

## 4.7 Greenhouse Gases

This section describes the existing greenhouse gas (GHG) conditions, identifies associated regulatory requirements, evaluates potential impacts, and establishes mitigation measures related to implementation of the Pacifica Project (proposed project or project). The following analysis is based on the Air Quality and Greenhouse Gas Emissions Technical Report prepared by Dudek in June 2023, which is included as Appendix C of this environmental impact report (EIR).

### 4.7.1 Existing Conditions

#### Climate Change Overview

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind patterns, lasting for an extended period of time (decades or longer). The earth's temperature depends on the balance between energy entering and leaving the planet's system. Many factors, both natural and human, can cause changes in the earth's energy balance, including variations in the sun's energy reaching the earth, changes in the reflectivity of the earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by the earth's atmosphere (EPA 2022a).

The greenhouse effect is the trapping and build-up of heat in the atmosphere (troposphere) near the earth's surface. The greenhouse effect traps heat in the troposphere through a threefold process as follows: short-wave radiation emitted by the sun is absorbed by the earth, the earth emits a portion of this energy in the form of long-wave radiation, and GHGs in the upper atmosphere absorb this long-wave radiation and emit it into space and toward the earth. The greenhouse effect is a natural process that contributes to regulating the earth's temperature and creates a pleasant, livable environment on the earth. Human activities that emit additional GHGs to the atmosphere increase the amount of infrared radiation that gets absorbed before escaping into space, thus enhancing the greenhouse effect and causing the earth's surface temperature to rise.

The scientific record of the earth's climate shows that the climate system varies naturally over a wide range of time scales and that, in general, climate changes prior to the Industrial Revolution in the 1700s can be explained by natural causes, such as changes in solar energy, volcanic eruptions, and natural changes in GHG concentrations. Recent climate changes, in particular the warming observed over the past century, however, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of that warming since the mid-twentieth century and are the most significant driver of observed climate change (IPCC 2014; EPA 2022a). Human influence on the climate system is evident from the increasing GHG concentrations in the atmosphere, positive radiative forcing, observed warming, and improved understanding of the climate system (IPCC 2014). The atmospheric concentrations of GHGs have increased to levels unprecedented in the last 800,000 years, primarily from fossil fuel emissions and secondarily from emissions associated with land use changes (IPCC 2014). Continued emissions of GHGs will cause further warming and changes in all components of the climate system.

#### Greenhouse Gases

A GHG is any gas that absorbs infrared radiation in the atmosphere; in other words, GHGs trap heat in the atmosphere. As defined in California Health and Safety Code Section 38505(g) for purposes of administering many of the state's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and nitrogen

trifluoride (NF<sub>3</sub>) (see also 14 CCR 15364.5).<sup>1</sup> Some GHGs, such as CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, are emitted into the atmosphere through natural processes and human activities. Of these gases, CO<sub>2</sub> and CH<sub>4</sub> are emitted in the greatest quantities from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO<sub>2</sub>, include fluorinated gases, such as HFCs, PFCs, and SF<sub>6</sub>, which are associated with certain industrial products and processes. The following paragraphs provide a summary of the most common GHGs and their sources.<sup>2</sup>

**Carbon Dioxide.** CO<sub>2</sub> is a naturally occurring gas and a by-product of human activities and is the principal anthropogenic GHG that affects the earth's radiative balance. Natural sources of CO<sub>2</sub> include respiration of bacteria, plants, animals, and fungus; evaporation from oceans; volcanic out-gassing; and decomposition of dead organic matter. Human activities that generate CO<sub>2</sub> include combustion of fuels such as coal, oil, natural gas, and wood, and changes in land use.

**Methane.** CH<sub>4</sub> is produced through both natural and human activities. CH<sub>4</sub> is a flammable gas and is the main component of natural gas. CH<sub>4</sub> is produced through anaerobic (without oxygen) decomposition of waste in landfills, flooded rice fields, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.

**Nitrous Oxide.** N<sub>2</sub>O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N<sub>2</sub>O. Sources of N<sub>2</sub>O include soil cultivation practices (microbial processes in soil and water), especially the use of commercial and organic fertilizers, manure management, industrial processes (such as in nitric acid production, nylon production, and fossil-fuel-fired power plants), vehicle emissions, and using N<sub>2</sub>O as a propellant (such as in rockets, race cars, and aerosol sprays).

**Fluorinated Gases.** Fluorinated gases (also referred to as F-gases) are powerful, synthetic GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric substances that deplete ozone (O<sub>3</sub>) (e.g., chlorofluorocarbons, hydrochlorofluorocarbons [HCFCs], and halons). The most prevalent fluorinated gases include the following:

- **Hydrofluorocarbons.** HFCs are compounds containing only hydrogen, fluorine, and carbon atoms. HFCs are synthetic chemicals used as alternatives to O<sub>3</sub>-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are used in manufacturing.
- **Perfluorocarbons.** PFCs are a group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, with HFCs, to the O<sub>3</sub>-depleting substances. The two main sources of PFCs are primary aluminum production and semiconductor manufacturing. Since PFCs have stable molecular structures and do not break down through the chemical processes in the lower atmosphere, these chemicals have long lifetimes, ranging between 10,000 and 50,000 years.
- **Sulfur Hexafluoride.** SF<sub>6</sub> is a colorless gas that is soluble in alcohol and ether and is slightly soluble in water. SF<sub>6</sub> is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, and the magnesium industry, and as a tracer gas for leak detection.

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<sup>1</sup> California Health and Safety Code 38505 identifies seven greenhouse gases (GHGs) that the California Air Resources Board (CARB) is responsible for monitoring and regulating to reduce emissions: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, SF<sub>6</sub>, HFCs, PFCs, and NF<sub>3</sub>.

<sup>2</sup> The descriptions of GHGs are summarized from the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report (1995), IPCC Fourth Assessment Report (2007), CARB's Glossary of Air Pollution Terms (2015), and EPA's Glossary of Climate Change Terms (2017).

- **Nitrogen Trifluoride.**  $\text{NF}_3$  is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.
- **Chlorofluorocarbons.** Chlorofluorocarbons are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. Chlorofluorocarbons are chemically unreactive in the lower atmosphere (troposphere) and the production of chlorofluorocarbons was prohibited in 1987 due to the chemical destruction of stratospheric  $\text{O}_3$ .
- **Hydrochlorofluorocarbons.** HCFCs are a large group of compounds, whose structure is very close to that of chlorofluorocarbons—containing hydrogen, fluorine, chlorine, and carbon atoms—but including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants. HCFCs were also used in place of chlorofluorocarbons for some applications; however, their use in general is being phased out.

**Black Carbon.** Black carbon is a component of fine particulate matter, which has been identified as a leading environmental risk factor for premature death. It is produced from the incomplete combustion of fossil fuels and biomass burning, particularly from older diesel engines and forest fires. Black carbon warms the atmosphere by absorbing solar radiation, influences cloud formation, and darkens the surface of snow and ice, which accelerates heat absorption and melting. Black carbon is a short-lived species that varies spatially, which makes quantifying its global warming potential (GWP) difficult. Diesel particulate matter emissions are a major source of black carbon and are toxic air contaminants that have been regulated and controlled in California for several decades to protect public health. In relation to declining diesel particulate matter from the California Air Resources Board (CARB) regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California were reduced by 70% between 1990 and 2010, with 95% control expected by 2020 (CARB 2014).

**Water Vapor.** The primary source of water vapor is evaporation from the ocean, with additional vapor generated by sublimation (change from solid to gas) from ice and snow, evaporation from other water bodies, and transpiration from plant leaves. Water vapor is the most important, abundant, and variable GHG in the atmosphere and is necessary to maintain life.

**Ozone.** Tropospheric  $\text{O}_3$ , which is created by photochemical reactions involving gases from both natural sources and human activities, acts as a GHG. Stratospheric  $\text{O}_3$ , which is created by the interaction between solar ultraviolet radiation and molecular oxygen, plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric  $\text{O}_3$ , due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet-B radiation.

**Aerosols.** Aerosols are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

## Global Warming Potential

Gases in the atmosphere can contribute to climate change both directly and indirectly. Direct effects occur when the gas itself absorbs radiation. Indirect radiative forcing occurs when chemical transformations of the substance produce other GHGs, when a gas influences the atmospheric lifetimes of other gases, and/or when a gas affects atmospheric processes that alter the radiative balance of the earth (e.g., affect cloud formation or albedo) (EPA 2022a). The Intergovernmental Panel on Climate Change (IPCC) developed the GWP concept to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of 1 kilogram of a trace substance relative to

that of 1 kilogram of a reference gas (IPCC 2014). The reference gas used is CO<sub>2</sub>; therefore, GWP-weighted emissions are measured in metric tons of CO<sub>2</sub> equivalent (MT CO<sub>2</sub>e).

The current version of the California Emissions Estimator Model (CalEEMod) (version 2020.4.0) assumes that the GWP for CH<sub>4</sub> is 25 (so emissions of 1 MT of CH<sub>4</sub> are equivalent to emissions of 25 MT of CO<sub>2</sub>), and the GWP for N<sub>2</sub>O is 298, based on the IPCC's Fourth Assessment Report (IPCC 2007). The GWP values identified in CalEEMod were applied to the project.

## Sources of Greenhouse Gas Emissions

### Global Inventory

Anthropogenic GHG emissions worldwide in 2020 (the most recent year for which data is available) totaled approximately 49,800 million metric tons (MMT) of CO<sub>2</sub>e, excluding land use change and forestry (PBL 2022). The top six GHG emitters include China, the United States, the Russian Federation, India, Japan, and the European Union, which accounted for approximately 60% of the total global emissions, or approximately 30,270 MMT CO<sub>2</sub>e (PBL 2022). Table 4.7-1 presents the top GHG-emissions-producing countries.

**Table 4.7-1. Six Top GHG Producer Countries**

Emitting Country	2020 GHG Emissions (MMT CO <sub>2</sub> e) <sup>a,b</sup>
China	14,300
United States	5,640
European Union	3,440
India	3,520
Russian Federation	2,210
Japan	1,160
<b>Total</b>	<b>30,270</b>

**Source:** PBL 2022.

**Notes:** GHG = greenhouse gas; MMT CO<sub>2</sub>e = million metric tons of carbon dioxide equivalent.

<sup>a</sup> Column may not add due to rounding.

<sup>b</sup> GHG emissions do not include land use change and forestry-related GHG emissions.

### National Inventory

Per the U.S. Environmental Protection Agency (EPA) Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 to 2020 (EPA 2022b), total United States GHG emissions were approximately 5,981.4 MMT CO<sub>2</sub>e in 2020 (EPA 2022b). The primary GHG emitted by human activities in the United States was CO<sub>2</sub>, which represented approximately 94.7% of total GHG emissions (4,715 MMT CO<sub>2</sub>e). The largest source of CO<sub>2</sub>, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 87.2% of CO<sub>2</sub> emissions in 2020 (4,342.7 MMT CO<sub>2</sub>e). Total U.S. emissions have decreased by 7.3% from 1990 to 2020, down from a high of 15.7% above 1990 levels in 2007. Emissions decreased from 2019 to 2020 by 9.0% (590.4 MMT CO<sub>2</sub>e.). Net emissions (i.e., including sinks) were 5,222.4 MMT CO<sub>2</sub>e in 2020. Overall, net emissions decreased 10.6% from 2019 to 2020 and decreased 21.4% from 2005 levels. The sharp decline in emissions from 2019 to 2020 is largely due to the impacts of the coronavirus (COVID-19) pandemic on travel and economic activity; however, the decline also reflects the combined impacts of long-term trends in many factors, including population, economic growth, energy markets, technological changes including energy efficiency, and the carbon intensity of energy fuel choices. Between 2019 and 2020, the decrease in total GHG emissions was driven largely by a 10.5% decrease in CO<sub>2</sub> emissions from

fossil fuel combustion, including a 13.3% decrease in transportation sector emissions from less travel due to the COVID-19 pandemic and a 10.4% decrease in the electric power sector. The decrease in electric power sector emissions was due to a decrease in electricity demand of 2.5% since 2019 and also reflects the continued shift from coal to less carbon intensive natural gas and renewables (EPA 2022b).

### State Inventory

According to California's 2000–2020 GHG emissions inventory (2022 edition), California emitted approximately 369.2 MMT CO<sub>2e</sub> in 2020, including emissions resulting from out-of-state electrical generation (CARB 2022a). The sources of GHG emissions in California include transportation, industry, electric power production from both in-state and out-of-state sources, residential and commercial activities, agriculture, high-GWP substances, and recycling and waste. Table 4.7-2 presents California GHG emission source categories and their relative contributions to the emissions inventory in 2020.

Between 2000 and 2019, per-capita GHG emissions in California have dropped from a peak of 14.0 MT per person in 2001 to 10.5 MT per person in 2019, representing an approximate 25% decrease. In addition, total GHG emissions in 2019 were approximately 7 MMT CO<sub>2e</sub> lower than 2018 emissions (CARB 2022a).

**Table 4.7-2. GHG Emissions Sources in California**

Source Category	Annual GHG Emissions (MMT CO <sub>2e</sub> )	Percent of Total
Transportation	136.60	37
Industrial uses	73.84	20
Electricity generation <sup>a</sup>	59.07	16
Residential and commercial uses	36.92	10
Agriculture and forestry	33.22	9
High GWP substances	22.15	6
Recycling and waste	7.38	2
<b>Totals</b>	<b>369.2</b>	<b>100</b>

**Source:** CARB 2022a.

**Notes:** GHG = greenhouse gas; MMT CO<sub>2e</sub> = million metric tons of carbon dioxide equivalent; GWP = global warming potential. Emissions reflect 2020 California GHG inventory.

Totals may not sum due to rounding.

<sup>a</sup> Includes emissions associated with imported electricity, which account for 18.46 MMT CO<sub>2e</sub>.

Per capita GHG emissions in California have dropped from a 2001 peak of 13.8 MT per person to 9.3 MT per person in 2020, a 33% decrease. In 2016, statewide GHG emissions dropped below the 2020 GHG limit of 431 MMT CO<sub>2e</sub> and have remained below the limit since that time (CARB 2022a).

### Local Inventories

According to the GHG inventory data compiled by the Energy Policy Initiative Center, in 2012, the County (as defined to include all cities therein and unincorporated County areas) emitted 34.7 MMT CO<sub>2e</sub> (EPIC 2015).

The 2013 emissions inventory for the City is shown in Table 4.7-3 below.

**Table 4.7-3. City of Oceanside GHG Emissions by Sectors for 2013**

Source Category	Annual GHG Emissions (MT CO <sub>2</sub> e)	Percent of Total
Transportation	477,178	48.5
Electricity	251,524	25.6
Natural gas	162,447	16.5
Solid waste	40,615	4.1
Water <sup>1</sup>	27,420	2.8
Municipal operations	24,828	2.5
<b>Total</b>	<b>984,012</b>	<b>100</b>

**Source:** City of Oceanside 2019.

**Notes:** GHG = greenhouse gas; MT CO<sub>2</sub>e = metric tons of carbon dioxide equivalent.

GHG emissions for each category are rounded. Sums may not add up to totals due to rounding.

<sup>1</sup> Emissions associated with water and wastewater treatment at City-operated facilities were accounted for as municipal emissions. Water emissions include upstream emissions from import of water to the City.

### Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The 2014 IPCC Synthesis Report (IPCC 2014) indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. Signs that global climate change has occurred include warming of the atmosphere and ocean, diminished amounts of snow and ice, rising sea levels, and ocean acidification (IPCC 2014).

In California, climate change impacts have the potential to affect sea-level rise, agriculture, snowpack and water supply, forestry, wildfire risk, public health, frequency of severe weather events, and electricity demand and supply. The primary effect of global climate change has been a rise in average global tropospheric temperature. Reflecting the long-term warming trend since pre-industrial times, observed global mean surface temperature for the decade 2006–2015 was 0.87 °C (likely between 0.75 °C and 0.99 °C) higher than the average over the 1850–1900 period (IPCC 2018). Scientific modeling predicts that continued emissions of GHGs at or above current rates would induce more extreme climate changes during the twenty-first century than were observed during the twentieth century. Human activities are estimated to have caused approximately 1.0 °C (1.8 °F) of global warming above pre-industrial levels, with a likely range of 0.8 °C to 1.2 °C (1.4 °F to 2.2 °F) (IPCC 2018). Global warming is likely to reach 1.5 °C (2.7 °F) between 2030 and 2052 if it continues to increase at the current rate (IPCC 2018).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernible evidence that climate change is occurring in California and is having significant, measurable impacts in the state. Changes in the state's climate have been observed including an increase in annual average air temperature with record warmth from 2012 to 2016, more frequent extreme heat events, more extreme drought, a decline in winter chill, an increase in cooling degree days and a decrease in heating degree days, and an increase in variability of statewide precipitation (OEHHA 2018).

Warming temperatures and changing precipitation patterns have altered California's physical systems—the ocean, lakes, rivers, and snowpack—upon which the state depends. Winter snowpack and spring snowmelt runoff from the

Sierra Nevada and southern Cascade Mountains provide approximately one-third of the state's annual water supply. Impacts of climate on physical systems have been observed such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters (OEHHA 2018).

Impacts of climate change on biological systems, including humans, wildlife, and vegetation, have also been observed including climate change impacts on terrestrial, marine, and freshwater ecosystems. As with global observations, species responses include those consistent with warming: elevational or latitudinal shifts in range, changes in the timing of key plant and animal life cycle events, and changes in the abundance of species and in community composition. Humans are better able to adapt to a changing climate than plants and animals in natural ecosystems. Nevertheless, climate change poses a threat to public health as warming temperatures and changes in precipitation can affect vector-borne pathogen transmission and disease patterns in California as well as the variability of heat-related deaths and illnesses. In addition, since 1950, the area burned by wildfires each year has followed an increasing trend overall.

The California Natural Resources Agency (CNRA) has released four California Climate Change Assessments (2006, 2009, 2012, and 2018), which have addressed the following: acceleration of warming across the state, more intense and frequent heat waves, greater riverine flows, accelerating sea-level rise, more intense and frequent drought, more severe and frequent wildfires, more severe storms and extreme weather events, shrinking snowpack and less overall precipitation, and ocean acidification, hypoxia, and warming. In addition to the potential statewide effects of climate change, to address local and regional governments need for information to support action in their communities, the CNRA Fourth Assessment includes reports for nine regions of the state, including the San Diego Region, where the project is located. Key projected climate changes for the San Diego Region include the following (CNRA 2019):

- Temperature is projected to increase substantially, along with mean temperature, heat wave frequency will increase, with more intensity and longer duration.
- Precipitation will remain highly variable but will change in character, with wetter winters, drier springs, and more frequent and severe droughts punctuated by more intense individual precipitation events.
- Wildfire risk will increase in the future as climate warms. The risk for large catastrophic wildfires driven by Santa Ana wind events will also likely increase as a result of a drier autumns leading to low antecedent precipitation before the height of the Santa Ana wind season.
- The sea level along San Diego County's shoreline is expected to rise. High tides combined with elevated shoreline water levels produced by locally and distantly driven wind-driven waves will drive extreme events. Longer-term sea level will increase rapidly in the second half of the century and will be punctuated by short periods of storm-driven extreme sea levels that will imperil existing infrastructure, structures, and ecosystems with increasing frequency.

### 4.7.2 Regulatory Setting

#### Federal

##### Massachusetts v. EPA

In *Massachusetts v. EPA* (April 2007), the U.S. Supreme Court directed the EPA administrator to determine whether GHG emissions from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned

decision. In December 2009, the administrator signed a final rule with the following two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- The administrator found that elevated concentrations of GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, and SF<sub>6</sub>—in the atmosphere threaten the public health and welfare of current and future generations. This is the “endangerment finding.”
- The administrator further found the combined emissions of GHGs—CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, and HFCs—from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare. This is the “cause or contribute finding.”

These two findings were necessary to establish the foundation for regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act.

### Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (December 2007), among other key measures, would do the following, which would aid in the reduction of national GHG emissions (EPA 2007):

- Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022
- Set a target of 35 miles per gallon for the combined fleet of cars and light trucks by model year 2020 and direct the National Highway Traffic Safety Administration (NHTSA) to establish a fuel economy program for medium- and heavy-duty trucks and create a separate fuel economy standard for work trucks
- Prescribe or revise standards affecting regional efficiency for heating and cooling products and procedures for new or amended standards, energy conservation, energy-efficiency labeling for consumer electronic products, residential boiler efficiency, electric motor efficiency, and home appliances

### Federal Vehicle Standards

In response to a U.S. Supreme Court ruling, the Bush Administration issued Executive Order (EO) 13432 in 2007 directing the EPA, the Department of Transportation, and the Department of Energy to establish regulations that reduce GHG emissions from motor vehicles, non-road vehicles, and non-road engines by 2008. In 2009, the NHTSA issued a final rule regulating fuel efficiency and GHG emissions from cars and light-duty trucks for model year 2011, and in 2010, the EPA and NHTSA issued a final rule regulating cars and light-duty trucks for model years 2012–2016 (75 FR 25324–25728).

In 2010, President Barack Obama issued a memorandum directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO<sub>2</sub> in model year 2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021 (77 FR 62624–63200). On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks (EPA 2022c).

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014–2018 (76 FR 57106–57513). The standards for CO<sub>2</sub> emissions and fuel consumption are tailored to three main vehicle categories: combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles. According to the EPA, this regulatory program will reduce GHG emissions and fuel consumption for the affected vehicles by 6% to 23% over the 2010 baselines.

In August 2016, EPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program will apply to vehicles with model year 2018– 2027 for certain trailers, and model years 2021– 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks. The final standards are expected to lower CO<sub>2</sub> emissions by approximately 1.1 billion MT and reduce oil consumption by up to 2 billion barrels over the lifetime of the vehicles sold under the program (EPA and NHTSA 2016).

In August 2018, EPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards now in place, the 2018 proposal would increase U.S. fuel consumption by about half a million barrels per day (2% to 3% of total daily consumption, according to the Energy Information Administration) and would impact the global climate by 3/1000th of 1°C by 2100 (EPA and NHTSA 2018). California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives.

In 2019, EPA and NHTSA published the Safer Affordable Fuel-Efficient Vehicles Rule Part One: One National Program (SAFE-1), which revoked California’s authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. In March 2020, Part Two was issued, which set CO<sub>2</sub> emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model years 2021 through 2026. In March 2022, EPA reinstated California’s authority under the Clean Air Act to implement its own GHG emission standards and zero-emission vehicle sales mandate. EPA’s March 2022 action concludes its reconsideration of the 2019 SAFE-1 rule by finding that the actions taken under the previous administration as a part of SAFE-1 were decided in error and are now entirely rescinded.

### Inflation Reduction Act of 2022

The Inflation Reduction Act was signed into law by President Biden in August 2022. The bill includes specific investment in energy and climate reform and is projected to reduce GHG emissions within the United States by 40% as compared to 2005 levels by 2030. The bill allocates funds to boost renewable energy infrastructure (e.g., solar panels and wind turbines), includes tax credits for the purchase of electric vehicles, and includes measures that will make homes more energy efficient.

### State

The statewide GHG emissions regulatory framework is summarized below by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, solid waste, water, and other state regulations and goals. The following text describes EOs, legislation [assembly bills (AB) and senate bills (SB)], regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

## State Climate Change Targets

The state has taken a number of actions to address climate change. These include EOs, legislation, and CARB plans and requirements. These are summarized below.

**EO S-3-05.** EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the state agencies for implementing the EO and for reporting on progress toward the targets. This EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels
- By 2020, reduce GHG emissions to 1990 levels
- By 2050, reduce GHG emissions to 80% below 1990 levels

EO S-3-05 also directed the California Environmental Protection Agency to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issued reports from 2006 to 2010.

**AB 32.** In furtherance of the goals established in EO S-3-05, the legislature enacted AB 32. The bill is referred to as the California Global Warming Solutions Act of 2006. AB 32 provided initial direction on creating a comprehensive multiyear program to limit California's GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the state's long-range climate objectives.

**EO B-55-18.** EO B-55-18 (September 2018) establishes a statewide policy for the state to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net-negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the state's GHG emissions. CARB will work with relevant state agencies to ensure that future scoping plans identify and recommend measures to achieve the carbon neutrality goal.

**SB 32 and AB 197.** SB 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the senate and three members of the assembly, in order to provide ongoing oversight over implementation of the state's climate policies. AB 197 also added two members of the legislature to CARB as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the scoping plan.

**CARB's Climate Change Scoping Plan.** One specific requirement of AB 32 is for CARB to prepare a scoping plan for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (California Health and Safety Code Section 38561[a]) and to update the plan at least once every 5 years. In 2008, CARB approved the first scoping plan. The Climate Change Scoping Plan: A Framework for Change (Scoping Plan) included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the state's long-range climate objectives. The key elements of the Scoping Plan include the following (CARB 2008):

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.
2. Achieving a statewide renewable energy mix of 33%.

3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions.
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.
5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (17 CCR 95480 et seq.).
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15% from then levels (2008) by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the state's GHG emission reduction priorities for the next 5 years and laid the groundwork to start the transition to the post-2020 goals set forth in EOs S-3-05 and B-16-2012. The First Update concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuum of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the state's 1990 emissions level, using more recent GWPs identified by the IPCC, from 427 MMT CO<sub>2e</sub> to 431 MMT CO<sub>2e</sub> (CARB 2014)

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. The governor called on California to pursue a new and ambitious set of strategies, in line with the five climate change pillars from his inaugural address, to reduce GHG emissions and prepare for the unavoidable impacts of climate change. In the summer of 2016, the legislature affirmed the importance of addressing climate change through passage of SB 32.

In December 2017, CARB released the 2017 Climate Change Scoping Plan Update (2030 Scoping Plan) for public review and comment (CARB 2017). The 2030 Scoping Plan builds on the successful framework established in the initial Scoping Plan and First Update, while identifying new, technologically feasible, and cost-effective strategies that will serve as the framework to achieve the 2030 GHG target and define the state's climate change priorities to 2030 and beyond. The strategies' "known commitments" include implementing renewable energy and energy efficiency (including the mandates of SB 350), increased stringency of the Low Carbon Fuel Standard, measures identified in the Mobile Source and Freight Strategies, measures identified in the proposed Short-Lived Climate Pollutant Plan, and increased stringency of SB 375 targets. To fill the gap in additional reductions needed to achieve the 2030 target, it recommends continuing the Cap-and-Trade Program and a measure to reduce GHGs from refineries by 20%.

For local governments, the 2017 Scoping Plan replaced the initial Scoping Plan's 15% reduction goal with a recommendation to aim for a community-wide goal of no more than 6 MT CO<sub>2e</sub> per capita by 2030 and no more than 2 MT CO<sub>2e</sub> per capita by 2050, which are consistent with the state's long-term goals. These goals are also consistent with the Global Climate Leadership Memorandum of Understanding (Under 2 MOU) and the Paris Agreement, which are developed around the scientifically based levels necessary to limit global warming below 2°C. The 2017 Scoping Plan recognizes the benefits of local government GHG planning (e.g., through climate action plans [CAPs]) and provides more information regarding tools CARB is working on to support those efforts. It also recognizes the California Environmental Quality Act (CEQA) streamlining provisions for project-level review where there is a legally adequate CAP.<sup>3</sup> The 2017 Scoping Plan was approved by CARB's Governing Board on December 14, 2017.

The Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs and establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. A project is considered consistent with the statutes and EOs if it meets the general policies in reducing GHG emissions to facilitate the achievement of the state's goals and does not impede attainment of those goals. As discussed in several cases, a given project need not be in perfect conformity with every planning policy or goals to be consistent. A project would be consistent if it would further the objectives and not obstruct their attainment.

**EO B-30-15.** EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80% below 1990 levels by 2050 as set forth in S-3-05. To facilitate achieving this goal, EO B-30-15 called for CARB to update the Scoping Plan to express the 2030 target in terms of MMT CO<sub>2e</sub>. The EO also called for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

**SB 605 and SB 1383.** SB 605 (2014) required CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants in the state, and SB 1383 (2016) required CARB to approve and implement that strategy by January 1, 2018. SB 1383 also establishes specific targets for the reduction of short-lived climate pollutants (40% below 2013 levels by 2030 for CH<sub>4</sub> and HFCs and 50% below 2013 levels by 2030 for anthropogenic black carbon) and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, and as previously discussed, CARB adopted its Short-Lived Climate Pollutant Reduction Strategy in March 2017. The Short-Lived Climate Pollutant Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, CH<sub>4</sub>, and fluorinated gases.

## Building Energy

**Title 24, Part 6.** Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC) (and revised if necessary) (California Public Resources Code, Section 25402[b][1]). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or

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<sup>3</sup> *Sierra Club v. County of Napa* (2004) 121 Cal.App.4th 1490; *San Francisco Tomorrow et al. v. City and County of San Francisco* (2015) 229 Cal.App.4th 498; *San Franciscans Upholding the Downtown Specific Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656; *Sequoyah Hills Homeowners Assn. v. City of Oakland* (1993) 23 Cal.App.4th 704, 719.

unnecessary consumption of energy” (California Public Resources Code, Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California Public Resources Code, Section 25402[d]) and cost effectiveness (California Public Resources Code, Sections 25402[b][2] and [b][3]). As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment. The 2016 Title 24 building energy efficiency standards became effective January 1, 2017. The 2019 Title 24 Building Energy Efficiency Standards became effective on January 1, 2020, which will further reduce energy used and associated GHG emissions compared to the 2016 Title 24 building energy standards. Residential buildings built to the 2019 standards are anticipated to use an estimated 53% less energy than those built to the 2016 standards (CEC 2018).

The 2022 Title 24 standards will improve upon the 2019 standards for new construction of, and additions and alterations to, residential and nonresidential buildings. The CEC adopted the 2022 Title 24 Energy Code in August 2021, and the California Building Standards Commission approved incorporating the updated code into the California Green Building Standards Code (CALGreen) in December 2021. The 2022 Energy Code went into effect on January 1, 2023. The 2022 Energy Code focuses on four key areas in newly constructed homes and businesses (CEC 2021):

- Encouraging electric heat pump technology for space and water heating, which consumes less energy and produces fewer emissions than gas-powered units.
- Establishing electric-ready requirements for single-family homes to position owners to use cleaner electric heating, cooking, and electric vehicle (EV) charging options whenever they choose to adopt those technologies.
- Expanding solar photovoltaic (PV) system and battery storage standards to make clean energy available onsite and complement the state’s progress toward a 100% clean electricity grid.
- Strengthening ventilation standards to improve indoor air quality.

**Title 24, Part 11.** In addition to the CEC’s efforts, in 2008, the California Building Standards Commission adopted the nation’s first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as CALGreen and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential and state-owned buildings, schools, and hospitals. The CALGreen 2019 standards, which are the current standards, became effective January 1, 2020.

**Title 20.** Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. The CEC certifies an appliance based on a manufacturer’s demonstration that the appliance meets the standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwashers; clothes washers and dryers; cooking products; electric motors; low-voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video equipment; and battery charger systems. Title 20 presents protocols for testing each type of appliance covered under the regulations, and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

**AB 1109.** Enacted in 2007, AB 1109 required the CEC to adopt minimum energy efficiency standards for general-purpose lighting to reduce electricity consumption by 50% for indoor residential lighting and by 25% for indoor commercial lighting.

**SB 1.** SB 1 (August 2006) established a \$3 billion rebate program to support the goal of the state to install rooftop solar energy systems with a generation capacity of 3,000 megawatts through 2016. SB 1 added sections to the California Public Resources Code, including Chapter 8.8 (California Solar Initiative), that require building projects applying for ratepayer-funded incentives for photovoltaic systems to meet minimum energy efficiency levels and performance requirements. Section 25780 established that it is a goal of the state to establish a self-sufficient solar industry. The goals included establishing solar energy systems as a viable mainstream option for both homes and businesses within 10 years of adoption, and placing solar energy systems on 50% of new homes within 13 years of adoption. SB 1, also termed “Go Solar California,” was previously titled “Million Solar Roofs.”

**AB 1470 (Solar Water Heating).** This bill established the Solar Water Heating and Efficiency Act of 2007. The bill makes findings and declarations of the legislature relating to the promotion of solar water heating systems and other technologies that reduce natural gas demand. The bill defines several terms for purposes of the act. The bill requires the commission to evaluate the data available from a specified pilot program, and, if it makes a specified determination, to design and implement a program of incentives for the installation of 200,000 solar water heating systems in homes and businesses throughout the state by 2017.

### Renewable Energy and Energy Procurement

**SB 1078.** SB 1078 (September 2002) established the Renewables Portfolio Standard (RPS) program, which requires an annual increase in renewable generation by the utilities. Initially, the RPS required utilities to obtain 20% of their power from renewable sources by 2010. SB X1-2 (2011) subsequently expanded the RPS by establishing that 33% of the total electricity sold to retail customers in California per year by December 31, 2020, and in subsequent years, be secured from qualifying renewable energy sources. SB 350 (2015) further expanded the RPS by establishing that 50% of the total electricity sold to retail customers in California per year by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 (2018) further accelerated the RPS, requiring achievement of a 50% RPS by December 31, 2026, and a 60% RPS by December 31, 2030. SB 100 also established a new state policy goal that calls for eligible renewable energy resources and zero-carbon resources to supply 100% of electricity retail sales and 100% of electricity procured to serve all state agencies by December 31, 2045.

Under the program, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation of 30 megawatts or less, digester gas, municipal solid waste conversion, landfill gas, ocean wave, ocean thermal, or tidal current, and that meets other specified requirements with respect to its location.

**SB 350.** SB 350 (October 2015) further expanded the RPS by establishing a goal of 50% of the total electricity sold to retail customers in California per year by December 31, 2030. In addition, SB 350 included the goal to double the energy-efficiency savings in electricity and natural gas final end uses (e.g., heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency. The bill also requires the California Public Utilities Commission, in consultation with the CEC, to establish efficiency targets for electrical and gas corporations consistent with this goal.

## Mobile Sources

**AB 1493.** AB 1493 (July 2002) was enacted in response to the transportation sector accounting for more than one-half of California's CO<sub>2</sub> emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the state board to be vehicles that are primarily used for noncommercial personal transportation in the state. AB 1493 required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. It ordered CARB, CEC, the California Public Utilities Commission, and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

**EO S-1-07.** EO S-1-07 (January 2007, implementing regulation adopted in April 2009) sets a declining Low Carbon Fuel Standard for GHG emissions measured in CO<sub>2e</sub> grams per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10% by 2020 (17 CCR 95480 et seq.). The Low Carbon Fuel Standard was subsequently amended in 2018 to require a 20% reduction in carbon intensity by 2030. This new requirement aligns with California's overall 2030 target of reducing climate changing emissions to 40% below 1990 levels by 2030, set by SB 32. CARB has adopted implementing regulations for both the 10% and 20% carbon intensity reduction targets. The carbon intensity measures the amount of GHG emissions in the lifecycle of a fuel, including extraction/feedstock production, processing, transportation, and final consumption, per unit of energy delivered.

**SB 375.** SB 375 (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035 and to update those targets every 8 years. SB 375 requires the state's 18 regional metropolitan planning organizations (MPOs) to prepare a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP) that will achieve the GHG reduction targets set by CARB. If an MPO is unable to devise an SCS to achieve the GHG reduction target, the MPO must prepare an Alternative Planning Strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to California Government Code Section 65080(b)(2)(K), an SCS does not regulate the use of land, supersede the land use authority of cities and counties, or require that a city or county's land use policies and regulations, including those in a general plan, be consistent with it. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the state-mandated housing element process.

In 2010, CARB adopted the SB 375 targets for the regional MPOs. The targets for the San Diego Association of Governments (SANDAG) are a 7% reduction in emissions per capita by 2020 and a 13% reduction by 2035.

SANDAG completed and adopted its 2050 RTP/SCS in October 2011. In November 2011, CARB, by resolution, accepted SANDAG's GHG emissions quantification analysis and determination that, if implemented, the SCS would achieve CARB's 2020 and 2035 GHG emissions reduction targets for the region.

After SANDAG's 2050 RTP/SCS was adopted, a lawsuit was filed by the Cleveland National Forest Foundation and others. The case was decided in July 2017, and the court found that the EIR did not have to use EO S-3-05's 2050 goal of an 80% reduction in GHG emissions from 1990 levels as a threshold because the EIR sufficiently informed the public of the potential impacts.

In 2015, SANDAG adopted the next iteration of its RTP/SCS in accordance with statutorily mandated timelines, and no subsequent litigation challenge was filed. More specifically, in October 2015, SANDAG adopted San Diego Forward: The Regional Plan (Regional Plan). Like the 2050 RTP/SCS, this planning document meets CARB's 2020 and 2035 reduction targets for the region (SANDAG 2015). In December 2015, CARB, by resolution, accepted SANDAG's GHG emissions quantification analysis and determination that, if implemented, the SCS would achieve CARB's 2020 and 2035 GHG emissions reduction targets for the region. In March 2018, CARB approved updates to the SB 375 GHG emission reduction targets, including a reduction of 15% reduction in emissions per capita by 2020 and a 19% reduction by 2035 for SANDAG.

On February 26, 2021, SANDAG's Board of Directors adopted the final 2021 Regional Transportation Improvement Program (RTIP). The 2021 RTIP covers 5 fiscal years (FY 2021 through FY 2025) and incrementally implements the SANDAG 2019 Federal RTP. The 2021 RTIP is designed to implement the region's overall strategy for providing mobility and improving the safety, condition, and efficiency of the transportation system while reducing transportation related air pollution. The 2021 RTIP incrementally implements San Diego Forward: The 2019 Federal RTP (2019 Federal RTP), the long-range transportation plan for the San Diego region approved by the SANDAG Board of Directors on October 25, 2019.

**Advanced Clean Cars Program and Zero-Emissions Vehicle Program.** The Advanced Clean Cars Program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars (CARB 2011). To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. It is estimated that in 2025 cars will emit 75% less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with EPA and NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce GHG emissions by 34% in 2025. The Zero-Emission Vehicle Program will act as the focused technology of the Advanced Clean Cars Program by requiring manufacturers to produce increasing numbers of zero-emission vehicles and plug-in hybrid electric vehicles in the 2018 to 2025 model years.

**EO B-16-12.** EO B-16-12 (March 2012) required that state entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emission vehicles. It ordered CARB, CEC, the California Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve benchmark goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80% less than 1990 levels by 2050. This directive did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

**AB 1236.** AB 1236 (October 2015) required a city, county, or city and county to approve an application for the installation of electric vehicle charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based upon substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill provided for appeal of that decision to the

planning commission, as specified. The bill provided that the implementation of consistent statewide standards to achieve the timely and cost-effective installation of electric vehicle charging stations is a matter of statewide concern. The bill required electric vehicle charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for electric vehicle charging stations, as specified. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt this ordinance by September 30, 2017.

### Water

**EO B-29-15.** In response to the ongoing drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25% relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives have become permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the state. In response to EO B-29-15, the California Department of Water Resources has modified and adopted a revised version of the Model Water Efficient Landscape Ordinance that, among other changes, significantly increases the requirements for landscape water use efficiency and broadens its applicability to include new development projects with smaller landscape areas.

**EO B-37-16.** Issued May 2016, EO B-37-16 directed the State Water Resources Control Board to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The State Water Resources Control Board also developed a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25% reduction called for in EO B-29-15. The State Water Resources Control Board and Department of Water Resources will develop new, permanent water use targets that build on the existing state law requirements that the state achieve 20% reduction in urban water usage by 2020. EO B-37-16 also specifies that the State Water Resources Control Board permanently prohibit water-wasting practices such as hosing off sidewalks, driveways, and other hardscapes; washing automobiles with hoses not equipped with a shut-off nozzle; using non-recirculated water in fountains and other decorative water features; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.

### Solid Waste

**AB 939, AB 341, and AB 1826.** In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code, Section 40000 et seq.), was passed because of the increase in waste stream and decrease in landfill capacity. The statute established the California Integrated Waste Management Board, which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed of where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25% by 1995 and 50% by 2000.

AB 341 (Chapter 476, Statutes of 2011 [Chesbro]) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that it is the policy goal of the state that not less than 75% of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery (CalRecycle) to develop strategies to achieve the state's policy goal. CalRecycle conducted several general workshops and several focused workshops, and in August 2015 published a discussion document titled AB 341 Report to the Legislature, which identified five

priority strategies that CalRecycle believed would assist the state in reaching the 75% goal by 2020, legislative and regulatory recommendations, and an evaluation of program effectiveness (CalRecycle 2015).

AB 1826 (Chapter 727, Statutes of 2014, effective 2016) requires that businesses recycle their organic waste (i.e., food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste) depending on the amount of waste they generate per week. This law also requires local jurisdictions across the state to implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. The minimum threshold of organic waste generation by businesses decreases over time, which means an increasingly greater proportion of the commercial sector will be required to comply.

### Other State Actions

**SB 97.** SB 97 (August 2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, Office of Planning and Research issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities (OPR 2008). The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. CNRA adopted the CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply its own thresholds of significance or those developed by other agencies or experts. CNRA also acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions (CNRA 2009a).

With respect to GHG emissions, the CEQA Guidelines state in Section 15064.4(a) that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance based standards" (14 CCR 15064.4[a]). CEQA Guidelines Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]).

**EO S-13-08.** EO Order S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs state agencies to take specified actions

to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009 (CNRA 2009b), and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014 (CNRA 2014). To assess the state's vulnerability, the report summarizes key climate change impacts to the state for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water.

### Local

#### City of Oceanside General Plan

The City of Oceanside's General Plan Circulation Element includes goals and policies to reduce GHG emissions within the City (City of Oceanside 2012). The following goals and policies from the City's General Plan are relevant to the project.

#### Circulation Element

**Policy 2.5:** The City will strive to incorporate complete streets throughout the Oceanside transportation network which are designed and constructed to serve all users of streets, roads and highways, regardless of their age or ability, or whether they are driving, walking, bicycling, or using transit.

#### Pedestrian Facilities

**Goal 5:** Support walking as a primary means of transportation that in turn supports transit and bike options. A positive walking environment is essential for supporting smart growth, mixed land uses, transit oriented development, traffic calming and reducing traffic congestion and greenhouse gas emissions.

#### Intelligent Transportation System Technologies

**Policy 4.1:** The City shall encourage the reduction of vehicle miles traveled, reduction of the total number of daily and peak hour vehicle trips, and provide better utilization of the circulation system through development and implementation of transportation demand management (TDM) strategies. These may include, but not limited to, implementation of peak hour trip reduction, encourage staggered work hours, telework programs, increased development of employment centers where transit usage is highly viable, encouragement of ridesharing options in the public and private sector, provision for park-and-ride facilities adjacent to the regional transportation system, and provision for transit subsidies.

#### Transportation Demand Management

**Policy 4.9:** The City shall look for opportunities to incorporate TDM [transportation demand management] programs into their Energy Roadmap that contributes to state and regional goals for saving energy and reducing greenhouse gas emissions.

#### Air Quality

The City will continue to cooperate with the San Diego Air Pollution Control District Board. This will include participation in the development of the Regional Air Quality Strategy through cooperation with the San Diego County Air Quality Planning Team.

### Bicycle Facilities

Policy A: Development shall provide Class II Bikeways (Bike Lanes) on all secondary, major, and prime arterials.

Policy D: The use of land shall integrate the Bicycle Circulation System with auto, pedestrian, and transit systems:

1. Development shall provide short-term bicycle parking and long-term bicycle storage facilities such as bicycle racks, pedestal posts, and rental bicycle lockers.
2. Development shall provide safe and convenient bicycle access to high activity land uses, such as schools, parks, shopping, employment, and entertainment centers.

### Pedestrian

Policy A: The construction of five (5) foot wide sidewalks adjacent to the curb shall be required in all new developments and street improvements.

### Transit System

Policy A: The City shall coordinate and encourage the existing bus system to serve newly developed areas.

### Energy

Policy A: The City shall encourage the design, installation, and use of passive and active solar collection systems.

Policy B: The City shall encourage the use of energy efficient design, structures, materials, and equipment in all land developments or uses.

### City of Oceanside Climate Action Plan

The City adopted its CAP on May 8, 2019 (City of Oceanside 2019). The CAP acts as a roadmap to address challenges of climate change within the City and outlines measures the City will take to make progress towards meeting the state's GHG reduction goals. The CAP includes a baseline GHG emissions inventory for 2013; GHG emissions forecasts for 2020, 2030, 2035, 2040, and 2050; local GHG emissions reduction strategies and measures to help the City achieve the statewide targets; and implementation and monitoring mechanisms to ensure the City's measures and targets are achieved. The CAP established local GHG emissions reduction targets for future years as follows:

- By 2020, reduce GHG emissions levels to 5 MT CO<sub>2</sub>e per capita
- By 2030, reduce GHG emissions levels to 4 MT CO<sub>2</sub>e per capita
- By 2040, reduce GHG emissions levels to 3 MT CO<sub>2</sub>e per capita
- By 2050, reduce GHG emissions levels to 2 MT CO<sub>2</sub>e per capita

## Oceanside Energy Climate Action Element

The Energy Climate Action Element of the City's General Plan was adopted on May 8, 2019 and addresses energy consumption and other activities within the City that may contribute to adverse energy and GHG impacts. The Energy Climate Action Element focuses on activities associated with human-induced climate change. The Energy Climate Action Element outlines sustainability goals and policies for the City's decision-making process including development review protocols. The primary themes and goals of the Energy Climate Action Element are related to energy efficiency and renewable energy, smart growth and multimodal transportation, zero waste, water conservation, urban greening, local agriculture, and sustainable consumption.

Policy ECAE 1b-4: The City shall explore opportunities to implement "mobility hub" features within Smart Growth Opportunity Areas and other areas amenable to active transportation and shared mobility option.

Policy ECAE 2a-6: The City shall work with the development community to identify new sources of financing for mixed-use and other forms of urbanized development, including the implementation of the El Corazon Specific Plan.

Policy ECAE 2e-4: Through TDM programs and other means, the City shall encourage employers to participate in regional rideshare programs, including SANDAG's iCommute.

Policy ECAE 2f-2: The City shall explore incentives for electric vehicle charging facilities in multi-family developments.

Policy ECAE 2f-4: The City shall partnership with the local business community, San Diego Gas & Electric, and other stakeholders, explore ways to reduce the cost of electric and other zero emission vehicles to Oceanside residents, specifically low-income households in proximity to air quality hotspots near I-5 and state highways.

Policy ECAE 2f-9: The City shall consider ways to reduce vehicle idling, particularly in proximity to schools and other sensitive receptors.

Policy ECAE 5a-2: The City shall update the City's Street Tree Ordinance to require one-to-one replacement of trees removed from the public right-of-way, parkways, and other public spaces.

### 4.7.3 Thresholds of Significance

California has developed guidelines to address the significance of GHG emissions impacts that are contained in Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.). Appendix G provides that a project would have a significant environmental impact if it would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
2. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The Appendix G thresholds for GHGs do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA (CNRA 2009). Additional guidance regarding assessment of GHGs is discussed below.

Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs. There are currently no established thresholds for assessing whether the GHG emissions of a project, such as the project, would be considered a cumulatively considerable contribution to global climate change; however, all reasonable efforts should be made to minimize a project's contribution to global climate change. In addition, while GHG impacts are recognized exclusively as cumulative impacts (CAPCOA 2008), GHG emissions impacts must also be evaluated on a project level under CEQA.

### CEQA Guidelines

With respect to GHG emissions, the CEQA Guidelines Section 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or performance-based standards" (14 CCR 15064.4[a]). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change" (14 CCR 15064.4[c]). The CEQA Guidelines provide that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment (14 CCR 15064.4[b]):

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

In addition, the CEQA Guidelines specify that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7[c]).

The extent to which a project increases or decreases GHG emissions in the existing environmental setting should be estimated in accordance with Section 15064.4, Determining the Significance of Impacts from Greenhouse Gas Emissions, of the CEQA Guidelines. The CEQA Guidelines indicate that when calculating GHG emissions resulting from a project, lead agencies shall make a good-faith effort based on scientific and factual data (14 CCR 15064.4[a]), and lead agencies have discretion to select the model or methodology deemed most appropriate for enabling decision makers to intelligently assess the project's incremental contribution to climate change (14 CCR 15064.4[c]).

The CEQA Guidelines do not indicate an amount of GHG emissions that constitutes a significant impact on the environment. Instead, they authorize the lead agency to consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to

adopt such thresholds is supported by substantial evidence (14 CCR 15064.4[a] and 15064.7[c]). Several agencies throughout the state have drafted and/or adopted numerical threshold approaches and guidelines for analyzing the significance of project-related GHG emissions; however, no numerical thresholds have been formally adopted by an air district or lead agency for use in the San Diego region.

### **Governor's Office of Planning and Research**

The Governor's Office of Planning and Research's Technical Advisory, titled CEQA and Climate Change: Addressing Climate Change through CEQA Review (OPR 2008), states the following:

[N]either the CEQA statute nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for performing an impact analysis. This is left to lead agency judgment and discretion, based upon factual data and guidance from regulatory agencies and other sources where available and applicable. ... Even in the absence of clearly defined thresholds for GHG emissions, such emissions must be disclosed and mitigated to the extent feasible whenever the lead agency determines that the project contributes to a significant, cumulative climate change impact.

Furthermore, the advisory document indicates that "in the absence of regulatory standards for GHG emissions or other scientific data to clearly define what constitutes a 'significant impact,' individual lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice." Section 15064.7(c) of the CEQA Guidelines specifies that "when adopting thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence."

### **Approaches to Determining Significance**

The significance of the project-related GHG emissions can be determined by evaluating the project's compliance with regulations or requirements adopted to implement statewide, regional, or local plans for the reduction or mitigation of GHG emissions. The state's 2030 target (reduce GHG emissions to 40% below 1990 levels by 2030) has been codified in law through SB 32 and the 2017 Scoping Plan (CARB 2017). Therefore, 2030 marks the next statutory statewide milestone target applicable to the project.

The City's 2019 CAP is a qualified GHG emissions reduction plan in accordance with CEQA Guidelines Section 15183.5. CEQA Guidelines 15183.5(a) states that lead agencies may analyze and mitigate the significant effects of GHG emissions at a programmatic level, such as in a General Plan, a long-range development plan, or a separate plan to reduce GHG emissions. Later project-specific environmental documents may tier from and/or incorporate by reference the existing programmatic review. CEQA Guidelines Section 15183.5(b) states that public agencies may choose to analyze and mitigate significant GHG emissions in a plan for the reduction of GHG emissions. Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of a CAP.

The City's CAP seeks to align with state efforts to reduce GHG emissions while balancing a variety of community interests (e.g., quality of life, economic development, and social equity). The City of Oceanside's 2019 CAP quantified baseline and projected future GHG emissions from activities within the City. State GHG reduction efforts were first initiated by EO S-3-05 in 2005, which established a 2050 emissions target to stabilize the climate (CARB 2008). EO S-3-05 also established a 2020 GHG emissions target goal, which was later codified by the State

Legislature as AB 32. EO B-30-15 then established an additional interim 2030 GHG emissions target, which was also codified by the State Legislature. On a per-capita basis, the 2020 GHG emissions target requires that emissions be reduced to “about 10 tons per person by 2020” (CARB 2008), and the subsequent targets require that emissions be reduced to “no more than 6 MT CO<sub>2e</sub> per capita by 2030 and no more than 2 MT CO<sub>2e</sub> per capita by 2050” (CARB 2017). The City’s CAP established GHG reduction targets for 2030 that are more rigorous than the state’s 6 MT CO<sub>2e</sub> per capita goal. The City’s goal is to achieve GHG emission levels of 4 MT CO<sub>2e</sub> per capita by 2020, 3.5 MT CO<sub>2e</sub> per capita by 2025, and 3.0 MT CO<sub>2e</sub> per capita by 2040. A 2050 target of 2.0 MT CO<sub>2e</sub> per capita is established for the City consistent with recommendations of the 2017 Scoping Plan and international agreements, such as the Under 2 MOU, which requires that all “signatories agree to reduce their GHG emissions to two metric tons CO<sub>2e</sub> per capita by 2050.” This is the most commonly agreed upon 2050 target and directly relates to the long-term target of EO-S-05.

As discussed in the CAP, to ensure the City remains on track to achieve the long-term reduction goals of the state, the City has implemented GHG reduction measures proactively. The CAP measures outline how the City will reduce its near-term GHG emissions and establish infrastructure to support continued reductions beyond 2030. The City is already projected to meet state-aligned per capita near-term emissions targets (2020 and 2030); as such, reduction measures in the CAP (Chapter 3 of the CAP) were selected based on their ability to achieve long-term GHG emission reductions. Measures were focused on energy, water, solid waste, transportation and land use, and agriculture and forestry. Although the City’s CAP predates CARB’s 2022 Scoping Plan, the City’s measures are consistent with CARB’s recommendations for local actions focused on transportation electrification, vehicle miles traveled reduction, and building decarbonization (CARB 2022b).

The City’s CAP establishes communitywide GHG emissions reduction targets based on an efficiency/service population methodology. “Service population” is defined as the sum of the City’s residents and workforce. The City issued a policy directive in May 2023 that provides direction on CEQA-compliant analysis of GHG emissions associated with new development. The 2023 Policy Directive notes that many of the CAP measures are contingent upon the adoption of several ordinances addressing renewable energy, electric vehicle charging facilities, and preferential parking, transportation demand management (TDM), and tree canopy. Accordingly, in the interim, all projects must demonstrate that associated GHG emissions fall below one of two efficiency thresholds noted below:

- Projects that will be implemented after 2020 and prior to end of 2025 must show that GHG emissions related to both construction and operations will not exceed 3.5 MT CO<sub>2e</sub>/service population per year.
- Projects that will be implemented after 2025 must show that GHG emissions related to both construction and operations will not exceed 3.0 MT CO<sub>2e</sub>/service population per year.

GHG emissions are by nature a cumulative impact; therefore, projects may rely on the City’s CAP and efficiency thresholds to determine a project’s impact on a project-level/cumulative-level basis. Chapter 4, Implementation, of the City’s CAP outlines how the CAP reduction measures will be implemented and establishes a mechanism for individual development projects to evaluate their consistency with the CAP through completion of a checklist.

The City of Oceanside’s CAP relies on a screening threshold based on land use size and a CAP Consistency Checklist to determine whether a project’s emissions would be consistent with GHG emissions estimated within the City’s CAP. Consistent with the California Air Pollution Control Officers Association CEQA and Climate Change document (CAPCOA 2008), the City has established a bright-line threshold of significance for GHG emissions impacts: 900 MT CO<sub>2e</sub> annually, with construction-related emissions amortized over 20 years. Specifically, the City has determined that new development projects emitting less than 900 MT CO<sub>2e</sub> annual GHG would not contribute considerably to

cumulative climate change impacts, and therefore do not need to demonstrate consistency with the CAP strategies, and would be determined to not conflict with the CAP. The 900 MT CO<sub>2</sub>e bright-line threshold represents a market capture rate of 90% of all development projects (CAPCOA 2008). The objective of the bright-line threshold is to set the emissions low enough to capture a substantial fraction of future residential and nonresidential development that will be constructed to accommodate future statewide population and job growth, while setting the emission threshold high enough to exclude small development projects that will contribute a relatively small fraction of the cumulative statewide GHG emissions (CAPCOA 2008). The 90% capture rate of new development establishes a strong basis for demonstrating that cumulative reductions are being achieved across the state. Projects greater than 900 MT CO<sub>2</sub>e would be required to show CAP Checklist consistency, which can be used to determine that the project would be consistent with the CAP. Essentially, to demonstrate that a project would comply with the CAP, requires a two-step process: the first step is a screening-level bright line threshold, which if exceeded, would require the second step, which is a CAP efficiency and CAP measures consistency analysis.

CEQA Guidelines Section 15183.5(2) states that an environmental document that relies on a GHG reduction plan for a cumulative impact analysis must identify those requirements specified in the plan that apply to the project, and if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project. In accordance with Section 15183.5(2) of the CEQA Guidelines, the CAP Checklist provides for streamlined review of projects subject to environmental review, offering an alternative to project-specific analysis of GHG emissions impacts. The CAP Checklist is available to projects that meet locational requirements that further the City's efforts to facilitate housing and employment growth in walkable, transit-served areas, as well as projects that either conform to current land use and zoning standards or involve uses that would generate less GHG emissions than those allowed under current standards.

As discussed above under Section 4.7.3, Thresholds of Significance, GHG emissions are recognized exclusively as a cumulative impact (CAPCOA 2008). The CAP Consistency Checklist is used to determine project-level significance in accordance with CEQA Guidelines Section 15183.5; the measures in the CAP Consistency Checklist identify the specific requirements that must be implemented by development projects on a citywide basis to achieve the City's identified reduction targets. The CAP addresses the cumulative impact of GHG emissions on a citywide basis and a project's compliance with the CAP supports the City's GHG emission reduction goals.

In accordance with Section 15064.4 of the CEQA Guidelines, GHG emissions resulting from construction and operation of the project were quantitatively estimated. The potential impacts from project-related GHG emissions were assessed based on the total increase above the existing environmental setting, which is largely formerly developed, vacant land. The GHG emissions associated with implementation of the project were estimated using industry standard and accepted software tools, techniques, and emissions factors, as described in the Air Quality and Greenhouse Gas Technical report provided as Appendix C. The significance of the project's GHG impacts is based on the project's compliance with the City's CAP measures which includes GHG efficiency metrics.

## 4.7.4 Impact Analysis

***Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?***

***Would the project generate conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?***

The City of Oceanside's CAP was adopted in May 2019 to assist the City in reducing GHG emissions to 4 MT CO<sub>2e</sub> per capita by 2030, and 2 MT CO<sub>2e</sub> per capita by 2050 to align with the state's targets established by Eos B-30-15 and S-3-05, respectively. According to the City's CAP, new discretionary development projects subject to CEQA review that emit less than 900 MT CO<sub>2e</sub> annually would not contribute considerably to cumulative climate change impacts, and therefore, would be considered consistent with the CAP and associated emissions projections. Projects that exceed the 900 MT CO<sub>2e</sub> are evaluated to determine if the CAP Consistency Checklist is applicable. In addition, pursuant to the City's May 2023 Policy Directive, a project's per service population emissions shall be determined and evaluated against the City's targets based on when a project is to be implemented to ensure that the project would comply with the CAP. As such, the evaluation presented below assess the project's consistency with the CAP through two tests: (1) CAP Consistency Checklist, and (2) per service population efficiency metric.

Project-generated GHG emissions were estimated per the methodology described in the Air Quality and Greenhouse Gas Technical Report (Appendix C) and are discussed for construction and operation below. Quantification of GHG emissions is provided pursuant to CEQA Guidelines 15064.4(c) as the determination of significance is based on the CAP Consistency Checklist.

### Project's Consistency with the CAP Checklist

Projects that meet one or more of the following locational criteria are eligible for using the CAP Consistency Checklist:

1. The project site is located within a designated Smart Growth Opportunity Area.
2. The project site is located with ¼ mile of a priority TOD corridor, as identified in the City's Smart and Sustainable Corridors Plan.

Items 1 and 2 pertain to the City's focus on where development will occur. The City seeks to accommodate future housing and job growth primarily through infill and redevelopment within already urbanized areas. Specifically, the City seeks to facilitate new residential and employment-oriented development within SANDAG-designated Smart Growth Opportunity Areas and prior corridors (i.e., Coast Hwy, Mission Avenue, Oceanside Blvd, Vista Way).

3. The project is consistent with current land use and zoning designations.  
Item 3 ensures that projected growth and development along with GHG emissions would be consistent with projections included in the CAP.
4. The project requires amendment of current land use and zoning designations. As demonstrated through a detailed analysis a) consistent with the precedent in the surrounding zoning district and b) subject to third party expert review, the proposed land uses would generate less GHG emissions than those associated with uses allowed under current land use and zoning designations.

Similar to Item 3, this measure allows for projects that require land use changes to use the CAP checklist if the projected GHG emissions would be comparable or less than the existing land use designation.

In response to Item 1, the project site is not located within a Smart Growth Opportunity Area, it is located approximately 50 feet outside a smart growth area. The project would not meet locational criteria 1.

In response to Item 2, the project site is located approximately 0.75 miles from the nearest TOD corridor. The project would not meet locational criteria 2.

In response to Item 3, the project is not consistent with the current land use and zoning designation because it requires a general plan amendment and rezone. The project would not meet criteria 3.

In response to Item 4, although the project requires a general plan amendment and rezone, it would generate less GHG emissions than those associated with the uses allowed under current land use and zoning designation. As discussed in Appendix B, the project’s development intensity (measured by vehicle trips and VMT) would be less than the current land use designation. Table 4.7-4 below shows how the project would generate less GHG emissions than allowed uses under the existing land use and zoning designations.

**Table 4.7-4. Comparison of Estimated Annual Operational Greenhouse Gas Emissions - Unmitigated**

Development	Land Use Developed	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Refrigerants	CO <sub>2</sub> e
		metric tons per year				
Proposed Project	164 multi-family residential units	1,142.70	1.50	0.03	1.42	1,193.10
Existing General Plan Land Use Designation (CI) and Zoning (PS)	Hospital (100 beds)	2,369.6	3.05	0.15	3.09	2,480.42
	Government Office (150)	2,835.9	2.39	0.13	3.82	2,942.16
	Highschool (1,000 students)	1,770.61	1.88	0.07	2.51	1,844.14

**Notes:** CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2</sub>e = carbon dioxide equivalent  
See Appendix B for complete results.

Because the project would generate fewer GHG emissions than the existing land use designations, it would meet criteria 4 and would be eligible to use the CAP Consistency Checklist.

As discussed previously, CEQA Guidelines Section 15183.5(2) states that an environmental document that relies on a GHG reduction plan for a cumulative impact analysis must identify those requirements specified in the plan that apply to the project, and if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project. In accordance with Section 15183.5(2) of the CEQA Guidelines, the CAP Checklist provides for streamlined review of projects subject to environmental review, offering an alternative to project-specific analysis of GHG emissions impacts.

Table 4.7-5 includes the CAP Checklist items and the related project consistency analysis.

**Table 4.7-5. Climate Action Plan Consistency Checklist and Project Consistency**

Check List Item	Project Consistency
<b>1. On-Site Renewable Energy Supply.</b> If the project meets one or more of the thresholds outlined in Section 3047 of the City's Zoning Ordinance, will at least 50 percent of the estimated electricity demand be met with on-site renewable emissions-free energy supply (e.g., solar photovoltaic facilities)?	<b>Consistent.</b> The Project is a residential project that includes more than 25 dwelling units, and is therefore required to comply with the on-site renewable energy supply provisions of the checklist. The Project includes roof-top solar PV, which will accommodate at least 50% of energy demand during operation.
<b>2. Electric Vehicle Charging Facilities.</b> If the project involves new development that requires at least five (5) parking spaces, will the project comply with the requirements of Section 3048 of the City's Zoning Ordinance?	<b>Consistent.</b> The Project includes a total of 384 parking spaces for residences and guests, and is therefore required to comply with the requirements of Section 3048 of the City's Zoning Ordinance. Per Section 3048, the Project will reserve 15% of parking spaces for zero-emission vehicles and equip 50% of those reserved spaces with Level 2 electric vehicle charging facilities.
<b>3. Recycled Water Infrastructure.</b> Does the City's Water Utilities Department require that the project install infrastructure to provide for recycled water service?	<b>Not Applicable.</b> The Project is not required to use recycled water.
<b>4. Transportation Demand Management (TDM).</b> Per Section 3050 of the City's Zoning Ordinance, does the proposed project expected to generate at least 100 daily employee commute trips, necessitating the preparation and implementation of a TDM Plan?	<b>Not Applicable.</b> The Project is a residential project and this measure does not apply.
<b>5. Urban Forestry.</b> Will the project comply with the minimum tree canopy and permeable surface area requirements outlined in Section 3049 of the City's Zoning Ordinance?	<b>Consistent.</b> The Project will provide a minimum of 12% tree canopy coverage and 22% permeable surface, which meets the requirements outlined in Section 3049 of the City's Zoning Ordinance.

**Source:** Appendix A, CAP Consistency Checklist

As shown in Table 3.7-5, the project is consistent with the CAP Consistency Checklist adopted by the City to ensure that the emission targets identified in the CAP are achieved. Therefore, the project is not expected to generate GHG emissions that may have a significant impact on the environment, and would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and the impact would be **less than significant**.

### Per Service Population Efficiency Metric

As discussed previously, pursuant to the City's May 2023 Policy Directive, a project's GHG emissions are to be quantified and its per service population emissions determined and evaluated against the City's targets based on when a project is to be implemented to ensure that the project would comply with the City's CAP, which is presented below.

### Construction Emissions

Construction of the project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road haul and vendor (material delivery) truck trips, and worker vehicle trips. Emissions from the

construction phase of project components were estimated using the CalEEMod Version 2022.1.<sup>4</sup> Per preliminary project details, it is assumed that construction of the project would begin in January 2024 and would last approximately 21 months. A detailed depiction of the construction schedule—including information regarding phasing, equipment used during each phase, haul trucks, vendor trucks, and worker vehicles—is included in Appendix C. Per City Guidance, construction-related GHG emissions were amortized over 20 years and added to operational emissions to assess significance.

Table 4.7-6 shows the estimated annual GHG construction emissions associated with the project. Complete details of the construction emissions calculations are provided in Appendix C.

**Table 4.7-6. Estimated Annual Construction GHG Emissions**

Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Refrigerant	CO <sub>2e</sub>
	Metric Tons				
2024	393	0.05	0.02	0.26	400
2025	162	0.01	0.01	0.18	165
<b>Total</b>	<b>555</b>	<b>0.06</b>	<b>0.03</b>	<b>0.44</b>	<b>565</b>
<b>Amortized Emissions (20 years)</b>					<b>28.2</b>

**Source:** CalEEMod Version 2022.1.

**Notes:** GHG = greenhouse gas; CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2e</sub> = carbon dioxide equivalent. See Appendix C for complete results.

As shown in Table 4.7-6, the estimated total GHG emissions from construction of the project would be approximately 565 MT CO<sub>2e</sub>. When amortized over 20 years, the estimated annual GHG emissions from construction of the project would be approximately 28 MT CO<sub>2e</sub> per year.

### Operational Emissions

Operation of the project would generate GHG emissions from mobile sources, area sources (landscape maintenance equipment), energy use, water use and wastewater generation, and solid waste (i.e., CO<sub>2e</sub> emissions associated with landfill off-gassing). As with project construction, CalEEMod Version 2022.1 was used to estimate potential project-generated operational GHG emissions based on project land uses. It was assumed that the project would be operational following the completion of construction, which would occur in 2026.

#### Area

The area source category calculates direct sources of GHG emissions located at the project site including hearths and landscape maintenance equipment. This source category does not include the emissions associated with natural gas usage in space heating and water heating as these are calculated in the building energy use module of CalEEMod. The project includes a project design feature (see Section 3.2.5, Project Design Features) that prohibits fireplaces in residential units.

<sup>4</sup> CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform to calculate construction and operational emissions from land use development projects. The model was developed for the California Air Pollution Control Officers Association in collaboration with multiple air districts across the state. Numerous lead agencies in the state, including the San Diego Air Pollution Control District, use CalEEMod to estimate GHG emissions in accordance with CEQA Guidelines Section 15064.4(a)(1).

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, roto tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers, as well as air compressors, generators, and pumps. The emissions associated from landscape equipment use were estimated using CalEEMod defaults. For San Diego County, CalEEMod assumes that landscaping equipment would operate 180 days per year. To be conservative, emissions were estimated assuming that landscape maintenance equipment was powered by gasoline or diesel fuel, and not electrified.

### Energy

As represented in CalEEMod, energy sources include emissions associated with building electricity and natural gas usage (non-hearth). CalEEMod default values for energy consumption were applied to each land use. The energy use from residential land uses is calculated in CalEEMod based on the Residential Appliance Saturation Survey. Energy use from the nonresidential land uses is based on various studies and assessments as described in Section 7.3, Estimating Energy Use from Other Land Uses, of Appendix A of the CalEEMod User's Guide (CAPCOA 2021).

Annual natural gas and electricity emissions were estimated in CalEEMod using default values for emissions factors for San Diego Gas and Electric, which would be the energy source provider for the project. The project includes Project Design Feature (PDF) 5 that ensures photovoltaic systems are installed on each building to meet 50% of forecasted electricity demand.

### Mobile Sources (Motor Vehicles)

Following the completion of construction activities, the project would generate GHG emissions from mobile sources (vehicular traffic), as a result of residents associated with the 164 residential units. The CalEEMod Version 2020.4.0 model was used to estimate daily emissions from vehicular sources (refer to Appendix C). CalEEMod Version 2020.4.0 default data, including trip rate, temperature, trip characteristics, variable start information, and emissions factors, were used for the model inputs. Emission factors representing the vehicle mix and emission factors for 2026 were used to estimate emissions associated with vehicular sources.

### Solid Waste

The project would generate solid waste and, therefore, result in CO<sub>2e</sub> emissions associated with landfill off-gassing. CalEEMod default values for solid waste generation were used to estimate GHG emissions associated with solid waste.

### Water and Wastewater

Supply, conveyance, treatment, and distribution of water for the project require the use of electricity, which would result in associated indirect GHG emissions. Similarly, wastewater generated by the project requires the use of electricity for conveyance and treatment, resulting in GHG emissions generated during wastewater treatment.

### Emissions

Table 4.7-7 shows the estimated annual GHG operational emissions associated with the project. As discussed above, total annual operational emissions were combined with amortized (20 years) construction emissions and compared to the recommended efficiency metric threshold. Complete details of the construction emissions calculations are provided in Appendix C.

**Table 4.7-7. Summary of Estimated Annual GHG Emissions**

Emissions Source	MT CO <sub>2</sub>	MT CH <sub>4</sub>	MT N <sub>2</sub> O	Refrigerants	MT CO <sub>2</sub> e
Mobile	803	0.04	0.03	1.21	815
Area	139	0.16	<0.01	n/a	143
Energy <sup>1</sup>	186	0.02	<0.01	n/a	187
Water	3.83	0.19	<0.01	n/a	9.93
Waste	10.9	1.09	0.00	n/a	38.0
Refrigerants	n/a	n/a	n/a	0.21	0.21
<b>Total</b>	<b>1,142.70</b>	<b>1.50</b>	<b>0.03</b>	<b>1.42</b>	<b>1,193.10</b>
<i>Amortized Construction Emissions (20 years)</i>					28
<b>Project Operations + Amortized Construction Total</b>					<b>1,221.14</b>
<i>Service Population</i>					457
<i>GHG Efficiency Threshold for Post-2025</i>					3.0
<i>Project GHG Efficiency Metric</i>					2.67
<b>Consistent with City's GHG Policy Directive?</b>					<b>Yes</b>

**Source:** See Appendix C for complete results.

**Notes:** GHG = greenhouse gas; MT = metric tons; CO<sub>2</sub> = carbon dioxide; CH<sub>4</sub> = methane; N<sub>2</sub>O = nitrous oxide; CO<sub>2</sub>e = carbon dioxide equivalent; n/a = not available or applicable.

<0.01 = reported value is less than 0.01.

<sup>1</sup> The above energy emissions estimate assumed the use of natural gas. The project will not include natural gas; thus, the energy GHG emissions would be reduced. The total GHG emissions shown are conservative.

As shown in Table 4.7-7, the project's GHG efficiency/service population would be consistent with the City's Policy Directive of achieving no more than 3.0 MT CO<sub>2</sub>e post-2025. Accordingly, the project would not generate GHG emissions that would have a significant impact on the environment. The project's GHG emissions would be **less than significant**.

### Consistency with Senate Bill 32, Assembly Bill 1279, Executive Order S-3-05, and Assembly Bill 1279

EO S-3-05 identified the following goals: GHG emissions should be reduced to 2000 levels by 2010, to 1990 levels by 2020, and to 80% below 1990 levels by 2050. SB 32 establishes a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, shall ensure that statewide GHG emissions are reduced to at least 40% below 1990 levels by December 31, 2030. AB 1279 establishes a policy of the state to achieve net zero GHG emissions no later than 2045 and for statewide anthropogenic GHG emissions to be reduced to at least 85% below 1990 levels by 2045.

Each Scoping Plan builds upon the successful framework established by the initial Scoping Plan and subsequent updates, while also identifying new, technologically feasible, and cost-effective strategies to ensure that California meets increasingly stringent GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health, including in disadvantaged communities. The Scoping Plan updates have continued to express optimism in meeting future year targets of 2050 and 2030, as evaluated in the 2014 and 2017 Scoping Plans (respectively), and most recently, the 2045 goal addressed in the 2022 Scoping Plan under EO B-55-18, which AB 1279 codified and expanded on.

While there are no established protocols or thresholds of significance for that future year analysis, CARB forecasted in the 2014 Scoping Plan that compliance with the current Scoping Plan would put the state on a trajectory of meeting the long-term 2050 GHG goals, although the specific path to compliance was unknown at the time (CARB 2014). The 2017 Scoping Plan outlined a strategy to achieve the 2030 GHG reduction target. The proposed scenario in the 2022 Scoping Plan lays out a path not just to carbon neutrality by 2045, but also to the 2030 GHG emissions reduction target (CARB 2022b). The modeling indicates that, if the plan described in the proposed scenario is fully implemented, and done so on schedule, the state is on track to reduce its emissions to 260 MMT CO<sub>2</sub>e by 2030 (CARB 2022b).

The City is on track to meet state-aligned emissions reduction targets for 2020 and 2030 without additional emissions reduction measures (City of Oceanside 2019). However, the City understands that meeting long-term reduction targets requires aggressive action. As such, the City has developed near-term local GHG emissions targets more aggressive than state targets that put the City on a trajectory consistent with the state's 2050 GHG emissions targets, which represent the level necessary to stabilize the climate in the latter part of the twenty-first century (City of Oceanside 2019). Regarding AB 1279, it is important to note that the state's carbon neutrality goal does not preclude any individual project from emitting GHG emissions. AB 1279 codifies EO B-55-18; however, its enactment was linked to the concurrent enactment of SB 905, which requires CARB to create a Carbon Capture, Removal, Utilization, and Storage Program that, fundamentally, will sequester carbon emitted by other projects. Therefore, the state's carbon neutrality goal does not preclude all individual projects from emitting GHG emissions.

As discussed above, the project would be consistent with the CAP and, therefore, would be consistent with state GHG reduction goals and progress towards achieving carbon neutrality.

### Consistency with SANDAG RTP/SCS

At the regional level, SANDAG's RTP/SCS has been adopted for the purpose of reducing GHG emissions attributable to passenger vehicles in the San Diego region. In October 2015, SANDAG adopted its Regional Plan, which was subsequently updated in 2021. The RTP/SCS is not directly applicable to the project because the underlying purpose of the RTP/SCS is to provide direction and guidance on future regional growth (i.e., the location of new residential and nonresidential land uses) and transportation patterns throughout the City and greater San Diego County, as stipulated under SB 375. CARB has recognized that the approved RTP/SCS is consistent with SB 375. The SANDAG Regional Plan is generally consistent with the local government plans. Since the project is within the scope of development that was anticipated in the General Plan, it would not result in growth that would conflict with the Regional Plan.

As noted above, the proposed project would not generate GHG emissions that have a significant impact on the environment because it is determined to be consistent with the City's CAP, which is the most applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs (see Table 4.7-7). Therefore, the proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and the impact would be **less than significant**.

## 4.7.5 Cumulative Analysis

GHG emissions inherently contribute to cumulative impacts; the project as well as the cumulative projects discussed in Section 3.4 of this EIR contribute additional GHG emissions, which would result in a cumulative impact. In accordance with CEQA Guidelines 15183.5(b), the City prepared its CAP to address the cumulative impact of development within the City. The CAP analyzes and mitigates GHG emissions through prescribed measures that

reduce GHG emissions on a citywide level. Pursuant to CEQA Guidelines Sections 15064(h)(3), 15130(d), and 15183(b), a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be cumulatively considerable if it complies with the requirements of a CAP. As shown in Table 4.7-5, the project is consistent with the CAP and thus would not have a cumulatively considerable impact on GHG emissions. The cumulative impact would be **less than significant**.

#### 4.7.6 Mitigation Measures

Impacts related to GHG emissions as a result of project implementation are determined to be less than significant, and therefore no mitigation measures are required.

#### 4.7.7 Level of Significance After Mitigation

No substantial impacts related to GHG emissions were identified; therefore, no mitigation measures are required. Impacts related to GHG emissions would be **less than significant**.

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