15.0 GREENHOUSE GAS EMISSIONS AND ENERGY

This chapter presents a summary of the existing science related to greenhouse gases (GHGs); overviews of state and local GHG emissions inventories, and of the existing regulatory context for GHGs; a summary of the methods used to estimate GHG emissions attributable to the proposed project; and an analysis of potential impacts of the proposed project related to GHG emissions.

The proposed trails expansion project would not contribute significantly to climate change by itself. However, cumulative emissions from many projects and plans would all contribute to global GHG concentrations and the climate system. This section considers the proposed project's cumulative contribution to the significant cumulative impact of climate change.

Energy use (and efficiency) is an important indicator of GHG emissions and is therefore analyzed in this section in conjunction with the GHG analysis. This section considers the primary energy requirements for the proposed project; the benefit of existing regulations that require energy-efficient construction and operation; the potential for the proposed project to result in the wasteful, inefficient, and unnecessary consumption of energy; and the energy conservation measures proposed as part of the project design to reduce energy use.

15.1 SUMMARY OF COUNTY FINDINGS ON THE 2010 HFRP EIR

15.1.1 FINDINGS OF FACT

Greenhouse gas was not considered as an environmental issue on the Initial Study Checklist at the time the 2010 HFRP was certified. However, the County Board of Supervisors made a number findings including affirmation that the document represented the independent judgement of the lead agency and was prepared consistent with appropriate CEQA requirements, including a statement that it was prepared in accordance with state statutes and guidelines.

15.1.2 OVERVIEW OF GREENHOUSE GASES

Certain gases in the earth's atmosphere, classified as Greenhouse Gasses (GHGs), play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space. A portion of the radiation is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space through the atmosphere. However, infrared radiation is selectively absorbed by GHGs in the atmosphere. As a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth. Anthropogenic (human-caused) emissions of these GHGs lead to atmospheric levels that exceed natural ambient concentrations and have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change.

The Intergovernmental Panel on Climate Change concluded that variations in natural phenomena, such as solar radiation and volcanoes, produced most of the earth's warming from pre-industrial times to 1950. Some variations in natural phenomena also had a small cooling effect. Since 1950, increasing GHG concentrations resulting from human activity, such as fossil fuel burning and deforestation, have been responsible for most of the observed temperature increase (IPCC 2019).

Global surface temperature has increased by approximately 1.53 degrees Fahrenheit over the last 140 years (IPCC 2019); however, the rate of increase in global average surface temperature has not been consistent. During the last three decades, temperatures have warmed at a much faster rate per decade (IPCC 2019).

During the same period when increased global warming has occurred, many other changes have occurred in other natural systems. Sea levels have risen; precipitation patterns throughout the world have shifted, with some areas becoming wetter and others drier; snowlines have increased in elevation, resulting in changes to the snowpack, runoff, and water storage; and numerous other conditions have been observed. Although it is difficult to prove a definitive cause-and-effect relationship between global warming and other observed changes to natural systems, there is a high level of confidence in the scientific community that these changes are a direct result of increased global temperatures caused by the increased presence of GHGs in the atmosphere (IPCC 2019).

PRINCIPAL GREENHOUSE GASES AND SOURCES

GHGs are present in the atmosphere naturally, are released by natural and anthropogenic sources, and are formed from secondary reactions taking place in the atmosphere. Natural sources of GHGs include the respiration of humans, animals, and plants; decomposition of organic matter; volcanic activity; and evaporation from the oceans. Anthropogenic sources include the combustion of fossil fuels by stationary and mobile sources, waste treatment, and agricultural processes. The following are the principal GHG pollutants that contribute to climate change and their primary emission sources:

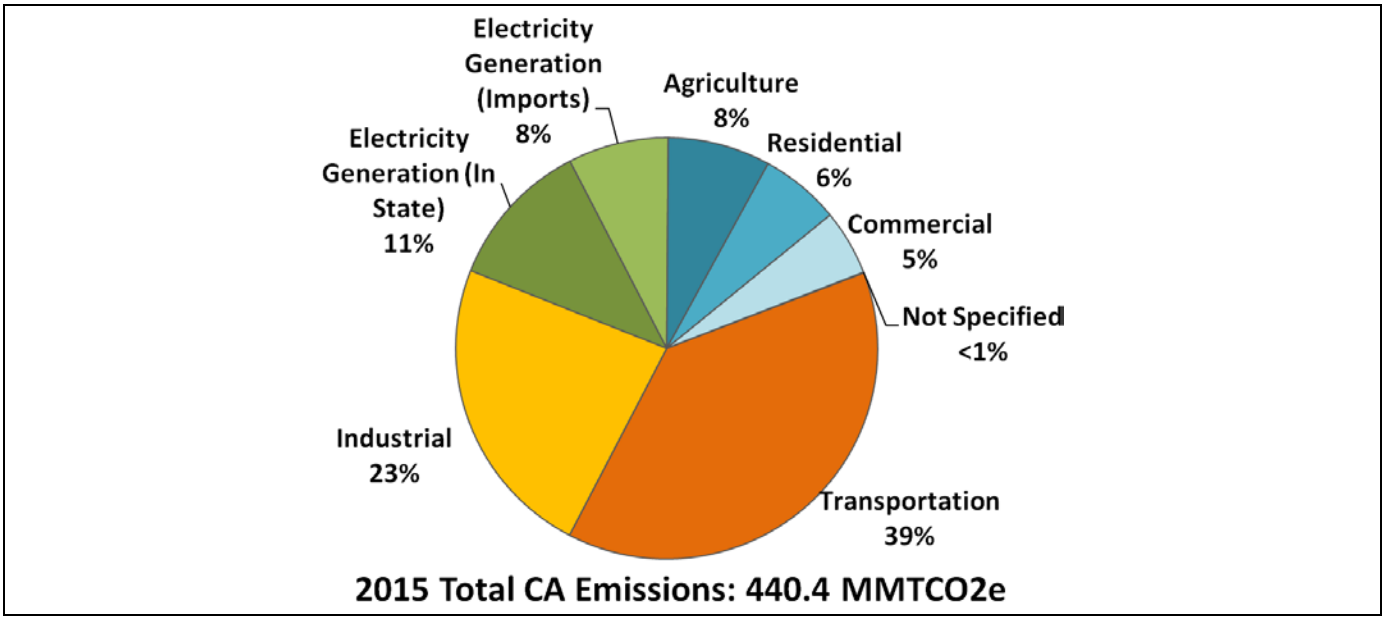
- **Carbon Dioxide:** Natural sources of carbon dioxide (CO_2) include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; and evaporation from oceans. Anthropogenic sources include burning of coal, oil, natural gas, and wood.
- **Methane:** Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal solid waste landfills.
- **Nitrous Oxide:** Nitrous oxide is produced by both natural and human-related sources. Primary human-related sources of nitrous oxide are agricultural soil management, sewage treatment, mobile and stationary combustion of fossil fuel, and production of adipic and nitric acid. Nitrous oxide is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests.
- **Fluorinated Gases:** These gases, listed below, are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as having high global warming potential (GWP).
    - *Chlorofluorocarbons* are used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants.
    - *Perfluorinated chemicals* are emitted as byproducts of industrial processes and are used in manufacturing.
    - *Sulfur hexafluoride* is a strong GHG used primarily as an insulator in electrical transmission and distribution systems.

- *Hydrochlorofluorocarbons* have been introduced as temporary replacements for chlorofluorocarbons and are also GHGs.

- *Hydrofluorocarbons* were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. Hydrofluorocarbons are emitted as byproducts of industrial processes and are used in manufacturing.

GHGs are not monitored at local air pollution monitoring stations and do not result in direct impacts on human health. Rather, GHGs generated locally contribute to global concentrations of GHGs, which result in changes to the climate and environment.

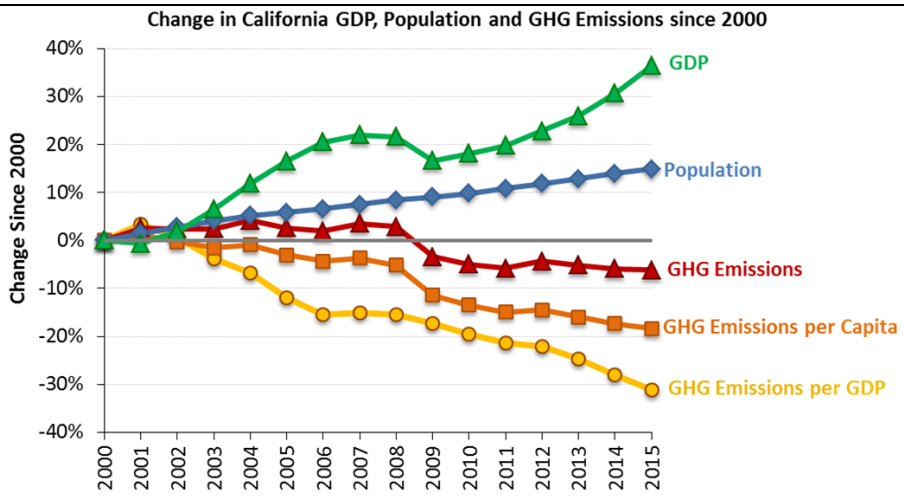
The California Air Resources Board (CARB) prepares an annual, statewide GHG emissions inventory. GHGs are typically analyzed by sector or type of activity. As shown in Exhibit 15-1, California produced 440.4 million metric tons (MT) CO_2 equivalent (CO_2e) in 2015. Combustion of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2015, accounting for 39 percent of total GHG emissions. Transportation was followed by industry, which accounted for 23 percent, and then by the electric power category (both in-state and out-of-state sources), which accounted for 11 percent of total GHG emissions (CARB 2017a).



Source: CARB 2017a

Exhibit 15-1. 2015 California Greenhouse Gas Emissions Inventory by Sector

As described below, California has implemented several programs and regulatory measures to reduce GHG emissions. Exhibit 15-2 demonstrates California's progress in achieving statewide GHG emissions reduction targets. Since 2007, California's GHG emissions have been declining; GHG emissions have continued to decline even as population and gross domestic product have increased. Per-capita GHG emissions in 2015 were 19 percent lower than the peak per-capita GHG emissions recorded in 2001. Similarly, GHG emissions per million dollars of gross domestic product have decreased by 33 percent since the peak in 2001 (CARB 2017b).



Metric	Associated 2015 Value
GDP	2.2 trillion (2009 $)
Population	39.1 million
GHG Emissions	440.36 MMTCO$_2$e
GHG Emissions per Capita	11.3 metric tons CO$_2$e per person
GHG Emissions per GDP	197 metric tons CO$_2$e per million dollars

Source: CARB 2017b

Exhibit 15-2. Trends in California Greenhouse Gas Emissions (Years 2000 to 2015)

GLOBAL WARMING POTENTIAL

GWP is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time the gas remains in the atmosphere (its "atmospheric lifetime"). The GWP of each gas is measured relative to CO_2; therefore, CO_2 has a GWP of 1. The other main GHGs that have been attributed to human activity include methane, which has a GWP of 28, and nitrous oxide, which has a GWP of 265 (IPCC 2019). For example, 1 ton of methane has the same contribution to the greenhouse effect as approximately 28 tons of CO_2. GHGs with lower emissions rates than CO_2 may still contribute to climate change, because they are more effective than CO_2 at absorbing outgoing infrared radiation (i.e., they have a high GWP). The concept of Carbon Dioxide Equivalent (CO_2e) is used to account for the different GWP potentials of GHGs to absorb infrared radiation. GHG emissions are typically measured in terms of pounds or tons of CO_2e, and are often expressed in metric tons (MT) CO_2e.

Climate change is a global issue because GHGs can have global effects, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern (see Section 3.3, "Air Quality"). Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about 1 day), GHGs have long atmospheric lifetimes (1 year to several thousand years), or long enough to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule depends on multiple variables, more CO_2 is currently emitted into the atmosphere than is stored or "sequestered."

15.1.3 ENERGY SERVICES AND DEMANDS

ELECTRICAL AND NATURAL GAS SERVICES

In 2016, the total system power for California was 290,567 gigawatt-hours (GWh) of electricity, of which approximately 198,227 GWh of electricity was generated in-state (CEC 2017a).

In Placer County, including the city of Auburn, electrical and natural gas services are provided by Pacific Gas and Electric Company (PG&E), one the largest combined natural gas and electrical energy companies in the United States. PG&E generates, transmits, and distributes electrical service to approximately 16 million people throughout its approximately 70,000-square-mile service area, which stretches north to south in California from Eureka to Bakersfield and west to east from the Pacific Ocean to the Sierra Nevada (PG&E 2017a).

PG&E owns approximately 106,700 circuit miles of electrical distribution lines and 18,400 circuit miles of electrical transmission lines. In 2016, PG&E delivered approximately 83,407 GWh of electricity within its service area (CEC 2017b); Placer County consumed approximately 3.5 percent (2,938 GWh) of that total (CEC 2017c).

PG&E provides natural gas service to Auburn through portions of its approximately 42,000 miles of natural gas distribution pipelines. Total natural gas throughput for PG&E is approximately 970 billion cubic feet (PG&E 2017b). In 2016, natural gas consumption in the PG&E service area totaled approximately 4,560 million therms (CEC 2017d), less than 1 percent (84 million therms) of which was consumed by users in Placer County (CEC 2017e).

ENERGY SOURCES

PG&E provides power from a variety of sources, including nuclear, hydroelectric, natural gas, and renewable energy resources such as wind, geothermal, biomass, solar, and small hydro, as detailed in Table 15-1 (PG&E 2017c). In 2016, 69 percent of energy delivered by PG&E was from non-GHG-generating sources. PG&E owns and operates four solar plants, and has connected more than 300,000 private rooftop solar customers to its energy grid. PG&E's hydroelectric system spans nearly 500 miles and has a generating capacity of nearly 3,900 megawatts total from 66 powerhouses.

Table 15-1. Pacific Gas and Electric Company Electrical Power Mix, 2016

Electrical Sources	Percent
Non-emitting Nuclear	24*
Large Hydroelectric	12*
Renewable[1]	33*
Natural Gas/Other	17
Other Unspecified[2]	14

Notes:

[1] Renewable energy sources include wind, geothermal, biomass, solar, and small hydro. These energy sources are considered eligible to meet California's renewable portfolio standard of 33 percent renewable energy generation by 2020.

[2] "Other unspecified" sources refer to electricity that is not traceable to specific generation sources by any auditable contract.

* These resources are greenhouse gas–free.

Source: PG&E 2017c

ENERGY USE FOR TRANSPORTATION

Transportation is the largest energy-consuming sector in California, accounting for approximately 39 percent of all energy use in the state (U.S. Energy Information Administration 2016). More motor vehicles are registered in California than in any other state, and commute times in California are among the longest in the country.

Types of transportation fuel have diversified in California and elsewhere. Historically gasoline and diesel fuel accounted for nearly all demand; now, however, numerous options are available, including ethanol, natural gas, electricity, and hydrogen. Despite advancements in alternative fuels and clean-vehicle technologies, gasoline and diesel remain the primary fuels used for transportation in California, with 15.1 billion gallons of gasoline and 4.2 billion gallons of diesel consumed in 2015 (CEC 2017f, 2017g).

The Sacramento Area Council of Governments (SACOG) prepared a regional analysis of vehicle miles traveled (VMT) and found average daily VMT for Placer County, excluding Tahoe Basin, to be approximately 8,605. This travel demand is forecast to increase to 11,360 in 2020 and to 13,762 in 2036 under the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) (SACOG 2016). Within the SACOG region (which includes Placer County), the population growth rate has been greater than the rate of increase of total VMT, resulting in a reduction in VMT per capita from 2000 through 2012. VMT forecasts project a continuation of this declining per-capita VMT trend for the region through 2036 (SACOG 2016). The SACOG 2016 MTP/SCS identifies several policies and factors as supporting this declining trend in per-capita VMT. Among these factors are the trend toward more compact development, with more residents able to find jobs, schools, shopping, and other activities closer to their place of residence, and proposed improvements in transit and walkability that promote a shift away from reliance on private vehicles for transportation.

15.2 REGULATORY SETTING

Although federal, state, regional, and local GHG-related plans, policies, and regulations do not directly apply to the proposed project, the information below is helpful for understanding the cumulative context for GHG emissions impacts and strategies to reduce GHG emissions.

15.2.1 FEDERAL PLANS, POLICIES, REGULATIONS, AND LAWS

The U.S. Environmental Protection Agency (EPA) is responsible for implementing the federal Clean Air Act (CAA). On April 2, 2007, the U.S. Supreme Court held that EPA must consider regulation of GHG emissions from motor vehicles. In *Massachusetts v. Environmental Protection Agency et al.,* 12 states and cities (including California) along with several environmental organizations sued to require EPA to regulate GHGs as pollutants under the CAA (127 S. Ct. 1438 [2007]). The Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and that EPA has the authority to regulate GHGs.

U.S. ENVIRONMENTAL PROTECTION AGENCY "ENDANGERMENT" AND "CAUSE OR CONTRIBUTE" FINDINGS

On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the CAA:

- *Endangerment Finding:* The current and projected concentrations of the six key GHGs—CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorinated chemicals, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.

- *Cause or Contribute Finding:* The combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to GHG pollution, which threatens public health and welfare.

MANDATORY GREENHOUSE GAS REPORTING RULE

On September 22, 2009, EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year 2008 Consolidated Appropriations Act (House of Representatives Bill 2764; Public Law 110-161), which required EPA to develop "…mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy…." The Reporting Rule applies to most entities that emit 25,000 MT CO_2e or more per year. Since 2010, facility owners have been required to submit an annual GHG emissions report with detailed calculations of the facility's GHG emissions. The Reporting Rule also mandates compliance with recordkeeping and administrative requirements to enable EPA to verify annual GHG emissions reports.

COUNCIL ON ENVIRONMENTAL QUALITY GUIDANCE

On December 18, 2014, the Council on Environmental Quality (CEQ) released revised draft guidance that superseded the draft GHG and climate change guidance released by CEQ in February 2010. The revised draft guidance applied to all proposed federal agency actions, including land and resource management actions. This guidance explained that agencies should consider both the potential effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the implications of climate change for the environmental effects of a proposed action (CEQ 2014). The guidance encouraged agencies to draw from their experience and expertise to determine the appropriate level (broad, programmatic, or project- or site-specific) and type (quantitative or qualitative) of analysis required to comply with the National Environmental Policy Act. The guidance recommended that agencies consider emissions of 25,000 MT CO_2e per year as a reference point below which a quantitative analysis of GHG emissions is not recommended unless it is easily accomplished based on available tools and data (CEQ 2014).

On August 1, 2016, an updated version of the CEQ guidelines was published. This document did not establish a numeric threshold for GHG emissions. Agencies were directed to consider the potential effects of a proposed action and alternatives on climate change as indicated by assessing GHG emissions (e.g., to include carbon sequestration where applicable) (CEQ 2016). However, this guidance was withdrawn on April 5, 2017 (CEQ 2017). The withdrawn guidance was not a regulation and the withdrawal does not change any law, regulation, or other legally binding requirement.

U.S. ENVIRONMENTAL PROTECTION AGENCY AND NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION STANDARDS

EPA and the National Highway Traffic Safety Administration (NHTSA) implemented national GHG emission and fuel economy standards for model year 2012–2016 light-duty cars and trucks. The second phase of the standards includes GHG and fuel economy standards for model years 2017–2025. The 2017–2025 standards are anticipated to save approximately 4 billion barrels of oil and 2 billion MT of GHG emissions. In 2025, if all

standards are met through fuel efficiency improvements, the average industry fleetwide fuel efficiency for light-duty cars and trucks would be approximately 54.5 miles per gallon (EPA 2012).

In addition to standards for light-duty cars and trucks, EPA and NHTSA have implemented Phase 1 of the Medium- and Heavy-Duty Vehicle GHG Emissions and Fuel Efficiency Standards, which apply to model years 2014–2018. It is anticipated that medium- and heavy-duty vehicles built to these standards from 2014–2018 will reduce CO_2 emissions by approximately 270 million MT over their lifetimes (EPA 2012). Phase 2 of these standards apply to model years 2021–2027 and would reduce GHG emissions by 1 billion MT over the lifetimes of those vehicles (EPA 2015). In addition to reducing GHG emissions and improving fuel efficiency, the standards are anticipated to generate research and development jobs focused on advanced cost-effective technologies for cleaner and more efficient commercial vehicles.

RENEWABLE FUEL STANDARD PROGRAM

Created by the Energy Policy Act of 2005, which amended the CAA, the Renewable Fuel Standard program established requirements for volumes of renewable fuel used to replace petroleum-based fuels. The four renewable fuels accepted as part of the Renewable Fuel Standard program are biomass-based diesel, cellulosic biofuel, advanced biofuel, and total renewable fuel. The 2007 Energy Independence and Security Act expanded the program and its requirements to include long-term goals of using 36 billion gallons of renewable fuels and extending annual renewable-fuel volume requirements to year 2022. The four renewable fuels have specific renewable fuel-blending requirements for obligated parties such as refiners and importers of gasoline or diesel fuel. EPA implements the program in consultation with U.S. Departments of Agriculture and Energy.

15.2.2 STATE PLANS, POLICIES, REGULATIONS, AND LAWS

The legal framework for GHG emission reductions has come about through executive orders, legislation, and regulations. The major components of California's climate change initiatives are outlined below.

ASSEMBLY BILL 1493

Assembly Bill (AB) 1493 required that CARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state." These stricter emissions standards were designed to apply to automobiles and light trucks beginning with model year 2009. In June 2009, the EPA Administrator granted a CAA waiver of preemption to the State of California, allowing the state to implement its own GHG emissions standards for motor vehicles beginning with model year 2009. California agencies worked with federal agencies to conduct joint rulemaking to reduce GHG emissions for passenger car model years 2017–2025.

EXECUTIVE ORDER S-3-05

Executive Order S-3-05, issued in recognition of California's vulnerability to the effects of climate change, set forth the following target dates by which statewide GHG emissions would be progressively reduced: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

ASSEMBLY BILL 32

In 2006, California enacted AB 32, the California Global Warming Solutions Act (California Health and Safety Code Section 38500 et seq.). AB 32 further details and puts into law the midterm GHG reduction target established in Executive Order S-3-05: reduce GHG emissions to 1990 levels by 2020. AB 32 also identifies CARB as the state agency responsible for designing and implementing emissions limits, regulations, and other measures to meet the target.

In December 2008, CARB adopted the Climate Change Scoping Plan (Scoping Plan), which includes California's main strategies for achieving the GHG reductions required by AB 32 (CARB 2008). The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of California's GHG inventory. CARB acknowledges that land use planning decisions will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emissions sectors.

CARB is required to update the Scoping Plan at least once every 5 years to evaluate progress and develop future inventories that may guide this process. CARB approved the *First Update to the Climate Change Scoping Plan: Building on the Framework* (2014 Scoping Plan Update) in June 2014 (CARB 2014). The 2014 Scoping Plan Update includes a status of the 2008 Scoping Plan measures and other federal, state, and local efforts to reduce GHG emissions in California, and potential actions to further reduce GHG emissions by 2020. The 2014 Scoping Plan Update determined that the state is on schedule to achieve the 2020 target (i.e., 1990 levels by 2020). However, an accelerated reduction in GHG emissions is required to achieve the Executive Order S-3-05 emissions reduction target of 80 percent below 1990 levels by 2050.

The statewide measures adopted under the direction of AB 32, and as outlined in the Scoping Plan, would reduce GHG emissions associated with existing and new development. In November 2017, CARB released *California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target* (2017 Scoping Plan Update) (CARB 2017c). The 2030 target of a 40 percent reduction in GHG emissions below 1990 statewide GHG emissions (consistent with Executive Order B-30-15, which is outlined below) guides the 2017 Scoping Plan Update (CARB 2017c). The 2017 Scoping Plan Update establishes a plan of action, consisting of a variety of strategies to be implemented rather than a single solution, for California to reduce statewide emissions by 40 percent by 2030 compared to 1990 levels (CARB 2017c).

EXECUTIVE ORDER B-30-15

In April 2015, Governor Edmund G. Brown Jr. issued an executive order establishing a statewide GHG reduction goal of 40 percent below 1990 levels by 2030. The emission reduction target acts as an interim goal between the AB 32 goal (i.e., achieve 1990 emission levels by 2020) and the goal in Governor Brown's Executive Order S-3-05 of reducing statewide emissions 80 percent below 1990 levels by 2050. In addition, the executive order aligns California's 2030 GHG reduction goal with the European Union's reduction target (i.e., 40 percent below 1990 levels by 2030) that was adopted in October 2014.

SENATE BILL 32

Approval of Senate Bill (SB) 32 in September 2016 extended the provisions of AB 32 from 2020 to 2030 with a new target of 40 percent below 1990 levels by 2030. The companion bill, AB 197, added two nonvoting members to CARB; created the Joint Legislative Committee on Climate Change Policies, consisting of at least three

senators and three Assembly members; required additional annual reporting of emissions; and required that Scoping Plan updates include alternative compliance mechanisms for each statewide reduction measure, along with market-based compliance mechanisms and potential incentives.

EXECUTIVE ORDER S-1-07

Executive Order S-1-07 acknowledges that the transportation sector is the main source of GHG emissions in California. The order established a goal of reducing the carbon intensity of fuels for mobile, stationary, and portable emissions sources sold in California by a minimum of 10 percent by 2020. It also directed CARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

SENATE BILL 97

SB 97, signed by the Governor in August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directed the Governor's Office of Planning and Research to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The California Natural Resources Agency adopted those guidelines on December 30, 2009, and the guidelines became effective March 18, 2010.

SENATE BILL 375

SB 375, signed by the Governor in September 2008, aligned regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 required metropolitan planning organizations (MPOs) to adopt a sustainable communities strategy that will prescribe land use allocation in that MPO's regional transportation plan. CARB adopted regional GHG targets for passenger vehicles and light trucks for 2020 and 2035 for the 18 MPOs in California. If the combination of measures in the SCS would not meet the regional targets, the MPO must prepare a separate "alternative planning strategy" to meet the targets.

CALIFORNIA AIR RESOURCES BOARD ADVANCED CLEAN CARS PROGRAM/ZERO EMISSION VEHICLE PROGRAM

AB 1493 (Chapter 200, Statutes of 2002), also known as the Pavley regulations, required CARB to adopt regulations by January 1, 2005, that would result in the achievement of the "maximum feasible" reduction in GHG emissions from vehicles used in the state primarily for noncommercial, personal transportation.

In January 2012, CARB approved a new emissions-control program for model years 2017–2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards called Advanced Clean Cars (California Code of Regulations [CCR] Title 13, Sections 1962.1 and 1962.2 [13 CCR Sections 1962.1 and 1962.2]). The Advanced Clean Cars requirements include new GHG standards for model year 2017–2025 vehicles. CARB anticipates that the new standards will reduce motor vehicle GHG emissions by 34 percent in 2025. A midterm review of the program, released in 2017, includes CARB's technical analysis of adopted GHG and particulate matter emission standards for low-emission vehicles and regulatory requirements for zero-emission vehicles, as well as recommended next steps for each of the adopted requirements (CARB 2017d).

The Advanced Clean Cars program also includes the Low-Emission Vehicle III amendments to the low-emission vehicle regulations (13 CCR Section 1900 et seq.), the Zero-Emission Vehicle program, and the Clean Fuels Outlet regulation. The Zero-Emission Vehicle program is designed to achieve California's goals for long-term emission reductions by requiring manufacturers to offer for sale specific numbers of the very cleanest cars available. These zero-emission vehicles, which include battery electric, fuel cell, and plug-in hybrid electric vehicles, have now entered the marketplace. They are expected to be fully commercial by 2020. The Clean Fuels Outlet regulation is intended to ensure that fuels such as electricity and hydrogen are available to meet the needs of the new advanced technology vehicles as they come to market.

EXECUTIVE ORDER B-16-12

Executive Order B-16-12 orders state entities under the direction of the Governor including CARB, the California Energy Commission, and the California Public Utilities Commission to support the rapid commercialization of zero-emission vehicles. The order directs these entities to achieve various benchmarks related to zero-emission vehicles, including:

- infrastructure to support up to 1 million zero-emission vehicles by 2020,
- widespread use of zero-emission vehicles for public transportation and freight transport by 2020,
- more than 1.5 million zero-emission vehicles on California roads by 2025,
- annual displacement of at least 1.5 billion gallons of petroleum fuels by 2025, and
- a reduction of GHG emissions from the transportation sector equaling 80 percent below 1990 levels by 2050.

EXECUTIVE ORDER S-01-07 (LOW CARBON FUEL STANDARD)

Executive Order S-01-07 (17 CCR Section 95480 et seq.) requires the state to achieve a 10 percent or greater reduction by 2020 in the average fuel carbon intensity for transportation fuels in California regulated by CARB. CARB identified the Low Carbon Fuel Standard as a discrete early-action item under AB 32, and issued the final resolution (No. 09-31) adopting the standard on April 23, 2009. CARB readopted the Low Carbon Fuel Standard in 2015.

SENATE BILLS 1078 AND 107, EXECUTIVE ORDERS S-14-08 AND S-21-09, AND SENATE BILL 350

SB 1078 (Chapter 516, Statutes of 2002) required retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

Executive Order S-14-08 expanded the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. Executive Order S-21-09 directs CARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020.

The 33 percent-by-2020 goal and requirements were codified in April 2011 with SB X1-2. This new Renewable Portfolio Standard applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. Consequently, PG&E, which would be the electricity provider for the proposed project, must meet the 33 percent goal by 2020. SB 350 (2015) increased the renewable-source requirement to 50 percent by 2030.

These requirements reduce the carbon content of electricity generation, and would reduce GHG emissions associated with both existing and new development, including new development on the project site.

In January 2016, the California Public Utilities Commission reported that California's three largest investor-owned utilities—PG&E, Southern California Edison, and San Diego Gas and Electric Company—collectively provided 26.6 percent of their 2014 retail electricity sales using renewable sources and are continuing progress toward meeting the future 2020 requirements (CPUC 2016).

CALIFORNIA GREEN BUILDING STANDARDS CODE

In January 2010, the State of California adopted the California Green Building Standards Code, which establishes mandatory green building standards for all buildings in California. The code covers five categories: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and indoor environmental quality. These standards include a set of minimum requirements and more rigorous voluntary measures for new construction projects to achieve specific green building performance levels. This code went into effect as part of local jurisdictions' building codes on January 1, 2011.

The 2013 update to the California Green Building Standards Code became effective in January 2014. Another update to the energy efficiency standards became effective January 1, 2017. This update to the Building Energy Efficiency Standards will improve the energy efficiency of newly constructed buildings and of additions and alterations to existing buildings. The new standards address nonresidential development as well, and build on the energy efficiency progress made in previous iterations.

15.2.3 LOCAL PLANS, POLICIES, REGULATIONS, AND ORDINANCES

SACRAMENTO AREA COUNCIL OF GOVERNMENTS

SACOG is designated by the U.S. government and the State of California as the MPO for the area and is responsible for developing a regional transportation plan (i.e., MTP) in coordination with Sacramento, Yolo, Yuba, Sutter, El Dorado, and Placer counties and the 22 cities within those counties (excluding the Tahoe Basin). This plan incorporates countywide transportation planning covering a 20-year planning horizon, which must be updated every 4 years. As a requirement of SB 375, MPOs need to develop a sustainable communities strategy as part of the MTP to identify strategies and policies to reduce GHG emissions from passenger vehicles to meet state targets established by CARB.

SACOG's MTP/SCS for 2035 was adopted on April 19, 2012. SACOG's MTP/SCS calls for meeting and exceeding CARB's GHG reduction goals for passenger vehicles and light-duty trucks of 7 percent by 2020 and 16 percent by 2035, where 2005 is the baseline year for comparison (SACOG 2012). SACOG's 2016 MTP/SCS was adopted on February 18, 2016 (SACOG 2016). The 2016 MTP/SCS demonstrates how the region can accommodate expected regional population growth and the increased demand for transportation in the region, while also showing that the region could achieve a reduction in per-capita passenger VMT.

SACOG has created a framework for describing the MTP/SCS that is made up of community types. Local land use plans (e.g., adopted and proposed general plans, specific plans, master plans, corridor plans) were divided into one of five community types based on the location of the plans. The project site is in the community type identified by the MTP/SCS as a "Developing Community" (SACOG 2016):

Developing Communities are typically, though not always, situated on vacant land at the edge of existing urban or suburban development; they are the next increment of urban expansion. Developing Communities are identified in local plans as special plan areas, specific plans, or master plans and may be residential-only, employment-only, or a mix of residential and employment uses. Transportation options in Developing Communities often depend, to a great extent, on the timing of development. Bus service, for example, may be infrequent or unavailable today, but may be available every 30 minutes or less once a community builds out. Walking and bicycling environments vary widely though many Developing Communities are designed with dedicated pedestrian and bicycle trails.

The MTP/SCS includes 31 policies and multiple strategies to address the principles of smart land use; environmental quality and sustainability; financial stewardship; economic vitality; access and mobility; and equity and choice. Highlights of MTP/SCS policies include:

- Implement the Rural-Urban Connection Strategy (RUCS) which ensures good rural-urban connections and promotes the economic viability of rural lands while also protecting open space resources to expand and support the implementation of the Blueprint growth strategy and the MTP/SCS.
- Support and invest in strategies to reduce vehicle emissions that can be shown as cost effective to help achieve and maintain clean air and better public health.
- Use the best information available to implement strategies and projects that lead to reduced GHG emissions.
- Consider strategies to green the system, such as quieter pavements, cleaner vehicles, and lower energy equipment where cost effective, and consider regional funding contributions to help cover the incremental cost.
- SACOG encourages locally determined developments consistent with Blueprint principles and local circulation plans to be designed with walking, bicycling, and transit use as primary transportation consideration.

PLACER COUNTY AIR POLLUTION CONTROL DISTRICT

Placer County Air Pollution Control District (PCAPCD) regulates local air quality and air pollutant emissions sources in Placer County. In its *CEQA Air Quality Handbook*, PCAPCD includes a chapter that outlines guidance for analyzing construction emissions, including GHG emissions, and a GHG-specific chapter that discusses the recommended approach to evaluating operational GHG emissions. PCAPCD also includes a list of analysis expectations and methodologies for CEQA analyses.

On October 13, 2016, the PCAPCD Board of Directors adopted the Review of Land Use Projects under CEQA Policy, which established thresholds of significance for GHG emissions. In developing the thresholds, the district took into account health-based air quality standards and the strategies to attain air quality standards, historical CEQA project review data in Placer County, statewide regulations to achieve GHG emission reduction targets, and the geographic and land use features of Placer County. PCAPCD's GHG thresholds of significance are discussed further in Section 15.3.2, "Thresholds of Significance," below.

15.3 IMPACTS

15.3.1 ANALYSIS METHODOLOGY

GHG emissions have the potential to adversely affect the environment because such emissions contribute cumulatively to global climate change. It is unlikely that a single project will contribute significantly to climate change, but cumulative emissions from many projects could affect global GHG concentrations and the climate system. Therefore, impacts are analyzed within the context of the potential contribution to the cumulatively significant impact of climate change.

15.3.2 THRESHOLDS OF SIGNIFICANCE

Based on the State CEQA Guidelines, the proposed project would result in a potentially significant impact related to GHG emissions if it would:

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

PCAPCD has developed recommendations for GHG emissions significance thresholds: a "bright line" threshold of 10,000 MT CO_2e per year for the construction and operational phases of development projects, or for stationary sources (PCAPCD 2017); and a "*de minimis*" threshold of 1,100 MT CO_2e per year for the operational phases of projects. According to PCAPCD's guidance, one of the efficiency thresholds should be used for projects where the operational phase would exceed this *de minimis* level. The efficiency thresholds reflect different expectations for urban and rural development in Placer County and for residential and nonresidential developments:

- *Residential projects:* Urban threshold, 4.5 MT CO_2e per year per capita; rural threshold, 5.5 MT CO_2e per year per capita
- *Nonresidential projects:* Urban threshold, 26.5 MT CO_2e per year per thousand square feet of building space; rural threshold, 27.3 MT CO_2e per year per thousand square feet of building space

According to PCAPCD, local lead agencies would identify whether each project is in an urban or a rural setting (PCAPCD 2016).

Appendix F of the State CEQA Guidelines provides guidance for assessing impacts related to energy supplies, focusing on the goal of conserving energy by ensuring that projects use energy wisely and efficiently, including a list of six environmental impacts related to use of energy in Section II(c). For the purposes of this SEIR, energy impacts are considered significant if the proposed project would:

- develop land use patterns that cause wasteful, inefficient, and unnecessary consumption of energy; or
- require or result in the construction of new energy production and/or transmission facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

15.3.3 IMPACT ANALYSIS

IMPACT 15-1	Greenhouse Gas Emissions and Energy— *The project would generate greenhouse gas emissions, either directly or indirectly, that could have a significant impact on the environment.*
Significance	*Less than Significant*
Mitigation Proposed	*None Warranted*
Residual Significance	*Less than Significant*

2019 HFRP TRAIL EXPANSION IMPACT ANALYSIS

The project would include direct and indirect GHG emissions from project construction and operations. Construction is considered a direct source since these emissions occur at the site. Direct operational-related GHG emissions for the proposed project would include emissions from area and mobile sources, while indirect emissions are from energy consumption, water demand, and solid waste.

Short-term construction of the project would generate GHG emissions. Construction-related GHG emissions would be generated by vehicle engine exhaust from construction equipment, haul trips, and construction worker trips. GHG emissions generated by the project would consist primarily of CO_2. Emissions of other GHGs, such as CH_4 and N_2O, are important with respect to global climate change; however, even when considering the higher GWPs of these other GHGs, their contribution to total GHG emissions is small compared with CO_2 emissions from the project's emission sources (i.e., construction equipment and on-road vehicles). However, where appropriate emission factors were available, emissions of CH_4 and N_2O were included in the analysis of the project.

Construction of the project would generate a peak of approximately 3,791 MT CO_2e during the grading phase. These emissions are generated by operation of heavy-duty construction equipment, haul trucks, and construction worker vehicles. The construction-related GHG emissions would not exceed the PCAPCD construction threshold of 10,000 MTCO_2e per year. Therefore, project construction would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment.

Operational or long-term emissions occur over the life of the proposed project. Sources of emissions may include motor vehicles and trucks, energy usage, water usage, waste generation, and area sources, such as landscaping activities. As described above the PCAPCD adopted a GHG operational threshold of 10,000 MT CO_2e per year and a De Minimis level threshold of 1,100 MT CO_2e. According to the PCAPCD, the De Minimis level for the operational phases represents an emissions level which can be considered as less than cumulatively considerable and excluded from additional analysis. Modeling output for operation of the proposed project is estimated to be approximately 6,419 MT CO_2e per year, which exceeds the PCAPCD De Minimis threshold but not the operational threshold of 10,000 MT CO_2e per year that represents a bright line threshold. Since the PCAPCD does not have an efficiency matrix for "Parks" land uses in order to utilize the De Minimis threshold, the bright line

threshold was utilized for this SEIR analysis. GHG impacts would be under the operational threshold of 10,000 MT CO_2e and would therefore be **less than significant**.

IMPACT 15-2	Greenhouse Gas Emissions and Energy— *The project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing greenhouse gas emissions.*
Significance	*Less than Significant*
Mitigation Proposed	*None Warranted*
Residual Significance	*Less than Significant*

None of the measures listed in the CARB *Climate Change Scoping Plan* (CARB 2008), which contains the main strategies that California would use to achieve emission reductions necessary to meet the goals of AB 32, relate directly to construction activities. The scoping plan includes some measures that would indirectly address GHG emissions levels associated with construction activity, such as the phasing in of cleaner technology for diesel engine fleets (including construction equipment) and the development of a low-carbon fuel standard. However, successful implementation of these measures depends primarily on the development of laws and policies at the state level. It is assumed that those policies formulated under the mandate of AB 32 that apply to construction-related activity, either directly or indirectly, would be implemented during construction of the project, if those policies and laws were in fact developed and adopted before the start of project construction. Therefore, project construction is not expected to conflict with the scoping plan.

The proposed project would be required to comply with existing regulations or would be directly affected by the outcomes (vehicle trips and energy consumption would be less carbon intensive due to statewide compliance with future low carbon fuel standard amendments and increasingly stringent Renewable Portfolio Standards). As such, the project would not conflict with any other state-level regulations pertaining to GHGs. Thus, implementation of the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and this impact would be **less than significant**.

15.4 MITIGATION MEASURES

No mitigation measures are necessary.