# 4.7 Greenhouse Gas Emissions

This section summarizes greenhouse gas emissions (GHG) and GHG emissions inventory and analyzes the impacts related to GHG emissions and climate change due to the 2045 General Plan.

## 4.7.1 Setting

Gases that absorb and re-emit infrared radiation in the atmosphere are called GHGs. Gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), fluorinated gases such as hydrofluorocarbons (HFC) and perfluorocarbons (PFC), and sulfur hexafluoride (SF6). Water vapor is excluded from the list of GHGs, because it is short-lived in the atmosphere, and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

Different GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO2) is used to relate the amount of heat absorbed to the amount of the gas, referred to as "carbon dioxide equivalent" (CO2e), which is the amount of GHG multiplied by its GWP. CO2 has a 100-year GWP of 1. By contrast, methane has a 100-year GWP of 30, meaning its global warming effect is 30 times greater than CO2 on a molecule-per-molecule basis (United Nations Intergovernmental Panel on Climate Change [IPCC] 2021).[1]

GHGs are emitted by natural processes and human activities. Of these gases, $CO_2$ and $CH_4$ are emitted in the greatest quantities from human activities. Emissions of $CO_2$ are usually by-products of fossil fuel combustion, and $CH_4$ results from off-gassing associated with leakage from natural gas pipelines and processes, agricultural practices and landfills. Human-made GHGs, which have greater heat-absorption potential than $CO_2$, include fluorinated gases and $SF_6$ (United States Environmental Protection Agency [USEPA] 2023a).

Climate change is the observed increase in the average temperature of the Earth's atmosphere, land and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period. The term "climate change" is often used interchangeably with the term "global warming," but climate change is preferred, because it conveys that other changes are happening in addition to rising temperatures. The baseline against which these changes are measured originates from historical records that identify temperature changes that occurred in the past, such as during previous ice ages. The global climate is changing continuously, as evidenced in the geologic record, which indicates repeated episodes of substantial warming and cooling. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming over the past 150 years. The IPCC expressed in their *Sixth Assessment Report* that the rise and continued growth of atmospheric CO2 concentrations is unequivocally due to human activities (IPCC 2021). Human influence has warmed the atmosphere, ocean, and land and has led the climate to warm at an unprecedented rate in the last 2,000 years. It is estimated that between the period of 1850 through 2019, a total of 2,390 gigatons of

[1] The IPCC's (2021) *Sixth Assessment Report* determined that methane has a GWP of 30. However, the 2017 *Climate Change Scoping Plan* published by CARB uses a GWP of 25 for $CH_4$, consistent with the IPCC's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWP of 25.

anthropogenic CO2 was emitted. It is likely that anthropogenic activities have increased the global surface temperature by approximately 1.07 degrees Celsius between the years 2010 through 2019 (IPCC 2021).

GHGs in the atmosphere regulate the earth's temperature. Without the natural heat-trapping effect of GHGs, the earth's surface would be approximately 33 degrees Celsius cooler (World Meteorological Organization 2013). However, since 1750, estimated concentrations of CO2, CH4, and N2O in the atmosphere have increased by 47 percent, 156 percent, and 23 percent, respectively, primarily due to human activity (IPCC 2021). GHG emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation are believed to have elevated the concentration of these gases in the atmosphere far beyond the level of concentrations that occur naturally.

## a. GHG Emissions Inventory

### Global GHG Emissions Inventory

Worldwide anthropogenic GHG emissions totaled 47,000 million metric tons (MMT) of CO2e in 2015, a 43 percent increase from 1990 GHG levels. Specifically, 34,522 million metric tons (MMT) of CO2e of CO2, 8,241 MMT of CO2e of CH4, 2,997 MMT of CO2e of N2O, and 1,001 MMT of CO2e of fluorinated gases were emitted in 2015. The largest source of GHG emissions were energy production and fuel use from vehicles and buildings, which accounted for 75 percent of the global GHG emissions. Agriculture uses and industrial processes contributed 12 percent and six percent, respectively. Waste sources contributed three percent and international transportation sources contributed two percent. These sources account for approximately 98 percent because there was a net sink of two percent from land-use change (including afforestation/reforestation and emissions removals by other land use activities) (USEPA 2023a).

### National GHG Emissions Inventory

United States GHG emissions were 6,347.7 MT of $CO_2e$ in 2021 or 5,593.5 MT $CO_2e$ after accounting for sequestration. Emissions increased by 6.8 percent from 2020 to 2021. The increase from 2020 to 2021 was driven by an increase in $CO_2$ emissions from fossil fuel combustion which increased 7 percent relative to previous years and is primarily due to the economy rebounding after the COVID-19 Pandemic. In 2020, the energy sector (including transportation) accounted for 81 percent of nationwide GHG emissions while agriculture, industrial and waste accounted for approximately 10 percent, 6 percent, and 3 percent respectively (USEPA 2023b).

### State GHG Emissions Inventory

Based on the California Air Resource Board (CARB) California Greenhouse Gas Inventory for 2000-2020, California produced 369.2 MT of $CO_2e$ in 2020, which is 35.3 MT of $CO_2e$ lower than 2019 levels and 14 percent below 1990 levels. The 2019 to 2020 decrease in emissions is likely due in large part to the impacts of the COVID-19 pandemic. The major source of GHG emissions in California is the transportation sector, which comprises 37 percent of the state's total GHG emissions. The industrial sector is the second largest source, comprising 20 percent of the state's GHG emissions while electric power accounts for approximately 16 percent. The magnitude of California's total GHG emissions is due in part to its large size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions as compared to other states is its relatively mild climate. In 2016, the state of California achieved its

2020 GHG emission reduction target of reducing emissions to 1990 levels as emissions fell below 431 MT of $CO_2e$ (CARB 2022). The annual 2030 statewide target emissions level is 260 MT of $CO_2e$ (CARB 2017).

## Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources though potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. The year 2022 was the sixth warmest year since global records began in 1880 at 0.86°C (1.55°F) above the 20th century average of 13.9°C (57.0°F). This value is 0.13°C (0.23°F) less than the record set in 2016 and it is only 0.02°C (0.04°F) higher than the last year's (2021) value, which now ranks as the seventh highest (National Oceanic and Atmospheric Administration 2023). Furthermore, several independently analyzed data records of global and regional Land-Surface Air Temperature obtained from station observations jointly indicate that Land Surface Air Temperature and sea surface temperatures have increased. Due to past and current activities, anthropogenic GHG emissions are increasing global mean surface temperature at a rate of 0.2°C per decade. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC 2014, 2018).

Potential impacts of climate change in California may include reduced water supply from snowpack, sea level rise, more extreme heat days per year, more large forest fires, and more drought years. *California's Fourth Climate Change Assessment* (California Natural Resource Agency 2019) includes regional reports that summarize climate impacts and adaptation solutions for nine regions of the state and regionally specific climate change case studies. However, while there is growing scientific consensus about the possible effects of climate change at a global and statewide level, current scientific modeling tools are unable to predict what local impacts may occur with a similar degree of accuracy. A summary follows of some of the potential effects that climate change could generate in California.

### *Air Quality*

Scientists project that the annual average maximum daily temperatures in California could rise by 2.4 to 3.2°C in the next 50 years and by 3.1 to 4.9°C in the next century. Higher temperatures are conducive to air pollution formation and rising temperatures could therefore result in worsened air quality in California. As a result, climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. In addition, as temperatures have increased in recent years, the area burned by wildfires throughout the state has increased, and wildfires have occurred at higher elevations in the Sierra Nevada Mountains (California Natural Resource Agency 2019). If higher temperatures continue to be accompanied by an increase in the incidence and extent of large wildfires, air quality could worsen. Severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state. With increasing temperatures, shifting weather patterns, longer dry seasons, and more dry fuel loads, the frequency of large wildfires and area burned is expected to increase (California Natural Resources Agency 2021).

### *Water Supply*

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future precipitation trends and water supplies in California. Year-to-year variability in statewide precipitation levels has increased since 1980, meaning that wet and dry precipitation extremes have become more common (California Department of Water Resources 2018). For example, the winter of 2022-2023 had severe storms and flooding from increased rainfall and snowmelt, which the California Department of Water Resources identified as "the latest example that California's climate is becoming more extreme" (California Department of Wate Resources 2023). This uncertainty regarding future precipitation trends complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The average early spring snowpack in the western United States, including the Sierra Nevada Mountains, decreased by about 10 percent during the last century. During the same period, sea level rose over 0.15 meter along the central and southern California coasts. The Sierra snowpack provides most of California's water supply as snow that accumulates during wet winters is released slowly during the dry months of spring and summer. A warmer climate is predicted to reduce the fraction of precipitation that falls as snow and the amount of snowfall at lower elevations, thereby reducing the total snowpack. Projections indicate that the average spring snowpack in the Sierra Nevada and other mountain catchments in central and northern California will decline by approximately 66 percent from its historical average by 2050 (California Natural Resource Agency 2019).

### *Hydrology and Sea Level Rise*

Climate change could affect the intensity and frequency of storms and flooding (California Natural Resource Agency 2019). Furthermore, climate change could induce substantial sea level rise in the coming century. Rising sea level increases the likelihood of and risk from flooding. The rate of increase of global mean sea levels between 1993 to 2022, observed by satellites, is approximately 3.4 millimeters per year, double the twentieth century trend of 1.6 millimeters per year (World Meteorological Organization 2013; National Aeronautics and Space Administration 2023). Global mean sea levels in 2013 were about 0.23 meter higher than those of 1880 (National Oceanic and Atmospheric Administration 2022). Sea levels are rising faster now than in the previous two millennia, and the rise will probably accelerate, even with robust GHG emission control measures. The most recent IPCC report predicts a mean sea level rise ranging between 0.25 to 1.01 meters by 2100 with the sea level ranges dependent on a low, intermediate, or high GHG emissions scenario (IPCC 2021). A rise in sea levels could erode 31 to 67 percent of southern California beaches and cause flooding of approximately 370 miles of coastal highways during 100-year storm events. This would also jeopardize California's water supply due to saltwater intrusion and induce groundwater flooding and/or exposure of buried infrastructure (California Natural Resource Agency 2019). Furthermore, increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

### *Agriculture*

California has an over $51 billion annual agricultural industry that produces over a third of the country's vegetables and three-quarters of the country's fruits and nuts (California Department of Food and Agriculture 2022). Higher $CO_2$ levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, certain regions of

agricultural production could experience water shortages of up to 16 percent, which would increase water demand as hotter conditions lead to the loss of soil moisture. In addition, crop yield could be threatened by water-induced stress and extreme heat waves, and plants may be susceptible to new and changing pest and disease outbreaks (California Natural Resource Agency 2019). Temperature increases could also change the time of year that certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (California Climate Change Center 2006).

#### *Ecosystems*

Climate change and the potential resultant changes in weather patterns could have ecological effects on the global and local scales. Soil moisture is likely to decline in many regions due to higher temperatures, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: timing of ecological events; geographic distribution and range of species; species composition and the incidence of nonnative species within communities; and ecosystem processes, such as carbon cycling and storage (Parmesan 2006; California Natural Resource Agency 2019).

## 4.7.2 Regulatory Setting

### a. Federal Regulations

#### *Federal Clean Air Act*

The U.S. Supreme Court determined in *Massachusetts et al. v. Environmental Protection Agency* et al. ([2007] 549 U.S. 05-1120) that the USEPA has the authority to regulate motor vehicle GHG emissions under the federal Clean Air Act. The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines and requires annual reporting of emissions. In 2012, the USEPA issued a Final Rule that established the GHG permitting thresholds that determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities.

In *Utility Air Regulatory Group v. Environmental Protection Agency* (134 Supreme Court 2427 [2014]), the Supreme Court held the USEPA may not treat GHGs as an air pollutant for purposes of determining whether a source can be considered a major source required to obtain a Prevention of Significant Deterioration or Title V permit. The Supreme Court also held that Prevention of Significant Deterioration permits otherwise required based on emissions of other pollutants may continue to require limitations on GHG emissions based on the application of Best Available Control Technology.

Federal Fuel Efficiency Standards (CAFE)Under the CAA, corporate average fuel economy (CAFE) standards have been set for passenger cars and light trucks. The State of California has traditionally had a waiver to set its own more stringent fuel efficiency standards. In 2020, the NHTSA and USEPA implemented the Safer Affordable Fuel-Efficient Vehicles Rule (SAFE Rule). Part One of the SAFE Rule revoked a waiver granted by USEPA to the State of California to enforce more stringent emission standards for motor vehicles those required by USEPA for the explicit purpose of GHG reduction. However, in 2021 the federal government formally proposed to roll back portions of the SAFE Rule, restoring California's right to enforce more stringent fuel efficiency standards (NHTSA

2022). Most recently, in December 2021, the NHTSA finalized rules to repeal the SAFE I Rule established in 2020.

### *Construction Equipment Fuel-Efficiency Standard*

USEPA sets emission standards for construction equipment. The first federal standards (Tier 1) were adopted in 1994 for all off-road engines over 50 horsepower (hp) and were phased in by 2000. A new standard was adopted in 1998 that introduced Tier 1 for all equipment below 50 hp and established the Tier 2 and Tier 3 standards. The Tier 2 and Tier 3 standards were phased in by 2008 for all equipment. The current iteration of emissions standards for construction equipment are the Tier 4 efficiency requirements, which are contained in 40 CFR Parts 1039, 1065, and 1068 (originally adopted in 69 Federal Register 38958 [June 29, 2004] and most recently updated in 2014 [79 Federal Register 46356]). Emissions requirements for new off-road Tier 4 vehicles were completely phased in by the end of 2015.

## b. State Regulations

CARB is responsible for the coordination and oversight of state and local air pollution control programs in California. There are numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

### *Executive Order S-3-05*

In 2005, the governor issued Executive Order (EO) S-3-05, which identifies statewide GHG emission reduction targets to achieve long-term climate stabilization as follows:

- Reduce GHG emissions to 1990 levels (431 MT of $CO_2e$) by 2020[2].
- Reduce GHG emissions to 80 percent below 1990 levels by 2050.

In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report"). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc.

### *California Global Warming Solutions Act of 2006 (Assembly Bill 32 and Senate Bill 32)*

The "California Global Warming Solutions Act of 2006," (Assembly Bill [AB] 32), outlines California's major legislative initiative for reducing GHG emissions. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 and requires CARB to prepare a Scoping Plan that outlines the main state strategies for reducing GHG emissions to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 2020 target of 431 MMT $CO_2e$, which was achieved in 2016. CARB approved the Scoping Plan on December 11, 2008, which included GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among others (CARB 2008). Many of the GHG reduction measures included in the Scoping Plan (e.g.,

[2] In 2016, the state of California achieved its 2020 GHG emission reduction target of reducing emissions to 1990 levels.

Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since the Scoping Plan's approval.

The CARB approved the 2013 Scoping Plan update in May 2014. The update defined the CARB's climate change priorities for the next five years, set the groundwork to reach post-2020 statewide goals, and highlighted California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluated how to align the state's longer term GHG reduction strategies with other state policy priorities, including those for water, waste, natural resources, clean energy, transportation, and land use (CARB 2014).

On September 8, 2016, the governor signed Senate Bill (SB) 32 into law, extending the California Global Warming Solutions Act of 2006 by requiring the state to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, the CARB adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program, and implementation of recently adopted policies and legislation, such as SB 1383 and SB 100 (discussed later). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends that local governments adopt policies and locally appropriate quantitative thresholds consistent with statewide per capita goals of six MT $CO_2e$ by 2030 and two MT $CO_2e$ by 2050 (CARB 2017). As stated in the 2017 Scoping Plan, these goals may be appropriate for plan-level analyses (City, county, sub-regional, or regional level), but not for specific individual projects because they include all emissions sectors in the state (CARB 2017).

### *Senate Bill 375*

The Sustainable Communities and Climate Protection Act of 2008 (SB 375), signed in August 2008, enhances the state's ability to reach AB 32 goals by directing the CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. SB 375 aligns regional transportation planning efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPOs) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO's Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy (categorized as "transit priority projects") can receive incentives to streamline CEQA processing.

On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Santa Barbara County Association of Governments (SBCAG) was assigned targets of an 13 percent reduction in per capita GHG emissions from passenger vehicles by 2020 and a 17 percent reduction in per capita GHG emissions from passenger vehicles by 2035. In the SBCAG region, SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements.

### *Senate Bill 350*

Adopted on October 7, 2015, SB 350 supports the reduction of GHG emissions from the electricity sector through a number of measures, including requiring electricity providers to achieve a 50 percent renewables portfolio standard by 2030, a cumulative doubling of statewide energy efficiency savings in electricity and natural gas by retail customers by 2030. Future residents

generated from the 2045 General Plan would be provided with energy from the Central Coast Community Energy (3CE), which is on a pathway to 100 percent renewable energy by 2030 (3CE 2024).

### *Senate Bill 1383*

Adopted in September 2016, SB 1383 requires CARB to approve and begin implementing a comprehensive strategy to reduce emissions of short-lived climate pollutants. The bill requires the strategy to achieve the following reduction targets by 2030:

- Methane – 40 percent below 2013 levels
- Hydrofluorocarbons – 40 percent below 2013 levels
- Anthropogenic black carbon – 50 percent below 2013 levels

The bill also requires the California Department of Resources Recycling and Recovery (CalRecycle), in consultation with the State board, to adopt regulations that achieve specified targets for reducing organic waste in landfills.

### *Senate Bill 100*

Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard Program, which was last updated by SB 350 in 2015. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. Residents generated from the 2045 General Plan would be supplied with 100 percent renewable energy by 2030 and 60 percent by 2025 (3CE 2024).

### *Executive Order B-55-18*

On September 10, 2018, former Governor Brown issued Executive Order (EO) B-55-18, which established a new statewide goal of achieving carbon neutrality by 2045 and maintaining net negative emissions thereafter. This goal is in addition to the existing statewide GHG reduction targets established by SB 375, SB 32, SB 1383, and SB 100.

### *California Building Standards Codes*

CCR Title 24 is referred to as the California Building Standards Code. It consists of a compilation of several distinct standards and codes related to building construction including plumbing, electrical, interior acoustics, energy efficiency, and handicap accessibility for persons with physical and sensory disabilities. The current iteration is the 2022 Title 24 standards. The California Building Standards Code's energy-efficiency and green building standards are outlined below.

#### PART 6 – BUILDING ENERGY EFFICIENCY STANDARDS/ENERGY CODE

CCR Title 24, Part 6 is the Building Energy Efficiency Standards or California Energy Code. This code, originally enacted in 1978, establishes energy-efficiency standards for residential and non-residential buildings to reduce California's energy demand. New construction and major renovations must demonstrate their compliance with the current Energy Code through submittal and approval of a Title 24 Compliance Report to the local building permit review authority and the California Energy Commission (CEC). The 2022 Title 24 standards are the applicable building energy efficiency standards for the 2045 General Plan because they became effective on January 1, 2023;

additionally, these standards have been adopted by ordinance into the City's municipal code in 2023.

### PART 11 – CALIFORNIA GREEN BUILDING STANDARDS

The California Green Building Standards Code, referred to as CALGreen, was added to Title 24 as Part 11, first in 2009 as a voluntary code, which then became mandatory effective January 1, 2011 (as part of the 2010 California Building Standards Code). The 2022 CALGreen includes mandatory minimum environmental performance standards for all ground-up new construction of residential and non-residential structures. It also includes voluntary tiers with stricter environmental performance standards for these same categories of residential and non-residential buildings. Local jurisdictions must enforce the minimum mandatory CALGreen standards and may adopt additional amendments for stricter requirements.

The mandatory standards applicable to the project are located at https://codes.iccsafe.org/content/CAGBC2022P1

#### *California Integrated Waste Management Act (Assembly Bill 341)*

The California Integrated Waste Management Act of 1989, as modified by AB 341 in 2011, requires each jurisdiction's source reduction and recycling element to include an implementation schedule that shows: (1) diversion of 25 percent of all solid waste by January 1, 1995, through source reduction, recycling, and composting activities and (2) diversion of 50 percent of all solid waste on and after January 1, 2000.

#### *Executive Order N-79-20*

On September 23, 2020, Governor Newsom issued EO N-79-20, which established the following new statewide goals:

- All new passenger cars and trucks sold in-state to be zero-emission by 2035.
- All medium- and heavy-duty vehicles in the state to be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks.
- All off-road vehicles and equipment to be zero-emission by 2035 where feasible.

EO N-79-20 directs CARB, the Governor's Office of Business and Economic Development, the CEC, the California Department of Transportation, and other state agencies to take steps toward drafting regulations and strategies and leveraging agency resources toward achieving these goals.

#### *Assembly Bill 1279*

AB 1279, "The California Climate Crisis Act," was passed on September 16, 2022. It declares the State will achieve net zero GHG emissions as soon as possible, but no later than 2045, and achieve and maintain net negative GHG emissions thereafter. In addition, the bill states that the State will reduce GHG emissions by 85 percent below 1990 levels no later than 2045.

In response to the passage of AB 1279 and the identification of the 2045 GHG reduction target, CARB published the Final 2022 Climate Change Scoping Plan in November 2022 (CARB 2022). The 2022 Update builds upon the framework established by the 2008 Climate Change Scoping Plan and previous updates while identifying a new, technologically feasible, cost-effective, and equity-focused path to achieve California's climate target. The 2022 Update includes policies to achieve a significant reduction in fossil fuel combustion, further reductions in short-lived climate pollutants,

support for sustainable development, increased action on natural and working lands (NWL) to reduce emissions and sequester carbon, and the capture and storage of carbon.

The 2022 Update assesses the progress California is making toward reducing its GHG emissions by at least 40 percent below 1990 levels (431 MT of $CO_2e$) by 2030, as called for in SB 32 and laid out in the 2017 Scoping Plan, addresses recent legislation and direction from Governor Newsom, extends and expands upon these earlier plans, and implements a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045, as well as taking an additional step of adding carbon neutrality as a science-based guide for California's climate work. As stated in the 2022 Update, "The plan outlines how carbon neutrality can be achieved by taking bold steps to reduce GHGs to meet the anthropogenic emissions target and by expanding actions to capture and store carbon through the state's NWL and using a variety of mechanical approaches" (CARB 2022). Specifically, the 2022 Update:

- Identifies a path to keep California on track to meet its SB 32 GHG reduction target of at least 40 percent below 1990 emissions by 2030.
- Identifies a technologically feasible, cost-effective path to achieve carbon neutrality by 2045 and a reduction in anthropogenic emissions by 85 percent below 1990 levels.
- Focuses on strategies for reducing California's dependency on petroleum to provide consumers with clean energy options that address climate change, improve air quality, and support economic growth and clean sector jobs.
- Integrates equity and protecting California's most impacted communities as driving principles throughout the document.
- Incorporates the contribution of NWL to the state's GHG emissions, as well as their role in achieving carbon neutrality.
- Relies on the most up-to-date science, including the need to deploy all viable tools to address the existential threat that climate change presents, including carbon capture and sequestration, as well as direct air capture.
- Evaluates the substantial health and economic benefits of taking action.
- Identifies key implementation actions to ensure success.

In addition to reducing emissions from transportation, energy, and industrial sectors, the 2022 Update includes emissions and carbon sequestration in NWL and explores how NWL contributes to long-term climate goals. Under the Scoping Plan Scenario, California's 2030 emissions are anticipated to be 48 percent below 1990 levels, representing an acceleration of the current SB 32 target. Cap-and-Trade regulation continues to play a large factor in the reduction of near-term emissions for meeting the accelerated 2030 reduction target. Every sector of the economy will need to begin to transition in this decade to meet our GHG reduction goals and achieve carbon neutrality no later than 2045. The 2022 Update approaches decarbonization from two perspectives, managing a phasedown of existing energy sources and technologies, as well as increasing, developing, and deploying alternative clean energy sources and technology.

### *Clean Energy, Jobs, and Affordability Act of 2022 (Senate Bill 1020)*

Adopted on September 16, 2022, SB 1020 creates clean electricity targets for eligible renewable energy resources and zero-carbon resources to supply 90 percent of retail sale electricity by 2035, 95 percent by 2040, 100 percent by 2045, and 100 percent of electricity procured to serve all state

agencies by 2035. This bill shall not increase carbon emissions elsewhere in the western grid and shall not allow resource shuffling[3].

### c. Local Regulations

#### SBCAG Connected 2050 RTP/SCS

The Connected 2050 RTP/SCS was adopted by SBCAG in 2021, and it builds upon the goals, policies, and forecasts of preceding plans. The City of Solvang is projected to increase by 500 residents from baseline year 2017 to year 2050. The Connected 2050 RTP/SCS demonstrates that the SBCAG region would achieve emissions reductions consistent with targets set forth by SB 375. GHG reductions achieved through the Connected 2050 RTP/SCS would result in corresponding reductions in energy consumption in the region. The Connected 2050 RTP/SCS sets forth goals and objectives related to mixed-use development and the jobs-housing balance by allotting more housing to the southern portion of Santa Barbara County, as well as incorporating region-specific analysis of environmental justice indicators. Policies in the Connected 2050 RTP/SCS applicable to the 2045 General Plan include meeting SB 375 requirements, promoting renewable energy, and promoting alternative transportation (SBCAG 2021).

## 4.7.3 Impact Analysis

### a. Significance Thresholds and Methodology

#### Significance Thresholds

Appendix G of the *CEQA Guidelines* states that a project may have a significant adverse impact if it would:

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

The issue of climate change typically involves an analysis of whether or not a project's contribution towards an impact is cumulatively considerable. Regional cumulative impacts consider the City-wide impacts together with similar impacts of future development in and around Santa Barbara County. The general approach to cumulative impact analysis used in this EIR is discussed in Section 3, *Environmental Setting*. Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of cumulative projects. In relation to GHG emissions, the effects of projects refer to the global accumulation of GHG emissions in the atmosphere.

Section 15064.4 of the CEQA Guidelines recommends that lead agencies quantify GHG emissions and consider several other factors that may be used in the determination of significance of GHG emissions from a project, including the extent to which the project may increase or reduce GHG emissions; whether a project exceeds an applicable significance threshold; and the extent to which

[3] Resource Shuffling is defined as a plan to substitute lower GHG emission power for higher GHG emission power to reduce a compliance obligation for GHG emissions from imported electricity in the Cap-and-Trade Program.

the project complies with regulations or requirements adopted to implement a plan for the reduction or mitigation of GHG emissions.

CEQA Guidelines Section 15064.4 does not establish a threshold of significance. Lead agencies have the discretion to establish significance thresholds for their respective jurisdictions, and in establishing those thresholds, a lead agency may appropriately look to thresholds developed by other public agencies, or suggested by other experts, as long as any threshold chosen is supported by substantial evidence (CEQA Guidelines Section 15064.7[c]).

According to CEQA Guidelines Section 15183.5, projects can tier off a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan, such as the CAP. The City of Solvang does not have a qualified CAP or has not adopted quantitative GHG emissions threshold for land use projects. The County of Santa Barbara adopted new Interim GHG Emissions Thresholds of Significance (referred to herein as "Interim GHG Thresholds"), which are recommended for use until completion of the County's 2030 Climate Action Plan.[4] The Interim GHG Thresholds recommend that land use projects be first assessed against a screening criterion of 300 MT $CO_2e$. For projects that exceed the screening threshold, a service population threshold of 3.8 MT $CO_2e$ is recommended. However, the quantitative threshold is intended to be used for the evaluation of project-level impacts and would not be applicable to programmatic review of plan-level documentation such as the 2045 General Plan. Therefore, this approach is not feasible for this analysis. Instead, GHG emissions associated with project implementation is discussed qualitatively by comparing the 2045 General Plan to statewide emission reduction targets established in CARB's 2022 Scoping Plan and SBCAG 2050 RTP/SCS. Project-related GHG emissions are described below for informational purposes only.

## Methodology

GHG emissions result from both direct and indirect sources. Direct emissions include emissions from fuel combustion in vehicles and natural gas combustion from stationary sources. Indirect sources include off-site emissions occurring as a result of electricity and water consumption and solid waste. In addition, construction activities would result in direct and indirect emissions.

As GHGs are evaluated on a regional basis, the following analysis addresses the 2045 General Plan as it pertains to the region. Mobile source emissions were estimated using VMT data presented in Section 4.14, *Transportation*.

Area source emissions related to existing and future demand for water, wastewater treatment and conveyance, solid waste disposal, and energy were obtained using the California Emissions Estimator Model (CalEEMod). GHG emissions result from the energy use to supply, distribute, and treat water and wastewater, as well as from solid waste disposal by landfilling, recycling, or composting as methane and $CO_2$ gas is emitted in the process.

The energy use estimates generated in the CalEEMod version 2022.1 utilizes the 2019 Building Energy Efficiency Standards (Title 24). This is a conservative assumption since the energy use estimates do not account for potential energy efficiency measures required by subsequent Title 24 updates in 2022, 2025, and 2028. Individual projects generated by 2045 General Plan would be enrolled to 3CE's 100 percent renewable energy mix by 2030. CalEEMod does not contain carbon intensity factors for 3CE; therefore, the analysis uses a carbon intensity factor for Pacific Gas & Electric (PG&E) from reporting year 2019, which would produce conservative results since 3CE

[4] The 2030 Climate Action Plan is planned for adoption in 2023.

supplies an energy mix with a higher proportion of renewable energy than PG&E (California Air Pollution Control Officer Association 2022).

GHG emissions would also be generated by construction activity. No specific development projects have been proposed as part of the 2045 General Plan, and an annualized quantification of construction emissions would be speculative. Operational emissions are based on estimated VMT data for existing conditions (2015) and proposed project (2045). Details for mobile source, energy source, and area source inputs included in the modeling of GHG emissions are provided in Section 4.2, *Air Quality.*

## b. Project Impacts and Mitigation Measures

| | |
|---|---|
| **Threshold 1:** | Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? |
| **Threshold 2:** | Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? |

**Impact GHG-1 ALTHOUGH CONSTRUCTION AND OPERATION OF PROJECTS CARRIED OUT UNDER THE 2045 GENERAL PLAN WOULD GENERATE GHG EMISSIONS, THE 2045 GENERAL PLAN INCLUDES POLICIES AND ACTIONS THAT REDUCE GHG EMISSIONS AND ALIGN WITH THE GOALS OF APPLICABLE PLANS, POLICIES, AND REGULATIONS RELATED TO GHG EMISSIONS. THE 2045 GENERAL PLAN WOULD THEREFORE NOT CONFLICT WITH APPLICABLE PLANS, POLICIES, AND REGULATIONS ADOPTED FOR THE PURPOSE OF REDUCING GHG EMISSIONS. IMPACTS WOULD BE LESS THAN SIGNIFICANT.**

As discussed under Section 4.7.3, *Significance Thresholds and Methodology*, plans and policies have been adopted to reduce GHG emissions in the Southern California region, including the State's 2022 Scoping Plan and SBCAG 2050 RTP/SCS. The 2045 General Plan's consistency with these plans and applicable policies is discussed in the following subsections. As discussed herein, the 2045 General Plan would not conflict with plans and policies aimed at reducing GHG emissions. Estimated GHG emissions for development expected to be carried out under the 2045 General Plan are provided for informational purposes following the consistency analysis.

### 2022 Scoping Plan

The latest iteration of the Scoping Plan is the 2022 Scoping Plan, which focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the state's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities. The 2022 Scoping Plan's strategies that apply to the 2045 General Plan include the following:

- Reducing fossil fuel use, energy demand and vehicle miles traveled (VMT)
- Building decarbonization
- Maximizing recycling and diversion from landfills

Implementation of individual projects carried out under the 2045 General Plan would be consistent with the latest Title 24 Standards, which would require EV charging spaces for residential and non-residential land uses and a photovoltaic system consistent with the provisions of the latest California

Building Energy Efficiency Standards. In addition, the 2045 General Plan includes the following General Plan policies to promote green infrastructure:

- **Policy ENV-9.3: Alternative Modes of Transportation.** The City shall encourage the use of alternative transportation modes, including transit, walking, and bicycling.
- **Policy ENV-9.4: Electric Vehicle Infrastructure.** The City shall encourage the installation of solar photovoltaic systems and electric vehicle charging facilities in commercial, residential, and industrial development.
- **Policy ENV-9.5: Fuel Efficient Vehicles.** The City shall encourage adoption of alternative fuel vehicles including electric, hybrid, hydrogen fuel cell, or other fuel-efficient vehicles, for personal transportation.
- **Policy ENV-9.7: Sustainable Development Patterns**. The City shall continue to promote patterns of development that minimize dependence on personal automobiles and reduce VMT and GHG.
- **Policy ENV-12.1: Green Building Code**. The City shall require through the State Building Code energy efficient construction and sustainable building practices by continuing to implement the Green Building Code.
- **Policy ENV-12.2: Green Building Practices.** The City shall support the use of green building practices in the planning, design, construction, management, renovation, operations, and demolition of all public and private buildings and projects, including:
  - Land planning and design techniques that preserve the natural environment and minimize disturbance of the land.
  - Site development to reduce erosion, minimize paved surfaces and runoff and protect vegetation, especially trees.
  - Water conservation indoors and outdoors.
  - Energy efficiency in heating/cooling systems, appliances, lighting and the building envelope.
  - Selection of materials based on recyclability, durability and the amount of energy used to create the material.
  - Waste reduction, reuse and recycling during construction and throughout the life of the project.
  - Other new aspects of green design and construction included in LEED™ or other certification programs.
  - Control nighttime lighting to lower energy use, reduce glare, and prevent illumination of the night sky.
- **Policy ENV-12.3: LEED Certified City Buildings.** The City shall design and construct all new or renovated City buildings to achieve Leadership in Energy and Environmental Design (LEED) Gold rating requirements.
- **Policy ENV-13.2: Renewable Energy for Homes**. The City shall encourage installation of renewable energy sources for new homes per the new state building codes.
- **Policy ENV-13.5: Low-Income Energy Efficiency**. The City shall partner with community service agencies and organizations to support energy efficient projects for low-income residents. Eligible projects may include, but are not limited to, the installation of heating, ventilation, and air-conditioning systems, lighting, water heating equipment, and insulation and weatherization.

Electricity would be served by 3CE, which is required to increase its renewable energy procurement in accordance with SB 100 targets. The 2045 General Plan would result in additional residential and commercial density, which would increase multimodal trips (vehicle, bicycle, pedestrian, and transit) onto the circulation network. The City of Solvang is served by Santa Ynez Valley Transit that connects to Buellton, Santa Ynez, and Los Olivos. The Express Route and Los Olivos Loop share common stops between Solvang and Santa Ynez along Sagunto Street, Edison Street, Pine Street, and along Mission Drive to Solvang Park. The proposed 2045 General Plan Update includes the following policies to promote alternative modes of transportation:

- **Policy MOB-2.1: Bicycle Master Plan.** The City shall adopt a master plan of bikeways on public property and shall develop bikeways as needed and feasible.[5]
- **Policy MOB-2.1: Bicycle and Pedestrian Routes on New Roadways.** The City shall incorporate bicycle routes or trails into the design of new or expanded roadways when feasible.
- **Policy MOB-4.1: Complete Streets**. The City shall create guidelines to facilitate the installation of non-automobile serving infrastructure along its streets, including sidewalks and bike trails.
- **Policy MOB-5.2: TDM.** The City shall encourage employers to promote carpooling, public transportation, and allow telecommuting.
- **Policy MOB-6.2: Regional Transit Network.** The City shall work with SBCAG and other nearby cities and jurisdictions to ensure that the regional transit network offers access for those with limited mobility options.

In addition, the 2045 General Plan policies would promote a zero waste community through responsible procurement, waste diversion, and innovated strategies The following policy from the 2045 General Plan would maximizing recycling and diversion from landfills:

- **Policy ENV-14.1: Zero Waste.** The City shall promote activities that reduce waste and increase waste diversion, including sourcing products with reusable, recyclable, or compostable packaging; establishing food diversion programs; and promoting and educating on waste diversion and its importance.

With implementation of the policies included in the proposed Environmental and Sustainability Element and Mobility Element, the 2045 General Plan would encourage green infrastructure, waste diversion, alternative travel, equitable access, and a reduction in vehicle trips. The 2045 General Plan emphasizes infill and reuse development within City limits, encourages high-density and mixed-use projects where appropriate, and supports development that compliments the existing natural and built environment. Therefore, the 2045 General Plan would not conflict with the 2022 Scoping Plan.

## SBCAG 2050 RTP/SCS

The Connected 2050 RTP/SCS demonstrates that the SBCAG region would achieve emissions reductions consistent with targets set forth by SB 375. GHG reductions achieved through the Connected 2050 RTP/SCS would result in corresponding reductions in energy consumption in the region. The Connected 2050 RTP/SCS includes goals and objectives related to mixed-use development and balancing jobs and housing by allotting more housing to the southern portion of Santa Barbara County, as well as incorporating region-specific analysis of environmental justice

[5] Active Transportation Plan for Solvang should be adopted early 2024.

indicators. As shown in Table 4.7-1, the 2045 General Plan would be consistent with SBCAG's GHG emission reduction strategies established in the Connected 2050 RTP/SCS.

### Table 4.7-1 2045 General Plan Update Consistency with Applicable SBCAG 2050 RTP/SCS Strategies

| Policy | Project Consistency |
|---|---|
| **Land Use.**<br>▪ Make land use decisions that adequately address regional transportation issues and are consistent with the RTP-SCS.<br>▪ Promote better balance of jobs and housing to reduce long-distance commuting by means of traditional land use zoning, infill development, and other, unconventional land use tools, such as employer-sponsored housing programs, economic development programs, commercial growth management ordinances, average unit size ordinances and parking pricing policies.<br>▪ Identify, minimize and mitigate adverse environmental impacts and, in particular, require mitigation of traffic impacts of new land development through onsite and related off-site improvements for all modes of transportation, including incentives to encourage the use of alternative transportation modes. | **Consistent.** The programs and policies within the 2045 General Plan prioritize housing production on vacant and underutilized sites. The proposed Land Use Element would support and promote infill development that is compact, mixed-use, and pedestrian friendly. In addition, encourage high-density residential development, such as multi-family residents and accessory dwelling units located in areas close to services and transit are encouraged. |
| **Alternative Fuels and Energy.**<br>▪ Encourage the use of alternative fuels, and the application of advanced transportation and energy technologies to reduce vehicular emission production and energy consumption.<br>▪ Promote renewable energy and energy conservation, consistent with applicable federal, State, and local energy programs, goals, and objectives. | **Consistent.** Residential development projects facilitated by the 2045 General Plan would be required to comply with State and local regulations, including the California Building Energy Efficiency Standards and CALGreen, specifically related to the provision of electric vehicle supply equipment for parking spaces and the installation of photovoltaic solar panels on commercial and residential buildings. In addition, residential development project generated by the 2045 General Plan would automatically enroll in 3CE, which would supply 100 percent renewable energy to residents by 2030. The 2045 General Plan's new Environment and Sustainability Element includes Policy ENV-9.4, which encourages the installation of solar photovoltaic systems and electric vehicle charging facilities in commercial, residential, and industrial development. Therefore, the 2045 General Plan would facilitate the use of alternative fuels and energy. |
| **Alternative Transportation Modes.**<br>▪ Encourage alternatives to single-occupancy vehicle trips and the use alternative transportation modes to reduce vehicle miles traveled and increase bike, walk and transit mode share.<br>▪ Provide for a variety of transportation modes and ensure connectivity within and between transportation modes both within and outside the Santa Barbara region. Alternative mode planning and projects shall be compatible with neighboring regions' transportation systems.<br>▪ Promote local and inter-city transit. | **Consistent.** The 2045 General Plan includes goals and policies that encourage compact development and alternative modes of transportation, such as Policy ENV-9.3. In addition, the new Mobility Element includes goals and policies to provide safe and increased access to sidewalks, bicycle routes, and wheelchair ramps to existing commercial and residential development. Therefore, the 2045 General Plan would encourage alternatives to single-occupancy vehicle trips and would facilitate an increase in bike, walk, and transit mode share. |

Source: SBCAG 2021

## Plan Consistency Conclusion

The plan consistency analysis provided above demonstrates that the project complies with the plans, policies, regulations and GHG reduction actions/strategies outlined in 2022 Scoping Plan and SBCAG's 2050 RTP/SCS. Consistency with the above plans, policies, and GHG reduction measures would ensure that the project's incremental contribution of GHG emissions would not inhibit the ability of the state to meet its GHG reduction goals. In addition, the 2045 General Plan policies in the Environment and Sustainability Element and Mobility Element promote green infrastructure and alternative modes of transportation. Therefore, the project would not conflict with any applicable plans, policies, and measures an agency adopted for the purpose of reducing emissions of GHG emissions. Impacts would be less than significant.

## GHG Emissions for Informational Purposes

GHG emissions would be generated by construction activity from development facilitated by the 2045 General Plan. Although development projects are envisioned by the 2045 General Plan, including the Old Lumberyard and Alamo Pintado projects, an annualized quantification of construction emissions would be speculative because specific project details, including construction schedule, equipment, and grading activities, are unknown at this time. In addition, construction related GHG emissions would be a negligible percentage of total regional emissions when considering the emissions generated by mobile sources; therefore, construction emissions were excluded in the analysis.

Development carried out under the 2045 General Plan would generate operational GHG emissions, which include mobile source emissions, energy emissions, area emissions, refrigerant emissions, water and waste emissions. As mentioned in Section 4.7.4, *Significance Thresholds and Methodology*, there is no adopted numerical threshold applicable to the 2045 General Plan; therefore, quantified GHG emissions are provided for informational purposes only. As shown in Table 4.7-2, the buildout of the 2045 General Plan would reduce GHG emissions per service population by 0.17 MT of $CO_2e$ per year compared to the existing scenario. The reduction for the 2045 General Plan compared to the existing scenario mostly occurs due to an increased service population and reduced mobile emissions.

**Table 4.7-2 Estimated Existing and Proposed Project Emissions**

| Emission Source | Annual Emissions (MT $CO_2e$) |
|---|---|
| **Existing (2015)** | |
| **Operational** | |
| Mobile | 9,951 |
| Area | 60 |
| Energy | 12,020 |
| Water | 588 |
| Waste | 1,128 |
| Refrigerant | 6 |
| Total GHG Emissions | 22,753 |
| Service Population[1] | 9,360 |
| **GHG emissions per Service Population (MT of $CO_2e$)** | **2.43** |

| Emission Source | Annual Emissions (MT $CO_2e$) |
|---|---|
| **Proposed Project (2045)** | |
| **Operational** | |
| Mobile | 8,503 |
| Area | 69 |
| Energy | 13,737 |
| Water | 655 |
| Waste | 1,284 |
| Refrigerant | 26 |
| Total GHG Emissions | 24,273 |
| Service Population[1] | 10,759 |
| **GHG emissions per Service Population (MT of $CO_2e$)** | **2.26** |
| **County of Santa Barbara Interim Service Population Threshold (MT of $CO_2e$)** | **3.80** |

MT $CO_2e$ = metric tons of carbon dioxide equivalent
[1] Residential and job buildout in Section 2, *Project Description*. Solvang average household size is 2.39 persons per unit.
Notes: Parenthetical values are negative numbers and are subtracted from the total emissions rather than added.
Source: See Appendix C for the CalEEMod worksheets

## Mitigation Measures

No mitigation is required because this impact would be less than significant.

## 4.7.4 Cumulative Impacts

GHG and climate change are, by definition, cumulative impacts. The geographic scope for considering cumulative impacts related to GHG emissions is the state of California. Although GHG emissions have worldwide repercussions, the contribution of the project to the impact is addressed in light of the goals for reducing statewide emissions.

Statewide GHG emissions are an existing significant cumulative impact. As such, the State has established the following statewide emissions reductions targets:

- By 2020, reduce GHG emissions to 1990 levels (431 MT of $CO_2e$).
- By 2030, reduce GHG emissions to 40 percent below 1990 levels (259 MT of $CO_2e$).
- By 2045, reduce GHG emissions to 85 percent below 1990 levels (65 MT of $CO_2e$).

GHG impacts are assessed in a cumulative context since no single project can cause a discernible change to the climate. Therefore, cumulative significance is based on the same thresholds as the 2045 General Plan. In the absence of an adopted numeric threshold for the City of Solvang, the significance of the project's GHG emissions is based on project compliance with State reduction targets. In addition, consistency with applicable plans, policies, regulations, and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. GHG emissions from the operation of the 2045 General Plan are provided for informational purposes.

As discussed in Impact GHG-1, the 2045 General Plan would implement energy and water conservation measures consistent with the latest Title 24 Building Energy Efficiency Standards (Part 6) and Green Building Standards (Part 11), aligned with statewide, regional, and local plans. The 2045 General Plan's objectives include meeting State targets for GHG emissions, infill and mixed-use development that would improve connectivity of land uses and promote the use of alternative modes of transportation. In addition, the project would implement bicycle and EV charging parking spaces consistent with the latest iterations of the CALGreen Standards, which would potentially reduce the reliance of single motor vehicles. However, the 2045 General Plan itself is cumulative in nature as it represents growth through Solvang over approximately the next 20 years.

The 2045 General Plan is not one individual project, but a number of as yet undefined future projects that may occur under the 2045 General Plan. New development carried out by the 2045 General Plan would contribute to GHG impacts regionally and globally, since GHG traps heat in the atmosphere over approximately 100 years but, as discussed in this section, the 2045 General Plan would be consistent with plans and regulations adopted for the purpose of reducing GHG emissions and their cumulative impacts on the environment. Therefore, the 2045 General Plan would not make a substantial contribution to cumulative GHG impacts.

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