4.6 GREENHOUSE GAS EMISSIONS

INTRODUCTION

This section addresses greenhouse gas (GHG) emissions generated by the construction and operation of the Project inclusive of mandatory and voluntary energy and resource conservation measures that have been incorporated into the Project to reduce GHG emissions and associated impacts. The analysis also addresses the consistency of the Project with applicable regulations, plans, and policies set forth by the State of California and the Town of Mammoth Lakes to reduce GHGs. The Project's potential contributions to global climate change impacts are identified. GHG emission calculations prepared for the Project are provided in Appendix C of this EIR.

1. ENVIRONMENTAL SETTING

Global climate change refers to changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation and storms. Historical records indicate that global climate changes have occurred in the past due to natural phenomena; however current data increasingly indicate that the current global conditions differ from past climate changes in rate and magnitude. Global climate change attributable to anthropogenic (human) GHG emissions is currently one of the most important and widely debated scientific, economic and political issues in the United States and the world. The extent to which increased concentrations of GHGs have caused or will cause climate change and the appropriate actions to limit and/or respond to climate change are the subject of significant and rapidly evolving regulatory efforts at the federal and state levels of government.

GHGs are those compounds in the Earth's atmosphere which play a critical role in determining temperature near the Earth's surface. More specifically, these gases allow high-frequency shortwave solar radiation to enter the Earth's atmosphere, but retain some of the low frequency infrared energy which is radiated back from the Earth towards space, resulting in a warming of the atmosphere. Not all GHGs possess the same ability to induce climate change; as a result, GHG contributions are commonly quantified in the units of equivalent mass of carbon dioxide (CO_2e). Mass emissions are calculated by converting pollutant specific emissions to CO_2e emissions by applying the proper global warming potential (GWP) value.[1] These GWP ratios are available from the Intergovernmental Panel on Climate Change (IPCC). Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's Second Assessment Report (SAR). The IPCC updated the GWP values based on the latest science in its Fourth Assessment Report (AR4). The updated GWPs in the IPCC AR4 have begun to be used in recent GHG emissions inventories. By applying the GWP ratios, project-related CO_2e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO_2 over a 100-year period is used as a baseline. The CO_2e values are calculated for construction years as well as existing and project build-out conditions in order to generate a net change in GHG emissions for construction and operation. Compounds that are regulated as GHGs are discussed below.

[1] *GWPs and associated CO_2e values were developed by the Intergovernmental Panel on Climate Change (IPCC), and published in its Second Assessment Report (SAR) in, 1996. Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's SAR. The IPCC updated the GWP values based on the latest science in its Fourth Assessment Report (AR4). The California Air Resources Board (CARB) has begun reporting GHG emission inventories for California using the GWP values from the IPCC AR4.*

Carbon Dioxide (CO_2): CO_2 is the most abundant GHG in the atmosphere and is primarily generated from fossil fuel combustion from stationary and mobile sources. CO_2 is the reference gas (GWP of 1) for determining the GWPs of other GHGs.

Methane (CH_4): CH_4 is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. The GWP of CH_4 is 21 in the IPCC SAR and 25 in the IPCC AR4.

Nitrous Oxide (N_2O): N_2O produced by human-related sources including 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 in the IPCC SAR and 298 in the IPCC AR4.

Hydrofluorocarbons (HFCs): HFCs are fluorinated compounds consisting of hydrogen, carbon, and fluorine. They are typically used as refrigerants in both stationary refrigeration and mobile air conditioning systems. The GWPs of HFCs ranges from 140 for HFC-152a to 11,700 for HFC-23 in the IPCC SAR and 124 for HFC-152a to 14,800 for HFC-23 in the IPCC AR4.

Perfluorocarbons (PFCs): PFCs are fluorinated compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. The GWPs of PFCs range from 6,500 to 9,200 in the IPCC SAR and 7,390 to 17,700 in the IPCC AR4.

Sulfur Hexafluoride (SF_6): SF_6 is a fluorinated compound consisting of sulfur and fluoride. It 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. SF_6 has a GWP of 23,900 in the IPCC SAR and 22,800 in the IPCC AR4.

a. Regulatory Framework

(1) Federal

The United States Environmental Protection Agency (USEPA) is responsible for implementing federal policy to address GHGs. The federal government administers a wide array of public-private partnerships to reduce the GHG intensity generated in the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. The USEPA implements numerous voluntary programs that contribute to the reduction of GHG emissions. These programs (e.g., the Energy Star labeling system for energy-efficient products) play a significant role in encouraging voluntary reductions from large corporations, consumers, industrial and commercial buildings, and many major industrial sectors.

In *Massachusetts v. Environmental Protection Agency* (Docket No. 05–1120), the United States Supreme Court held in April of 2007 that the USEPA has statutory authority under Section 202 of the federal Clean Air Act to regulate GHGs. The Court did not hold that the USEPA was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare.

On May 19, 2009, the President announced a national policy for fuel efficiency and emissions standards in the United States auto industry. The adopted federal standard applies to passenger cars and light-duty trucks for model years 2012 through 2016. The rule surpasses the prior Corporate Average Fuel Economy standards and requires an average fuel economy standard of 35.5 miles per gallon (mpg) and 250 grams of CO_2 per mile by model year 2016, based on USEPA calculation methods. These standards were formally adopted on April 1, 2010. In August 2012, standards were adopted for model year 2017 through 2025 passenger cars and light-duty trucks. By 2025, vehicles are required to achieve 54.5 mpg (if GHG reductions are achieved exclusively through fuel economy improvements) and 163 grams of CO_2 per mile. According to the USEPA, a model year 2025 vehicle would emit one-half of the GHG emissions from a model year 2010 vehicle.[2]

On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act. The USEPA adopted a Final Endangerment Finding for the six defined GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) on December 7, 2009. The Endangerment Finding is required before USEPA can regulate GHG emissions under Section 202(a)(1) of the Clean Air Act consistently with the United States Supreme Court decision. The USEPA also adopted a Cause or Contribute Finding in which the USEPA Administrator found that GHG emissions from new motor vehicle and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. These findings do not themselves impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

(2) State

California has promulgated a series of executive orders, laws, and regulations aimed at reducing both the level of GHGs in the atmosphere and emissions of GHGs from commercial and private activities within the State.

(a) California Air Resources Board

The California Air Resources Board (CARB), a part of the California Environmental Protection Agency (CalEPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, CARB conducts research, sets the California Ambient Air Quality Standards (CAAQS), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB has primary responsibility for the development of California's State Implementation Plan, for which it works closely with the federal government and the local air districts. The State Implementation Plan is required for the State to take over implementation of the federal Clean Air Act.

(b) Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

[2] *United States Environmental Protection Agency, "EPA and NHTSA Set Standards to Reduce Greenhouse Gases and Improve Fuel* *(Footnote continued on next page)*

- By 2010, California shall reduce GHG emissions to 2000 levels;
- By 2020, California shall reduce GHG emissions to 1990 levels; and
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels.

The Secretary of CalEPA is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agency representatives involved in the GHG reduction plan include the Secretary of the Business, Transportation and Housing Agency, the Secretary of the Department of Food and Agriculture, the Secretary of the Resources Agency, the Chairperson of CARB, the Chairperson of the California Energy Commission, and the President of the Public Utilities Commission. Representatives from these agencies comprise the California Climate Action Team (CAT).

The CAT provides biennial reports to the Governor and Legislature on the state of GHG reductions in the state as well as strategies for mitigating and adapting to climate change. The first CAT Report to the Governor and the Legislature in 2006 contained recommendations and strategies to help meet the targets in Executive Order S 3-05.[3] The 2010 CAT Report, finalized in December 2010, expands on the policy oriented 2006 assessment.[4] The new information detailed in the CAT Report includes development of revised climate and sea-level projections using new information and tools that have become available in the last two years; and an evaluation of climate change within the context of broader social changes, such as land-use changes and demographic shifts.

(c) California Assembly Bill 32 (AB 32, Nunez) (Chapter 488, Statutes of 2006)

In 2006, the California State Legislature adopted Assembly Bill (AB) 32 (Chapter 488, Statutes of 2006), the California Global Warming Solutions Act of 2006, focusing on reducing GHG emissions in California to 1990 levels by 2020. As required by AB 32, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was originally set at 427 million metric tons (MMT) CO_2e using the GWP values from the IPCC SAR. CARB also projected the state's 2020 GHG emissions under business-as-usual (BAU) conditions – that is, emissions that would occur without any plans, policies, or regulations to reduce GHG emissions. CARB originally used an average of the state's GHG emissions from 2002 through 2004 and projected the 2020 levels at approximately 596 $MMTCO_2e$ (using GWP values from the IPCC SAR). Therefore, under the original projections, the state must reduce its 2020 BAU emissions by 28.4 percent in order to meet the 1990 target of 427 $MMTCO_2e$. In 2014, CARB revised the target using the GWP values from the IPCC AR4 and determined that the 1990 GHG emissions inventory and 2020 GHG emissions limit is 431 $MMTCO_2e$. CARB also updated the State's 2020 BAU emissions estimate to account for the effect of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulation that were recently adopted for motor vehicles and renewable energy.[5] CARB's revised 2020 BAU emissions estimate using the GWP values from the IPCC AR4 is 509.4 $MMTCO_2e$. Therefore, the emission reductions necessary to achieve the 2020 emissions target of 431 $MMTCO_2e$ would be 78.4 $MMTCO_2e$, or a reduction of GHG emissions by approximately 15.4 percent. A

Economy for Model Years 2017-2025 Cars and Light Trucks," http://www.epa.gov/oms/climate/documents/420f12051.pdf. 2012.

3 *California Environmental Protection Agency, California Climate Action Team Report to the Governor and the Legislature, (2006).*

4 *California Environmental Protection Agency, California Climate Action Team Report to the Governor and the Legislature, (2010).*

5 *California Air Resources Board, "Greenhouse Gas Inventory – 2020 Emissions Forecast," http://www.arb.ca.gov/cc/inventory/data/forecast.htm. 2012.*

summary of the GHG emissions reductions required under AB 32 is provided in **Table 4.6-1**, *Estimated Greenhouse Gas Emissions Reductions Required by AB 32*.

Table 4.6-1

Estimated Greenhouse Gas Emissions Reductions Required by AB 32

Emissions Category	GHG Emissions ($MMTCO_2e$)
2008 Scoping Plan (IPCC SAR)	
2020 BAU Forecast (CARB 2008 Scoping Plan Estimate)	596
2020 Emissions Target Set by AB 32 (i.e., 1990 level)	427
Reduction below Business-As-Usual necessary to achieve 1990 levels by 2020	**169 (28.4%)** [a]
2011 Scoping Plan (IPCC AR4)	
2020 BAU Forecast (CARB 2011 Scoping Plan Estimate)	509.4
2020 Emissions Target Set by AB 32 (i.e., 1990 level)	431
Reduction below Business-As-Usual necessary to achieve 1990 levels by 2020	**78.4 (15.4%)** [b]

$MMTCO_2e$ = million metric tons of carbon dioxide equivalents

[a] *596 – 427 = 169 / 596 = 28.4%*

[b] *509.4 – 431 = 78.4 / 509.4 = 15.4%*

Source: California Air Resources Board, Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (FED), Attachment D, August 19, 2011; California Air Resources Board, 2020 Business-as-Usual (BAU) Emissions Projection, 2014 Edition, http://www.arb.ca.gov/cc/inventory/data/bau.htm. Accessed November 2015.

AB 32 defines GHGs as CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6 and represents the first enforceable statewide program to limit emissions of these GHGs from all major industries with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. Under AB 32, CARB has the primary responsibility for reducing GHG emissions. CARB is required to adopt rules and regulations directing state actions that would achieve GHG emissions reductions equivalent to 1990 statewide levels by 2020. On or before June 30, 2007, CARB was required to publish a list of discrete early action GHG emission reduction measures that would be implemented to be made enforceable by 2010. In 2007, CARB published its Final Report for Proposed Early Actions to Mitigate Climate Change in California.[6] This report described recommendations for discrete early action measures to reduce GHG emissions as part of California's AB 32 GHG reduction strategy. Resulting from this are three new regulations proposed to meet the definition of "discrete early action greenhouse gas reduction measures," including the following: a low carbon fuel standard; reduction of HFC 134a (HFC used in automobile air-conditioning systems) emissions from non-professional servicing of motor vehicle air conditioning systems; and improved landfill gas capture. CARB estimates that by 2020, the reductions from those three measures would range from 13 to 26 $MMTCO_2e$. Six additional early-action regulations were adopted on October 25, 2007 that targeted: motor vehicles; auxiliary engines from docked ships; PFCs from the semiconductor industry; propellants in consumer products; automotive maintenance; and SF_6 from non-electricity sectors.

[6] *California Air Resources Board, Proposed Early Actions to Mitigation Climate Change in California, 2007.*

(d) California Assembly Bill No. 1493 (AB 1493, Pavley), (Chapter 200, Statutes of 2002)

In response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 (Chapter 200, Statutes of 2002), enacted on July 22, 2002, required CARB to set GHG emission standards for passenger vehicles, light duty trucks, and other vehicles whose primary use is non-commercial personal transportation manufactured in and after 2009. In setting these standards, CARB must consider cost effectiveness, technological feasibility, economic impacts, and provide maximum flexibility to manufacturers. The State of California in 2004 submitted a request for a waiver from federal clean air regulations, which ordinarily preempts state regulation of motor vehicle emission standards, to allow the state to require reduced tailpipe emissions of CO_2. In late 2007, the USEPA denied California's waiver request. In early 2008, the state brought suit against USEPA related to this denial. In January 2009, the President directed the USEPA to assess whether its denial of the waiver was appropriate under the federal Clean Air Act. In June 2009, the USEPA granted California the waiver.

However, as discussed previously, the USEPA and USDOT have adopted federal standards for model year 2012 through 2016 light-duty vehicles. In light of the USEPA and USDOT standards, California - and states adopting California emissions standards - have agreed to defer to the proposed national standard through model year 2016. The 2016 endpoint of the federal and state standards is similar, although the federal standard ramps up slightly more slowly than required under the state standard. The state standards (called the Pavley standards) require additional reductions in CO_2 emissions beyond model year 2016 (referred to as Pavley Phase II standards). As noted above, the USEPA and USDOT have adopted GHG emission standards for model year 2017 through 2025 vehicles. These standards are slightly different from the Pavley Phase II standards, but the State of California has agreed not to contest these standards, in part due to the fact that while the national standard would achieve slightly less reductions in California, it would achieve greater reductions nationally and is stringent enough to meet state GHG emission reduction goals.[7] On November 15, 2012, CARB approved an amendment that allows manufacturers to comply with the 2017-2025 national standards to meet state law.

(e) Executive Order S-01-07

Executive Order S-01-07 was enacted by the Governor on January 18, 2007. The order mandates the following: (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and (2) that a Low Carbon Fuel Standard (LCFS) for transportation fuels be established in California.

(f) Senate Bill 97 (SB 97, Dutton) (Chapter 185, Statutes of 2007)

Senate Bill (SB) 97 (Chapter 185, Statutes of 2007), enacted in 2007, amended CEQA to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. It directed the California Office of Planning and Research to develop revisions to the State CEQA Guidelines "for the mitigation of GHG emissions or the effects of GHG emissions" and directed the Resources Agency to certify and adopt these revised State CEQA Guidelines by January 2010. The revisions were completed in March 2010 and codified into the California Code of Regulations and became effective within 120 days pursuant to

[7] *California Air Resources Board, "Advanced Clean Cars Summary," http://www.arb.ca.gov/msprog/clean_cars/acc%20summary-final.pdf. Accessed June 2013.*

CEQA. The amendments provide regulatory guidance for the analysis and mitigation of the potential effects of GHG emissions. The CEQA Guidelines require:

- Inclusion of GHG analyses in CEQA documents;
- Determination of significance of GHG emissions; and
- If significant GHG emissions would occur, adoption of mitigation to address significant emissions.

(g) Senate Bill 375 (SB 375, Steinberg) (Chapter 728, Statutes of 2008)

SB 375 (Chapter 728, Statutes of 2008), which establishes mechanisms for the development of regional targets for reducing passenger vehicle greenhouse gas emissions, was adopted by the State on September 30, 2008. Under SB 375, CARB is required, in consultation with each Metropolitan Planning Organization (MPO) in the State, to set regional GHG reduction targets for the passenger vehicle and light-duty truck sector for 2020 and 2035. Of note, the proposed reduction targets explicitly exclude emission reductions expected from the AB 1493 and the low carbon fuel standard regulations.

The Mono County Local Transportation Commission (LTC) is the designated Regional Transportation Planning Agency for the Town of Mammoth Lakes; however, the Mono County LTC is not within the jurisdiction of any of the State's MPOs. As a result, the Mono County LTC is exempt from the GHG reduction requirements of SB 375. According to CARB, the initial GHG reduction targets established under SB 375 apply to approximately 95 percent of the State's population, vehicle miles traveled (VMT), and passenger vehicle GHG emissions.[8] Some of the smaller MPOs had relatively small or zero GHG reduction requirements in the initial target setting. CARB has indicated it would reevaluate the targets for future updates. As such, the Mono County LTC, along with the other 20 county LTCs that are not within an MPO, comprise less than five percent of the State's GHG emissions from the portion of the transportation sector that is the subject of SB 375.

(h) Title 24, Building Standards Code and CALGreen Code

The California Energy Commission first adopted the Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards (CALGreen) Code. The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4)

[8] *California Air Resources Board, Staff Report, Proposed Regional Greenhouse Gas Emission Reduction Targets For Automobiles And Light Trucks Pursuant To Senate Bill 375, (2010).*

Material conservation and resource efficiency; and (5) Environmental air quality."[9] The CALGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission. When the CALGreen Code went into effect in 2009, compliance through 2010 was voluntary. As of January 1, 2011, the CALGreen Code is mandatory for all new buildings constructed in the state. The CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.[10] The CALGreen Code was most recently updated in 2013 to include new mandatory measures for residential as well as nonresidential uses; the new measures took effect on January 1, 2014.[11]

(i) Renewables Portfolio Standard

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the State's Renewables Portfolio Standard to 33 percent renewable power by 2020. Pursuant to Executive Order S-21-09, CARB was also preparing regulations to supplement the Renewables Portfolio Standard with a Renewable Energy Standard that will result in a total renewable energy requirement for utilities of 33 percent by 2020. But on April 12, 2011, Governor Jerry Brown signed SB X1-2 to increase California's RPS to 33 percent by 2020. SB 350 (Chapter 547, Statues of 2015), signed into law on October 7, 2015, further increased the Renewables Portfolio Standard to 50 percent by 2030. The legislation also included interim targets of 40 percent by 2024 and 45 percent by 2027.

(3) Regional

The Project Areas are located in the Town of Mammoth Lakes in Mono County. The Great Basin Unified Air Pollution Control District (GBUAPCD) is responsible for air quality planning and permitting and developing rules and regulations to bring the area into attainment of the ambient air quality standards. This is accomplished through air quality monitoring, evaluation, education, implementation of control measures to reduce emissions from stationary sources, permitting and inspection of pollution sources, enforcement of air quality regulations, and by supporting and implementing measures and strategies to reduce emissions from motor vehicles and VMT.

(4) Town of Mammoth Lakes

(a) Mammoth Lakes Plans and Policies

The Town of Mammoth Lakes General Plan includes goals and policies related to climate change and GHG emissions. Additionally, the Resource Management and Conservation Element of the General Plan includes goals and policies related to energy conservation and resources, green building practices, and air quality that would aid to reduce GHG emissions in the Town. Refer to Subsection 4.6.2.c for a list of these goals and policies.

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[9] *California Building Standards Commission, 2010 California Green Building Standards Code, (2010).*

[10] *California Building Standards Commission, 2010 California Green Building Standards Code, (2010).*

[11] *California Building Standards Commission, 2010 California Green Building Standards Code, (2010).*

(b) Mammoth Lakes Municipal Code

The Town of Mammoth Lakes has adopted by reference the CALGreen Code in Chapter 15.04 of the Municipal Code. As discussed previously, the CALGreen Code establishes mandatory measures for new residential and non-residential buildings. Such mandatory measures include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.

b. Existing Conditions

(1) Greenhouse Gas Emissions Inventory

Worldwide man-made emissions of GHGs were approximately 49,000 $MMTCO_2e$ annually including ongoing emissions from industrial and agricultural sources and emissions from land use changes (e.g., deforestation).[12] Emissions of CO_2 emissions from fossil fuel use and industrial processes accounts for 65 percent of the total while CO_2 emissions from all sources accounts for 76 percent of the total. Methane emissions account for 16 percent and N_2O emissions for 6.2 percent. In 2013, the United States was the world's second largest emitter of carbon dioxide at 5,300 MMT (China was the largest emitter of carbon dioxide at 10,300 MMT).[13]

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based on the 2013 GHG inventory data (i.e., the latest year for which data are available from CARB), California emitted 457.2 $MMTCO_2e$ including emissions resulting from imported electrical power and 417.2 $MMTCO_2e$ excluding emissions related to imported power.[14] Between 1990 and 2013, the population of California grew by approximately 8.2 million (from 29.8 to 38.0 million).[15] This represents an increase of approximately 27.5 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from $773 billion in 1990 to $2.21 trillion in 2013 representing an increase of approximately 186 percent.[16] Despite the population and economic growth, California's net GHG emissions only grew by approximately 6 percent between 1990 and 2013. The California Energy Commission (CEC) attributes the slow rate of growth to the success of California's renewable energy programs and its commitment to clean air and clean energy.[17] **Table 4.6-2**, *State of California Greenhouse Gas Emissions,* identifies and quantifies statewide anthropogenic GHG emissions and sinks (e.g., carbon sequestration due to forest growth) in 1990 and 2013 (i.e., the most recent year in which data are available from CARB). As shown in the table, the transportation sector is the largest contributor to statewide GHG emissions at 37 percent in 2013.

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12 *Intergovernmental Panel on Climate Change, Fifth Assessment Report Synthesis Report, (2014).*

13 *PBL Netherlands Environmental Assessment Agency and the European Commission Joint Research Center, Trends in Global CO_2 Emissions 2014 Report, (2014).*

14 *California Air Resources Board, "California Greenhouse Gas 2000-2013 Inventory by Scoping Plan Category - Summary," http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed April 2016.*

15 *U.S. Census Bureau, "California, Population of Counties by Decennial Census: 1900 to 1990," http://quickfacts.census.gov/qfd/states/06000lk.html. Accessed November 2015; California Department of Finance, "E-5 Population and Housing Estimates for Cities, Counties and the State, January 2011-2015, with 2010 Benchmark," http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2011-20/view.php. Accessed November 2015.*

16 *California Department of Finance, "Financial & Economic Data: Gross Domestic Product, California," http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm. Accessed November 2015. Amounts are based on current dollars as of the date of the report (June 2015).*

17 *California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004, (2006).*

Table 4.6-2

State of California Greenhouse Gas Emissions

Category	Total 1990 Emissions using IPCC SAR ($MMTCO_2e$)	Percent of Total 1990 Emissions	Total 2013 Emissions using IPCC AR4 ($MMTCO_2e$)	Percent of Total 2013 Emissions
Transportation	150.7	35%	169.0	37%
Electric Power	110.6	26%	90.5	20%
Commercial	14.4	3%	13.3	3%
Residential	29.7	7%	28.1	6%
Industrial	103.0	24%	92.7	20%
Recycling and Waste [a]	–	–	8.9	2%
High GWP/Non-Specified [b]	1.3	<1%	18.5	4%
Agriculture/Forestry	23.6	6%	36.2	8%
Forestry Sinks	-6.7		-- [c]	--
Net Total (IPCC SAR)	**426.6**	**100%**	--	--
Net Total (IPCC AR4) [d]	**431**	**100%**	**457.2**	**100%**

[a] *Included in other categories for the 1990 emissions inventory.*

[b] *High GWP gases are not specifically called out in the 1990 emissions inventory.*

[c] *Revised methodology under development (not reported for 2013).*

[d] *CARB revised the State's 1990 level GHG emissions using GWPs from the IPCC AR4.*

Sources: California Air Resources Board, Staff Report – California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit, (2007); California Air Resources Board, "California Greenhouse Gas 2000-2013 Inventory by Scoping Plan Category – Summary," http://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed April 2016.

(2) Existing Greenhouse Gas Emissions

The Town of Mammoth Lakes is currently developed with a mix of residential units, hotel/lodging, commercial services, including outdoor and recreational uses, for residents and visitors to the Town, and limited industrial uses. The existing uses include retail, restaurants, cinema, equipment rental, storage, laundromat, gas stations, banks, pet supplies, offices, residences, churches, day care, visitor accommodations, and some construction related uses. The existing development within the Project Area and Townwide is provided in Chapter 2.0, *Project Description*. The Transportation Impact Analysis for the Project[18] provides an estimate of the existing VMT for the Town of Mammoth Lakes. According to the Transportation Impact Analysis the existing VMT estimates for the Town roadways included in the modeling analysis is 152,844 VMT per day or approximately 41.3 million VMT per year.

Sources of GHG emissions in the Project Area consist primarily of area, energy, water, and solid waste sources from commercial uses within the approximately 122-acre commercially designated area that would be covered by the proposed Land Use Element/Zoning Code Amendments and mobile sources associated

[18] *LSC Transportation Consultants, Inc., Mammoth Mobility Element Transportation Impact Analysis, 2016.*

with vehicle travel along Town roadways that would be affected by both the proposed Land Use Element/Zoning Code Amendments and Mobility Element Update. Under CEQA, the baseline environmental setting is established at the time that environmental assessment commences. Therefore, the existing Project Area emissions serves as the baseline and the operational GHG emissions impacts for the Project are assessed based on the incremental change in emissions from future development resulting from the proposed Land Use Element/Zoning Code Amendments and improvements occurring under the Mobility Element Update.

(3) Effects of Global Climate Change

The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth's climate system and inability to accurately model it, the uncertainty surrounding climate change may never be completely eliminated. Nonetheless, the IPCC, in its *Fifth Assessment Report, Summary for Policy Makers*, stated that, "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 greenhouse gas concentrations and other anthropogenic forcings together."[19] A report from the National Academy of Sciences concluded that 97 to 98 percent of the climate researchers most actively publishing in the field support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity.[20]

According to CARB, the potential impacts in California due to global climate change may include: loss in snow pack; sea level rise; more extreme heat days per year; more high ozone days; more large forest fires; more drought years; increased erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Deltas and associated levee systems; and increased pest infestation.[21] Below is a summary of some of the potential effects, reported by an array of studies that could be experienced in California as a result of global warming and climate change.

(a) Air Quality

Higher temperatures, conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore, its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thus ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air

[19] *Intergovernmental Panel on Climate Change, Fifth Assessment Report, Summary for Policy Makers, (2013) 15.*

[20] *Anderegg, William R. L., J.W. Prall, J. Harold, S.H., Schneider, Expert Credibility in Climate Change, Proceedings of the National Academy of Sciences of the United States of America. 2010;107:12107-12109.*

[21] *California Environmental Protection Agency, Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the Legislature, (2006).*

quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state.[22]

In 2009, the California Natural Resources Agency (CNRA) published the *California Climate Adaptation Strategy*[23] as a response to the Governor's Executive Order S-13-2008. The CNRA report lists specific recommendations for state and local agencies to best adapt to the anticipated risks posed by a changing climate. In accordance with the *California Climate Adaptation Strategy*, the CEC was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers.[24] The website, known as Cal-Adapt, became operational in 2011.[25] The information provided from the Cal-Adapt website represents a projection of potential future climate scenarios. The data are comprised of the average values from a variety of scenarios and models and are meant to illustrate how the climate may change based on a variety of different potential social and economic factors. According to the Cal-Adapt website, the Town of Mammoth Lakes area could result in an average increase in temperature of approximately 10 to 17 percent (about 4.3 to 7.4°F) by 2070-2090, compared to the baseline 1961-1990 period. According to the Cal-Adapt website, Mono County could see a reduction in snow moisture between approximately 40 and 60 percent by 2070-2090, compared to the baseline 1961-1990 period and an increase in the potential amount of area burned by 1.3 to 1.5 times by 2085 compared to the baseline 2010 levels.

(b) Water Supply

Uncertainty remains with respect to the overall impact of global climate change on future water supplies in California. Studies have found that, "Considerable uncertainty about precise impacts of climate change on California hydrology and water resources will remain until we have more precise and consistent information about how precipitation patterns, timing, and intensity will change."[26] For example, some studies identify little change in total annual precipitation in projections for California while others show significantly more precipitation. [27] Warmer, wetter winters would increase the amount of runoff available for groundwater recharge; however, this additional runoff would occur at a time when some basins are either being recharged at their maximum capacity or are already full.[28] Conversely, reductions in spring runoff and higher evapotranspiration because of higher temperatures could reduce the amount of water available for recharge.[29]

The California Department of Water Resources report on climate change and effects on the State Water Project (SWP), the Central Valley Project, and the Sacramento-San Joaquin Delta, concludes that "climate

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[22] *California Energy Commission, Scenarios of Climate Change in California: An Overview, February 2006. http://www.energy.ca.gov/2005publications/CEC-500-2005-186/CEC-500-2005-186-SF.PDF. Accessed January 2015.*

[23] *California Natural Resources Agency, Climate Action Team, 2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008, (2009).*

[24] *Ibid.*

[25] *The Cal-Adapt website address is: http://cal-adapt.org.*

[26] *Pacific Institute for Studies in Development, Environment and Security, Climate Change and California Water Resources: A Survey and Summary of the Literature, July 2003. http://www.pacinst.org/reports/climate_change_and_california_water_resources.pdf. Accessed January 2015.*

[27] *Ibid*.

[28] *Ibid.*

[29] *Ibid.*

change will likely have a significant effect on California's future water resources…[and] future water demand." It also reports that "much uncertainty about future water demand [remains], especially [for] those aspects of future demand that will be directly affected by climate change and warming. While climate change is expected to continue through at least the end of this century, the magnitude and, in some cases, the nature of future changes is uncertain." It also reports that the relationship between climate change and its potential effect on water demand is not well understood, but "[i]t is unlikely that this level of uncertainty will diminish significantly in the foreseeable future." Still, changes in water supply are expected to occur, and many regional studies have shown that large changes in the reliability of water yields from reservoirs could result from only small changes in inflows.[30] In its *Fifth Assessment Report*, the IPCC states "Changes in the global water cycle in response to the warming over the 21st century will not be uniform. The contrast in precipitation between wet and dry regions and between wet and dry seasons will increase, although there may be regional exceptions."[31]

(c) Hydrology and Sea Level Rise

As discussed above, climate changes could potentially affect: the amount of snowfall, rainfall and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. Sea level rise can be a product of global warming through two main processes: expansion of seawater as the oceans warm, and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

(d) Agriculture

California has a $30 billion agricultural industry that produces half the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater ozone pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thus affect their quality.[32]

(e) Ecosystems and Wildlife

Increases in global temperatures and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists expect that the average global surface temperature could rise by 2-11.5°F (1.1-6.4°C) by 2100, with significant regional variation.[33] Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Sea level could rise as much as two feet along most of the U.S. coast. Rising temperatures could have four major impacts on plants and animals: (1) timing

[30] *California Department of Water Resources Climate Change Report, Progress on Incorporating Climate Change into Planning and Management of California's Water Resources, July 2006. http://baydeltaoffice.water.ca.gov/climatechange/DWRClimateChangeJuly06_update8-2-07.pdf. Accessed December 2013.*

[31] *Intergovernmental Panel on Climate Change, Fifth Assessment Report, Summary for Policy Makers, (2013) 20.*

[32] *California Climate Change Center, Our Changing Climate: Assessing the Risks to California, (2006).*

[33] *National Research Council, Advancing the Science of Climate Change, (2010).*

of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes such as carbon cycling and storage.[34, 35]

2. METHODOLOGY AND THRESHOLDS

a. Methodology

The evaluation of potential impacts to GHG emissions that may result from the construction and long-term operations of the Project is conducted as follows:

(1) Greenhouse Gas Emissions

For the purposes of this EIR, total GHG emissions from the Project were quantified to determine whether the associated emissions would substantially help or hinder the state's ability to attain the goals identified in AB 32 (i.e., reduction of statewide GHG emissions to 1990 levels by 2020). As stated above, the mandate of AB 32 demonstrates California's commitment to reducing GHG emissions and the state's associated contribution to climate change, without intending to limit population or economic growth within the state.

The Climate Registry has prepared the General Reporting Protocol for calculating and reporting GHG emissions from a number of general and industry-specific activities.[36] No specific protocols are available for land use projects, so the General Reporting Protocol has been adapted to address GHG emissions from the Project. The information provided in this section is consistent with the General Reporting Protocol minimum reporting requirements. The General Reporting Protocol recommends the separation of GHG emissions into three categories that reflect different aspects of ownership or control over emissions. They include:

- Scope 1: Direct, on-site combustion of fossil fuels (e.g., natural gas, propane, gasoline, and diesel).
- Scope 2: Indirect, off-site emissions associated with purchased electricity or purchased steam.
- Scope 3: Indirect emissions associated with other emissions sources, such as third-party vehicles and embodied energy.[37]

CARB believes that consideration of so-called indirect emissions provides a more complete picture of the GHG footprint of a facility: "As facilities consider changes that would affect their emissions – addition of a cogeneration unit to boost overall efficiency even as it increases direct emissions, for example – the relative impact on total (direct plus indirect) emissions by the facility should be monitored. Annually reported indirect energy usage also aids the conservation awareness of the facility and provides information" to CARB to be considered for future strategies by the industrial sector.[38] For these reasons, CARB has proposed requiring the calculation of direct and indirect GHG emissions as part of the AB 32 reporting requirements.

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[34] *Parmesan, C., 2004. Ecological and Evolutionary Response to Recent Climate Change.*

[35] *Parmesan, C and Galbraith, H, 2004. Observed Ecological Impacts of Climate Change in North America. Arlington, VA: Pew. Cent. Glob. Clim. Change.*

[36] *California Climate Action Registry, General Reporting Protocol Version 3.1, (2009).*

[37] *Embodied energy includes energy required for water pumping and treatment for end-uses.*

[38] *California Air Resources Board, Initial Statement of Reasons for Rulemaking, Proposed Regulation for Mandatory Reporting of Greenhouse Gas Emissions Pursuant to the California Global Warming Solutions Act of 2006 (AB 32), (2007).*

Additionally, the Office of Planning and Research directs lead agencies to "make a good-faith effort, based on available information, to calculate, model, or estimate…GHG emissions from a project, including the emissions associated with vehicular traffic, energy consumption, water usage and construction activities."[39] Therefore, direct and indirect emissions have been calculated for the Project.

For purposes of this analysis, it is considered reasonable and consistent with criteria pollutant calculations to consider those GHG emissions resulting from Project-related incremental (net) increase in the use of on-road mobile vehicles, electricity, and natural gas compared to existing conditions. This includes Project construction activities such as demolition, hauling, and construction worker trips. This analysis also considers indirect GHG emissions from water conveyance, wastewater generation, and solid waste handling. Since potential impacts resulting from GHG emissions are long-term rather than acute, GHG emissions are calculated on an annual basis. In order to report total GHG emissions using the CO_2e metric, the GWP ratios corresponding to the warming potential of CO_2 over a 100-year period is used in this analysis.

Construction activity that would occur as a result of the Land Use Element/Zoning Code Amendments and Mobility Element Update has the potential to generate emissions through the use of heavy-duty construction equipment and through vehicle trips generated from construction workers traveling to and from construction sites. Specific project-level developments are not proposed as part of this Project. As a result, specific project-level information, such as construction schedules and import and export soil quantities, are not known and it is not possible to quantify the emissions associated with project-level construction. For the purposes of conducting a programmatic assessment of the Project, construction-related GHG impacts are qualitatively assessed by evaluating consistency with applicable CARB and GBUAPCD measures to reduce construction-related emissions from the combustion of fossil fuels.

The analysis of a project's impact on GHG emissions during long-term project operations typically considers emissions from mobile sources, stationary area point sources, energy and water demand, and wastewater and solid waste generation. The Project's change to a maximum of 2.0 FAR with no cap on the density of units or rooms could potentially increase the number of units/rooms/commercial square footage within the commercially designated areas compared to existing conditions and increase the GHG emissions associated with these sources. Operational air quality impacts are assessed based on the incremental increase in emissions compared to the existing baseline conditions.

The incremental change in operational emissions are estimated using CARB's updated version of the on-road vehicle emissions factor (EMFAC) model and the California Emissions Estimator Model (CalEEMod) software. Mobile source emissions are estimated based on CARB's updated version of the on-road vehicle emissions factor (EMFAC) model. The most recent version is EMFAC2014, which "represents ARB's current understanding of motor vehicle travel activities and their associated emission levels."[40] Mobile source emissions are based on the VMT estimates provided in the Transportation Impact Analysis for the Project.[41]

[39] *Office of Planning and Research, Technical Advisory, p. 5.*

[40] *California Air Resources Board, Mobile Source Emissions Inventory, http://www.arb.ca.gov/msei/categories.htm#emfac2014. Accessed November 2015. "USEPA approval is expected by the end of 2015. USEPA will provide a transition period during which either version may be used. Therefore, in anticipation of USEPA approval, use of EMFAC2014 before the end of the year is appropriate."*

[41] *LSC Transportation Consultants, Inc., Mammoth Mobility Element Transportation Impact Analysis, 2016.*

The estimated VMT takes into account trip reductions based on applicable physical and operational Project characteristics including internal capture from co-locating commercial and residential uses in close proximity. The emission factors from EMFAC2014 are applied to the VMT to obtain mobile source emissions.

With regard to energy usage, the consumption of fossil fuels to generate electricity and to provide heating and hot water generates GHG emissions. Future fuel consumption rates are estimated based on specific square footage of the multi-family residential, retail, and restaurant land uses, as well as predicted water supply needs of the Project. Energy usage (electricity and natural gas consumption) for the Project is calculated within CalEEMod using the CEC's CEUS data set.[42] This data set provides energy intensities of different land uses throughout the state and different climate zones. However, since the data from the CEUS is from 2002, the CalEEMod software incorporates correction factors to account for compliance with the Title 24 Building Standards Code. Water demand and wastewater generated from the Project require energy to supply, distribute and treat. Refer to Section 4.12, *Utilities and Service Systems*, of this EIR for the estimated water usage rate for the Project. The CalEEMod software uses the electrical intensity factors from the 2006 CEC report *Refining Estimates of Water-Related Energy Use in California*.[43] The emissions of GHGs associated with the wastewater treatment process emissions are also calculated using the CalEEMod software as described in the *California Emissions Estimator Model User's Guide, Appendix A*.[44]

Emissions from solid waste handling generated as a result of the Land Use Element/Zoning Code Amendments are also accounted for in the GHG emissions inventory. Refer to Section 4.12, *Utilities and Service Systems*, of this Draft EIR for estimated solid waste disposal and diversion rates from the Project. The GHG emission factors, particularly for CH_4, are based on the default values, as provided in CalEEMod, for landfill gas capture (e.g., no capture, flaring, energy recovery).

Other sources of GHG emissions from operation of the Project include equipment used to maintain landscaping, such as lawnmowers and trimmers. The CalEEMod tool uses landscaping equipment GHG emission factors from the CARB OFFROAD2011 model and the CARB *Technical Memo: Change in Population and Activity Factors for Lawn and Garden Equipment (6/13/2003)*.[45] The CalEEMod software estimates that landscaping equipment operate for 180 days per year in Mono County.

Operational GHG impacts are assessed based on the Project-related incremental increase in GHG emissions compared to baseline conditions. Under CEQA, the baseline environmental setting is established at the time that environmental assessment commences. The net change in Project VMT is based on the Project VMT minus the existing VMT. Similarly, the net change in the Project's energy, waste, and water GHG emissions are based on the Project's emissions minus the emissions from the existing land uses. Detailed GHG emissions calculations are provided in Appendix C of this EIR.

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[42] *California Energy Commission, California Commercial End-Use Survey, http://capabilities.itron.com/CeusWeb/Chart.aspx. Accessed December 2013.*

[43] *California Energy Commission, Refining Estimates of Water-Related Energy Use in California, PIER Final Project Report, CEC-500-2006-118, (2006).*

[44] *California Air Pollution Control Officers Association, California Emissions Estimator Model User's Guide, (2013).*

[45] *California Air Resources Board, OFFROAD Modeling Change Technical Memo: Change in Population and Activity Factors for Lawn and Garden Equipment, (6/13/2003), http://www.arb.ca.gov/msei/2001_residential_lawn_and_garden_changes_in_eqpt_pop_and_act.pdf. Accessed November 2013.*

(2) Greenhouse Gas Reduction Plan

In accordance with the *CEQA Guidelines*, the Office and Planning and Research encourages lead agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses. The Town of Mammoth Lakes does not have a programmatic mitigation plan specific to GHG emissions to tier from, such as a Greenhouse Gas Emissions Reduction Plan as recommended in the relevant amendments to the *CEQA Guidelines*. However, the Town has adopted the CALGreen Code that requires applicable projects to implement energy efficiency measures. In addition, the California CAT Report provides recommendations for specific emission reduction strategies for reducing GHG emissions and reaching the targets established in AB 32 and Executive Order S-3-05. Thus, if the project is designed in accordance with these policies and regulations, it would result in a less than significant impact, since it would be consistent with the overarching State regulations on GHG reduction (AB 32).

b. Thresholds of Significance

For purposes of this EIR, the Town of Mammoth Lakes has utilized the checklist questions in Appendix G of the *CEQA Guidelines* as thresholds of significance to determine whether a project would have a significant environmental impact regarding GHG emissions. Based on applicable Project components and Appendix G questions, the Project would result in a significant impact with regard to traffic if the Project would:

GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance.

GHG-2 Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Neither the Town of Mammoth Lakes nor the GBUAPCD have established numerical air quality significance thresholds for quantitatively determining GHG emission impacts in accordance with the criteria listed above. The Town has also not adopted a programmatic mitigation plan to tier from, such as a Greenhouse Gas Emissions Reduction Plan or Climate Action Plan. CEQA allows Lead Agencies to rely on standards or thresholds promulgated by other agencies. With respect to Threshold GHG-1 above, the Bay Area Air Quality Management District (BAAQMD) promulgated a plan-level GHG emissions threshold of 6.6 $MTCO_2e$ per service population (employees plus residents) per year, applicable to general plans. The BAAQMD GHG emissions threshold was developed by the air district to evaluate GHG emissions from general plan projects located in the San Francisco Bay Area Air Basin and takes into account GHG reduction obligations from applicable statewide mandates under AB 32 and related legislation. The Town of Mammoth Lakes is located in Mono County, which is in a different air basin (the Great Basin Valleys Air Basin) and has different GHG reduction obligations under State GHG reduction plans than counties located in the San Francisco Bay Area Air Basin. As discussed previously, the Mono County LTC is not subject to transportation GHG reductions under SB 375. Therefore, the Town of Mammoth Lakes has fewer GHG reduction obligations under the State's framework to reduce statewide GHG emissions under AB 32 and associated legislation. As a result, the BAAQMD plan-level GHG emissions threshold of 6.6 $MTCO_2e$ per service population per year would be too stringent for general plan projects in the Town of Mammoth Lakes. Nonetheless, in the absence of an applicable adopted numerical threshold, the BAAQMD plan-level GHG emissions threshold is used as a screening-level indicator of significance to evaluate the Project. Consistency with this threshold would indicate that the Project would achieve a per service population GHG emissions level that exceeds the Town's

obligations under statewide GHG emissions reductions efforts under AB 32 and related legislation. With respect to Threshold GHG-2 above, the Project would have a less than significant impact if it would implement design and operational strategies to reduce GHG emissions consistent with those set forth in AB 32 and the California CAT.

c. Applicable General Plan Goals/Policies and Adopted Mitigation Measures

The Town of Mammoth Lakes General Plan includes goals and policies related to climate change and GHG emissions. The goals and policies applicable to the Project include:

(1) Energy Resources

GOAL R.6: Optimize efficient use of energy.

- **Policy R.6.A:** Reduce energy demand by promoting energy efficiency in all sectors of the community.
- **Policy R.6.C:** Encourage energy efficiency in new building and retrofit construction, as well as resource conservation and use of recycled materials.
- **Policy R.6.D:** Reduce the use of fossil fuels and energy consumption of Town fleet through innovative measures.

(2) Green Technology

GOAL R.7: Be a leader in the use of green building technology.

- **Policy R.7.A:** Use green building practices to greatest extent possible in all construction projects.
- **Policy R.7.B:** Encourage development of housing close to work, commercial services, recreation areas and transit routes to reduce fuel consumption.

(3) Energy Conservation

GOAL R.8: Increase use of renewable energy resources and encourage conservation of existing sources of energy.

- **Policy R.8.A:** 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.
- **Policy R.8.B:** 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.
- **Policy R.8.C:** Research and facilitate cost-benefit analysis for energy and resource conservation in new and existing building systems.
- **Policy R.8.D:** Encourage use of renewable fuels such as biodiesel.

- **Policy R.8.F:** Encourage building design and orientation for passive solar heating.
- **Policy R.8.G:** Encourage use of decentralized solar electric power production systems.

(4) Solid Waste

GOAL R.9: Reduce volume of solid waste.

- **Policy R.9.A:** Support programs to recycle materials such as paper, cardboard, glass, metal, plastics, motor oil; and programs to compost or chip for mulch tree cuttings, brush, and other vegetation.

(5) Air Quality

GOAL R.11: Reduce greenhouse gas emissions.

- **Policy R.11.A:** Support the objectives of the U.S. Mayors Climate Protection Agreement, Assembly Bill 32, and California Executive Order S-03-05 and implement actions to reduce Mammoth Lakes' carbon footprint.

There are no applicable mitigation measures regarding greenhouse gas emissions in the adopted Mitigation Monitoring and Reporting Program for the General Plan Update or the Trails System Master Plan.

3. ENVIRONMENTAL IMPACTS

Threshold GHG-1:	The project would result in a significant impact if the project would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance.

Impact Statement GHG-1: *Emissions of GHGs associated with implementation of the combined Land Use Element/Zoning Code Amendments and Mobility Element Update, or the individual Mobility Element Update or Land Use Element/Zoning Code Amendments would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. Therefore, impacts would be less than significant.*

a. Land Use Element/Zoning Code Amendments and Mobility Element Update Impacts

Construction activities that would occur as a result of the combined Land Use Element/Zoning Code Amendments and Mobility Element Update would cause temporary, short-term emissions of GHGs. Emissions would be generated by construction equipment during various activities, such as grading and excavation, infrastructure construction, building demolition, and architectural coating activities. Information regarding specific development projects, soil conditions, and the location of sensitive receptors in relation to the various projects would be needed in order to quantify the level of impact associated with construction activity. It is recognized that construction-related GHG emissions from specific implementing projects would "occur over a relatively short-term period of time, they contribute a relatively small portion

of the overall lifetime project GHG emissions."[46] Construction activities would be required to comply with applicable State and GBUAPCD regulations including the CARB on-road and off-road vehicle rules that limit idling to five minutes and require construction fleets to meet stringent exhaust standards. Compliance with these regulations would minimize construction GHG emissions.

Operation of the land uses developed pursuant to implementation of the combined Land Use Element/Zoning Code Amendments and Mobility Element Update would result in area and mobile source emissions generated by future development and population growth. Under the Land Use Element/Zoning Code Amendments and Mobility Element Update, the annual VMT would be approximately 48.3 million miles compared to an existing annual VMT of 41.3 million miles under existing roadway and land use development conditions. In Mammoth Lakes, with the combined Land Use Element/Zoning Code Amendments and Mobility Element Update, a threefold increase in sidewalk coverage in the General Pedestrian Zone, which corresponds to commercial districts along Main Street and Old Mammoth Road is likely to result in a 4.2 percent decrease in VMT generated by trips within the pedestrian zone. The bike lanes would increase by 127 percent which would result in a 32 percent increase in bicycle mode share for a total bike mode share of 4.6 percent. Refer to Table 4.2-4 in Section 4.2, *Air Quality*, for a summary of the VMT adjustments from the increased pedestrian activity and the bicycle mode split.[47]

The incremental change from existing conditions in GHG emissions from the development of new land uses under the Land Use Element/Zoning Code Amendments and Mobility Element Update is provided in **Table 4.6-3**, *Incremental Change in Annual GHG Emissions – Land Use Element/Zoning Code Amendments*. As shown in Table 4.6-3, the per service population GHG emissions associated with future growth as a result of the Land Use Element/Zoning Code Amendments and Mobility Element Update would not exceed the thresholds. Although buildout of the Land Use Element/Zoning Code Amendments and Mobility Element Update would result in an increase in the total amount of vehicle miles traveled compared to existing conditions, emissions of mobile source exhaust pollutants are expected to decline due to improved vehicle emission standards and fuel economy standards that have been adopted by the USEPA and State of California. Operational impacts from implementation of the Land Use Element/Zoning Code Amendments and Mobility Element Update would be less than significant.

b. Land Use Element/Zoning Code Amendments Impacts

Construction activities that would occur as a result of the Land Use Element/Zoning Code Amendments would cause temporary, short-term emissions of GHGs. Emissions would be generated by construction equipment during various activities, such as grading and excavation, infrastructure construction, building demolition, and architectural coating activities. Information regarding specific development projects, soil conditions, and the location of sensitive receptors in relation to the various projects would be needed in order to quantify the level of impact associated with construction activity. However, as discussed previously, construction-related GHG emissions from specific implementing projects contribute a relatively small portion of the overall lifetime project GHG emissions. Construction activities would be required to comply with applicable State and GBUAPCD regulations including the CARB on-road and off-road vehicle rules that

[46] *South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, (2008) 3-8.*

[47] *"Mode split" refers to percentage of travelers using a particular type of transportation.*

Table 4.6-3

Incremental Change in Annual GHG Emissions – Land Use Element/Zoning Code Amendments and Mobility Element Update

Emissions Sources	$MTCO_2e$ per Year [a]
Land Use Element/Zoning Code Amendments and Mobility Element Update	**Buildout Year**
Mobile – Exhaust [b]	-544
Area Sources	<1
Energy Sources (Electricity)	1,354
Energy Sources (Natural Gas)	104
Water Conveyance	163
Solid Waste	92
Incremental Change in Emissions	**1,171**
Per Service Population (SP) Emissions [c]	**2.9**
Significance Threshold (per SP)	**6.6**
Exceed Threshold?	**No**

[a] *Totals may not add up exactly due to rounding in the modeling calculations Detailed emissions calculations are provided in Appendix C of this EIR.*

[b] *The incremental change in emissions for this source is negative because mobile source exhaust pollutants are expected to decline in the future due to improved vehicle emission standards and fuel economy standards that have been adopted by the USEPA and State of California.*

[c] *Service population is based on the incremental increase in employees within the C-1 and C-2 designated areas in the Project Area (see Section 4.9, Population and Housing, of this Draft EIR).*

Source: ESA PCR, 2016

limit idling to five minutes and require construction fleets to meet stringent exhaust standards. Compliance with these regulations would minimize construction GHG emissions.

Operation of the land uses developed pursuant to implementation of the Land Use Element/Zoning Code Amendments would result in area and mobile source emissions generated by future development and population growth. Under the Land Use Element/Zoning Code Amendments, annual VMT would be approximately 49.8 million miles compared to an existing annual VMT of 41.3 million miles (see discussion below under Impact Statement GHG-1(c) for derivation of VMT estimates). The incremental change from existing conditions in GHG emissions from the development of new land uses under the Land Use Element/Zoning Code Amendments is provided in **Table 4.6-4**, *Incremental Change in Annual GHG Emissions – Land Use Element/Zoning Code Amendments*. As shown in Table 4.6-4, the per service population GHG emissions associated with future growth as a result of the Land Use Element/Zoning Code Amendments would not exceed the thresholds. Although buildout of the Land Use Element/Zoning Code Amendments would result in an increase in the total amount of vehicle miles traveled compared to existing conditions, emissions of mobile source exhaust pollutants are expected to decline due to improved vehicle emission standards and fuel economy standards that have been adopted by the USEPA and State of California. Operational impacts from implementation of the Land Use Element/Zoning Code Amendments would be less than significant.

Table 4.6-4

Incremental Change in Annual GHG Emissions – Land Use Element/Zoning Code Amendments

Emissions Sources	$MTCO_2e$ per Year [a]
Land Use Element/Zoning Code Amendments	**Buildout Year**
Mobile – Exhaust [b]	-424
Area Sources	<1
Energy Sources (Electricity)	1,354
Energy Sources (Natural Gas)	104
Water Conveyance	92
Solid Waste	163
Incremental Change in Emissions	**1,290**
Per Service Population (SP) Emissions [c]	**3.1**
Significance Threshold (per SP)	**6.6**
Exceed Threshold?	**No**

[a] *Totals may not add up exactly due to rounding in the modeling calculations Detailed emissions calculations are provided in Appendix C of this EIR.*

[b] *The incremental change in emissions for this source is negative because mobile source exhaust pollutants are expected to decline in the future due to improved vehicle emission standards and fuel economy standards that have been adopted by the USEPA and State of California.*

[c] *Service population is based on the incremental increase in employees within the C-1 and C-2 designated areas in the Project Area (see Section 4.9, Population and Housing, of this EIR).*

Source: ESA PCR, 2016

c. Mobility Element Update Impacts

Construction activities that would occur as a result of the Mobility Element Update would cause temporary, short-term emissions of GHGs from roadway improvement activities. Emissions would be generated by construction equipment during various activities, such as demolition of existing asphalt, grading, and new asphalt paving. Given that the scope of construction activities associated with implementation of the Mobility Element Update would generally be limited to roadway construction, it is reasonable to assume that construction activity would result in temporary and short-term emissions. Roadway construction activities would be required to comply with applicable State and GBUAPCD regulations including the CARB on-road and off-road vehicle rules that limit idling to five minutes and require construction fleets to meet stringent exhaust standards. Compliance with these regulations would further minimize construction GHG emissions.

Operation of the Mobility Element Update would result in reduced VMT as compared to existing or future conditions. Under the Mobility Element Update, annual VMT would be reduced from approximately 41.3 million miles under existing roadway and land use development conditions to 40.4 million miles under the Mobility Element Update and existing land use development conditions. Similarly, the Mobility Element Update would reduce future annual VMT from approximately 48.4 million miles per year to 46.9 million miles per year under future buildout of the existing General Plan conditions. The trip generation rates and

VMT account for bicycle and pedestrian use, which reduces overall VMT.[48] The effects of proposed improved pedestrian connectivity in the Town's commercial districts, an increase in Class II bicycle lanes, and future transit improvements under the Mobility Element Update are taken into account in the evaluation of total trips (expressed as VMT) that would occur under the various analysis scenarios. According to *An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy*, a direct correlation exists between increase in sidewalk coverage and reduction in traffic. A threefold increase in sidewalk coverage in the General Pedestrian Zone, which corresponds to commercial districts along Main Street and Old Mammoth Road is likely to result in a 4.2 percent decrease in VMT generated by trips within the pedestrian zone. A correlation also occurs between miles of bike lanes and increase in the bicycle mode in the overall mode split.[49] The current bicycling mode split in Mammoth Lakes is 3.5 percent, based on *2010-2014 American Community Survey 5-Year Estimates*.[50] According to the *Inyo County Active Transportation Plan* (ATP) 2016, a doubling of the miles of bike lanes would likely result in a 25 percent increase in bicycle mode share. In Mammoth Lakes, with the Mobility Element Update, the bike lanes would increase by 127 percent which would result in a 32 percent increase in bicycle mode share for a total bike mode share of 4.6 percent. Refer to Table 4.2-4 in Section 4.2, *Air Quality*, for a summary of the VMT adjustments from the increased pedestrian activity and the bicycle mode split.

Implementation of the Mobility Element itself would not result in a change in service population or the buildout of land uses. Therefore, because the Mobility Element would result in a net reduction in long-term GHG emissions from reduced annual VMT, the Mobility Element would not exceed the numerical threshold and impacts would be less than significant.

Mitigation Measures

Impacts regarding emissions of GHGs would be less than significant. Therefore, no mitigation measures are required.

Threshold GHG-2:	The project would result in a significant impact if the project would conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Impact Statement GHG-2: *Implementation of the Land Use Element/Zoning Code Amendments, Mobility Element Update, or the combined Land Use Element/Zoning Code Amendments and Mobility Element Update would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Therefore, impacts would be less than significant.*

Due to the complex physical, chemical, and atmospheric mechanisms involved in global climate change, there is no basis for concluding that the Project's GHG emissions would actually cause a measurable increase in global GHG emissions necessary to influence global climate change. Newer construction materials and practices, current energy efficiency requirements, and newer appliances tend to emit lower levels of air

[48] *LSC Transportation Consultants, Mammoth Mobility Element Update Transportation Impact Analysis, (2016) 19.*

[49] *"Mode split" refers to percentage of travelers using a particular type of transportation.*

[50] *U.S. Census Bureau, American FactFinder, Data Set B08301 (Means of Transportation to Work, Mammoth Lakes, 2010-2014), http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t. Accessed April 2016.*

pollutant emissions, including GHGs, as compared to those built years ago; however, the net effect is difficult to quantify. Thus, the estimated net increase in emissions resulting from implementation of the Project presented above may be an over- or under-estimation. The GHG emissions of the Project alone would not likely cause a direct physical change in the environment.

According to a white paper prepared by the California Air Pollution Control Officers Association (CAPCOA), "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective."[51] It is global GHG emissions in their aggregate that contribute to climate change, not any single source of GHG emissions alone. However, given 1) the lack of evidence indicating that those emissions would cause a measurable increase in global GHG emissions necessary to exacerbate global climate change and 2) the fact that the Project incorporates physical and operational Project characteristics and Project Design Features that would reduce potential GHG emissions to a less-than-significant level, the Project is considered not to conflict with the GHG reduction goals of AB 32.

Implementation of the Land Use Element/Zoning Code Amendments and Mobility Element Update would incorporate strategies and measures that would reduce GHG emissions by increasing energy-efficiency beyond requirements, reducing indoor and outdoor water demand, and incorporating waste reduction measures. The Project would also incorporate characteristics that would reduce transportation-related GHG emissions by reducing annual VMT and encouraging more dense mixed-use development, thereby encouraging walking and alternative forms of transportation.

In accordance with the CALGreen Code, Implementation of the Land Use Element/Zoning Code Amendments and Mobility Element Update would incorporate the following features supportive of goals to reduce GHG emissions:

- **Energy Conservation:** New development would be required to reduce energy demand in accordance with the Title 24 Building Standards Code. The Town would ensure that new developments meet or exceed the applicable standards prior to building permit issuance.
- **Water Conservation:** New development would be required to reduce indoor and outdoor water demand in accordance with the Title 24 Building Standards Code. The Town would ensure that new developments meet or exceed the applicable standards prior to building permit issuance.
- **Resource Conservation:** New development would be required to recycle, reuse, or divert from landfills at least 50 percent of nonhazardous construction waste (by weight). The Town would ensure that new developments meet or exceed the applicable standards prior to grading permit issuance.

Consistency with GHG reduction strategies is an important priority, and reasonable reduction efforts should be taken. **Table 4.6-5**, *Consistency with Applicable Greenhouse Gas Reduction Strategies*, contains a list of GHG-reducing strategies potentially applicable to the Project. The analysis describes the consistency of the Project with these strategies.

[51] *California Air Pollution Control Officer's Association, CEQA and Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, January 2008.*

Table 4.6-5

Consistency with Applicable Greenhouse Gas Reduction Strategies

Source	Category / Description	Consistency Analysis
AB 1493 (Pavley Regulations)	Reduces greenhouse gas emissions in new passenger vehicles from 2012 through 2016 (Phase I) and from 2017 through 2025 (Phase II).	**Consistent.** The Project would be consistent with this regulation and would not conflict with implementation of the vehicle emissions standards.
SB 1368	Establishes an emissions performance standard for power plants within the State of California.	**Consistent.** The Project would be consistent with this regulation and would not conflict with implementation of the emissions standards for power plants.
Low Carbon Fuel Standard	Establishes protocols for measuring life-cycle carbon intensity of transportation fuels and helps to establish use of alternative fuels.	**Consistent.** The Project would be consistent with this regulation and would not conflict with implementation of the transportation fuel standards.
California Green Building Standards Code Requirements	All bathroom exhaust fans shall be ENERGY STAR compliant.	**Consistent.** Implementing projects would utilize energy efficiency appliances and equipment and would meet or exceed the energy standards in ASHRAE Appendix G and the Title 24 Building Standards Code (the version of the standards in effect at the time of building permit issuance for implementing projects).
	HVAC Systems will be designed to meet ASHRAE standards.	**Consistent.** Implementing projects would utilize energy efficiency appliances and equipment and would meet or exceed the energy standards in ASHRAE Appendix G and the Title 24 Building Standards Code (the version of the standards in effect at the time of building permit issuance for implementing projects).
	Energy commissioning shall be performed for nonresidential buildings larger than 10,000 square feet.	**Consistent.** Implementing projects with nonresidential buildings larger than 10,000 square feet would be commissioned in accordance with the Town's requirements and the CALGreen Code.
	Air filtration systems are required to meet a minimum of MERV 8 or higher.	**Consistent.** Implementing projects would meet or exceed this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
	Refrigerants used in newly installed HVAC systems shall not contain any CFCs.	**Consistent.** Implementing projects would meet this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
	Parking spaces shall be designed for carpool or alternative fueled vehicles as specified in the CALGreen Code.	**Consistent.** Implementing projects would meet this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
	Long-term and short-term bike parking shall be provided for up to five percent of vehicle trips as specified in the CALGreen Code.	**Consistent.** Implementing projects would meet this requirement as part of its compliance with the Town's requirements and the CALGreen Code.

Table 4.6-5 (Continued)

Consistency with Applicable Greenhouse Gas Reduction Strategies

Source	Category / Description	Consistency Analysis
	Stormwater Pollution Prevention Plan (SWPPP) required.	**Consistent.** The Project would meet this requirement.
	Reduce indoor water usage by installing low-flow fixtures as specified in the CALGreen Code and/or reduced indoor water usage by 20 percent compared to California Building Code Standards baseline flow rates.	**Consistent.** Implementing projects would exceed this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
	All irrigation controllers must be installed with weather sensing or soil moisture sensors.	**Consistent.** Implementing projects would meet this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
	Wastewater usage shall be reduced by 20 percent compared to California Building Code Standards baseline flow rates.	**Consistent.** Implementing projects would exceed this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
	Requires a minimum of 50 percent recycle or reuse of nonhazardous construction and demolition debris.	**Consistent.** Implementing projects would exceed this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
	Requires documentation of types of waste recycled, diverted or reused.	**Consistent.** Implementing projects would exceed this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
	Requires use of low VOC coatings consistent with SCAQMD Rule 1168.	**Consistent.** Implementing projects would be consistent with this regulation and would meet or exceed the low VOC coating requirements.
	100 percent of vegetation, rocks, soils from land clearing shall be recycled or stockpiled on-site.	**Consistent.** Implementing projects would exceed this requirement as part of its compliance with the Town's requirements and the CALGreen Code.
Climate Action Team	Reduce diesel-fueled commercial motor vehicle idling.	**Consistent.** Implementing projects would be consistent with the CARB Air Toxics Control Measure (ATCM) to limit heavy duty diesel motor vehicle idling to no more than 5 minutes at any given time (see Section 4.2, *Air Quality*, of this Draft EIR).
	Achieve California's 50 percent waste diversion mandate (Integrated Waste Management Act of 1989) or meet local ordinance, whichever is more stringent.	**Consistent.** Implementing projects would exceed this requirement as part of its compliance with the Town's requirements and the CALGreen Code.

Table 4.6-5 (Continued)

Consistency with Applicable Greenhouse Gas Reduction Strategies

Source	Category / Description	Consistency Analysis
	Reduce GHG emissions from electricity by reducing energy demand. The California Energy Commission updates appliance energy efficiency standards that apply to electrical devices or equipment sold in California. Recent policies have established specific goals for updating the standards; new standards are currently in development.	**Consistent.** Implementing projects would utilize energy efficiency appliances and equipment and would exceed the energy standards in ASHRAE Appendix G and the Title 24 Building Standards Code (the version of the standards in effect at the time of building permit issuance for implementing projects).
	Apply strategies that integrate transportation and land-use decisions, including but not limited to promoting jobs/housing proximity, high-density residential/ commercial development along transit corridors, and implementing intelligent transportation systems.	**Consistent.** The Project would incorporate physical and operational characteristics that would reduce vehicle trips and VMT and encourage alternative modes of transportation for patrons and employees. The Land Use Element/Zoning Code Amendments would allow for more dense mixed-use development, which encourages walking and alternative forms of transportation. The Mobility Element Update would reduce Town-wide VMT though the provision of sidewalks, bike paths, and transit service.
	Reduce energy use in private buildings.	**Consistent.** Implementing projects would utilize energy efficiency appliances and equipment and would exceed the energy standards in ASHRAE Appendix G and the Title 24 Building Standards Code (the version of the standards in effect at the time of building permit issuance for implementing projects).

Source: ESA PCR, 2016

Executive Orders S-3-05 and B-30-15 are orders from the State's Executive Branch for the purpose of reducing statewide GHG emissions. Executive Orders S-3-05's goal to reduce GHG emissions to 1990 levels by 2020 was codified by AB 32. As analyzed above, the implementation of the Land Use Element/Zoning Code Amendments and Mobility Element Update would be consistent with AB 32. Therefore, the Project would not conflict with this component of the Executive Orders.

The Executive Orders also establish the goals to reduce GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. These goals have not yet been codified. However, studies have shown that, in order to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. In its *Climate*

Change Scoping Plan, CARB acknowledged that the "measures needed to meet the 2050 are too far in the future to define in detail."[52] In the First Update, however, CARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately."[53] Due to the technological shifts required and the unknown parameters of the regulatory framework in 2030 and 2050, quantitatively analyzing the Project's impacts further relative to the 2030 and 2050 goals currently is speculative for purposes of CEQA.

Although the Project's emissions levels in 2030 and 2050 cannot yet be reliably quantified, Statewide efforts are underway to facilitate the State's achievement of those goals and it is reasonable to expect the Project's incremental emissions to decline as the regulatory initiatives identified by CARB in the First Update are implemented, and other technological innovations occur. Stated differently, the Project's emissions total at buildout represents the maximum emissions inventory for the Project as California's emissions sources are being regulated (and foreseeably expected to continue to be regulated in the future) in furtherance of the State's environmental policy objectives. As such, given the reasonably anticipated decline in Project emissions once fully constructed and operational, the Project is consistent with the Executive Orders' goals.

Recent studies shows that the State's existing and proposed regulatory framework can allow the State to reduce its GHG emissions level to 40 percent below 1990 levels by 2030, and to 80 percent below 1990 levels by 2050. Even though these studies did not provide an exact regulatory and technological roadmap to achieve the 2030 and 2050 goals, they demonstrated that various combinations of policies could allow the Statewide emissions level to remain very low through 2050, suggesting that the combination of new technologies and other regulations not analyzed in the study could allow the State to meet the 2030 and 2050 targets.[54]

For the reasons described above, the Project's post-2020 emissions trajectory is expected to follow a declining trend, consistent with the establishment of the 2030 and 2050 targets.

Mitigation Measures

Impacts regarding consistency with applicable GHG emissions reductions plans, policies, or regulations would be less than significant. Therefore, no mitigation measures are required.

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[52] *California Air Resources Board, Climate Change Scoping Plan, December 2008, page 117.*

[53] *California Air Resources Board, First Update to the Climate Change Scoping Plan, May 2014, page 32.*

[54] *Energy and Environmental Economics (E3), "Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios," April 2015; Greenblatt, Jeffrey, Energy Policy, "Modeling California Impacts on Greenhouse Gas Emissions," Vol. 78, pages 158-172. The California Air Resources Board, California Energy Commission, California Public Utilities Commission, and the California Independent System Operator engaged E3 to evaluate the feasibility and cost of a range of potential 2030 targets along the way to the state's goal of reducing GHG emissions to 80 percent below 1990 levels by 2050. With input from the agencies, E3 developed scenarios that explore the potential pace at which emission reductions can be achieved as well as the mix of technologies and practices deployed. E3 conducted the analysis using its California PATHWAYS model. Enhanced specifically for this study, the model encompasses the entire California economy with detailed representations of the buildings, industry, transportation, and electricity sectors.*

4. CUMULATIVE IMPACTS

The emissions of a single project will not cause or exacerbate global climate change. It is possible that a substantial increase in GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change. CEQA requires that lead agencies consider evaluating the cumulative impacts of GHGs from even relatively small (on a global basis) increases in GHG emissions. Small contributions to this cumulative impact (from which significant effects are occurring and are expected to worsen over time) may be potentially considerable and therefore significant. A cumulatively considerable impact is the impact of a proposed project in addition to the related projects. However, in the case of global climate change, the proximity of the project to other GHG-generating activities is not directly relevant to the determination of a cumulative impact. Although the State requires planning agencies to consider how region-wide planning decisions can impact global climate change, there is currently no established non-speculative method to assess the cumulative impact of land use development projects.

Although AB 32 sets a statewide target for 2020 GHG emissions, which equates to approximately 15.8 percent below statewide BAU emissions, the implementing tools of the law (e.g., CARB's *Climate Change Scoping Plan*) are clear that the reductions are not expected to occur uniformly from all sources or sectors. CARB has set targets specific to the transportation sector (land use-related transportation emissions), for example, and under SB 375 the Southern California Association of Governments (SCAG) must incorporate these GHG-reduction goals into the Regional Transportation Plan and demonstrate that its Sustainable Communities Strategy or Alternative Planning Strategy is consistent with the Regional Housing Needs Assessment. One of the goals of this process is to ensure that the efforts of State, regional and local planning agencies accommodate the contemporaneous increase in population and employment with a decrease in overall GHG emissions. For example, adopting zoning designations that reduce density in areas which are expected to experience growth in population and housing needs, is seen as inconsistent with anti-sprawl goals of sustainable planning. Although development under a reduced density scenario results in lower GHG emissions from the use of that land compared to what is currently or hypothetically allowed (by creating fewer units and fewer attributable vehicle trips), total regional GHG emissions will likely fail to decrease at the desired rate or, worse, increase if regional housing and employment needs of an area are met with a larger number of less-intensive development projects. Therefore, it is not simply a cumulative increase in regional development or the resultant GHG emissions that threatens GHG reduction goals.

The land use sector can accommodate growth and still be consistent with statewide plans to reduce GHG emissions. To that end, various agencies are required to develop programs to guide future building and transportation development towards minimized resource consumption and lowered resultant pollution. As discussed above, the Town has adopted the CALGreen Code that includes mandatory measures for reducing GHG emissions. In addition, implementation of the Land Use Element/Zoning Code Amendments and Mobility Element Update would locate uses in closer proximity, which would encourage walking and alternative forms of transportation. Furthermore, the overwhelming majority of the Project-related GHG emissions are from source sectors that include electricity generated in-state or imported and the combustion of transportation fuels. These sectors would achieve reduced sector-wide GHG emissions in accordance with the goals of AB 32 and related legislation. Given that the Project would generate GHG emissions that are less than significant, and given that GHG emission impacts are cumulative in nature, the Project's incremental contribution to cumulatively significant GHG emissions would be less than cumulatively considerable, and impacts would be less than significant.

5. LEVEL OF SIGNIFICANCE AFTER MITIGATION

The Project would result in less than significant impacts with respect to emissions of GHGs and consistency with applicable GHG emissions reductions plans, policies, or regulations. Therefore, no mitigation measures would be required.