

12 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

12.1 INTRODUCTION

This chapter includes a discussion of existing greenhouse gas (GHG) emissions and climate change conditions, a summary of applicable regulations, and an analysis of potential short-term and long-term GHG and climate change impacts that could result from implementation of the Placer County Tahoe Basin Area Plan and the Tahoe City Lodge. The primary issues raised during scoping that pertain to GHG emissions and climate change include:

- ▲ total and per capita GHG emissions based on actual population, including full- and part-time residents and visitors;
- ▲ emissions upon which Area Plan mitigation is based should consider total and per capita GHG emissions;
- ▲ methods by which the Area Plan will achieve GHG reductions with the addition of up to 400 tourist accommodation units (TAUs); and
- ▲ extreme flooding events due to climate change.

The methods of analysis for short-term construction, long-term regional (operational), and local mobile-source GHG emissions used in this chapter are consistent with the recommendations of the Placer County Air Pollution Control District (PCAPCD), the California Air Resources Board (ARB), and the U.S. Environmental Protection Agency (EPA).

As discussed in Chapter 4, “Approach to Environmental Analysis,” this analysis is provided to fully document the environmental effects of the four Area Plan and lodge alternatives. The broad geography and long timeframe to which the Area Plan applies and the policy-oriented nature of its guidance is such that the EIR/EIS is prepared at a programmatic level, i.e., a more general analysis of each resource area with a level of detail and degree of specificity commensurate with the overall planning level of the Area Plan. Similarly, because the Kings Beach Center design concept lacks sufficient detail for definitive impact analysis, that portion of the project is also evaluated in a programmatic fashion. The proposed Tahoe City Lodge represents a project that contains a greater level of detail and specificity such that a project-level analysis is included in this chapter.

12.2 REGULATORY SETTING

12.2.1 Federal

GHG emissions and responses to global climate change are regulated by a variety of federal, regional, state, and local laws and policies. Key regulatory and conservation planning issues applicable to the proposed project are discussed below.

FEDERAL

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

On August 28, 2014, EPA and the Department of Transportation National Highway Traffic Safety Administration (NHTSA) finalized a new national program that would reduce GHG emissions and improve fuel

economy for all new cars and trucks sold in the United States. (NHTSA 2012). EPA proposed the first-ever national GHG emissions standards under the CAA, and NHTSA proposed Corporate Average Fuel Economy standards under the Energy Policy and Conservation Act. This proposed national program allows automobile manufacturers to build a single light-duty national fleet that satisfies all requirements under both federal programs and the standards of California and other states. This program will increase fuel economy to the equivalent of 54.5 miles per gallon (mpg) for cars and light-duty trucks by Model Year 2025, and additional phases are being developed by NHTSA and EPA that address GHG emission standards for new medium- and heavy-duty trucks (NHTSA 2015).

12.2.2 Tahoe Regional Planning Agency

The Tahoe Regional Planning Agency (TRPA) has not specifically identified any goals, policies, or Environmental Threshold Carrying Capacities (environmental threshold standards) related to GHG emissions or climate change. Through its Regional Plan and Code of Ordinances, however, TRPA has defined conformance requirements for area plans relative to GHG reduction strategies. In addition, through its Regional Transportation Plan and Sustainability Action Plan, both prepared in partnership with the Tahoe Metropolitan Planning Organization (TMPO), TRPA addresses GHG reduction targets for cars and light trucks mandated by Senate Bill (SB) 375, and defines a GHG emissions target and broader GHG reduction strategies, respectively.

Regional Plan and Code of Ordinances

The Regional Plan Update Environmental Impact Statement (RPU EIS) proposed mitigation measures to address potentially significant impacts of GHG emissions from implementation of the Regional Plan. Mitigation Measure 3.5-1 of the RPU EIS required TRPA to coordinate implementation of a GHG Emission Reduction Policy through TRPA-approved plans, project permitting, or projects/programs (TRPA 2012). In accordance with that measure, Subsection 13.5.3.E, Greenhouse Gas Reduction Strategy, was added to the TRPA Code of Ordinances in November 2013. It requires area plans to include a strategy to reduce GHGs from the construction and operation of buildings. Specifically, Subsection 13.5.3.E reads:

Greenhouse Gas Reduction Strategy. To be found in conformance with the Regional Plan, area plans shall include a strategy to reduce emissions of greenhouse gases from the operation or construction of buildings. The strategy shall include elements in addition to those included to satisfy other state requirements or requirements of this code. Additional elements included in the strategy may include but are not limited to the following:

- ▲ a local green building incentive program to reduce the energy consumption of new or remodeled buildings;
- ▲ a low interest loan or rebate program for alternative energy projects or energy efficiency retrofits;
- ▲ modifications to the applicable building code or design standards to reduce energy consumption; or
- ▲ capital improvements to reduce energy consumption or incorporate alternative energy production into public facilities.

Mobility 2035: Lake Tahoe Regional Transportation Plan

In 2012, TMPO prepared the *Mobility 2035: Lake Tahoe Regional Transportation Plan* (RTP), which seeks to improve mobility and safety for the commuting public while at the same time delivering environmental improvements throughout the transportation network in the Tahoe Basin. Important directions of the plan are to reduce the overall environmental impact of transportation in the region, create walkable, vibrant communities, and provide real alternatives to driving. The plan also supported an update of the Transportation Element of TRPA's Regional Plan. Finally, the plan met the challenge of California's Senate

Bill (SB) 375 by presenting an integrated land use and transportation strategy that would allow the region to achieve targets for reducing GHG emissions by 2035. The RTP included fulfilled requirements of Senate Bill (SB) 375 for a regional Sustainable Communities Strategy (SCS). TMPO is currently in the process of updating the RTP in 2016. (TMPO and TRPA 2012, TMPO and TRPA 2016). The reduction targets assigned by ARB to TMPO for its next SCS include a 7 percent reduction in GHG per capita by 2020 and a 5 percent reduction in GHG/capita by 2035, as compared to 2005 levels.

Lake Tahoe Sustainability Action Plan

The Sustainability Action Plan (SAP) provides tools to assist local governments, agencies, businesses, residents, visitors, and community groups with prioritizing and adopting consistent sustainability actions throughout the Tahoe Region. The SAP represents an integrated approach to reducing GHG emissions and striving toward zero-impact in all aspects of sustainability. The SAP includes the revised GHG emissions inventory and reduction targets, and climate change and adaptation strategies vetted through the Lake Tahoe Sustainability Collaborative and the Tahoe Basin Partnership for Sustainable Communities. Table 12-1 below summarizes major recommended actions in the SAP that have the potential to reduce GHG emissions during construction and operation of land uses and protect against the effects of climate change. Within the SAP, TMPO and TRPA established a GHG reduction goal for the Tahoe Region of 5 percent and 49 percent below the 2005-2010 average baseline by 2020 and 2035, respectively. The baseline inventory is shown in Table 12-2 under Section 12.3 “Affected Environment.” Note that the SAP and the recommended actions shown in Table 12-1 have not been officially adopted. Thus, the recommended actions are not currently required by TRPA or TMPO (Lake Tahoe Sustainable Communities Program 2013).

Table 12-1 Summary of Recommended Sustainability Actions with GHG Reduction Potential

Sustainability Benefit	Sustainability Action
Construction-Related GHG Reduction Actions	Local Construction Materials Procurement in New Development
	Best Construction Practices
	Enforce Idling Time Limitations
	Construction and Demolition Debris Diversion
	Alternative Fueled Vehicle Fleet
Operation-Related GHG Reduction Actions	Green Building Ordinance
	Property Assessed Clean Energy Financing Program
	Energy Efficient Lighting Development Standards
	Energy Star Appliances
	Community Choice Aggregation
	Renewable Energy Standards or Incentives for New Development
	Innovative Approaches to Energy Generation and Distribution
	Complete Neighborhoods
	Expand Bicycle and Pedestrian Network
	Improve Transit Services
	Streetscape and Bicycle Amenities
	Electric Vehicle Changing Network
	Alternative Fueled Vehicle Fleet
Solid Waste Diversion	
Water Efficiency Measures/Water Conservation	
Replace Wood Stoves and Wood Fireplaces	

Table 12-1 Summary of Recommended Sustainability Actions with GHG Reduction Potential

Sustainability Benefit	Sustainability Action
	Local Food Production & Farmers Markets
	Urban Forestry
Climate Change Impacts	Vulnerability Assessment and Outreach
	Wildfire Emergency Response
	Emergency and Disaster Preparedness Training
	100-year Storm Event Planning
	Prohibit Development in 100-Year Flood Plain
	Evacuation Access
	Coordinated Hazard Mitigation Planning

Notes: GHG = greenhouse gas, TRPA = Tahoe Regional Planning Association

Source: Lake Tahoe Sustainable Communities Program 2013: Table 1.1

TRPA Best Construction Practices Policy for Construction Emissions

TRPA is committed to continue to monitor and adaptively manage construction emissions through existing permit compliance programs. Pre-grade inspections occur for every permitted project prior to any ground-disturbing activities. These inspections verify that all required permit conditions, such as the location of staging areas and the use of approved power sources are in place prior to intensive construction activities. In addition, compliance inspections occur throughout the period of construction activity to verify compliance with all permit requirements. These compliance inspections are a core function of TRPA and local jurisdiction building departments, and will continue into the future. If an inspection determines that a project is not in compliance with permit conditions, then enforcement actions are taken, which can include stopping activity at the construction site and monetary fines.

In addition to existing permit limits, TRPA developed a Best Construction Practices Policy for Construction Emissions, pursuant to the requirements of RPU EIS mitigation measures adopted by the TRPA Governing Board. This policy addresses potentially significant construction-generated emissions of GHGs associated with development under the RPU, including development within the Plan area. The following items constitute TRPA's development of its Best Construction Practices Policy for Construction Emissions:

- ▲ TRPA Code Section 65.1.8, Idling Restrictions, was revised to, among other things, limit idling for certain diesel engines to no longer than 5 minutes in California and 15 minutes in Nevada.
- ▲ TRPA's Standard Conditions of Approval for projects involving grading (Attachment Q, "Standard Conditions of Approval for Construction Projects") and residential projects (Attachment R, "Standard Conditions of Approval for Residential Projects") were revised to:
 - limit idling time for diesel powered vehicles exceeding 10,000 pounds in Gross Vehicle Weight and self-propelled equipment exceeding 25 horsepower to no more than 15 minutes in Nevada and 5 minutes in California, or as otherwise required by state or local permits (TRPA Code Section 65.1.8); and
 - utilize existing power sources (e.g., power poles) or clean-fuel generators rather than temporary diesel power generators, wherever feasible.

These changes were approved at the November 20, 2013 meeting of the TRPA Governing Board and became effective at that time.

The overall effectiveness of these measures and other efforts to attain and maintain air quality standards will continue to be monitored through a comprehensive multi-agency air quality program. The existing air quality monitoring program is being expanded to ensure adequate data continues to be available to assess the status and trends of a variety of constituents. In 2011, TRPA established additional ozone and particulate monitoring at the Stateline Monitoring Site. Working under a cooperative agreement with the TRPA, PCAPCD installed additional ozone and PM₁₀ monitors in Tahoe City and Kings Beach in 2011. In 2013, TRPA installed an additional Visibility Monitoring Station and an ozone monitor in South Lake Tahoe.

If ongoing monitoring determines that these measures and other efforts to achieve adopted air quality standards have not been successful, then TRPA will develop and implement additional compliance measures as required by Chapter 16 of the TRPA Code. Additional compliance measures could include additional required construction best practices, an expanded rebate program to replace non-conforming woodstoves or other emission-producing appliances, or restrictions on other emission sources such as off-highway vehicles or boats.

12.2.3 State

Executive Order S-3-05

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

Assembly Bill 32, the California Global Warming Solutions Act of 2006

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

Assembly Bill 32 Climate Change Scoping Plan and Updates

In December 2008, ARB adopted its Climate Change Scoping Plan, which contains the main strategies California will implement to achieve reduction of approximately 118 million metric tons (MMT) of CO₂-equivalent (CO₂e) emissions, or approximately 21.7 percent from the State's projected 2020 emission level of 545 MMT of CO₂e under a business-as-usual scenario (this is a reduction of 47 MMT CO₂e, or almost 10 percent, from 2008 emissions). In May 2014, ARB released and has since adopted the *First Update to the Climate Change Scoping Plan* to identify the next steps in reaching AB 32 goals and evaluate the progress that has been made between 2000 and 2012 (ARB 2014:4 and 5). According to the update, California is on track to meet the near-term 2020 GHG limit and is well positioned to maintain and continue reductions beyond 2020 (ARB 2014a:ES-2). Statewide measures initiated by the Scoping Plan include the Low Carbon Fuel Standard (LCFS), energy efficiency measures, and renewable portfolio and electricity standards for electricity production. The update also reports the trends in GHG emissions from various emission sectors. ARB is moving forward to release a second update to the Scoping Plan to reflect the 2030 target established in Executive Order B-30-15, described below (ARB 2016).

Senate Bill 375

SB 375, signed by the Governor in September 2008, aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a SCS or Alternative Planning Strategy, showing prescribed land use allocation in each MPO's RTP. ARB, in consultation with the MPOs, is to provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in their respective regions for 2020 and 2035.

TMPO and TRPA, together, serve as the MPO for counties within the Tahoe Basin, including portions of Placer and El Dorado counties as well as Douglas, Carson, and Washoe counties in Nevada. The ARB-issued targets for the California portion of the Tahoe Region are a 7 percent reduction in GHG emissions per capita by 2020 relative to 2005 per capita GHG emissions and a 5 percent reduction by 2035 (ARB 2013a). As mentioned, TMPO and TRPA adopted the *Mobility 2035: Lake Tahoe Regional Transportation Plan* to serve as the RTP/SCS for the region. The RTP/SCS demonstrated that, if implemented, the Tahoe Region would achieve a 12.1 percent passenger vehicle GHG per capita reduction in 2020, and a 7.2 percent reduction in 2035 from 2005 levels, which is consistent with ARB-issued targets for the Tahoe Region (ARB 2013b).

Executive Order B-30-15

On April 20, 2015 Governor Edmund G. Brown Jr. signed Executive Order B-30-15 to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments such as the 28-nation European Union which adopted the same target in October 2014. California is on track to meet or exceed its legislated target of reducing GHG emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32, summarized above). California's new emission reduction target of 40 percent below 1990 levels by 2030 will make it possible to reach the ultimate goal of reducing emissions 80 percent below 1990 levels by 2050. This is in line with the scientifically established levels needed in the U.S. to limit global warming below 2 degrees Celsius (°C), the warming threshold at which there will likely be major climate disruptions such as super droughts and rising sea levels. The targets stated in Executive Order B-30-15 have not been adopted by the California Legislature.

Advanced Clean Cars Program

In January 2012, ARB approved the Advanced Clean Cars (ACC) program which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of zero-emission vehicles, into a single package of standards for vehicle model years 2017 through 2025. The new rules strengthen the GHG standard for 2017 models and beyond. The program's zero-emission vehicle regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions than the statewide fleet in 2016 (ARB 2011).

Senate Bill X1-2, the California Renewable Energy Resources Act of 2011

SB X1-2 of 2011 requires all California utilities to generate 33 percent of their electricity from renewables by 2020, referred to as California's Renewable Portfolio Standard (RPS). SB X1-2 sets a three-stage compliance period requiring all California utilities, including independently owned utilities, energy service providers, and community choice aggregators, to generate 20 percent of their electricity from renewables by December 31, 2013; 25 percent by December 31, 2016; and 33 percent by December 31, 2020. SB X1-2 also requires the renewable electricity standard to be met increasingly with renewable energy that is supplied to the California grid from sources within, or directly proximate to, California. SB X1-2 mandates that renewables from these sources make up at least 50 percent of the total renewable energy for the 2011-2013 compliance period, at least 65 percent for the 2014-2016 compliance period, and at least 75 percent for 2016 and beyond.

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

Buildings in California are required to comply with California's Energy Efficiency Standards for Residential and Nonresidential Buildings established by the California Energy Commission (CEC) regarding energy

conservation standards and found in Title 24, Part 6 of the California Code of Regulations. California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated on an approximately 3-year cycle to allow consideration and possible incorporation of new energy efficient technologies and methods. All buildings for which an application for a building permit is submitted on or after January 1, 2017 must follow the 2016 standards (CEC 2012). Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The CEC Impact Analysis for California's 2016 Building Energy Efficiency Standards estimates that the 2016 Standards are 28 percent more efficient than the previous 2013 standards for single-family residential construction (CEC 2016a).

Senate Bill 350

Approved by the Governor on October 7, 2015, SB 350 targets a 50 percent renewable mix in California electricity by December 31, 2030 and a cumulative doubling of statewide energy efficiency savings in electricity and natural gas final end uses of retail customers by January 1, 2030 with annual targets established by the California Energy Commission. This bill is meant as an extension of the State's current 2020 RPS goal. SB 350's energy efficiency goals are applicable to both existing building stock and new construction, but would have the most impact on existing building stock.

California Zero Net Energy Targets

In 2007, the California Public Utilities Commission (CPUC) adopted California's Zero Net Energy (ZNE) Building Goals under which all new residential construction and all new commercial construction in the State would have net zero energy consumption by 2020 and 2030, respectively. These goals were reiterated in CPUC's California Long Term Energy Efficiency Strategic Plan, adopted in 2008. The ZNE goals would be achieved through a combination of building efficiency requirements including: the triennial iterations of the California Building Efficiency Standard, technical assistance and incentives for owners and design teams, investing in new technologies in energy efficiency, and incentives for rooftop solar installations.

12.2.4 Local

PLACER COUNTY AIR POLLUTION CONTROL DISTRICT

Currently, Placer County and PCAPCD have not adopted climate change- or GHG-related laws, regulations, policies, programs, or plans that are applicable to the proposed project. However, as explained in Section 12.3.1, "Significance Criteria," PCAPCD participated with other local air districts in development of a GHG threshold of significance for CEQA.

TAHOE BASIN AREA PLAN OBJECTIVES

The following objective from the Area Plan applies to GHG and climate change impacts.

- ▲ Encourage a range of housing types in close proximity to employment centers to reduce vehicle miles traveled and provide for related environmental benefits.

PLACER AREA PLAN POLICIES AND PROGRAMS

The following policies from the Placer County Tahoe Basin Area Plan applies to greenhouse gas emissions and climate change.

- ▲ **AQ-P-4** Prioritize projects and services that reduce vehicle miles traveled (VMT) and support alternative modes of transportation.

- ▲ **AQ-P-6** Continue to implement the mPOWER incentive program to reduce greenhouse gas emissions from buildings and other site improvements.
- ▲ **AQ-P-7** Implement building design standards and design capital improvements to reduce energy consumption and where feasible to incorporate alternative energy production.

The following projects related to GHG reduction are being pursued to implement the Area Plan (Part 8, Implementation Plan).

- ▲ **Evaluation of GHG Reduction Strategies:** This project began in 2011 and completes science-based evaluations of the effectiveness of alternative strategies to control and reduce GHG throughout the region. The program includes annual monitoring and evaluation of the effectiveness of specific actions and strategies implemented to reduce GHG at achieving regional Reduction Targets as directed in the Climate Sustainability Plan. (Lead Agency: Pacific Southwest Research Station- Southern Nevada Public Land Management Act, CA)
- ▲ **Placer County mPOWER (Money for Property Owner Water and Energy Efficiency Retrofitting) Program:** This program was launched in 2010 and provides residential and non-residential property owners with financing opportunities to retrofit existing buildings with energy efficiency and water conservation improvements and renewable energy systems. The program promotes energy and water efficiency, reduces reliance on fossil fuels, and reduces GHG emissions. (Lead Agency: Placer County)
- ▲ **Cabin Creek Biomass Facility:** Placer County is developing the Cabin Creek Biomass Facility (outside the Tahoe basin) to dispose of woody debris generated from forest management and fuel reduction activities, ultimately to reduce the risk of catastrophic wildfire. (Lead Agency: Placer County)

TAHOE CITY LODGE OBJECTIVES

The following objectives of the Tahoe City Lodge apply to GHG and climate change impacts:

- ▲ build an energy efficient and environmentally sensitive project using Green Building Design methods and features in addition to operating the facility according to green hotel standards; and
- ▲ minimize VMT.

12.3 ENVIRONMENTAL SETTING

GHG emissions have the potential to adversely affect the environment because they contribute, on a cumulative basis, to global climate change. This section provides background on global climate change and summarizes the California GHG emissions inventory.

GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Prominent GHGs contributing to the greenhouse effect are CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcings together (Intergovernmental Panel on Climate Change [IPCC] 2014a:52). See Appendix I-1 for further discussion on the physical scientific basis for the relationship between greenhouse gases and climate change.

Greenhouse Gas Emission Sources

GHG emissions are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural emissions sectors. In California, the transportation sector is the largest emitter of GHGs, followed by electricity generation. Emissions of CO₂ are byproducts of fossil fuel combustion. CH₄ is a highly potent GHG that primarily results from escaped emissions of natural gas and from anaerobic decomposition of organic substances in agricultural practices and landfills. N₂O is also largely attributable to agricultural practices and soil management. CO₂ sinks, or reservoirs, include vegetation and the ocean, which absorb CO₂ through sequestration and dissolution (CO₂ dissolving into the water), respectively, two of the most common processes for removing CO₂ from the atmosphere. (ARB 2015a).

Tahoe Region Emissions Inventory

In 2013, TMPO and TRPA prepared an emissions inventory as part of the SAP. The SAP used a baseline year of 2005 to be consistent with other planning efforts in the Tahoe Region, and 2010 to quantify the effects of the economic downturn after 2005. Source categories were determined based on unique characteristics of the Tahoe Region including forestry, wildfires, and recreational boating, which are not typically significant in urban areas. Emissions estimates were also classified as direct and indirect. Direct emissions are those that result from activity contained entirely within the Tahoe Basin, and indirect sources take into account emissions from activities outside of the Tahoe Basin that are attributable to activity within it (e.g., electricity generated outside of the Tahoe Basin that is consumed within it).

As shown in Table 12-2, in 2010, the largest sources of emissions in the region were electricity generation (39 percent), on-road transportation (23 percent), and natural gas combustion (17 percent). The largest increase in emissions between 2005 and 2010 occurred in the electricity consumption sector where emissions increased by nearly 75,000 MT CO₂e per year. During the same time, emissions from on-road transportation sources decreased by approximately 21,000 MT CO₂e. Per capita passenger vehicle emissions and 2005-2010 average baseline emissions are presented in Table 12-2 for comparison with SB 375 and SAP targets, respectively.

Table 12-2 Tahoe Region Greenhouse Gas Emission Inventory in 2005 and 2010 (MT CO₂e/year) ¹

Type	Source Sector	Source Category	2005	% of 2005 total	2010	% of 2010 total	2005-2010 Average Baseline	% of Baseline Total
Direct	Transportation	On-road mobile sources	325,282	24	304,348	21	314,815	23
		Recreational boats	22,403	2	15,994	1	19,199	1
		Other off-road equipment	53,860	4	58,751	4	56,306	4
	Fuel combustion	Wood combustion	97,700	7	104,297	7	100,999	7
		Natural gas combustion	236,232	17	243,075	17	239,654	17
		Other combustion	5,858	<1	6,161	<1	6,010	0
	Fires	Wildfires and prescribed burns	4,284	0	91,652	6	47,968	3
	Land use	Livestock	12,734	<1	12,734	1	12,734	1
Waste	Wastewater treatment	57	<1	62	<1	60	0	
Indirect	Energy	Electricity consumption	487,553	36	562,543	39	525,048	38
		Wastewater treatment	2,115	<1	2,300	<1	2,208	0
	Transportation	Aircraft	5,131	<1	4,739	<1	4,935	0
	Waste	Municipal solid waste	110,512	8	26,704	2	68,608	5
		Wastewater treatment	12	<1	12	<1	12	0
Total Emissions			1,363,734	100	1,433,374	100	1,398,554	100
Population			51,089	NA	54,473	NA	52,781	NA
On-Road Transportation Emissions per Capita			6.4	NA	5.6	NA	6.0	NA

Notes: IPCC = Intergovernmental Panel on Climate Change; MT CO₂e = metric tons of carbon dioxide equivalents; NA = not applicable; TRPA = Tahoe Regional Planning Association

¹ CO₂e emissions based on global warming potential factors from IPCC's Second Assessment Report (IPCC 2007).

Source: Lake Tahoe Sustainable Communities Program 2013: Table 3-1 and A-1, IPCC 2007

Placer County Tahoe Basin Area Emissions Inventory

Additionally, the SAP estimated the 2005 and 2010 GHG emissions inventory for the Placer County portion of the Tahoe Basin, or Plan area. As shown in Table 12-3, the electricity consumption sector accounted for approximately 39 percent of total Plan area GHG emissions in 2010. On-road transportation and natural gas consumption were the next largest non-biogenic sources of GHG emissions in the Plan area (17 and 11 percent, respectively). Wood combustion and wildfires, combined, accounted for 24 percent of emissions in 2010, due to a wildfire event that year. In 2005, wildfires accounted for less than 1 percent of annual emissions. To establish an average baseline from which to reduce GHG emissions, the SAP used an average of the 2005 and 2010 inventories. With respect to SB 375 metrics, on-road transportation per-capita emissions increased to approximately 12 percent from 2005 to 2010 in the Plan area.

Table 12-3 Area Plan Greenhouse Gas Emission Inventory in 2005 and 2010 (MT CO₂e/year) ¹

Type	Source Sector	Source Category	2005	% of 2005 total	2010	% of 2010 total
Direct	Transportation	On-road mobile sources	62,904	20	68,567	17
		Recreational boats	8,001	3	5,712	1
		Other off-road equipment	9,602	3	9,571	2
	Fuel combustion	Wood combustion	39,022	12	41,657	10
		Natural gas combustion	44,792	14	46,200	11
		Other combustion	1,073	<1	1,046	<1
	Fires	Wildfires and prescribed burns	1,345	<1	58,372	14
	Land use	Livestock	9,809	3	9,809	2
Waste	Wastewater treatment	-	-	-	-	
Indirect	Energy	Electricity consumption	120,258	38	157,801	39
		Wastewater treatment	2,115	1	2,300	1
	Transportation	Aircraft	-	-	-	-
	Waste	Municipal solid waste	18,251	6	4,446	1
		Wastewater treatment	12	<1	12	<1
Total Emissions			317,184	100	405,493	100
Population			9,108	NA	8,874	NA
On-Road Transportation Emissions per Capita			6.9	NA	7.7	NA

Notes: "-" = zero or not available, MT CO₂e = metric tons of carbon dioxide equivalents; NA = not applicable; TRPA = Tahoe Regional Planning Association

¹ CO₂e emissions based on global warming potential factors from IPCC's Second Assessment Report (IPCC 2007).

Source: Lake Tahoe Sustainable Communities Program 2013: Table 3-2, 3-3, and A-1, IPCC 2007

EFFECTS OF CLIMATE CHANGE ON THE ENVIRONMENT

The IPCC was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to provide the world with a scientific view on climate change and its potential effects. According to the IPCC global average temperature is expected to increase relative to the 1986-2005 period by 0.3–4.8 °C (0.5-8.6 degrees Fahrenheit [°F]) by the end of the 21st century (2081-2100), depending on future GHG emission scenarios (IPCC 2014b:13). According to the California Natural Resources Agency (CNRA), temperatures in California are projected to increase 2.7 °F above 2000 averages by 2050 and, depending on emission levels, 4.1–8.6 °F by 2100 (CNRA 2012:2).

Physical conditions beyond average temperatures could be affected by the accumulation of GHG emissions. For example, changes in weather patterns resulting from increases in global average temperature are expected to result in a decreased volume of precipitation falling as snow in California and an overall

reduction in snowpack in the Sierra Nevada. Based upon historical data and modeling, the California Department of Water Resources (DWR) projects that the Sierra snowpack will decrease by 25 to 40 percent from its historic average by 2050 (DWR 2008:4). An increase in precipitation falling as rain rather than snow also could lead to increased potential for floods because water that would normally be held in the Sierra Nevada until spring could flow into the Central Valley concurrently with winter storm events (CNRA 2012:5). This scenario would place more pressure on California's levee/flood control system.

As the existing climate throughout California changes over time, the ranges of various plant and wildlife species could shift or be reduced, depending on the favored temperature and moisture regimes of each species. In the worst cases, some species would become extinct or be extirpated from the state if suitable conditions are no longer available (CNRA 2012:11 and 12).

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

Cal-Adapt is a climate change scenario planning tool developed by CEC that downscales global climate model data to local and regional resolution under an A-2 and a B-1 emissions scenarios: the A-2 scenario represents a business-as-usual future emissions scenario, and the B-1 scenario represents a lower GHG emissions future. According to Cal-Adapt, annual average temperatures in the Tahoe Basin are projected to rise by 3.9-6.8 °F by 2100, with the range based on low and high emissions scenarios (Cal-Adapt 2016).

12.4 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

12.4.1 Methods and Assumptions

PLACER COUNTY TAHOE BASIN AREA PLAN/KINGS BEACH CENTER DESIGN CONCEPT

Construction

It is not possible to speculate on the specific type, number, location, timing, or construction details of future projects that would be proposed over the planning horizon of the Area Plan, so short-term construction-generated emissions of GHGs were assessed qualitatively.

Operation

The operational GHG emissions of the Plan area at build-out were already evaluated at a programmatic level in the Regional Plan Update (RPU) EIS. The RPU EIS quantified emissions from mobile sources using the 2007 and 2011 versions of ARB's Mobile-Source Emission Factor Model (EMFAC). As explained in Chapter 11, "Air Quality," of this EIR/EIS for the Area Plan and Tahoe City Lodge estimated mobile-source emissions using emission factors from EMFAC2014. EMFAC2014 is the most current version of the model with the most up-to-date mobile-source emission factors and accounts for recent advances in GHG reduction through incorporation of measures designed for that purpose. To calculate annual mobile-source GHG emissions, EMFAC2014 emission factors were applied to VMT estimates for the Area Plan and the proposed lodge project based on the land use buildout for each alternative, as provided by LSC Transportation Consultants, Inc. (See Table 12-5 and Appendix G-2 – *Traffic Volumes and VMT for Placer Area Plan EIR/EIS*).

Operational GHG emissions from area, energy, solid waste, and water-related sources were estimated for each alternative using the California Emissions Estimator Model (CalEEMod) Version 2013.2.2 computer program (South Coast Air Quality Management District [SCAQMD] 2013), as recommended by PCAPCD and other air districts in California. Emissions associated with waterborne transit vehicles were assumed to be

unchanged from the RPU EIS analysis because the changes proposed by the Area Plan would not substantially change watercraft activity than what was assumed under the RPU EIS.

Indirect emissions associated with electricity consumption were calculated using GHG emission factors for Liberty Utilities (also known as CalPeco Electric). A 2015 emissions factor of 589 MT CO_{2e} per megawatt hour (MWh) was calculated from the utility's total 2013 emissions reported in ARB's Mandatory Reporting Rule database and the total 2013 electricity generation available from CEC, assuming emissions factors in 2015 are essentially unchanged from 2013 (ARB 2015b, CEC 2016b). Liberty Utilities also reported a 21.7 percent renewable mix in 2015 (Liberty Utilities 2015). Assuming Liberty Utilities is on trajectory to meet the state's RPS and SB 350 renewable portfolio goals, the utility is estimated to emit 345 MT CO_{2e} per MWh in 2035.

For building energy use, the level of energy usage in the operation of new construction operating between 2015 and 2035 is assumed to be 28 percent lower than default consumption rates provided by CalEEMod. This is based on CEC estimates of improvements in residential energy efficiency under the State's Title 24 2016 Building Energy Efficiency Standards versus those built to the 2013 standards (CEC 2016a). Although the CEC did not make similar statements for commercial energy use, new construction is assumed to be at least 28 percent more efficient than the default Title 24 energy usage rates which are based on 2008 standards. For the lodge analysis, the level of energy use during operations was calculated based on CalEEMod defaults, as a conservative assumption. Emissions from watercraft and other off-road equipment were estimated using ARB's OFFROAD 2007 model. Emissions from wildfires and livestock were not included in this estimate. Off-road, wildfire, and livestock emissions are assumed to occur independently from the land uses under the Regional Plan or Area Plan.

Global warming potential (GWP) factors from IPCC's Fourth Assessment Report were used to calculate CO₂ equivalent emissions to be consistent with what is used in the State's GHG inventory.

Kings Beach Center Design Concept

The Kings Beach Center design concept was modeled using the same approach as discussed above for the lodge analysis. Option A was quantified because this option is more intensive (e.g., represents greater emissions) than Option B, based on total building area and anticipated daily trips (see Table 3-4 and Chapter 3). For purposes of analysis, it is assumed that the Kings Beach Center design concept would be constructed between 2017 and 2019 and begin operations in 2020. The analysis also compares future operation of the Kings Beach Center design concept in 2020 to existing conditions in 2015. Currently, approximately 30,000 square feet of retail space operates on the site. The resulting net emissions are compared to PCAPCD criteria to determine significance. See Appendix H-5 for detailed assumptions related to construction and operational emissions due to implementation of the Kings Beach Center design concept.

TAHOE CITY LODGE

Construction

Short-term construction-generated GHG emissions were calculated using CalEEMod. Modeling was based on project-specific information (e.g., size, number of units, amounts of demolition, area to be graded), where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location and land use types. Detailed model construction assumptions and inputs, such as building floor area by alternative, and schedule are provided in Appendix H-3 Construction is assumed only to occur between May 1 and October 1 per TRPA rules.

Operation

Operational mobile-source emissions were modeled based on estimated VMT by visitors, workers, and truck and vendor deliveries as provided by LSC Transportation Consultants for both the Area Plan and lodge. mobile emission factors were obtained from EMFAC2014 for the existing (2015) and built-out (2035) years. For emissions from building operations, the level of energy use during operations was calculated based on

CalEEMod defaults, as a conservative assumption, and applied to the proposed building land use types and sizes. Electricity emission factors and GWP factors were the same as those used in the Area Plan analysis.

Other specific model assumptions and inputs for all of these calculations can be found in Appendix H-3.

12.4.2 Significance Criteria

Significance criteria relevant to GHGs and climate change are summarized below.

TRPA CRITERIA

While TRPA considers GHG emissions and climate change within its EISs, TRPA has not adopted specific significance criteria for analyzing GHG emissions generated by a proposed project, or endorsed a particular methodology for analyzing impacts related to GHG emissions or global climate change.

CEQA CRITERIA

Based on Appendix G of the State CEQA Guidelines and the Placer County CEQA Checklist, impacts related to greenhouse gas emissions and climate change would be significant if the project would:

- ▲ generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- ▲ conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Plan-Level Criteria

At the plan-level, total operational GHG emissions from the Area Plan alternatives are compared to existing conditions to determine whether the net increase in GHG emissions would be substantial in the context of California's GHG reduction goals (Impact 12-1). Additionally, mobile-source GHG emissions associated with VMT attributable to the Plan area were quantified for each alternative to assess the ability of each to meet the applicable SB 375 per-capita GHG reduction targets (Impact 12-2). These results are included herein because the Area Plan is the land use plan that would influence VMT and GHG as they relate to the RTP/SCS.

To reduce GHG emissions to less-than-significant levels on a cumulative basis, California would need to reduce GHG emissions below current levels. AB 32, EO S-3-05, and EO B-30-15 demonstrate California's commitment to reducing GHG emissions and its associated contribution to climate change, without the intent to limit population or economic growth in the state. These policies are based on scientific evidence showing the rate of GHG reduction needed to lessen the impacts of climate change. To meet the state's GHG reduction goals, which are tied to GHG emission rates of specific benchmark years (e.g., 1990), California would need to achieve an even lower per capita rate of emissions than was achieved in 1990. Thus, land use plans, such as the Area Plan, which would reduce the area's future GHG emissions per capita relative to existing conditions and consistent with the targets, would be considered to have a less-than-significant effect on GHG emissions and climate change. For example, a plan that would result in annual emissions per capita in 2030 that are 40 percent lower than in 1990 would comply with state mandates, specifically EO B-30-15. With respect to the 2015 baseline that is used in the Area Plan analysis, Table 12-4 below shows the percent reduction in emissions in future milestone years that would be consistent with the state's targets.

As shown in Table 12-4, buildout of the Area Plan in 2035 should show a 54 percent reduction from 2015 annual GHG emissions to be consistent with state GHG reduction goals. Although California has not specifically set a percent reduction target for 2035, consistency with the 2035 targets shown in Table 12-4 would demonstrate that the area is on a trajectory toward meeting both 2030 and 2050 state targets.

Table 12-4 California GHG Percent Reduction Targets (adjusted for a 2015 baseline)¹

Inventory Year	California's GHG Inventory (MMT CO ₂ e)		
1990	431		
2013	459		
2015 ²	468		
GHG Reduction Target Milestone Year	Applicable Policy	Percent Reduction from 1990	Percent Reduction from 2015
2020	AB 32	0	8
2030	EO B-30-15	40	45
2035 ³	Interpolated for Area Plan purposes	50	54
2050	EO S-3-05	80	82

Note: AB = assembly bill; ARB = California Air Resources Board; EO = executive order; GHG = greenhouse gas; IPCC = Intergovernmental Panel on Climate Change; MMT CO₂e = million metric tons of carbon dioxide equivalent; Area Plan = Placer County Tahoe Basin Area Plan

¹ Based on global warming potential factors from IPCC's Fourth Assessment Report.

² As of March 2016, ARB's latest official inventory is available for the 2013 calendar year. The 2015 inventory was scaled by the growth in the state's population from 2013 to 2015, a 1.8 percent growth, based on data from the California Department of Finance (DOF 2015).

³ 2035 was not identified as a milestone target year in state policies, but is the build out year for the Area Plan. Percent reduction goals for 2035 were interpolated based on state targets for 2030 and 2050.

Source: ARB 2015a, DOF 2015

Project-Level Criteria

PCAPCD developed recommended thresholds of significance for evaluating construction- and operation-related GHG emissions for proposed land use development projects in their jurisdiction. These thresholds were developed in collaboration with the Sacramento Metropolitan Air Quality Management District, the Yolo Solano Air Quality Management District, and the Feather River Air Quality Management District (Green, pers. comm. 2014). These thresholds were intended to evaluate a project for consistency with GHG targets established in AB 32, particularly for emissions occurring by 2020. The term "no action taken" (NAT, sometimes also referred to as a business-as-usual [BAU] scenario) is used here to reflect conditions, including regulations, in place when GHG reduction targets were established by ARB; ARB evaluated potential GHG emissions in 2020 if no actions were taken, and determined the level of reduction that would be needed to attain 2020 targets.

- ▲ For the evaluation of construction-related emissions, PCAPCD recommends using the mass emission threshold of 1,100 MT CO₂e /year (metric tons of carbon dioxide-equivalent per year);
- ▲ For the evaluation of operational emissions PCAPCD recommends a two-tiered approach:
 - (Tier I) Operational emissions of a project would not have a significant impact on the environment if they are less than 1,100 MT CO₂e/year, and
 - (Tier II) Projects with operational emissions that exceed 1,100 MT CO₂e/year, but are able to demonstrate a 21.7 percent reduction from a "no action taken" (NAT) scenario compared to the proposed project operating in 2020 would not conflict with ARB's Scoping Plan.

For projects with operational emissions that exceed 1,100 MT CO₂e/year, but are able to demonstrate a 21.7 percent reduction from the NAT scenario, PCAPCD allows lead agencies discretion about whether an exceedance of the Tier I threshold (i.e., 1,100 MT/year) constitutes a significant impact (Green, pers. comm., 2014).

In the period since the two-tiered approach for operational emissions was developed, the California Supreme Court issued a decision in November 2015 in a case known as the Center for Biological Diversity v. California

Department of Fish and Wildlife (also known as CBD v. CDFW, or the “Newhall Ranch” decision). The Court held that the California Department of Fish and Wildlife (CDFW) record lacked substantial evidence to support the conclusion that GHG impacts associated with the proposed Newhall Ranch development project would be less than significant. In assessing the significance of GHGs in this case, the EIR inquired as to whether project-generated emissions (i.e., 269,053 MT CO₂e) “would impede the State of California’s compliance with the statutory emissions reduction mandate established by AB 32 (the Global Warming Solution Act of 2006).” For this analysis, the EIR compared project-generated emissions against those that would occur under a “business as usual (BAU)” scenario (i.e., 390,046 MT CO₂e).

Because the Newhall Ranch project would reduce GHG emissions 31 percent below the BAU scenario by 2020, which was better than the 29 percent average reduction required for the State as a whole, the EIR concluded the project would not impede achievement of state goals and; therefore, the GHG emissions impact would be less than significant. The Court concluded that “the Scoping Plan nowhere related the statewide level of reduction effort to the percentage of reduction that would or should be required from individual project” and that “nothing ... in CDFW’s ... record indicates that required percentage reduction from BAU is the same for an individual project as for the entire state population and economy.” In addition, the Court stated that “at bottom, the EIR’s deficiency stems from taking a quantitative comparison method developed by the Scoping Plan as a measure of the GHG emissions reduction effort required by the State as a whole, and attempting to use that method, without consideration of any changes or adjustments, for a purpose very different from its original design: To measure the efficiency and conservation measures incorporated in a specific land use development proposed for a specific location.” Thus, the Newhall Ranch decision reveals the challenges of using a BAU (or NAT) threshold comparison that is based on achieving the average statewide level of GHG reduction from the Scoping Plan in the context of an individual land use development project.

In reaching its decision, the Court also identified several potential pathways in which the significance of a project’s GHG emissions could be determined based on substantial evidence, one of which includes the use of a mass emissions threshold. Therefore, in view of the Newhall Ranch decision by the CA Supreme Court, the PCAPCD-recommended Tier 1 bright-line threshold of 1,100 MT CO₂e/year is used in this analysis for both construction and operational GHG emissions at the project-level.

12.4.3 Environmental Effects of the Project Alternatives

Impact 12-1: Generation of GHG emissions

Implementation of Alternatives 1 through 4 would result in a modest level of population growth from existing conditions in 2015, and development/redevelopment would result in construction- and operation-related GHG emissions. Construction-related emissions would primarily be associated with heavy-duty construction equipment and truck and vehicle exhaust associated with project development. Long-term operational sources of GHG emissions associated with the Area Plan and lodge would include area sources (e.g., landscaping equipment, snow removal equipment, wood-burning appliances), mobile sources (e.g., vehicle exhaust), energy consumption (e.g., electricity and natural gas), solid waste (e.g., emissions that would occur at a landfill associated with solid waste decomposition), and water consumption (e.g., electricity used to deliver and treat water to serve the region).

Buildout of Area Plan Alternatives 1 and 4 would result in slightly more building square footage than considered in the RPU EIS, and Alternatives 2 and 3 would be the same (as shown in Table 12-5). Conversely (as explained in Section 12.4.1), vehicle activity in the Plan area would be lower under all Area Plan alternatives, as compared to that evaluated in the RPU EIS. By 2035, the combination of increased building area and decreased vehicle activity under the Area Plan would result in a net decrease in long-term operational GHG emissions from existing 2015 conditions and lower emissions than would have occurred under the RPU EIS analyses under all four alternatives. Generally, because a substantial portion of “new” development would actually be redevelopment, that is, new, more energy-efficient buildings would replace

older, less efficient ones, GHG emissions per unit of development would be reduced. The level of construction-generated GHG emissions from all new development and redevelopment in accordance with the Area Plan cannot be known at the time of writing this EIR/EIS. Although construction activities in the Plan area would be subject to TRPA's Best Construction Practices Policy that were compiled pursuant to RPU EIS mitigation measures, emissions from construction activities over the buildout period of the Area Plan could still be substantial. While an overall reduction in GHG emissions from existing conditions is anticipated, it would not, however, be sufficient to meet California's GHG reduction goals. Thus, anticipated future GHG emissions in the Plan area would not result in more severe impacts than already analyzed in the RPU but the GHG impact in the region and would remain **significant and unavoidable**. Implementation of Mitigation Measure 12-1 would reduce GHG emissions further, but the extent of this additional reduction depends on market conditions, available technology, and general participation rates, and does not guarantee that Area Plan emissions would meet California GHG reduction goals.

For the lodge, construction and operational emissions would be below PCAPCD thresholds for project-level GHG emissions. Thus, the lodge would result in a **less-than-significant** impact and would not have a cumulatively considerable contribution to global climate change.

Future projects under the Area Plan may include development, redevelopment, commercial and tourist uses, transit and transportation, recreation, public/quasi-public facilities, and natural resources restoration. New construction would be subject to revised building code standards that result in facilities with higher efficiency than those built under previous codes. For example, homes built to the 2016 Title 24 building code would be 28 percent more efficient than homes built under the 2013 code (CEC 2016a). Future mobile activity would also result in fewer emissions per mile due to increased fuel efficiency and lower carbon content of fuels as a result of ARB policies such as LCFS and the ACC program.

The GHG impacts for the Tahoe Basin under the Regional Plan were already analyzed in the RPU EIS, but were not available by jurisdiction. To determine GHG impacts from the proposed Plan area, the current analysis compares the anticipated changes in land use and vehicle activity in the Plan area between that assumed in the RPU EIS and the Area Plan and applies revised future emission factors and energy efficiency assumptions that were not accounted for in the RPU EIS analysis. For the lodge, a separate analysis was performed using CalEEMod and mobile-source emission factors from EMFAC2014.

Placer County Tahoe Basin Area Plan Program-Level Analysis

According to the RPU EIS, GHG emissions would increase in the Tahoe Basin from 2010 to 2035 by 75,592 MT CO_{2e} as a result of additional development that would be allowed under the Regional Plan. However, the RPU EIS did not provide similar estimates at the county level. To estimate existing and future GHG emissions generated in the Plan area, emission factors and energy efficiency assumptions were applied to the land use and VMT estimates specific to the Plan area under the existing 2015 conditions and 2035 buildout conditions under the Regional Plan and Area Plan alternatives, as shown in Table 12-5.

Emission factors and energy efficiency assumptions were derived for both 2015 and 2035 calendar years. For comparison to AB 32 targets, 2020 emissions were interpolated between 2015 and 2035 estimates. Emissions from watercraft and other off-road equipment were estimated using ARB's OFFROAD 2007 model. Emissions from livestock were assumed to be unchanged from existing conditions through future years. Off-road equipment and livestock emissions were assumed to occur independently of the applicable area plans. Although included in the Tahoe SAP inventory, wildfire emissions were excluded from this analysis because this sector is not included in ARB's California GHG inventory and therefore, not included in the state's GHG reduction goals.

Table 12-5 Area Plan Land Use Assumptions under Existing Conditions, RPU, and Area Plan Alternatives

Land Use or VMT type	Existing (2015)	RPU (2035)	Alternative 1 (2035)	Alternative 2 (2035)	Alternative 3 (2035)	Alternative 4 (2035)
Total Residential Units	11,190	12,206	12,206	12,206	12,206	12,206
Full-time occupied residential units	3,698	4,192	4,192	4,192	4,191	4,170
Seasonal/part-time residential units	7,492	8,014	8,014	8,014	8,015	8,038
Commercial Floor Area (sq. ft.)	1,306,564	1,576,882	1,396,882	1,576,882	1,486,882	1,576,882
Tourist Accommodation Units	1,340	1,511	1,911	1,511	1,711	1,511
Total Building Area (sq. ft.) ¹	23,394,244	25,741,654	26,142,454	25,741,654	25,942,054	25,741,654
Peak Summer Daily VMT ²	437,576	481,739	446,197	447,609	447,314	448,384
Annual VMT ³	115,082,440	126,697,357	117,349,934	117,721,286	117,643,579	117,924,977

Notes: CalEEMod = California Emissions Estimator Model; Area Plan = Placer County Tahoe Basin Area Plan, RPU = Regional Plan Update, sq. ft. = square feet, VMT = vehicle miles travelled

¹ Assumes the average single family residential unit and tourist accommodation unit are 1,800 sq. ft. and 1,425 sq. ft. per unit, on average, based on CalEEMod defaults.

² Calculated from Tahoe region estimate from LSC Transportation Consultants in 2016 (Appendix G-4 - LOS Intersection Output). Scaled to Area Plan assumed Placer County accounts for 23% of VMT. The same ratio is assumed in the RPU analysis.

³ Based on a scaling factor of 263 to convert peak summer daily VMT to annual VMT, as recommended by LSC Transportation Consultants (Shaw pers. comm., 2016)

Source: TRPA 2012, Shaw, pers. comm. 2016, LSC Transportation Consultants 2016 (Appendix G-4 - LOS Intersection Output); data compiled by Ascent Environmental in 2016

Depending on the Area Plan Alternative, the Area Plan would slightly alter land use plans as evaluated in the RPU EIS and correspondingly affect the level of vehicle activity. Buildout of the Area Plan would allow slightly more building square footage under Alternatives 1 (approximately 1.6 percent more) and 4 (approximately 0.8 percent more) and the same square footage under Alternative 2 and 3, as compared to the RPU. Conversely, vehicle activity in the Plan area would be lower under all Placer Area Plan alternatives compared to the RPU. Discussed in detail below, by 2035, the combination of increased building area and decreased vehicle activity under the Area Plan would result in a net decrease in GHG emissions from existing conditions and lower emissions than that considered in the RPU EIS analyses under all alternatives.

Construction-generated GHG emissions would depend on the timing and degree of construction activities over time, which in turn would depend on market conditions and other factors. Although the Area Plan and Regional Plan guide the size and scope of building developments and include an overall cap on development rights and allocations, they do not prescribe the rate at which construction would occur. GHG impacts from construction are qualitatively addressed in the discussion below for each alternative.

Construction and operational activities under the Area Plan would also be subject to local and Area Plan policies and ordinances that require energy efficient building designs for private projects and public infrastructure, as discussed under Section 12.2.4. For example, under Area Plan Policy AQ-P-6, Placer County's mPOWER program provides residential and non-residential property owners with financing opportunities to retrofit existing buildings with energy efficiency and water conservation improvements and renewable energy systems. Under AQ-P-4 and AQ-P-7, the Area Plan also seeks to limit GHG emissions by transitioning to a more walkable development pattern in town centers and improving pedestrian, bicycle and transit facilities. (These policies are set out in Section 11.2.2 under the heading "Placer County Tahoe Basin Area Plan Policies and Programs.") The intent of these actions is to promote more efficient use of water and energy within the built environment, reduce reliance on fossil fuels, and reduce GHG emissions. However, the GHG reduction benefits of these and other applicable plan policies and ordinances are dependent on participation rates and available technology, and are not quantified.

Alternative 1: Proposed Area Plan

Alternative 1 would result in 180,000 fewer square feet of commercial floor area and 400 additional TAUs than what was estimated for Placer County in the RPU EIS. Assuming an average of 1,452 square feet per TAU, based on CalEEMod assumptions for a hotel room, this would result in a net increase of 400,800 square feet of building space. CalEEMod assumptions for a hotel room include space for hotel lobbies and other shared amenities. According to the transportation analysis prepared for this project, Alternative 1 would decrease vehicle activity in the Plan area by approximately 9.35 million VMT per year, or 7 percent, compared to the 2035 VMT estimates under the RPU.

Construction Emissions

Construction under Alternative 1 would occur at slightly higher rates than assumed in the RPU EIS due to the slight increase in allowable development. All construction activity would be subject to TRPA standard conditions of approval and applicable ordinances that limit construction activity and reduce emissions. Although project-specific details cannot be known, the types of construction activities that would be associated with land use development and redevelopment projects typically result in GHG emissions from fuel use in construction equipment that could exceed PCAPCD thresholds and contribute substantially to climate change.

Operational Emissions

As shown in Table 12-6, Alternative 1 would result in slightly lower GHG emissions in the Plan area than calculated in the RPU EIS and would also result in a net reduction in emissions from existing conditions. Alternative 1 GHG reductions are primarily from mobile source emissions.

Table 12-6 2015 Existing and 2035 Build-Out GHG Emissions in the Plan Area under Area Plan Alternative 1 and RPU (MT CO₂e)

Source	2015	2020		2035	
	Existing	RPU ¹	Area Plan Alternative 1 ¹	RPU	Area Plan Alternative 1
Energy-Related Emissions	30,422	29,523	29,693	26,826	27,509
Mobile-Source Emissions	57,373	51,684	51,045	34,617	32,063
Area-Source Emissions	9,299	9,535	9,535	10,242	10,242
Water Consumption-Related Emissions	2,205	2,269	2,255	2,462	2,404
Solid Waste-Related Emissions	4,246	4,372	4,378	4,750	4,776
Watercraft ²	5,465	6,624	6,624	10,103	10,103
Off-Road ²	8,010	7,235	7,235	4,909	4,909
Livestock ³	10,442	10,442	10,442	10,442	10,442
TOTAL	127,461	121,684	121,208	104,352	102,448
Population	9,708	9,802	9,802	10,083	10,083
Emissions per Capita	13.1	12.4	12.4	10.3	10.2
Percent Reduction from 2015	NA	-5%	-6%	-21%	-23%
Target Percent Reduction from 2015	NA	-8%	-8%	-54%	-54%
Meets State Targets?	NA	No	No	No	No

Note: CO₂e= carbon dioxide equivalents; IPCC = Intergovernmental Panel on Climate Change; MT = metric tons; NA = not applicable; Area Plan = Placer County Tahoe Basin Area Plan; RPU = Regional Plan Update; SAP = Sustainability Action Plan

¹ 2020 emissions were interpolated between 2015 and 2035 estimates.

² Available for the Plan area from ARB's OFFROAD 2007 model. This source is the same source used in the GHG inventory in the Tahoe SAP.

³ Assumes livestock emissions are unchanged from the Tahoe SAP 2005/2010 baseline for Placer County into future years. These emissions were adjusted to match the global warming potential factors from IPCC's Fourth Assessment Report to be consistent with the rest of the analysis.

Source: Lake Tahoe Sustainable Communities Program 2013, data compiled by Ascent Environmental in 2016.

Based on the results of the GHG emissions modeling presented in Table 12-6, overall GHG emissions in the Plan area would decrease by approximately 25,012 MT CO₂e/year in 2035 (or 25 percent) under Alternative 1, as compared to existing conditions. Achievement of California's ZNE goals could result in additional emissions reductions from new residential and commercial facilities. Despite an overall reduction in emissions, Alternative 1 would not meet AB 32 goals for 2020 or demonstrate that the Plan area is on a trajectory to meet the state's 2030 and 2050 targets. The RPU EIS also concluded a significant and unavoidable GHG impact for the Tahoe Region, but made this determination based on an estimated increase in emissions.

Additionally, the land use allowances under the Area Plan would include the Kings Beach Center design concept. Based on modeling conducted, the emissions from implementation of the Kings Beach Center design concept would not exceed project-level PCAPCD significance criteria for GHGs. See Appendix H-5 for detailed results and assumptions related to this project-level analysis.

The analysis for Alternative 1 shows an overall decrease in emissions within the Plan area, including the Kings Beach Center design concept. However, as shown in Table 12-6, the reduction in emissions would not be sufficient to meet the state's future GHG reduction targets. Thus, Alternative 1 would not result in more severe impacts than already analyzed in the RPU EIS, but the GHG impact in the region would remain **potentially significant**.

Alternative 2: Area Plan with No Substitute Standards

According to the transportation analysis prepared for this project, the Alternative 2 would decrease vehicle activity in the Plan area by 9.0 million VMT per year, or 7 percent, compared to the 2035 VMT estimates under the RPU EIS. However, Alternative 2 would have the same land uses as assumed in the RPU EIS, as shown in Table 12-5.

Construction Emissions

Construction under Alternative 2 would occur at the same rate as that assumed in the RPU EIS because proposed land uses would be the same. Although project-specific details cannot be known, the types of construction activities that would be associated with land use development and redevelopment projects typically result in GHG emissions from fuel use in construction equipment that could exceed PCAPCD thresholds and contribute substantially to climate change.

Operational Emissions

As shown in Table 12-7, Alternative 2 would result in slightly lower GHG emissions in the Plan area than calculated in the RPU EIS and would also result in a net reduction in emissions from existing conditions. Alternative 2 reductions are primarily from mobile source emissions.

Based on the results of the GHG emissions modeling presented in Table 12-7, overall GHG emissions in the Plan area would decrease by approximately 25,561 MT CO₂e/year (or 23 percent) in 2035 under Alternative 2, as compared to existing conditions. Achievement of California's ZNE goals could result in additional emissions reductions from new residential and commercial facilities. Despite an overall reduction in emissions, Alternative 2 would not meet AB 32 goals for 2020 or demonstrate that the Plan area is on a trajectory to meet the state's 2030 and 2050 targets. The RPU EIS also concluded a significant and unavoidable GHG impact for the Tahoe Region, but made this determination based on an estimated increase in emissions. As described above, emissions from implementation of the Kings Beach Center design concept would not exceed project-level PCAPCD significance criteria for GHGs (see Appendix H-5).

The analysis for Alternative 2 shows an overall decrease in emissions within the Plan area, including the Kings Beach Center design concept. However, as shown in Table 12-7, the reduction in emissions would not be sufficient to meet the state's future GHG reduction targets. Thus, Alternative 2 would not result in more severe impacts than already analyzed in the RPU EIS, but the GHG impact in the region would remain **potentially significant**.

Table 12-7 2015 Existing and 2035 Build-Out GHG Emissions in the Plan Area under Area Plan Alternative 2 and RPU (MT CO₂e)

Source	2015	2020		2035	
	Existing	RPU ¹	Area Plan Alternative 2 ¹	RPU	Area Plan Alternative 2
Energy-Related Emissions	30,422	29,523	29,523	26,826	26,826
Mobile-Source Emissions	57,373	51,684	51,070	34,617	32,164
Area-Source Emissions	9,299	9,535	9,535	10,242	10,242
Water Consumption-Related Emissions	2,205	2,269	2,269	2,462	2,462
Solid Waste-Related Emissions	4,246	4,372	4,372	4,750	4,750
Watercraft ²	5,465	6,624	6,624	10,103	10,103
Off-Road ²	8,010	7,235	7,235	4,909	4,909
Livestock ³	10,442	10,442	10,442	10,442	10,442
TOTAL	127,461	121,684	121,070	104,352	101,900
Population	9,708	9,802	9,802	10,083	10,083
Emissions per Capita	13.1	12.4	12.4	10.3	10.1
Percent Reduction from 2015	NA	-5%	-5%	-21%	-23%
Target Percent Reduction from 2015	NA	-8%	-8%	-54%	-54%
Meets State Targets?	NA	No	No	No	No

Note: CO₂e= carbon dioxide equivalents; IPCC = Intergovernmental Panel on Climate Change; MT = metric tons; NA = not applicable; Area Plan = Placer County Tahoe Basin Area Plan; RPU = Regional Plan Update; SAP = Sustainability Action Plan

¹ 2020 emissions were interpolated between 2015 and 2035 estimates.

² Available for the Plan area from ARB's OFFROAD 2007 model. This source is the same source used in the GHG inventory in the Tahoe SAP.

³ Assumes livestock emissions are unchanged from the Tahoe SAP 2005/2010 baseline for Placer County into future years. These emissions were adjusted to match the global warming potential factors from IPCC's Fourth Assessment Report to be consistent with the rest of the analysis.

Source: Lake Tahoe Sustainable Communities Program 2013, data compiled by Ascent Environmental in 2016.

Alternative 3: Reduced Intensity Area Plan

Alternative 3 would result in 90,000 fewer square feet of commercial floor area and 200 additional TAUs than what was estimated for Placer County in the RPU EIS. Assuming an average of 1,452 square feet per TAU, based on CalEEMod assumptions for a hotel room, the changes proposed by the Area Plan would result in a net addition of 200,400 square feet of building space. CalEEMod assumptions for a hotel room include space for hotel lobbies and other shared amenities. According to the transportation analysis prepared for this project, the Alternative 3 would decrease vehicle activity in the Plan area by approximately 9.0 million VMT per year, or 7 percent, compared to the 2035 VMT estimates under the RPU.

Construction Emissions

Construction under Alternative 3 would occur at slightly higher rates than assumed in the RPU EIS due to the increase in allowable development. Although project-specific details cannot be known, the types of construction activities that would be associated with land use development and redevelopment projects typically result in GHG emissions from fuel use in construction equipment that could exceed PCAPCD thresholds and contribute substantially to climate change.

Operational Emissions

As shown in Table 12-8, Alternative 3 would result in lower GHG emissions in the Plan area than calculated in the RPU EIS and would also result in a net reduction in emissions from existing conditions. Alternative 3 reductions from RPU estimates are primarily from mobile source emissions.

Table 12-8 2015 Existing and 2035 Build-Out GHG Emissions in the Plan Area under Area Plan Alternative 3 and RPU (MT CO₂e)

Source	2015	2020		2035	
	Existing	RPU ¹	Alternative 3 ¹	RPU	Alternative 3
Energy-Related Emissions	30,422	29,523	29,608	26,826	27,167
Mobile-Source Emissions	57,373	51,684	51,065	34,617	32,143
Area-Source Emissions	9,299	9,535	9,535	10,242	10,242
Water Consumption-Related Emissions	2,205	2,269	2,262	2,462	2,433
Solid Waste-Related Emissions	4,246	4,372	4,375	4,750	4,763
Watercraft ²	5,465	6,624	6,624	10,103	10,103
Off-Road ²	8,010	7,235	7,235	4,909	4,909
Livestock ³	10,442	10,442	10,442	10,442	10,442
TOTAL	127,461	121,684	121,146	104,352	102,202
Population	9,708	9,802	9,755	10,083	9,894
Emissions per Capita	13.1	12.4	12.4	10.3	10.3
Percent Reduction from 2015	NA	-5%	-5%	-21%	-21%
Target Percent Reduction from 2015	NA	-8%	-8%	-54%	-54%
Meets State Targets?	NA	No	No	No	No

Note: CO₂e= carbon dioxide equivalents; IPCC = Intergovernmental Panel on Climate Change; MT = metric tons; NA = not applicable; Area Plan = Placer County Tahoe Basin Area Plan; RPU = Regional Plan Update; SAP = Sustainability Action Plan

¹ 2020 emissions were interpolated between 2015 and 2035 estimates.

² Available for the Plan area from ARB's OFFROAD 2007 model. This source is the same source used in the GHG inventory in the Tahoe SAP.

³ Assumes livestock emissions are unchanged from the Tahoe SAP 2005/2010 baseline for Placer County into future years. These emissions were adjusted to match the global warming potential factors from IPCC's Fourth Assessment Report to be consistent with the rest of the analysis.

Source: Lake Tahoe Sustainable Communities Program 2013, data compiled by Ascent Environmental in 2016.

Based on the results of the GHG emissions modeling presented in Table 12-8, overall GHG emissions in the Plan area would decrease by approximately 25,259 MT CO₂e/year (or 21 percent) in 2035 under Alternative 3, as compared to existing conditions. The achievement of California's ZNE goals could result in additional emissions reductions from new residential and commercial facilities. Despite an overall reduction in emissions, Alternative 3 would not meet AB 32 goals for 2020 or demonstrate that the Plan area is on a trajectory to meet the state's 2030 and 2050 targets. The RPU also concluded a significant and unavoidable GHG impact for the Tahoe Region, but made this determination based on an estimated increase in emissions. As described above, emissions from implementation of the Kings Beach Center design concept would not exceed project-level PCAPCD significance criteria for GHGs (see Appendix H-5).

The analysis for Alternative 3 shows an overall decrease in emissions within the Plan area, including the Kings Beach Center design concept. However, as shown in Table 12-8, the reduction in emissions would not be sufficient to meet the state's future GHG reduction targets. Thus, Alternative 3 would not result in more severe impacts than already analyzed in the RPU EIS, but the GHG impact in the region would remain **potentially significant**.

Alternative 4: No Project

Alternative 4 would include the remaining development allocations authorized in the Regional Plan and without incorporating any of the changes authorized under the Area Plan. Compared to the Regional Plan and Area Plan, Alternative 4, No Project, would result in slightly lower densities, 22 fewer permanent

residential units, and 24 additional short-term residential units. By 2035, the No Project Alternative would also result in 8.8 million, or 7 percent, fewer VMT per year in the Plan area compared to the 2035 VMT estimates in the RPU EIS.

Construction Emissions

Construction under Alternative 4 would occur at the same rates of construction as under the Regional Plan. Although project-specific details cannot be known, the types of construction activities that would be associated with land use development and redevelopment projects typically result in GHG emissions from fuel use in construction equipment that could exceed PCAPCD thresholds and contribute substantially to climate change.

Operational Emissions

As shown in Table 12-9, Alternative 4 would result in lower GHG emissions in the Plan area than calculated in the RPU EIS and would also result in a net reduction in emissions from existing conditions. Alternative 4 reductions are primarily from mobile source emissions.

Table 12-9 2015 Existing and 2035 Build-Out GHG Emissions in the Plan Area under Area Plan Alternative 4 and RPU (MT CO₂e)

Source	2015	2020		2035	
	Existing	RPU ¹	Alternative 4 ¹	RPU	Alternative 4
Energy-Related Emissions	30,422	29,523	29,518	26,826	26,808
Mobile-Source Emissions	57,373	51,684	51,084	34,617	32,220
Area-Source Emissions	9,299	9,535	9,532	10,242	10,230
Water Consumption-Related Emissions	2,205	2,269	2,269	2,462	2,461
Solid Waste-Related Emissions	4,246	4,372	4,371	4,750	4,746
Watercraft ²	5,465	6,624	6,624	10,103	10,103
Off-Road ²	8,010	7,235	7,235	4,909	4,909
Livestock ³	10,442	10,442	10,442	10,442	10,442
TOTAL	127,461	121,684	121,075	104,352	101,918
Population	9,708	9,802	9,730	10,083	9,796
Emissions per Capita	13.1	12.4	12.4	10.3	10.4
Percent Reduction from 2015	NA	-5%	-5%	-21%	-21%
Target Percent Reduction from 2015	NA	-8%	-8%	-54%	-54%
Meets State Targets?	NA	No	No	No	No

Note: CO₂e= carbon dioxide equivalents; IPCC = Intergovernmental Panel on Climate Change; MT = metric tons; NA = not applicable; Area Plan = Placer County Tahoe Basin Area Plan; RPU = Regional Plan Update; SAP = Sustainability Action Plan

¹ 2020 emissions were interpolated between 2015 and 2035 estimates.

² Available for the Plan area from ARB's OFFROAD 2007 model. This source is the same source used in the GHG inventory in the Tahoe SAP.

³ Assumes livestock emissions are unchanged from the Tahoe SAP 2005/2010 baseline for Placer County into future years. These emissions were adjusted to match the global warming potential factors from IPCC's Fourth Assessment Report to be consistent with the rest of the analysis.

Source: Lake Tahoe Sustainable Communities Program 2013, data compiled by Ascent Environmental in 2016.

Based on the results of the GHG emissions modeling presented in Table 12-9, overall GHG emissions in the Plan area would decrease by approximately 25,542 MT CO₂e/year (or 21 percent) in 2035 under Alternative 4, as compared to existing conditions. Achievement of California's ZNE goals could result in additional emissions reductions from new residential and commercial facilities. Despite an overall reduction in emissions, Alternative 4 would not meet AB 32 goal for 2020 or demonstrate that the Plan area is on a

trajectory to meet the state's 2030 and 2050 targets. The RPU also concluded a significant and unavoidable GHG impact for the Tahoe Region, but made this determination based on an estimated increase in emissions. As described above, emissions from implementation of the Kings Beach Center design concept would not exceed project-level PCAPCD significance criteria for GHGs (see Appendix H-5).

The analysis for Alternative 4 shows an overall decrease in emissions within the Plan area, including the Kings Beach Center design concept. However, as shown in Table 12-8, the reduction in emissions would not be sufficient to meet the state's future GHG reduction targets. Thus, Alternative 4 would not result in more severe impacts than already analyzed in the RPU EIS and the GHG impact in the region would remain **potentially significant**. Because Alternative 4 is the no project alternative, there is no mechanism to implement mitigation measures.

Tahoe City Lodge Project-Level Analysis

Alternative 1: Proposed Lodge

Alternative 1 would involve the removal of the existing club house and commercial land uses on site and result in the construction and operation of a new 6,738-square-foot golf course clubhouse and 118-unit lodge that includes office space, restaurant, pool deck, and exercise room for a total of 104,007 square feet of new building space (additional building details are available in Chapter 3). These changes result in a net increase of 86,288 square feet of building space, but the proposed lodge would also be subject to higher building efficiency standards applicable at the time the building application is submitted. Thus, the new building would be more efficient on a per-square foot basis, as compared to the existing building. Because the exact level of building energy efficiency depends on when the building applications are submitted, modeling conservatively assumes that building energy efficiency does not change between the existing facility and the proposed lodge. Based on modeling conducted, the proposed lodge would result in a net increase of electricity and natural gas use per year. With respect to mobile sources, the proposed lodge would also increase operational vehicle activity by approximately 2,783 daily VMT as compared to existing 2015 conditions, as estimated by LSC Transportation Consultants (Appendix G-2 – *Traffic Volumes and VMT for Placer Area Plan EIR/EIS*). The increase in VMT would occur even with the decrease in the number of daily trips, as analyzed in Chapter 10, "Transportation and Circulation," and Chapter 13, "Noise," because of the longer trip lengths associated with trips generated by lodging compared to commercial retail land uses.

As shown in Table 12-10, project implementation would result in a net increase of 569 MT CO₂e/year from existing conditions at the site in 2015. The largest increase in emissions would be from vehicle trips to and from the project site, which would represent approximately 56 percent of annual operational emissions. This net increase in emissions reduction also includes amortized construction emissions which were added to annual operational emissions estimates due to the cumulative nature of GHG emissions. Thus, the project would not result in annual emissions that exceed the threshold of 1,100 MT CO₂e/year. This would be a **less-than-significant** impact. Refer to Appendix H-3 for a detailed summary of the modeling assumptions, inputs, and outputs.

Table 12-10 Net Greenhouse Gas Emissions Associated with the Tahoe City Lodge – Alternative 1

Construction Year	MT CO _{2e} /year
2017	500
2018	180
Total Construction Emissions	680
Operational Emissions ¹	MT CO _{2e} /year
Vehicle Trips ²	305
Electricity	121
Natural Gas	87
Waste	25
Water and Wastewater	7
Area Sources ³	<1
Total Operational Emissions (net increase from existing)	546
Amortized Construction Emissions (30 Year Lifetime)	23
Combined Net Increase ⁴	569
Threshold of Significance	1,100
Exceed Threshold?	No

Notes: GHG = greenhouse gas; MT CO_{2e} = metric tons of carbon dioxide-equivalent

¹ Although operations would begin in the later part of 2018, operational emissions shown above represent GHG emissions in the first full year of operations in 2019. Future mobile-source emissions beyond 2020 are anticipated to decrease over time as older passenger cars are replaced by newer, greenhouse gas-efficient vehicles, including electric and other alternative-fuel vehicles as a result of State and Federal actions regulations (e.g., Advanced Clean Cars Program).

² Calculated from daily peak VMT adjusted to annual VMT using a scaling factor of 241 for lodging land use types, as recommended by LSC Transportation Consultants (Shaw pers. comm., 2016)

³ Area-source GHG emissions from landscaping equipment and wood-burning stoves.

⁴ Totals may not add due to rounding.

Source: Shaw pers. comm., 2016, data compiled by Ascent Environmental in 2016.

Alternative 2: Reduced Scale Lodge

Alternative 2 would remove existing commercial land uses and result in the operation of a new 56-unit lodge which includes office space, restaurant, pool deck, and exercise room for a total of 60,560 square feet of new building space (additional building details are available in Chapter 3). The existing golf course club house would remain unchanged. These changes result in a net increase of 42,841 square feet of building space. For the same reasons and using the same methods indicated under Alternative 1, the reduced scale lodge would result in a net increase of electricity and natural gas use per year. With respect to mobile sources, the reduced scale lodge would decrease vehicle activity generated by the site by 2,844 daily VMT from existing 2015 conditions (see Appendix G-2 – *Traffic Volumes and VMT for Placer Area Plan EIR/EIS*). The increase in VMT would occur even with the decrease in the number of daily trips, as analyzed in Chapter 10, “Transportation and Circulation,” and Chapter 13, “Noise,” because of the longer trip lengths associated with trips generated by lodging compared to commercial retail land uses.

As shown in Table 12-11, project implementation would result in a net decrease of 80 MT CO_{2e}/year from existing conditions at the site in 2015. This reduction results from the substantial decrease in VMT due to the reduce lodge size, when compared to existing commercial land use operations, as estimated by LSC Transportation Consultants (see Appendix G-2 – *Traffic Volumes and VMT for Placer Area Plan EIR/EIS*). This reduction also includes amortized construction emissions which were added to annual operational emissions estimates due to the cumulative nature of GHG emissions. Thus, the project would not result in

annual emissions that exceed the threshold of 1,100 MT CO₂e/year. This would be a **less-than-significant** impact. Refer to Appendix H-3 for a detailed summary of the modeling assumptions, inputs, and outputs.

Table 12-11 Net Greenhouse Gas Emissions Associated with the Tahoe City Lodge – Alternative 2

Construction Year	MT CO ₂ e/year
2017	427
2018	153
Total Construction Emissions	580
Operational Emissions ¹	MT CO ₂ e/year
Vehicle Trips ²	-312
Electricity	120
Natural Gas	91
Waste	-1
Water and Wastewater	4
Area Sources ³	<1
Total Operational Emissions (net increase from existing)	-99
Amortized Construction Emissions (30 Year Lifetime)	19
Combined Net Increase ⁴	-80
Threshold of Significance	1,100
Exceed Threshold?	No

Notes: GHG = greenhouse gas; MT CO₂e = metric tons of carbon dioxide-equivalent

¹ Although operations would begin in the later part of 2018, operational emissions shown above represent GHG emissions in the first full year of operations in 2019. Future mobile-source emissions beyond 2020 are anticipated to decrease over time as older passenger cars are replaced by newer, greenhouse gas-efficient vehicles, including electric and other alternative-fuel vehicles as a result of State and Federal actions regulations (e.g., Advanced Clean Cars Program).

² Calculated from daily peak VMT adjusted to annual VMT using a scaling factor of 241 for lodging land use types, as recommended by LSC Transportation Consultants (Shaw pers. comm., 2016)

³ Area-source GHG emissions from landscaping equipment and wood-burning stoves.

⁴ Totals may not add due to rounding.

Source: Shaw pers. comm., 2016, data compiled by Ascent Environmental in 2016.

Alternative 3: Reduced Height Lodge

Alternative 3 would remove the existing club house and commercial land uses on-site and result in the operation of a new 6,738-square-foot golf course clubhouse and a 118-unit lodge. The lodge would include office space, restaurant, pool deck, and exercise room for a total of 108,915 sq. ft. of new building space (additional building details are available in Chapter 3). These changes result in a net increase of 91,196 square feet of building space. For the same reasons and using the same methods indicated under Alternative 1, the reduced height lodge would result in a net increase of electricity and natural gas use per year. With respect to mobile sources, the reduced scale lodge would also increase vehicle activity by approximately 2,783 daily VMT as compared to existing 2015 conditions (see Appendix G-2 – *Traffic Volumes and VMT for Placer Area Plan EIR/EIS*). The increase in VMT would occur even with the decrease in the number of daily trips, as analyzed in Chapter 10, “Transportation and Circulation,” and Chapter 13, “Noise,” because of the longer trip lengths associated with trips generated by lodging compared to commercial retail land uses.

As shown in Table 12-12, project implementation would result in a net increase of 587 MT CO₂e/year from existing conditions at the site in 2015. The largest increase in emissions would be from vehicle trips to and from the project site, which would represent approximately 54 percent of annual operational emissions. This

net increase in emissions reduction also includes amortized construction emissions which were added to annual operational emissions estimates due to the cumulative nature of GHG emissions. Thus, the project would not result in annual emissions that exceed the threshold of 1,100 MT CO_{2e}/year. This would be a **less-than-significant** impact. Refer to Appendix H-3 for a detailed summary of the modeling assumptions, inputs, and outputs.

Table 12-12 Net Greenhouse Gas Emissions Associated with the Tahoe City Lodge – Alternative 3

Construction Year	MT CO _{2e} /year
2017	507
2018	183
Total Construction Emissions	691
Operational Emissions ¹	MT CO _{2e} /year
Vehicle Trips ²	306
Electricity	137
Natural Gas	95
Waste	18
Water and Wastewater	8
Area Sources ³	<1
Total Operational Emissions (net increase from existing)	-564
Amortized Construction Emissions (30 Year Lifetime)	23
Combined Net Increase ⁴	587
Threshold of Significance	1,100
Exceed Threshold?	No

Notes: GHG = greenhouse gas; MT CO_{2e} = metric tons of carbon dioxide-equivalent

¹ Although operations would begin in the later part of 2018, operational emissions shown above represent GHG emissions in the first full year of operations in 2019. Future mobile-source emissions beyond 2020 are anticipated to decrease over time as older passenger cars are replaced by newer, greenhouse gas-efficient vehicles, including electric and other alternative-fuel vehicles as a result of State and Federal actions regulations (e.g., Advanced Clean Cars Program).

² Calculated from daily peak VMT adjusted to annual VMT using a scaling factor of 241 for lodging land use types, as recommended by LSC Transportation Consultants (Shaw pers. comm., 2016)

³ Area-source GHG emissions from landscaping equipment and wood-burning stoves.

⁴ Totals may not add due to rounding.

Source: Shaw pers. comm., 2016, data compiled by Ascent Environmental in 2016.

Alternative 4: No Project

The No Project alternative would continue operation of the existing commercial land use which would include a foreseeable renovation with no change in building square footage. The existing clubhouse would remain unchanged. At full occupancy, the renovated commercial land use would increase vehicle activity by approximately 8,029 daily VMT as compared to existing 2015 conditions (see Appendix G-2 – *Traffic Volumes and VMT for Placer Area Plan EIR/EIS*).

As shown in Table 12-13, the No Project alternative would result in a net increase of 988 MT CO_{2e}/year from existing conditions at the site in 2015. The largest increase in emissions would be from vehicle trips to and from the project site, which would represent approximately 89 percent of annual operational emissions. This net increase in emissions reduction does not include emissions resulting from the potential renovation of existing facilities. Thus, the No Project alternative would not result in annual emissions that exceed the threshold of 1,100 MT CO_{2e}/year. This would be a **less-than-significant** impact. Refer to Appendix H-3 for a detailed summary of the modeling assumptions, inputs, and outputs.

Table 12-13 Net Greenhouse Gas Emissions Associated with the Tahoe City Lodge – Alternative 4

Operational Emissions ¹	MT CO ₂ e/year
Vehicle Trips ²	882
Electricity	40
Natural Gas	46
Waste	12
Water and Wastewater	8
Area Sources ³	<1
Total Operational Emissions (net increase from existing)	988
Amortized Construction Emissions (30 Year Lifetime)	1,100
Combined Net Increase ⁴	No

Notes: GHG = greenhouse gas; MT CO₂e = metric tons of carbon dioxide-equivalent

¹ Although operations would begin in the later part of 2018, operational emissions shown above represent GHG emissions in the first full year of operations in 2019. Future mobile-source emissions beyond 2020 are anticipated to decrease over time as older passenger cars are replaced by newer, greenhouse gas-efficient vehicles, including electric and other alternative-fuel vehicles as a result of State and Federal actions regulations (e.g., Advanced Clean Cars Program).

² Calculated from daily peak VMT adjusted to annual VMT using a scaling factor of 241 for lodging land use types, as recommended by LSC Transportation Consultants (Shaw pers. comm., 2016)

³ Area-source GHG emissions from landscaping equipment and wood-burning stoves.

⁴ Totals may not add due to rounding.

Source: Shaw pers. comm., 2016, data compiled by Ascent Environmental in 2016.

Mitigation Measures

Mitigation Measure 12-1: Implement all feasible energy, water, transportation, and vegetation measures recommended by PCAPCD

The following mitigation measure is required for Area Plan Alternatives 1, 2, and 3.

Require, as feasible, new construction to implement energy, water, transportation, and vegetation measures recommended by PCAPCD available in Appendix F-1 of the District's CEQA Handbook. This would apply to new construction occurring under the Area Plan, including the proposed lodge project. Also, initiate a funding program to apply these measures to existing facilities within the Plan area, as feasible (PCAPCD 2012).

These recommended measures include, but are not limited to:

- ▲ Installing Tank-less or Energy Efficiency water heaters (E5)
- ▲ Installing solar water heaters (E3)
- ▲ Installing energy efficient roofing (E4)
- ▲ Require Energy Star-rated appliances in new construction (E9)
- ▲ Pre-Plumb new construction for Solar Energy and design for load (E12)
- ▲ Install low-flow water fixtures (W1)
- ▲ Use reclaimed water for irrigation (W3)
- ▲ Provide bus shelters and lanes and provide bike parking (T1, T2, and T3)
- ▲ Plant drought tolerant plants (V2)
- ▲ Prohibit gas-powered landscaping equipment (V3)

Significance after Mitigation (applies to Area Plan impacts only)

Among the Area Plan alternatives, Alternative 2 provides the greatest GHG reductions, as compared to existing conditions, followed closely by the No Project alternative. However, under all alternatives, the Area Plan may not reduce overall regional emissions to less-than-significant levels. Implementation of Mitigation Measure 12-1 would reduce some of the anticipated future GHG emissions at buildout. Some of these measures would also be consistent with those identified in the Tahoe SAP. However, the exact effectiveness of these measures would depend on participation rates, available funding, and available technology at the time of installation. Given the uncertain effect of these mitigation measures, the Area Plan would have a considerable contribution to the cumulative impact of greenhouse gas emissions and climate change **significant and unavoidable** for all alternatives.

Impact 12-2: Consistency with SB 375 targets

Area Plan Alternatives 1 through 4 would meet and exceed TMPO's ARB-issued SB 375 GHG reduction targets for 2020 and 2035. The Area Plan alternatives would also meet and exceed the percent reductions in GHG emissions per capita by 2020 and 2035, from 2005 levels, anticipated for the Tahoe Region in the Tahoe RTP/SCS. The allowed land uses under the Area Plan also include the Kings Beach Center design concept and the Tahoe City Lodge. Therefore, this impact would be **less than significant**.

Under SB 375, ARB issued to TMPO regional GHG reduction targets to reduce emissions from on-road passenger vehicles. These targets are a 7 percent reduction in GHG per capita by 2020 and a 5 percent reduction in GHG per capita by 2035 compared with 2005 levels and apply to mobile-source emissions from automobiles, light-duty trucks, and medium-duty trucks traveling in the California portion of the Tahoe Basin. TMPO and TRPA's adopted SCS also demonstrates that, if implemented, the Lake Tahoe Region would achieve a 12.1 percent passenger vehicle greenhouse gas per capita reduction in 2020, and a 7.2 percent reduction in 2035 from 2005 levels (ARB 2013b).

VMT generated in the region under the Area Plan and Regional Plan was estimated by LSC Transportation Consultants using TRPA's travel demand model and the method recommended by the Regional Targets Advisory Committee for SB 375 analyses, detailed further in Appendix G-2, *Traffic Volumes and VMT for Placer Area Plan EIR/EIS*. Mobile-source emissions associated with VMT from automobiles, light-duty trucks, and medium-duty trucks were estimated using the EMFAC2014 model. For the purposes of comparing to SB 375 targets, ACC program, LCFS, and other AB 32 Scoping Plan measures were excluded from the mobile-source emissions modeling used in this impact analysis, because SB 375 targets were based on scenarios in which GHG reductions from these measures were not applied.

Placer County Tahoe Basin Area Plan Program-Level/Tahoe City Lodge Project-Level Analysis

The RPU EIS determined the significance of plan-level GHG impacts by comparing plan-level emissions to the achievement of SB 375 GHG reduction targets of 7 percent and 5 percent per capita in 2020 and 2035, respectively. This target was based on ARB's final resolution of TMPO's SB 375 Sustainable Communities Strategy (ARB 2013b). For the purposes of this analysis, the same reduction targets were used to determine Area Plan's consistency with SB 375 and TMPO targets. Because the Tahoe City Lodge and the Kings Beach Center design concept are included in the land use plan under the Area Plan alternatives, the significance determination at the plan-level for the Area Plan would also apply at the project-level for the lodge project and Kings Beach Center design concept.

Alternative 1: Proposed Area Plan/Proposed Lodge

Results of mobile-source GHG emissions modeling associated with Alternative 1 are summarized in Table 12-14.

Table 12-14 Alternative 1 Mobile-Source Greenhouse Gas Emissions for the Plan Area

2005		2020		2035	
Mobile source GHG emissions (MT CO ₂ e) ¹	62,846	Mobile source GHG emissions (MT CO ₂ e)	49,640	Mobile source GHG emissions (MT CO ₂ e)	47,856
Population	9,108	Population	9,802	Population	10,083
Mobile source GHG emissions per Capita (MT CO ₂ e /person/year) ²	6.9	Mobile source GHG emissions per Capita (MT CO ₂ e /person/year) ²	5.1	Mobile source GHG emissions per Capita (MT CO ₂ e /person/year) ²	4.7
		% change GHG per capita from 2005	-26.6	% change GHG per capita from 2005	-31.2
		TRPA/Tahoe RTP/SCS Target	-12.1%	TRPA/Tahoe RTP/SCS Target	-7.2%
		TRPA/Tahoe RTP/SCS Target Met?	Yes	TRPA/Tahoe RTP/SCS Target Met?	Yes
		SB 375 Target	-7%	SB 375 Target	-5%
		SB 375 Target Met?	Yes	SB 375 Target Met?	Yes

Notes: CO₂e = carbon dioxide-equivalent; GHG = greenhouse gas; IPCC = Intergovernmental Panel on Climate Change; MT = metric tons; NA = not available; SAP = Sustainability Action Plan; TMPO = Tahoe Metropolitan Planning Organization; TRPA = Tahoe Regional Planning Association; VMT = vehicle miles traveled

¹ As reported in the Tahoe SAP for the Placer County portion of the Tahoe Basin and scaled to match global warming potential factors from IPCC’s Fourth Assessment Report, consistent with the rest of the analysis and the California GHG Inventory.

² Vehicle-related GHG emissions were estimated for the entire on-road vehicle fleet in the Basin, including autos, buses, light-, medium-, and heavy- duty vehicles and trucks. However, GHG emission estimates for purposes of meeting SB 375 targets include only autos and light- and medium duty- trucks. The percent of mobile source emissions as attributable to passenger vehicles reported in the Tahoe SAP for 2005 was not available. Thus, the 2020 and 2035 mobile source emissions were also estimated for the entire fleet. Because passenger vehicle emissions contribute to total mobile source emissions, it is anticipated that passenger vehicle emissions and passenger vehicle emissions per capita would be less than presented here. Thus, the mobile-source emissions presented here are conservative estimates of passenger vehicle emissions.

Source: LSC Transportation Consultants 2016 (Appendix G-4 – LOS Intersection Output), data compiled by Ascent Environmental in 2016.

As shown in Table 12-14, Alternative 1 would result in a net reduction in total mobile-source GHG emissions associated with all vehicles in the Plan area in both 2020 and 2035 compared to 2005 levels, despite an increase in population. Under Alternative 1, mobile-source emissions per capita in the Plan area would decrease by 27 percent by 2020 and 31 percent by 2035 from 2005 levels. Thus, Alternative 1 would meet and exceed the anticipated regional reductions in the Tahoe RTP/SCS of 12.1 percent below 2005 levels by 2020 and 7.2 percent below 2005 by 2035 which has been demonstrated to meet SB 375 requirements, and this impact would be **less-than-significant**.

Alternative 2: Area Plan with No Substitute Standards/Reduced Scale Lodge

Results of mobile-source GHG emissions modeling associated with Alternative 2 are summarized in Table 12-15.

Table 12-15 Alternative 2 Mobile-Source Greenhouse Gas Emissions for the Plan Area

2005		2020		2035	
Mobile source GHG emissions (MT CO ₂ e) ¹	62,846	Mobile source GHG emissions (MT CO ₂ e)	49,680	Mobile source GHG emissions (MT CO ₂ e)	48,007
Population	9,108	Population	9,802	Population	10,083
Mobile source GHG emissions per Capita (MT CO ₂ e /person/year) ²	6.9	Mobile source GHG emissions per Capita (MT CO ₂ e /person/year) ²	5.1	Mobile source GHG emissions per Capita (MT CO ₂ e /person/year) ²	4.8
		% change GHG per capita from 2005	-26.5	% change GHG per capita from 2005	-31.0
		TRPA/Tahoe RTP/SCS Target	-12.1%	TRPA/Tahoe RTP/SCS Target	-7.2%
		TRPA/Tahoe RTP/SCS Target Met?	Yes	TRPA/Tahoe RTP/SCS Target Met?	Yes
		SB 375 Target	-7%	SB 375 Target	-5%
		SB 375 Target Met?	Yes	SB 375 Target Met?	Yes

Notes: CO₂e = carbon dioxide-equivalent; GHG = greenhouse gas; IPCC = Intergovernmental Panel on Climate Change; MT = metric tons; NA = not available; SAP = Sustainability Action Plan; TMPO = Tahoe Metropolitan Planning Organization; TRPA = Tahoe Regional Planning Association; VMT = vehicle miles traveled

¹ As reported in the Tahoe SAP for the Placer County portion of the Tahoe Basin and scaled to match global warming potential factors from IPCC’s Fourth Assessment Report, consistent with the rest of the analysis and the California GHG Inventory.

² Vehicle-related GHG emissions were estimated for the entire on-road vehicle fleet in the Basin, including autos, buses, light-, medium-, and heavy- duty vehicles and trucks. However, GHG emission estimates for purposes of meeting SB 375 targets include only autos and light- and medium duty- trucks. The percent of mobile source emissions as attributable to passenger vehicles reported in the Tahoe SAP for 2005 was not available. Thus, the 2020 and 2035 mobile source emissions were also estimated for the entire fleet. Because passenger vehicle emissions contribute to total mobile source emissions, it is anticipated that passenger vehicle emissions and passenger vehicle emissions per capita would be less than presented here. Thus, the mobile-source emissions presented here are conservative estimates of passenger vehicle emissions.

Source: LSC Transportation Consultants 2016 (Appendix G-4 – LOS Intersection Output), data compiled by Ascent Environmental in 2016.

As shown in Table 12-15, Alternative 2 would result in a net reduction in total mobile-source GHG emissions associated with all vehicles in the Plan area in both 2020 and 2035 compared to 2005 levels, despite an increase in population. Under Alternative 2, mobile-source emissions per capita in the Plan area would decrease by 27 percent by 2020 and 31 percent by 2035 from 2005 levels. Thus, Alternative 2 would meet and exceed the anticipated regional reductions in the Tahoe RTP/SCS of 12.1 percent below 2005 levels by 2020 and 7.2 percent below 2005 by 2035 which has been demonstrated to meet SB 375 requirements, and this impact would be **less-than-significant**.

Alternative 3: Reduced Intensity Area Plan

Results of mobile-source GHG emissions modeling associated with Alternative 3 are summarized in Table 12-16.

Table 12-16 Alternative 3 Mobile-Source Greenhouse Gas Emissions for the Plan Area

2005		2020		2035	
Mobile source GHG emissions (MT CO _{2e}) ¹	62,846	Mobile source GHG emissions (MT CO _{2e})	49,672	Mobile source GHG emissions (MT CO _{2e})	47,975
Population	9,108	Population	9,755	Population	9,894
Mobile source GHG emissions per Capita (MT CO _{2e} /person/year) ²	6.9	Mobile source GHG emissions per Capita (MT CO _{2e} /person/year) ²	5.1	Mobile source GHG emissions per Capita (MT CO _{2e} /person/year) ²	4.8
		% change GHG per capita from 2005	-26.2	% change GHG per capita from 2005	-29.7
		TRPA/Tahoe RTP/SCS Target	-12.1%	TRPA/Tahoe RTP/SCS Target	-7.2%
		TRPA/Tahoe RTP/SCS Target Met?	Yes	TRPA/Tahoe RTP/SCS Target Met?	Yes
		SB 375 Target	-7%	SB 375 Target	-5%
		SB 375 Target Met?	Yes	SB 375 Target Met?	Yes

Notes: CO_{2e} = carbon dioxide-equivalent; GHG = greenhouse gas; IPCC = Intergovernmental Panel on Climate Change; MT = metric tons; NA = not available; SAP = Sustainability Action Plan; TMPO = Tahoe Metropolitan Planning Organization; TRPA = Tahoe Regional Planning Association; VMT = vehicle miles traveled

¹ As reported in the Tahoe SAP for the Placer County portion of the Tahoe Basin and scaled to match global warming potential factors from IPCC's Fourth Assessment Report, consistent with the rest of the analysis and the California GHG Inventory.

² Vehicle-related GHG emissions were estimated for the entire on-road vehicle fleet in the Basin, including autos, buses, light-, medium-, and heavy- duty vehicles and trucks. However, GHG emission estimates for purposes of meeting SB 375 targets include only autos and light- and medium duty- trucks. The percent of mobile source emissions as attributable to passenger vehicles reported in the Tahoe SAP for 2005 was not available. Thus, the 2020 and 2035 mobile source emissions were also estimated for the entire fleet. Because passenger vehicle emissions contribute to total mobile source emissions, it is anticipated that passenger vehicle emissions and passenger vehicle emissions per capita would be less than presented here. Thus, the mobile-source emissions presented here are conservative estimates of passenger vehicle emissions.

Source: LSC Transportation Consultants 2016 (Appendix G-4 - LOS Intersection Output), data compiled by Ascent Environmental in 2016.

As shown in Table 12-16, Alternative 3 would result in a net reduction in total mobile-source GHG emissions associated with all vehicles in the Plan area in both 2020 and 2035 compared to 2005 levels, despite an increase in population. Under Alternative 3, mobile-source emissions per capita in the Plan area would decrease by 26 percent by 2020 and 30 percent by 2035 from 2005 levels. Thus, Alternative 3 would meet and exceed the anticipated regional reductions in the Tahoe RTP/SCS of 12.1 percent below 2005 levels by 2020 and 7.2 percent below 2005 by 2035 which has been demonstrated to meet SB 375 requirements, and this impact would be **less-than-significant**.

Alternative 4: No Project

Results of mobile-source GHG emissions modeling associated with Alternative 4 are summarized in Table 12-17.

Table 12-17 Alternative 4 Mobile-Source Greenhouse Gas Emissions for the Area Plan Area

2005		2020		2035	
Mobile source GHG emissions (MT CO _{2e}) ¹	62,846	Mobile source GHG emissions (MT CO _{2e})	49,702	Mobile source GHG emissions (MT CO _{2e})	48,090
Population	9,108	Population	9,730	Population	9,796
Mobile source GHG emissions per Capita (MT CO _{2e} /person/year) ²	6.9	Mobile source GHG emissions per Capita (MT CO _{2e} /person/year) ²	5.1	Mobile source GHG emissions per Capita (MT CO _{2e} /person/year) ²	4.9
		% change GHG per capita from 2005	-26.0	% change GHG per capita from 2005	-28.9
		TRPA/Tahoe RTP/SCS Target	-12.1%	TRPA/Tahoe RTP/SCS Target	-7.2%
		TRPA/Tahoe RTP/SCS Target Met?	Yes	TRPA/Tahoe RTP/SCS Target Met?	Yes
		SB 375 Target	-7%	SB 375 Target	-5%
		SB 375 Target Met?	Yes	SB 375 Target Met?	Yes

Notes: CO_{2e} = carbon dioxide-equivalent; GHG = greenhouse gas; IPCC = Intergovernmental Panel on Climate Change; MT = metric tons; NA = not available; SAP = Sustainability Action Plan; TMPO = Tahoe Metropolitan Planning Organization; TRPA = Tahoe Regional Planning Association; VMT = vehicle miles traveled

¹ As reported in the Tahoe SAP for the Placer County portion of the Tahoe Basin and scaled to match global warming potential factors from IPCC’s Fourth Assessment Report, consistent with the rest of the analysis and the California GHG Inventory.

² Vehicle-related GHG emissions were estimated for the entire on-road vehicle fleet in the Basin, including autos, buses, light-, medium-, and heavy- duty vehicles and trucks. However, GHG emission estimates for purposes of meeting SB 375 targets include only autos and light- and medium duty- trucks. The percent of mobile source emissions as attributable to passenger vehicles reported in the Tahoe SAP for 2005 was not available. Thus, the 2020 and 2035 mobile source emissions were also estimated for the entire fleet. Because passenger vehicle emissions contribute to total mobile source emissions, it is anticipated that passenger vehicle emissions and passenger vehicle emissions per capita would be less than presented here. Thus, the mobile-source emissions presented here are conservative estimates of passenger vehicle emissions.

Source: LSC Transportation Consultants 2016 (Appendix G-4 – LOS Intersection Output), data compiled by Ascent Environmental in 2016.

As shown in Table 12-17, Alternative 4 would result in a net reduction in total mobile-source GHG emissions associated with all vehicles in the Plan area in both 2020 and 2035 compared to 2005 levels, despite an increase in population. Under Alternative 4, mobile-source emissions per capita in the Plan area would decrease by 26 percent by 2020 and 29 percent by 2035 from 2005 levels. Thus, Alternative 4 would meet and exceed the anticipated regional reductions in the Tahoe RTP/SCS of 12.1 percent below 2005 levels by 2020 and 7.2 percent below 2005 by 2035 which has been demonstrated to meet SB 375 requirements, and this impact would be **less-than-significant**.

Mitigation Measures

No mitigation is required.

Impact 12-3: Impacts of climate change on the project

Climate change is projected to result in a variety of effects that would influence conditions in the Plan area including increased temperatures, leading to increased wildland fire risk; changes to timing and intensity of precipitation, resulting in increased stormwater runoff, flood risk, and water supply impacts; and potentially changes to snow pack conditions that could be more favorable to avalanche formation. However, there are numerous programs and policies in place to protect against and respond to wildland fire, as well as to protect new land uses and facilities from flooding and avalanche exposure. This impact would be **less than significant** for all of the Area Plan and Tahoe City Lodge alternatives.

As discussed previously in this chapter, there is substantial evidence that human-induced increases in GHG concentrations in the atmosphere have led to increased global average temperatures (climate change) through the intensification of the greenhouse effect, and associated changes in local, regional, and global average climatic conditions.

Although there is strong scientific consensus that global climate change is occurring and is influenced by human activity, there is less certainty as to the timing, severity, and potential consequences of the climate phenomena, particularly at specific locations. Scientists have identified several ways in which global climate change could alter the physical environment in California (CNRA 2012, DWR 2006, IPCC 2014a, IPCC 2014b). These include:

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

These climate change effects may translate into a variety of issues and concerns that may affect the Area Plan and lodge project area, including but not limited to:

- ▲ increased frequency and intensity of wildfire as a result of changing precipitation patterns and temperatures;
- ▲ increased stormwater runoff associated with changes to precipitation patterns and snowmelt patterns;
- ▲ increased risk of avalanches, mudslides, and flooding associated with changes to precipitation and snowmelt patterns; and
- ▲ decreased snowpack resulting in lower water supply during summer months and negative economic effects from impaired winter recreation.

Despite the global effects of climate change, how those effects would impact the project areas would depend on the policies, plan or project designs, and programs in place that would lessen climate change impacts. This analysis is addressed separately for the Area Plan and lodge below.

Placer County Tahoe Basin Area Plan Program-Level Analysis

Alternatives 1 through 4

Risk of exposure of structures and people to wildfire are addressed in Impact 18-4. Climate change could increase wildfire risk due to prolonged droughts that reduce moisture in plants and soils and the water supply needed to fight fires. As discussed in Impact 18-4, the Plan area contains large areas of high to very high fire hazards as well as some moderate fire hazard areas (see Exhibit 18-1). Fire codes applicable to the Plan area include codes from the North Tahoe Fire Protection District (NTFPD), Placer County, Placer County Local Hazard Mitigation Plan, the North Tahoe Community Wildfire Protection Plan, and the California Fire Code as well as ordinances specific to cities located within the Plan area. These applicable codes include guidance on defensible space, fire flow levels for hydrants, sprinkler requirements, and other preventative and defensive actions. The covenants, conditions, and restrictions for individual projects would mandate that property owners maintain adequate defensible space around structures. California Department of Forestry and Fire Protection (CAL FIRE) plans for Placer County include continued provision of fire protection and prevention services for areas surrounding the Plan area. The Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy for the Lake Tahoe Region (Fuel Reduction Strategy) also provides land management, fire, and regulatory agencies with strategies to reduce the probability of a catastrophic fire in the region. See Chapter 17, "Public Services and Recreation," and Chapter 18, "Hazards and Hazardous Materials," for additional information on plans and policies related to wildfire. Implementation of these plans and policies would reduce the likelihood of wildland fire and reduce the negative effects of wildfires through management of fuels and implementation of best practices, and would ensure that resources to respond to occurrence of wildland fire would be available. In addition, the project would also comply with appropriate Emergency Vehicle Access standards (see Chapter 18, "Hazards and Hazardous Materials," for more details); and no new wood-burning open-hearth fireplaces would be allowed under current TRPA Code.

Therefore, the Plan area would be resilient to potential increases in wildfire risk that might result from climate change.

With regard to flood risk associated with increased stormwater runoff and changes to precipitation patterns and snowmelt patterns, the Kings Beach Center design concept is located outside of the 100-year flood zone, however portions of the communities of Kings Beach, Tahoe Vista, Tahoe Pines, Dollar Point, Tahoe City, and Homewood could be inundated during a 100-year flood event. However, several policies would minimize the potential for future projects to expose people or property to flood risks. The TRPA Code of Ordinances, under Section 35.4.2, requires that all new development, grading, and filling be prohibited within 100-year floodplains except for certain public outdoor recreation or public service facilities that meet specific code requirements. TRPA's BMP Handbook and Chapter 35 and other TRPA Code provisions would serve to reduce flood risk by managing stormwater runoff and drainage systems so that post-development peak flows do not exceed pre-development flows. Finally, compliance with the Placer County Flood Damage Prevention Regulations (Placer County Code Section 15.52) requires special permits applications for any developments in special flood hazard areas and provides guidance on other flood prevention strategies. Although current flood risk in the Plan area is low, implementing current policies would further reduce flood risk (see Chapter 15, "Hydrology and Water Quality").

With regard to water supply, the IPCC reports that droughts are likely to become more frequent and persistent throughout the world in the 21st century due to changes in atmospheric temperatures and dynamics (IPCC 2007). Periods of extended drought, decreased snow pack, increased reliance on groundwater, use of water supplies for firefighting, and other responses will require careful monitoring and management of water supplies statewide and beyond. While the impacts of climate change on Lake Tahoe and the groundwater resources that supply water to the Plan area cannot be known with specificity, it is important to acknowledge that a changing climate is likely to result in the need for additional conservation measures and judicious use of water supplies into the future. Urban Water Management Plans such as those prepared by Tahoe City Public Utility District and North Tahoe Public Utility District are required to be updated every 5 years and, among other things, are required to describe water supply reliability and vulnerability to seasonal or climatic shortage; provide data for average, single dry, and multiple dry years; and address urban water shortage contingency analysis.

With regard to avalanche risk, parts of the Plan area's varied terrain contains slopes steep enough to generate avalanches or areas that are susceptible to landslides or similar hazards, as detailed in Chapter 14, "Geology, Soils, Land Capability, and Coverage." Most steep terrain could produce minor sloughs of snow, but it is likely that dense forest cover would prevent avalanche slab formation. Steep terrain without dense forest cover, such as those located at ski resorts, would be more susceptible to avalanche formation, but would also more likely already have avalanche controls measures in place to intervene snow pack formation or lessen the effects of an avalanche. Furthermore, avalanche hazards are mitigated by the existing protective provisions included in the Placer County and TRPA permitting process.

Development under the Area Plan Alternatives 1 through 3 and under Alternative 4, the No Project Alternative, would be subject to all applicable local regulations, codes, and programs that would reduce the extent and severity of climate change-related impacts to the project by providing methods for adapting to these changes (e.g., manage wildfire, drainage and runoff, and avalanche risk). Area Plan goals, policies, and implementation measures are would neither violate nor conflict with policies and plans that would reduce the extent and severity of these potential climate change-related effects. For these reasons, this impact would be **less than significant**.

Tahoe City Lodge Project-Level Analysis

Alternatives 1 through 4

As discussed in Impact 18-4, the lodge site is located within a very high fire hazard area (see Exhibit 18-1). However, the project site is currently developed with three commercial buildings, a golf course, and golf course clubhouse within a developed area of Tahoe City. The project site is surrounded by developed urban uses in an area where the topography is fairly level, fuel loads are relatively low, and existing access for

firefighting equipment is good. Fire protection on the project site would be provided by NTFPD. The site is also located in a developed area with existing fire hydrants. Therefore, the lodge site would be resilient to potential increases in wildfire risk that might result from climate change.

With regards to flood risk associated with increased stormwater runoff and changes to precipitation patterns and snowmelt patterns, the lodge is located above the 500-year floodplain and would not be susceptible to flood risk (see Impact 15-4 in Chapter 15, “Hydrology and Water Quality”).

With regard to avalanche risk, the lodge site is located in an area not likely to be directly affected by avalanche events, although avalanches occurring in the surrounding mountainous terrain could block roadways and, therefore, traffic flow to and from the site.

Development under the lodge Alternatives 1 through 4 would be subject to all applicable local regulations, codes, and programs that would reduce the extent and severity of climate change-related impacts to the project by providing methods for adapting to these changes (e.g., manage wildfire, drainage and runoff, and avalanche risk). No aspect of the lodge project that would violate or conflict with policies and plans that would reduce the extent and severity of these potential climate change-related effects. For these reasons, this impact would be **less than significant**.

Mitigation Measures

No mitigation is required.