4.6 GREENHOUSE GAS EMISSIONS

This section of the EIR presents an analysis of the potential greenhouse gas (GHG) emission impacts associated with development and implementation of the proposed Master Plan, including five near-term development components (Project). This section presents the environmental setting, regulatory framework, impacts of the Project on the environment, and proposed measures to mitigate any significant or potentially significant impacts, if any such impacts are identified. Information in this section is based on the EIR's Transportation Analysis (Appendix H) and Air Quality and Greenhouse Gas Emissions Calculations (Appendix D).

No public and agency comments related to greenhouse gas emissions were received during the public scoping periods in response to the original Notice of Preparation (NOP) or the Revision to Previously Issued NOP. For a complete list of public comments received during the public scoping periods refer to Appendix B.

4.6.1 Environmental Setting

4.6.1.1 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 Earth's energy balance, including variations in the sun's energy reaching Earth, changes in the reflectivity of Earth's atmosphere and surface, and changes in the greenhouse effect, which affects the amount of heat retained by Earth's atmosphere (EPA 2017).

The greenhouse effect is the trapping and buildup of heat in the atmosphere (troposphere) near the Earth's surface. The greenhouse effect traps heat in the troposphere through a three-part process as follows: (1) short-wave radiation emitted by the Sun is absorbed by the Earth, (2) the Earth emits a portion of this energy in the form of long-wave radiation, and (3) GHGs in the upper atmosphere absorb this long-wave radiation and emit it both into space and back 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. However, recent climate changes, in particular the warming observed over the past century, cannot be explained by natural causes alone. Rather, it is extremely likely that human activities have been the dominant cause of warming since the mid-twentieth century and are the most significant driver of observed climate change (IPCC 2013; EPA 2017). 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 2013). 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 2013). Continued emissions of GHGs will cause further warming and changes in all components of the climate system.

4.6.1.2 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 § 38505(g), for purposes of administering many of the State's primary GHG emissions reduction programs, GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride. (See also Cal. Code Regs. tit. 14, § 15364.5.)[1] Some GHGs, such as CO_2, CH_4, and N_2O, occur naturally and are emitted into the atmosphere through natural processes and human activities. Of these gases, CO_2 and CH_4 are the predominant GHGs emitted from human activities. Manufactured GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as HFCs, PFCs, and SF_6.[2]

Carbon Dioxide. CO_2 is a naturally occurring gas and a by-product of human activities; it is the principal anthropogenic GHG that affects the Earth's radiative balance. Natural sources of CO_2 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_2 include the combustion of fuels such as coal, oil, natural gas, and wood, and changes in land use.

Methane. CH_4 is produced through both natural and human activities. CH_4 is a flammable gas and is the main component of natural gas. CH_4 is produced through anaerobic (i.e., 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.

[1] Climate-forcing substances include GHGs and other substances such as black carbon and aerosols.

[2] The descriptions of GHGs are summarized from the IPCC Fourth Assessment Report (2007), CARB's "Glossary of Terms Used in GHG Inventories" (2021a), and EPA's "Climate Change" (2017).

Nitrous Oxide. N_2O is produced through natural and human activities, mainly through agricultural activities and natural biological processes, although fuel burning and other processes also create N_2O. Sources of N_2O 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_2O as a propellant (such as in rockets, racecars, and aerosol sprays).

Fluorinated Gases. Fluorinated gases (also referred to as F-gases) are synthetic powerful GHGs emitted from many industrial processes. Fluorinated gases are commonly used as substitutes for stratospheric ozone (O_3)-depleting substances (e.g., chlorofluorocarbons [CFCs], 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_3-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, along with HFCs, as alternatives to the O_3-depleting substances. The two main sources of PFCs are primarily 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_6 is a colorless gas soluble in alcohol and ether and slightly soluble in water. SF_6 is used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.
- **Nitrogen Trifluoride:** Nitrogen trifluoride is used in the manufacture of a variety of electronics, including semiconductors and flat panel displays.

Chlorofluorocarbons. CFCs are synthetic chemicals that have been used as cleaning solvents, refrigerants, and aerosol propellants. CFCs are chemically unreactive in the lower atmosphere (troposphere), and the production of CFCs was prohibited in 1987 due to the chemical destruction of stratospheric O_3.

Hydrochlorofluorocarbons. HCFCs are a large group of compounds the structure of which is very close to that of CFCs—containing fluorine, chlorine, and carbon atoms—but also including one or more hydrogen atoms. Like HFCs, HCFCs are used in refrigerants and propellants.

HCFCs were also used in place of CFCs for some applications; however, their use in general is being phased out.

Black Carbon. Black carbon is a component of fine particulate matter ($PM_{2.5}$), 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 substance that varies spatially, which makes it difficult to quantify its global warming potential (GWP). 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 as a result of the California Air Resources Board's (CARB's) regulations pertaining to diesel engines, diesel fuels, and burning activities, CARB estimates that annual black carbon emissions in California have decreased by 70 percent between 1990 and 2010, with 95-percent 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 maintains a climate necessary for life.

Ozone. Tropospheric O_3, which is created by photochemical reactions involving gases from both natural sources and human activities, acts as a GHG. Stratospheric 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 O_3, which occurs 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.

4.6.1.3 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 2017). The Intergovernmental Panel

on Climate Change 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_2; therefore, GWP-weighted emissions are measured in metric tons of CO_2 equivalent (MT CO_2e).

For purposes of this analysis, the GWP for CH_4 is 25 (so emissions of 1 MT of CH_4 are equivalent to emissions of 25 MT of CO_2) and the GWP for N_2O is 298, based on the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC 2007).

4.6.1.4 Greenhouse Gas Inventories and Climate Change Conditions

GHG Inventories

Global Inventory. Anthropogenic GHG emissions worldwide in 2017 (the most recent year for which data is available) totaled approximately 50,860 million metric tons (MMT) of CO_2e, excluding land use change and forestry (PBL 2018). Six countries—China, the United States, the Russian Federation, India, Japan, and Brazil—and the European community accounted for approximately 65 percent of the total global emissions, or approximately 33,290 MMT CO_2e (PBL 2018). Table 4.6-1 presents the top GHG-emissions-producing countries.

Table 4.6-1
Six Top Greenhouse-Gas-Producer Countries and the European Union

Emitting Countries (listed in order of emissions)	Greenhouse Gas Emissions (MMT CO_2e)
China	13,350
United States	6,640
European Union	4,560
India	3,650
Russian Federation	2,220
Japan	1,490
Brazil	1,200
Total	**33,290**

Source: PBL 2018.
Note: MMT CO_2e = million metric tons of carbon dioxide equivalent.

National and State Inventories. Per the 2021 U.S. Environmental Protection Agency (EPA) Inventory of U.S. GHG Emissions and Sinks: 1990–2019, total U.S. GHG emissions were approximately 6,558 MMT CO_2e in 2019 (EPA 2021). The primary GHG emitted by human activities in the United States was CO_2, which represented approximately 80.1 percent of total GHG emissions (5,256 MMT CO_2e). The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 74.1 percent of CO_2 emissions in 2019 (4,857 MMT CO_2e). Relative to the 1990 emissions level, gross U.S. GHG emissions in 2019 were 1.8 percent

higher; however, the gross emissions were down from a high of 15.6 percent above the 1990 level that occurred in 2007. GHG emissions decreased from 2018 to 2019 by 1.7 percent (113 MMT CO_2e) and, overall, net emissions in 2019 were 13 percent below 2005 levels (EPA 2021).

According to California's 2000–2019 GHG emissions inventory (2021 edition), California emitted 418 MMT CO_2e in 2019, including emissions resulting from out-of-state electrical generation (CARB 2021b). The sources of GHG emissions in California include transportation, industrial uses, electric power production from both in-state and out-of-state sources, commercial and residential uses, agriculture, high-GWP substances, and recycling and waste. Table 4.6-2 presents California GHG emission source categories (as defined in CARB's 2008 Scoping Plan) and their relative contributions to the emissions inventory in 2019.

Table 4.6-2
Greenhouse Gas Emissions Sources in California

Source Category	Annual GHG Emissions (MMT CO_2e)	Percent of Total
Transportation	166.14	40%
Industrial uses	88.18	21%
Electricity generation	58.83	14%
Residential and commercial uses	43.81	10%
Agriculture	31.75	8%
High-GWP substances	20.58	5%
Recycling and waste	8.85	2%
Totals	**429.40**	**100%**

Source: CARB 2021b.
Notes: GHG = greenhouse gas; MMT CO2e = million metric tons of carbon dioxide equivalent; GWP = global warming potential. Emissions reflect 2019 California GHG inventory.

Between 2000 and 2019, per-capita GHG emissions in California dropped from a peak of 14.0 MT per person in 2001 to 10.5 MT per person in 2019, representing a 25-percent decrease. Overall trends in the inventory also continue to demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product [GDP]) is declining (CARB 2021b).

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. While 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 average temperatures in California have increased, leading to more extreme hot days and fewer cold nights. Shifts in the water cycle have been observed, with less winter precipitation falling as snow

and earlier spring runoff. Sea levels have risen, and wildland fires are becoming more frequent and intense due to dry seasons that start earlier and end later (CAT 2010).

An increase in annual average temperature is a reasonably foreseeable effect of climate change. Observed changes over the last several decades across the western United States reveal clear signals of climate change. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and warming has been greatest in the Sierra Nevada (CCCC 2012). By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1°F to 8.6°F, depending on emissions levels. Springtime warming—a critical influence on snowmelt—will be particularly pronounced. Summer temperatures will rise more than winter temperatures, and the increases will be greater in inland California compared to the coast. Heat waves will be more frequent, hotter, and longer. There will be fewer extremely cold nights (CCCC 2012). A decline of Sierra Nevada snowpack, which accounts for approximately half of the surface water storage in California, by 30 percent to as much as 90 percent is predicted over the next 100 years (CAT 2006).

Model projections for precipitation over California continue to show the Mediterranean pattern of wet winters and dry summers with seasonal, year-to-year, and decade-to-decade variability. For the first time, however, several of the improved climate models shift toward drier conditions by the mid-to-late twenty-first century in central and southern California. By the late century, all projections show drying, and half of them suggest 30-year average precipitation will decline by more than 10 percent below the historical average (CCCC 2012).

A summary of current and future climate change impacts to resource areas in California, as discussed in the *Safeguarding California: Reducing Climate Risk* (CNRA 2014), is provided below.

Agriculture. Some of the specific challenges faced by the agricultural sector and farmers include more drastic and unpredictable precipitation and weather patterns; extreme weather events that range from severe flooding to extreme drought, to destructive storm events; significant shifts in water availability and water quality; changes in pollinator lifecycles; temperature fluctuations, including extreme heat stress and decreased chill hours; increased risks from invasive species and weeds, agricultural pests, and plant diseases; and disruptions to the transportation and energy infrastructure supporting agricultural production.

Biodiversity and Habitat. Specific climate change challenges to biodiversity and habitat include species migration in response to climatic changes, range shift and novel combinations of species; pathogens, parasites, and disease; invasive species; extinction risks; changes in the timing of seasonal life-cycle events; food web disruptions; and threshold effects (i.e., a change in the ecosystem that results in a "tipping point" beyond which irreversible damage or loss has occurs).

Energy. Specific climate change challenges for the energy sector include increasing temperatures, fluctuating precipitation patterns, increasing extreme weather events, and sea-level rise.

Forestry. The most significant risk to forests related to climate change is accelerated risk of wildfire and more frequent and severe droughts. Droughts have resulted in more large-scale mortalities and combined with increasing temperatures, have led to an overall increase in wildfire risks. Increased wildfire intensity subsequently increases public safety risks, property damage, fire suppression and emergency response costs, watershed and water quality impacts, and vegetation conversions.

Ocean and Coastal Ecosystems and Resources. Sea-level rise, changing ocean conditions, and other climate change stressors are likely to exacerbate long-standing challenges related to ocean and coastal ecosystems in addition to threatening people and infrastructure located along the California coastline and in coastal communities. Sea-level rise and more frequent and severe coastal storms and erosion are threatening vital infrastructure such as roads, bridges, power plants, ports and airports, gasoline pipes, and emergency facilities; they are also negatively impacting coastal recreational assets, such as beaches and tidal wetlands.

Public Health. Climate change can impact public health through various environmental changes and is the largest threat to human health in the twenty-first century. Changes in precipitation patterns affect public health, primarily through the potential for altered water supplies, and extreme events such as heat, floods, droughts, and wildfires. Increased frequency, intensity, and duration of extreme heat and heat waves are likely to increase the risk of mortality due to heat-related illness, as well as exacerbate existing chronic health conditions. Other extreme weather events are likely to negatively impact air quality and increase or intensify respiratory illness such as asthma and allergies.

Transportation. While the transportation industry is a source of GHG emissions, it is also vulnerable to climate change risks. Increasing temperatures and extended periods of extreme heat threaten the integrity of the roadways and rail lines. High temperatures cause the road surfaces to expand, which leads to increased pressure and pavement buckling. High temperatures can also cause rail breakages, which could lead to train derailment. Other forms of extreme weather events, such as extreme storm events, can negatively impact infrastructure, which can impair movement of people and goods, or potentially block evacuation routes and emergency access roads. Increased wildfires, flooding, erosion risks, landslides, mudslides, and rockslides can all profoundly impact the transportation system and pose a serious risk to public safety.

Water. Climate change could seriously impact the timing, form, and amount of precipitation; runoff patterns; and the frequency and severity of precipitation events. Higher temperatures reduce the proportion of precipitation falling as snow relative to rain and lead to earlier snowmelt, which can impact water supply availability, natural ecosystems, and winter recreation.

Water supply availability during the intense dry summer months is heavily dependent on the snowpack accumulated during the winter. Increased risk of flooding has a variety of public health concerns including water quality, public safety, property damage, displacement, and post-disaster mental health problems. Prolonged and intensified droughts can also negatively impact groundwater reserves and result in increased overdraft and subsidence. More frequent or severe wildfires can lead to increased erosion, which can negatively impact watersheds and result in poor water quality.

In March 2016, the California Natural Resources Agency (CNRA) released *Safeguarding California: Implementation Action Plans*, a document that shows how California is acting to convert the recommendations contained in the 2014 *Safeguarding California* plan into action (CNRA 2016). Additionally, in January 2018, the CNRA released *Safeguarding California Plan: 2018 Update*, which provides a roadmap for state agencies to protect communities, infrastructure, services, and the natural environment from climate change impacts. The 2018 Update includes 69 recommendations across 11 sectors and more than 1,000 ongoing actions and next steps developed by scientific and policy experts across 38 state agencies (CNRA 2018). As with previous state adaptation plans, the 2018 Update addresses 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.

4.6.2 Regulatory Framework

4.6.2.1 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_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations. This is the "endangerment finding."
- The administrator further found that the combined emissions of GHGs—CO_2, CH_4, N_2O, 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 federal regulation of GHGs from new motor vehicles as air pollutants under the Clean Air Act (42 USC § 7401).

Energy Independence and Security Act of 2007

To aid in the reduction of national GHG emissions, the Energy Independence and Security Act of 2007 (Public Law 110-140), among other key measures, provides for the following:

- 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 2007, in response to the *Massachusetts v. EPA* U.S. Supreme Court ruling, the Bush Administration issued Executive Order (EO) 13432 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 through 2016 (75 Fed. Reg. 25324–25728).

In 2010, President 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, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards projected to achieve 163 grams/mile of CO_2 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 through 2021 (77 Fed. Reg. 62624–63200), and NHTSA intends to set standards for model years 2022 through 2025 in a future rulemaking.

In addition to the regulations applicable to cars and light-duty trucks described above, in 2011, the EPA and NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014 through 2018. The standards for CO_2 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 percent over the 2010 baselines (76 Fed. Reg. 57106–57513).

In August 2016, the 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 applies to vehicles with model year 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all sizes of buses and work trucks. The final standards are expected to lower CO_2 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 (during the administration of President Trump), the 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 then in place, the 2018 proposal increased U.S. fuel consumption by about half a million barrels per day (2–3 percent of total daily consumption, according to the Energy Information Administration) and would impact the global climate by 3/1000th of one degree Celsius by 2100 (EPA and NHTSA 2018).

In September 2019, the EPA and NHTSA published the final Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program (84 FR 51310), which revoked California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. The EPA and NHTSA subsequently issued the Part Two Rule in March 2020, which set less aggressive CO_2 emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model years 2021 through 2026.

On January 20, 2021, President Joe Biden issued an EO on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which called for review of the Part One Rule by April 2021 and review of the Part Two Rule by July 2021 (The White House 2021). After reviewing the public comments submitted on the NHTSA's April 2021 Notice of Proposed Rulemaking, the NHTSA concluded that the SAFE Rule overstepped the agency's legal authority and established overly broad prohibitions that did not account for a variety of important

state and local interests. The final rule adopted by the NHTSA ensures that the SAFE Rule will no longer form an improper barrier to States exploring creative solutions to address their local communities' environmental and public health challenges (NHTSA 2021).

Relatedly, in December 2021, the EPA finalized its revisions to the federal GHG emissions standards for passenger cars and light-duty trucks, as applied to model years 2023 through 2026. These standards have been described as the "strongest vehicle emissions standards ever established for the light-duty vehicle sector" and are expected to result in the avoidance of more than 3 billion tons of GHG emissions through 2050. At the same time, the EPA also announced its intent to initiate a separate rulemaking to establish multi-pollutant emissions standards for model years 2027 and later, which are anticipated to transition the passenger vehicle fleet to a zero-emissions fleet consistent with federal executive policy.

EO 14057

President Joe Biden signed EO 14057 on December 8, 2021 which sets a path for reducing GHG emissions across federal operations, investing in clean energy industries and manufacturing, and creating clean, healthy, and resilient communities to achieve carbon neutrality by 2050. The EO outlines five goals for the federal government:

- 100 percent carbon pollution-free electricity (CFE) by 2030, at least half of which will be locally supplied clean energy to meet 24/7 demand;
- 100 percent zero-emission vehicle (ZEV) acquisitions by 2035, including 100 percent zero-emission light-duty vehicle acquisitions by 2027;
- Net-zero emissions from federal procurement no later than 2050, including a Buy Clean policy to promote use of construction materials with lower embodied emissions;
- A net-zero emissions building portfolio by 2045, including a 50 percent emissions reduction by 2032; and
- Net-zero emissions from overall federal operations by 2050, including a 65 percent emissions reduction by 2030.

4.6.2.2 State

The statewide GHG emissions regulatory framework is summarized in this subsection by category: state climate change targets, building energy, renewable energy and energy procurement, mobile sources, water, solid waste, and other state actions. The following text describes EOs, Assembly Bills (ABs), Senate Bills (SBs), and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues.

State Climate Change Targets

EO S-3-05. EO S-3-05 (June 2005) established California's initial round of 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 percent 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 in response to EO S-3-05, which subsequently issued reports to the Governor and Legislature from 2006 to 2010 (CAT 2016).

AB 32. In furtherance of the goals established in EO S-3-05, the Legislature enacted AB 32, the California Global Warming Solutions Act of 2006 (Cal. Health & Safety Code § 38500-38599 *et seq.*). AB 32 provided initial direction on creating a comprehensive, multi-year program to reduce California's GHG emissions to 1990 levels by 2020, and initiate the transformations required to achieve the state's long-range climate objectives.

In 2007, and in accordance their AB 32-based responsibilities, CARB approved a statewide limit on the GHG emissions level for year 2020 consistent with the determined 1990 baseline (427 MMT CO_2e).

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 (discussed further below) by requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent 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 the Board 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 emission-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 (Cal. Health and Safety Code, § 38561(a)), and to update the plan at

least once every 5 years. In 2008, CARB approved the first scoping plan: *Climate Change Scoping Plan: A Framework for Change* (2008 Scoping Plan). The 2008 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 2008 Scoping Plan include the following (CARB 2008):

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.
- Achieving a statewide renewable energy mix of 33 percent.
- 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 percent of California's GHG emissions.
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.
- 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 (Cal. Code Regs., tit. 17, § 95480 *et seq.*).
- 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 2008 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 2008 Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15 percent from then levels (2008) by 2020. Many local governments developed community-scale local GHG-reduction plans based on this 2008 Scoping Plan recommendation.

In 2014, CARB approved the first update to the 2008 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 (CARB 2014). 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 Intergovernmental Panel on Climate Change, from 427 MMT CO_2e to 431 MMT CO_2e.

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 percent 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 percent 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 adopted *California's 2017 Climate Change Scoping Plan Update* (2017 Scoping Plan) (CARB 2017a). The 2017 Scoping Plan builds on the successful framework established in the 2008 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, the 2017 Scoping Plan also recommends continuing the Cap-and-Trade Program.

For local governments, the 2017 Scoping Plan replaced the 2008 Scoping Plan's 15 percent reduction goal with a recommendation to aim for a community-wide goal of no more than 6 MT CO_2e per capita by 2030 and no more than 2 MT CO_2e per capita by 2050, which are developed around the scientifically based levels necessary to limit global warming below 2°C. The 2017 Scoping Plan recognized the benefits of local government GHG planning (e.g., through climate action plans (CAPs)) and provide more information regarding tools CARB is working on to support those efforts. It also recognizes the CEQA streamlining provisions for project-level review where there is a legally adequate CAP. The 2017 Scoping Plan was approved by CARB's Governing Board on December 14, 2017.

The 2017 Scoping Plan recommends strategies for implementation at the statewide level to meet the goals of AB 32, SB 32, and the EOs; it also 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 would meet the general policies in reducing GHG emissions in order to facilitate the achievement of the state's goals and would not impede attainment of those goals. As discussed in several cases, a given project need not be in perfect conformity with each and every planning policy or goal to be consistent. A project would be consistent if it would further the objectives and not obstruct their attainment.

CARB presently is preparing the *2022 Scoping Plan Update*, which will assess progress towards achievement of the state's 2030 reduction target and lay out a path for the state's achievement of carbon neutrality by 2045. CARB has held a number of public workshops to provide information on the plan update and solicit feedback from stakeholders. A draft plan has not yet been released for public review and comment.

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 percent 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 percent 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_2e. The EO also called for state agencies to continue to develop and implement GHG emission-reduction programs in support of the reduction targets. Please see the discussion of "SB 32 and AB 197" above for related information.

SB 605 and SB 1383. SB 605 (2014) required CARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants (SLCPs) in the state (Cal. Health and Safety Code § 39730); and SB 1383 (2016) required CARB to approve and implement that strategy by January 1, 2018 (Cal. Pub. Resources Code § 42652-43654). SB 1383 also established specific targets for the reduction of SLCPs (40 percent below 2013 levels by 2030 for CH_4 and HFCs, and 50 percent below 2013 levels by 2030 for anthropogenic black carbon) and provided direction for reductions from dairy and livestock operations and landfills. Accordingly, and as mentioned above, CARB adopted its *Short-Lived Climate Pollutant Reduction Strategy* (SLCP Reduction Strategy) in March 2017. The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, methane and fluorinated gases (CARB 2017b).

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 (no later than 2045) and to 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.

Building Energy

Title 24, Part 6. The California Building Standards Code was established in 1978 and serves to enhance and regulate California's building standards (Cal. Code Regs, tit. 24). While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically established Building Energy Efficiency Standards that are designed to ensure that 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 (Cal. Pub. Resources Code, § 25402(b)(1)). The regulations receive input from members of industry, as well as the public, in order to "reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (Cal. Pub. Resources Code, § 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (Cal. Pub. Resources Code, § 25402(d)) and cost effectiveness (Cal. Pub. Resources Code, § 25402(b)(2–3)). 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 2019 Title 24 standards are the currently applicable building energy efficiency standards that became effective on January 1, 2020. The 2019 Title 24 Building Energy Efficiency Standards will further reduce energy used and associated GHG emissions compared to prior standards. In general, single-family residences built to the 2019 standards are anticipated to use approximately 7 percent less energy due to energy efficiency measures than those built to the 2016 standards, once rooftop solar electricity generation is factored in. Non-residential buildings built to the 2019 standards are anticipated to use an estimated 30 percent less energy than those built to the 2016 standards (CEC 2018).

Note that the 2022 Title 24 standards are under development. The 2022 standards focus on four key areas in new construction: encouraging electric heat pump technology and use; establishing electric-ready requirements when natural gas is installed; expanding solar photovoltaic system and battery storage standards; and strengthening ventilation standards to improve indoor air quality. In August 2021, the CEC adopted the 2022 standards; but before those standards can become effective, they must be approved by the California Building Standards Commission. If approved, the 2022 Title 24 standards will go into effect on January 1, 2023.

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 (Cal. Code Regs., tit. 24, part 11) is commonly referred to as CALGreen, and establishes minimum mandatory standards as well as 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 and schools and hospitals. The CALGreen 2019 standards, which are the current standards, became effective January 1, 2020.

For non-residential projects, some of the key mandatory CALGreen 2019 standards include the following (24 CCR Part 11):

- *Long-term bicycle parking.* For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- *Designated parking for clean air vehicles.* In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 of the CALGreen Code (5.106.5.2).
- *Electric vehicle (EV) charging stations.* Construction shall comply with Section 5.106.5.3.1 (single charging space requirements) or Section 106.5.3.2 (multiple charging space requirements) to facilitate future installation of electric vehicle supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. Table 5.106.5.3.3 of the CALGreen Code shall be used to determine if single or multiple charging space requirements apply for the future installation of electric vehicle supply equipment (5.106.5.3).[3]
- *Shade trees.* Shade trees shall be planted to comply with Sections 5.106.12.1 (surface parking areas), 5.106.12.2 (landscape areas), and 5.106.12.3 (hardscape areas). Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section 5.304.6. (5.106.12).
- *Water conserving plumbing fixtures and fittings.* Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - *Water Closets.* The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
    - *Urinals.* The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).

[3] Table 5.106.5.3.3 of the CALGreen code establishes a range of EV charging space requirements based on the total number of parking places of a project. At the minimum, no EV charging spaces are required if the project has a total of 0 to 9 parking spaces. At the maximum, 6 percent of the total parking spaces are required to be EV charging spaces for projects with a total number of actual parking spaces of 201 and over.

- *Showerheads.* Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute (gpm) and 80 pounds per square inch (psi) (5.303.3.3.1). When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gpm at 80 psi (5.303.3.3.2).
- *Faucets and fountains.* Non-residential lavatory faucets shall have a maximum flow rate of not more than 0.5 gpm at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gpm of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gpm/20 [rim space (inches) at 60 psi] (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle/20 [rim space (inches) at 60 psi] (5.303.3.4.5).

- *Outdoor potable water use in landscaped areas.* Non-residential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).
- *Recycled water supply systems.* Recycled water supply systems shall be installed in accordance with Sections 5.305.1.1 (outdoor recycled water supply systems), 5.305.1.2 (technical requirements for outdoor recycled water supply systems), and the California Plumbing Code (5.305.1).
- *Construction waste management.* Recycle and/or salvage for reuse a minimum of 65 percent of the non-hazardous construction and demolition waste in accordance with Section 5.408.1.1 (construction waste management plan). 5.405.1.2 (waste management company), or 5.408.1.3 (waste stream reduction alternative); or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- *Outdoor Air Quality.* Installations of heating, ventilation, and air conditioning (HVAC), refrigeration, and fire suppression equipment shall comply with Section 5.508.1.1 (no CFCs) and Section 5.508.1.2 (no halons).

The CALGreen standards also include voluntary efficiency measures that are implemented at the discretion of local agencies and applicants.

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 (Cal. Code Regs. tit. 20, § 1401-1410 *et seq.*). 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; dishwaters; 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.

Renewable Energy and Energy Procurement

SB 1078, SBX1-2, SB 350, and SB 100. SB 1078 (2002) (Cal. Pub. Utilities Code § 399.11 *et seq*.) established the Renewables Portfolio Standard (RPS) program, which required an annual increase in renewable generation by the utilities equivalent to at least 1 percent of sales, with an aggregate goal of 20 percent by 2017.

SB X1-2 expanded the RPS by establishing a renewable energy target of 20 percent of the total electricity sold to retail customers in California per year by December 31, 2013, and 33 percent by December 31, 2020, and in subsequent years. Under the bill, a renewable electrical generation facility is one that uses biomass, solar thermal, photovoltaic, wind, geothermal, fuel cells using renewable fuels, small hydroelectric generation (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 (2015) further expanded the RPS program by establishing a goal of 50 percent renewable electricity 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 (such as heating, cooling, lighting, or class of energy uses on which an energy-efficiency program is focused) of retail customers through energy conservation and efficiency.

SB 100 (2018) increased the standards set forth in SB 350, establishing that 44 percent of the total electricity sold to retail customers in California per year by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030, be secured from qualifying renewable energy sources. SB 100 states that it is the policy of the state that eligible renewable energy resources and zero-carbon resources supply 100 percent of the retail sales of electricity to California. This bill requires that the achievement of 100 percent zero-carbon electricity resources does not increase the carbon emissions elsewhere in the western grid and that the achievement not be achieved through resource shuffling.

Mobile Sources

CARB's Mobile Source Strategy. On May 16, 2016, CARB released the 2016 Mobile Source Strategy that demonstrates how the state can simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease health risk from transportation emissions, and reduce petroleum consumption over the next fifteen years. The actions contained in the 2016 Mobile Source Strategy will deliver broad environmental and public health benefits, as well as support much needed efforts to modernize and upgrade transportation infrastructure, enhance system-wide efficiency and mobility options, and promote clean economic growth in the mobile sector. The 2016 Mobile Source Strategy would also result in a 45 percent reduction in GHG emissions, and a 50 percent reduction in the consumption of petroleum-based fuels (CARB 2016).

On October 28, 2021, CARB received and heard the 2020 Mobile Source Strategy, which continues and builds upon the foundation established by the 2016 Mobile Source Strategy. The 2020 Mobile Source Strategy, if implemented, would achieve a 76 percent reduction in GHG emissions from 2020 levels from mobile sources by 2045, as largely attributable to transitioning towards a zero-emissions fleet. Moving forward, CARB anticipates that the programs and concepts in the 2020 Mobile Source Strategy will be incorporated into other aspects of CARB's regulatory and planning frameworks.

AB 1493. AB 1493 (2002) was enacted in response to the transportation sector accounting for more than half of California's CO_2 emissions at the time of its drafting (Cal. Health and Safety Code § 43018.5 and § 42823 amendments). 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 non-commercial personal transportation in the state. The bill 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. When fully phased in, the near-term (2009–2012) standards were projected to result in a reduction of about 22 percent in GHG emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30 percent.

Heavy-Duty Diesel. The Heavy-Duty Truck and Bus Regulation that went into effect January 2012, requires diesel particulate matter filters be applied to newer heavier trucks and buses by January 1, 2012, with older vehicles required to comply by January 1, 2015. CARB adopted the proposed amendments to the Heavy-Duty Truck and Bus Regulation on December 31, 2014 to reduce diesel particulate matter, a major source of black carbon, and oxides of nitrogen emissions from heavy-duty diesel vehicles (Cal. Code Regs., tit 13, § 2025). The rule requires nearly all diesel trucks and buses to be compliant with the 2010 model year engine requirement by January 1, 2023. CARB also adopted an Airborne Toxic Control Measure to limit idling of diesel-fueled commercial vehicles on December 12, 2013. This rule requires diesel-fueled vehicles with gross

vehicle weights greater than 10,000 pounds to idle no more than 5 minutes at any location (Cal. Code Regs., tit. 13, § 2485).

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_2e 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 percent by 2020 and 20 percent by 2030 (Cal. Code Regs., tit.17, § 95480 *et seq*.). 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 (Cal. Gov. Code § 65080) 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 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.

A SCS does not: (i) regulate the use of land; (ii) supersede the land use authority of cities and counties; or (iii) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with it (Cal Gov. Code, § 65080(b)(2)(K)). 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. See Section 4.6.2.4 for information about the implementation of SB 375 in the Monterey Bay Area.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program. The Advanced Clean Cars (ACC) program (January 2012) is an emission-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 2012). 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 percent less smog-forming pollution than the average new car sold today. To reduce GHG emissions, CARB, in conjunction with the EPA and the NHTSA, adopted new GHG standards for model year 2017 to 2025 vehicles; the new standards are estimated to reduce

GHG emissions by 34 percent 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 (ZEVs) and plug-in hybrid EVs (low-emission vehicles [LEVs]) in the 2018 to 2025 model years.

The ACC II program is currently in development to establish the next set of LEV and ZEV requirements for model years after 2025 to contribute to meeting federal ambient air quality ozone standards and California's carbon neutrality standards (CARB 2021c). The main objectives of ACC II are:

1. Maximize criteria and GHG emission reductions through increased stringency and real-world reductions.
2. Accelerate the transition to ZEVs through both increased stringency of requirements and associated actions to support wide-scale adoption and use.

An ACC II rulemaking package, which will consider technological feasibility, environmental impacts, equity, economic impacts, and consumer impacts, is anticipated to be presented to CARB for consideration in June 2022. However, as detailed previously, EPA and NHTSA published the SAFE Vehicles Rule, which revokes California's authority to set its own GHG emissions standards and set ZEV mandates in California. Since California and 22 other states, as well as the District of Columbia and four cities, filed suit against the EPA and a petition for reconsideration of the SAFE Rule, the ACC II rulemaking's course may vary depending on the results of this ongoing litigation.

Advanced Clean Trucks Regulation. The Advanced Clean Trucks (ACT) Regulation was also approved by CARB in 2020. The purpose of the ACT Regulation is to accelerate the market for ZEVs in the medium- and heavy-duty truck sector and to reduce air pollutant emissions generated from on-road mobile sources (CARB 2021d). The regulation has two components including (1) a manufacturer sales requirement and (2) a reporting requirement:

- Zero-emission truck sales: Manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines will be required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales would need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales.
- Company and fleet reporting: Large employers including retailers, manufacturers, brokers and others will be required to report information about shipments and shuttle services. Fleet owners, with 50 or more trucks, will be required to report about their existing fleet operations. This information will help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

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 ZEVs. It ordered CARB, CEC, CPUC, 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 percent 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 N-79-20. Governor Newsom's EO N-79-20 (September 2020) sets a course to end the sale of new internal combustion passenger vehicles by 2035. The primary mechanism to facilitate achievement of this executive specific target is the ACC II program under development that is discussed above. The EO also sets zero-emission vehicle penetration targets for medium- and heavy-duty vehicles, drayage trucks, as well as off-road vehicles and equipment.

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 percent 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 (Water Board) to adjust emergency water conservation regulations through the end of January 2017 to reflect differing water supply conditions across the state. The Water Board must also develop a proposal to achieve a mandatory reduction of potable urban water usage that builds off the mandatory 25 percent reduction called for in EO B-29-15. The Water Board and Department of Water Resources also was tasked with developing new, permanent water use targets that build upon the existing state law requirements that the state achieve a 20 percent reduction in urban water usage by 2020. EO B-37-16 also specified that the Water Board will 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 a fountain or other decorative water feature; watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and irrigating ornamental turf on public street medians.

EO B-40-17. EO B-40-17 (April 2017) lifted the drought emergency in all California counties except Fresno, Kings, Tulare, and Tuolumne. It also rescinded EO B-29-15, but expressly stated that EO B-37-16 remains in effect and directs the Water Board to continue development of permanent prohibitions on wasteful water use.

Solid Waste

AB 939 and AB 341. In 1989, AB 939, known as the Integrated Waste Management Act (Cal. Pub. Resources Code, § 40000 *et seq.*), was passed because of the increase in waste stream and the decrease in landfill capacity. The statute established the California Integrated Waste Management Board (replaced in 2010 by the California Department of Resources Recycling and Recovery, or CalRecycle), which oversees a disposal reporting system. AB 939 mandated a reduction of waste being disposed where jurisdictions were required to meet diversion goals of all solid waste through source reduction, recycling, and composting activities of 25 percent by 1995 and 50 percent by the year 2000.

AB 341 (2011) 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 percent of solid waste generated be source-reduced, recycled, or composted by the year 2020, and annually thereafter. In addition, AB 341 required CalRecycle to develop strategies to achieve the state's policy goal. CalRecycle has conducted multiple workshops and published documents that identify priority strategies that it believes would assist the state in reaching the 75 percent goal by 2020.

SB 1383. SB 1383 (2016) established the following target for the benefit of reducing GHG emissions from organic waste: reduce organic waste disposal 50% by 2020 and 75% by 2025. To facilitate achievement of this target, starting in 2022, all jurisdictions are required to (i) provide organic waste collection services to all residents and business, and (ii) recycle collected organic materials using recycling facilities, such as anaerobic digestion facilities and composting facilities.

Other State Actions

CEQA and Senate Bill 97. SB 97 (2007) directed the Governor's Office of Planning and Research to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's 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. The CNRA adopted the State CEQA Guidelines amendments in December 2009, which became effective in March 2010.

Under the amended State 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 (Cal. Code Regs., tit. 14, § 15064.4(a)). The State 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 (Cal. Code Regs., tit. 14, § 15064.4(b)). The State 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. The 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 State CEQA Guidelines section 15064.4(a) state that lead agencies "should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions. The State 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 performance based standards" (Cal. Code Regs., tit. 14, § 15064.4(a), (c)). 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 (Cal. Code Regs., tit. 14, § 15064.4(b)).

In late 2018, the CNRA finalized amendments to the CEQA Guidelines, including changes to CEQA Guidelines section 15064.4, which addresses the analysis of GHG emissions. The amendments became effective on December 28, 2018. The revision of CEQA Guidelines section 15064.4 clarified several points, including in determining the significance of a project's impacts, the lead agency may consider a project's consistency with the state's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is consistent with those plans, goals, or strategies. (CEQA Guidelines, § 15064.4(b)(3).)

Amendments to the Small Off-Road Engine (SORE) Regulations: Transition to Zero Emissions. On December 9, 2021, CARB approved proposed amendments to the SORE Regulations, which would require most newly manufactured SORE such as those found in leaf blowers, lawn mowers and other equipment be zero emission starting in 2024. Portable generators, including those in recreational vehicles, would be required to meet more stringent standards in 2024 and meet zero-emission standards starting in 2028.

California State University

CSU Sustainability Policy

CSU has identified sustainability as a system-wide priority, as detailed in the CSU Sustainability Policy, which was adopted in 2014 and is currently in the process of being updated. The CSU Sustainability Policy focuses mainly on energy and GHG emissions, and largely aligns with the State of California's energy and GHG emissions reduction goals (CSU 2014). The policy aims to reduce the environmental impact of construction and operation of buildings and to integrate sustainability across the curriculum. Table 4.6-3 includes a summary of the CSU Sustainability Policy and associated goals.

Table 4.6-3
CSU Sustainability Policy

University Sustainability
1. The CSU will develop employee and student workforce skills in the green jobs industry, promote the development of sustainable products and services, and foster economic development.
2. The CSU will seek to further integrate sustainability into the academic curriculum.
3. The CSU will pursue sustainable practices in all areas of the university.
4. Each CSU is encouraged to designate a sustainability officer responsible for campus sustainability programs.
Climate Action Plan
1. The CSU will strive to reduce systemwide facility greenhouse gas (GHG) emissions to 1990 levels, or below, by 2020 consistent with AB 32, California's Global Warming Solutions Act of 2006.
2. The CSU will strive to reduce facility GHG emissions to 80 percent below 1990 levels by 2040.
3. The CSU will encourage and promote the use of alternative transportation and/or alternative fuels.
Energy Independence and Procurement
1. The CSU shall pursue energy procurement and production. The CSU shall endeavor to increase its self-generated energy capacity from 44 to 80 megawatts (MW) by 2020.
2. The CSU will endeavor to exceed the State of California and CPUC RPS sooner than the established goal of procuring 33 percent of its electricity needs from renewable sources by 2020.
Energy Conservation and Utility Management
1. All CSU buildings and facilities will be operated in the most energy efficient manner.
2. All CSU campuses will continue to identify energy efficiency improvement measures to the greatest extent possible.
3. The CSU will cooperate with federal, state, and local governments and other appropriate organizations in accomplishing energy conservation and utilities management objectives throughout the state.

Table 4.6-3
CSU Sustainability Policy

4. Each CSU campus will designate an energy/utilities manager with the responsibility and the authority for carrying out energy conservation and utilities management programs.
5. The CSU will monitor monthly energy and utility usage on all campuses and will prepare a systemwide annual report on energy utilization and greenhouse gas emissions.
6. Each CSU campus is encouraged to develop and maintain an integrated strategic energy resource plan.
Water Conservation
1. All CSU campuses will pursue water resource conservation to reduce water consumption by 10 percent by 2016, and 20 percent by 2020 including such steps to develop sustainable landscaping, install controls to optimize irrigation water use, reduce water usage in restrooms and showers, and promote the use of reclaimed/recycled water.
Waste Management
1. Campuses shall seek to reduce the solid waste disposal rate by 50 percent by 2016, by 80 percent by 2020, and move to zero waste.
2. The CSU will encourage the reduction of hazardous waste while supporting the academic program.
Sustainable Procurement
1. Campuses will promote use of suppliers and/or vendors who reduce waste and re-purpose recycled material.
2. Campus practices should encourage use of products that minimize waste sent to landfills or incinerators and participation in the CalRecycle Buy-Recycled program or equivalent.
3. Campuses shall continue to report on and track all recycled content product categories.
Sustainable Food Service
1. Campuses shall strive to increase their sustainable food purchases to 20 percent of total food budget by 2020.
2. Campuses shall collaborate to provide information and/or training on sustainable food service operations.
Sustainable Building Practices
1. All future CSU new construction, remodeling, renovation, and repair projects will be designed with consideration of optimum energy utilization, low life cycle operating costs, and compliance with all applicable energy regulations.
2. Capital Planning, Design and Construction in the Chancellor's Office shall monitor building sustainability/energy performance, based on Leadership in Energy and Environmental Design (LEED) principles.
3. The CSU shall design and build all new buildings and major renovations to meet or exceed the minimum requirements equivalent to LEED "Silver."
Physical Plant Management
1. Each campus shall operate and maintain a comprehensive energy management system.
2. To the extent possible, programs will be consolidated to achieve the highest building utilization.
3. All CSU campuses will implement a utilities chargeback system to recover direct and indirect costs of utilities.

Under the CSU Sustainability Policy, campuses are responsible for quantifying and reducing their Scope 1 and 2 emissions to reach the 2020 and 2040 goals. Scope 1 emissions are direct emissions (e.g., combustion of fossil fuels, fleet vehicles, agriculture operations, use of refrigerants). Scope 2 emissions are emissions from purchased utilities (e.g., electricity, water).

Executive Order 0987

CSU Executive Order 0987 provides a policy statement on energy conservation, sustainable building practices, and physical plant management for the CSU. CSUMB operates under this executive order, which sets minimum efficiency standards for new construction and renovations, and establishes operating practices intended to ensure CSU buildings are used in the most energy efficient and sustainable manner possible while still meeting the programmatic needs of the University.

Integrated California State University Administrative Manual (Section IX)

The Integrated California State University Administrative Manual (ICSUAM; Section IX) provides that all CSU buildings and facilities will be operated in the most energy efficient manner without endangering public health and safety. The policy also indicates that all future CSU new construction, remodeling, renovation and repair projects will be designed for optimum energy utilization, lowest life-cycle operating costs, and in compliance with all applicable energy codes (Enhanced Title 24 Energy Codes) and regulations. Incorporation of energy efficient design features in the project plans and specifications will receive a high priority.

CSUMB Campus Sustainability Plan

The 2020 CSUMB Campus Sustainability Plan builds upon and replaces the 2013 CSUMB Climate Action Plan. The Sustainability Tracking Assessment and Rating System Report provides data collection and consistent review of metrics that support efforts in every topic area identified. Key goals of the plan that are relevant to the analysis in this section include the following:

- Reduce GHG emissions and achieve carbon neutrality[4] by 2030 by making progress on the Carbon Neutrality Roadmap.
- Support individual and departmental behavior change to lower GHG emissions.
- Advance innovative opportunities and partnerships to support water conservation and sustainability goals.
- Reduce water use in all areas of campus operations.
- Promote food justice and access, as well as increase locally sourced food in all campus food service venues.
- Divert 75 percent diversion of non-demolition and construction waste by 2025. (Note that a "Core Goal" of the plan, which has a 2030 planning period, is to divert 90 percent of waste from the landfill.)

[4] Carbon neutrality means achieving a state in which the net amount of carbon dioxide or other carbon compounds emitted into the atmosphere is reduced to zero because it is balanced by actions to reduce or offset these emissions (CSUMB 2020).

- Reduce waste associated with move out by 25 percent.
- Establish a framework for implementing sustainable procurement practices.
- Plan for future projects to integrate Living Building Challenge certification options, in support of campus-scale efforts to meet Living Community Challenge goals.
- Integrate user-perspectives and occupant behavior before and after building construction.
- Support mode shift from Single Occupancy Vehicles; double percent of bicycle, walking, carpool and bus/shuttle commute trips each by 2030.
- Prioritize mobility access for those with limited physical abilities.
- Create a strong sense of place by connecting people to the natural environment by planting 2,030 trees.
- Promote wellness and encourage healthy behaviors alongside disaster preparedness to help communities face everyday challenges as well as major disruptions or disasters.
- Align Emergency Preparedness and the Office of Enterprise Risk Management and Environmental Health and Safety goals to prepare for potential operational impacts that result from climate effects.

The Carbon Neutrality Roadmap (Roadmap) is a technical appendix to the CSUMB Campus Sustainability Plan in support of achieving carbon neutrality by 2030. The Roadmap provides a detailed review of pathways that CSUMB can follow and describes existing and recommended carbon reduction measures that, if implemented, will enable CSUMB to achieve its carbon neutrality goal.

4.6.2.3 Regional

Association of Monterey Bay Area Governments

AMBAG is the designated MPO for the Monterey region. The AMBAG region includes Monterey, San Benito, and Santa Cruz counties.

CARB initially set SB 375 GHG-reduction targets for the Monterey Bay Area at 0 -percent increase from 2005 per capita emissions by 2020, and 5 percent below 2005 per capita emissions by 2035. Targets for the Monterey Bay Area beginning October 1, 2018 were set at 3 percent below 2005 per capita emissions by 2020 and 6 percent below 2005 per capita emissions by 2035.

In June 2014, AMBAG adopted the *Moving Forward 2035 Monterey Bay – Metropolitan Transportation Plan/Sustainable Communities Strategy* (2035 MTP/SCS) (AMBAG 2014). The 2035 MTP/SCS demonstrates that, if implemented, the region will achieve over a 3 percent per capita GHG reduction in passenger vehicle emissions in 2020, and an approximately 6 -percent reduction in 2035. These reductions meet the GHG targets for AMBAG, as discussed above.

In June 2018, AMBAG adopted an update to the 2035 MTP/SCS, *Moving Forward Monterey Bay 2040* (2040 MTP/SCS), the implementation of which is anticipated to achieve a 4 percent per capita reduction and nearly 7 percent per capita reduction in GHG emissions from passenger vehicles by 2020 and 2035, respectively (AMBAG 2018). The 2040 MTP/SCS outlines the region's proposed transportation network, emphasizing multimodal system enhancements, system preservation, and improved access to high quality transit, as well as land use development that complements this transportation network (AMBAG 2018).

Monterey Bay Air Resources District

California has 35 Air Pollution Control Districts and Air Quality Management Districts, many of which are currently addressing climate change issues by developing significance thresholds, performance standards, and mitigation measures. The Monterey Bay Air Resources District (MBARD) is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the North Central Coast Air Basin (NCCAB), where the Project is located. In February 2016, the MBARD adopted the staff-recommended significance threshold of 10,000 MT of CO_2e for stationary source projects (MBARD 2016), which does not directly apply to the Project (as the Project does not propose a singular stationary source, but rather a multi-faceted suite of residential, non-residential and academic development components for the CSUMB campus).

4.6.3 Impacts and Mitigation Measures

This section presents the evaluation of potential environmental impacts associated with the Project related to GHG emissions. The section identifies the thresholds of significance used in evaluating the impacts, the methods used in conducting the analysis, and the evaluation of Project impacts and the Project's contribution to significant cumulative impacts. In the event significant impacts within the meaning of CEQA are identified, appropriate mitigation measures, where feasible, are identified.

4.6.3.1 Thresholds of Significance

The significance thresholds used to evaluate the impacts of the Project related to GHG emissions are based on Appendix G of the CEQA Guidelines. Based on Appendix G, a significant impact related to GHG emissions would occur if the Project would:

A. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

B. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Other Relevant Background Information

Notably, 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, generally applicable, quantitative thresholds adopted by an agency with subject matter expertise (like CARB) 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.

The CEQA Guidelines 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 2009a). The Governor's Office of Planning and Research's Technical Advisory, titled "Discussion Draft CEQA and Climate Change Advisory," states that

> "Neither the CEQA statute nor the CEQA Guidelines prescribe thresholds of significance or particular methodologies for perming 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." (OPR 2018)

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."

As described previously, the Project is located within the North Central Coast Air Basin under the jurisdiction of the MBARD, which, to date, has not adopted significance criteria or thresholds for project- or plan-level analyses. The MBARD-adopted significance threshold of 10,000 MT of

CO_2e for stationary source projects (MBARD 2016), does not apply to the Project for the reasons explained above. Nor has CSU adopted a threshold of significance for generally applicable use.

Campus-Specific Mass Emissions Threshold

In the absence of a numeric threshold adopted by either CARB, the MBARD or CSU, a campus-specific mass emissions threshold was derived based on the state's and CSUMB's most recent inventories. This approach is appropriate for the Project because it compares the Project's GHG emissions to statewide GHG reduction goals established for 2030 in SB 32 (i.e., 40 percent below 1990 levels), and for 2050 in EO S-3-05 (i.e., 80 percent below 1990 levels). The campus-specific mass emission threshold is discussed below.

The first step in the derivation of the campus-specific mass emissions threshold was to identify the percentage reduction that must be achieved statewide for attainment of the 2030 and 2050 GHG reduction goals. The state's 2018 inventory (316 MMT CO_2e) was used to derive a percent reduction that would be in line with the state's 2050 target (67 MMT CO_2e) from the 2018 GHG emission levels, applying a straight-line regression between the 2030 and 2050 emissions reduction targets. In 2035, the state's estimated emission target would be approximately 169 MMT CO_2e. When calculating the state's estimated emissions target, sources applicable to CSUMB were used; therefore, sources such as industrial and high GWP sources were not included. Based on that calculation, the state needs to achieve a percent reduction of approximately 47 percent from the 2018 inventory to be in line with the 2050 reduction target.

The second step was to apply the statewide percent reduction of 47 percent to CSUMB's 2018 GHG emissions inventory (13,399 MT CO_2e, as reported in the Sustainability Tracking, Assessment & Rating System [STARS] used by CSUMB) to determine the mass emissions level for 2035, the buildout horizon for the Project, that would be in line with the state's goals. This calculation identified a mass emissions level of 7,153 MT CO_2e. (This is a conservative approach because, in lieu of using an interpolated percent reduction specific to the Project's build-out year, the threshold derivation methodology utilizes the full 47 percent reduction necessary statewide for 2050 in the Project's interim build-out year of 2035.)

The third step involved dividing the campus-specific mass emissions level (7,153 MT CO_2e) by the campus' total anticipated service population, including all faculty/staff and students (i.e., 15,790 service population). This calculation resulted in a per capita emissions level of 0.45 MT CO_2e per year.

The fourth and final step involved multiplying the per capita emissions rate by CSUMB's net increase in service population (i.e., 7,359 service population) to obtain the campus-specific mass emission threshold of 3,334 MT CO_2e per year. (See Chapter 3, Project Description, Table 3-1 for existing and projected CSUMB population.) Therefore, the net operational emissions

associated with CSUMB operations that meet this mass emissions threshold would be consistent with state targets and would have a less than cumulatively considerable contribution to climate change. The equation and calculations for the campus-specific mass emission threshold are provided in Table 4.6-4; detailed campus-specific mass emissions threshold calculations also are provided in Appendix D.

Table 4.6-4
Campus-Specific Mass Emissions Threshold

Equation	Calculation
CSUMB's 2018 GHG emissions inventory × % reduction to be in line with the 2050 reduction target = mass emissions level	13,399 MT CO_2e X 47% = 7,153 MT CO_2e
Mass emissions level ÷ by the total anticipated CSUMB service population, including all faculty/staff and students in 2035 = per capita emissions level per year	7,153 MT CO_2e ÷ 15,790 total service population = 0.45 MT CO_2e per year
Per capital emissions level per year × net increase in CSUMB service population by 2035 attributable to the Project = campus-specific mass emission threshold per year	0.45 MT CO_2e per year × 7,359 net service population = 3,334 MT CO_2e per year
Campus-Specific Mass Emissions Threshold	**3,334 MT CO_2e per year**

Source: Appendix D, STARS 2019.
Notes: MT CO_2e = metric tons of carbon dioxide equivalent.

Note that, because the GHG per capita emissions rate is based on the CSUMB GHG emissions inventory and anticipated service population (i.e., students and faculty/staff), the threshold is geographically and jurisdictionally specific to CSUMB. Furthermore, the per capita emissions limit is based on the state's established emissions reductions needed to achieve both the 2030 and 2050 GHG reduction targets.

4.6.3.2 Analytical Method

Program- and Project-Level Review

The GHG emissions impact analysis in this section includes a program-level analysis under CEQA of the proposed Master Plan and project design features (PDFs), as described in Chapter 3, Project Description. The analysis also includes a project-level analysis under CEQA of the 5 near-term development components that would be implemented under the proposed Master Plan, as described in Chapter 3, Project Description. Both construction and operation of the Project are considered in the impact analysis, where relevant. In the event significant adverse environmental impacts would occur with the implementation of the Project even with incorporation of applicable regulations and proposed PDFs, mitigation measures would be identified to reduce impacts to less than significant, where feasible.

Project Design Features

There are a number of PDFs that are incorporated quantitatively into the trip generation rates contained in the Transportation Analysis (Appendix H), including PDF-MO-1, PDF-MO-2, PDF-MO-6(c), and PDF-MO-8, and therefore are quantitatively incorporated into the GHG analysis:

- *PDF-MO-1 and PDF-MO-2* provide that CSUMB will accommodate at least 60 percent of enrolled students and 65 percent of faculty and staff in on-campus housing. CSUMB will implement these PDFs to ensure that these campus housing goals are met, which will minimize vehicle commute travel to and from the campus. Appendix C, Student Housing and Parking Management Guidelines, and the CSUMB Housing Guidelines (CSUMB 2022) provide additional information about meeting the identified housing goals.
- *PDF-MO-6(c)* provides that CSUMB will implement strategies and measures to reduce parking demand, including that parking will be consolidated and relocated to select areas on the periphery of the campus core. While this PDF includes other measures (e.g., maintaining existing parking supply, prohibiting residential Freshmen and Sophomores from purchasing a parking permit, a "park once" policy), such measures are not assumed in the quantitative analysis.
- *PDF-MO-8* establishes restrictions to general vehicle travel through the campus core and locates vehicle circulation and parking on the campus periphery (see Chapter 3, Project Description, Figure 3-9). Specifically, vehicle access will be limited to CSUMB students, faculty, and staff vehicles on General Jim Moore Boulevard between Eighth Street and Fifth Street. Vehicle travel through the campus core will be restricted to shuttles, transit vehicles, service vehicles, and emergency vehicles at: Inter-Garrison Road between General Jim Moore Boulevard and Sixth Avenue, Divarty Street between General Jim Moore Boulevard and Seventh Avenue, Fourth Avenue between Divarty Street and Inter-Garrison Road, Fifth Avenue between Divarty Street and Inter-Garrison, A Street between Divarty Street and Seventh Avenue, Sixth Avenue between B Street and north of Divarty Street, and Butler Street between Sixth Avenue and Seventh Avenue. Additionally, Seventh Avenue between Colonel Durham Street and Butler Street will be converted to one-way for vehicles traveling north from Colonel Durham Street to Inter-Garrison Road.

As indicated in Section 4.13, Transportation, to provide for a conservative analysis, other mobility PDFs are considered qualitatively, including PDF-MO-3 through PDF-MO-7, and PDF-MO-9 through PDF-MO-18. While these PDFs would serve to reduce vehicle travel and promote transit, bicycle and pedestrian mobility, their ability to reduce vehicle travel is not quantified in the Transportation Analysis (Appendix H) and therefore the GHG analysis conservatively does not include these PDFs in the operational emissions estimates identified below. These PDFs are described in detail in Chapter 3, Project Description.

Additionally, there are a number of other PDFs that are considered in the technical analysis, including the GHG assessment, as part of the Project but are not factored into the quantitative estimates of water, wastewater and energy, including the following water and energy PDFs (see Chapter 3, Project Description for the specific text of each applicable PDF):

- *PDF-W-1* indicates that development will be pursued within the campus's water allocation by: establishing water use thresholds below CALGreen Building Code standards; establishing water modeling for each capital project during the feasibility phase; establishing potable water conservation projects; retrofitting high-use campus fixtures; pursuing a heat recovery chilling system to reduce water needs; and studying expansion of non-potable water use including the establishment of an on-site water recycling facility.
- *PDF-E-1* calls for achieving carbon neutrality for scope 1&2 emissions, per the Carbon Neutrality Roadmap.
- *PDF-E-2* calls for the design and retrofit of infrastructure and buildings to minimize energy use by: establishing district-scale on-site energy production and distribution strategies; studying expansion of district-scale electrical, chilled and hot water distribution; achieving a minimum 15 percent energy performance improvement target goal over current Title 24 code in new construction; achieving a minimum 5 percent energy performance improvement target goal over existing usage in existing facilities; establishing passive heating and cooling and thermal-mass building designs; establishing standards for campus-scale energy conversion systems; and meeting minimum requirements equivalent to LEED "Silver," while aiming for the highest green building energy standards possible (i.e., LEED Platinum or equivalent).
- *PDF-E-3* provides for meeting future demand for energy in a safe, reliable, and cost-effective manner by: performing regular energy efficiency upgrades to reduce energy use; recommissioning major buildings every five years, as funding is available; establishing energy system efficiency retrofit projects; and establishing funding mechanisms and thresholds for existing energy systems as they near the end of their usable life.

Construction Emissions

Emissions from the construction phase of the Project were estimated using California Emissions Estimator Model (CalEEMod) Version 2020.4.0. Construction of the Project would result in GHG emissions primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. The analysis of GHG emissions used the same methodology and modeling inputs as the analysis of air quality impacts in Section 4.2, Air Quality, of this EIR. All details for construction criteria air pollutants discussed in Section 4.2.3.2, Analytical Method (Construction Emissions) are also applicable for the estimation of construction

GHG emissions. As such, see Section 4.2.3.2 for a discussion of construction emissions calculation methodology and modeling inputs used in the GHG emissions analysis.

Operational Emissions

Emissions from the operational phase of the Project were estimated using CalEEMod Version 2020.4.0, based on an operational year 2035, the estimated planning horizon for the Project. Emissions from the existing land uses on the campus were also estimated using CalEEMod to present the net change in GHG emissions. Operational year 2018 was used for the existing conditions.

Of note, CalEEMod provides conservative and representative default values (e.g., emission factors) for each emissions source type, so that the model may be used to estimate emissions once all Project-specific and existing land use characteristics and information have been input into the model. Default values in CalEEMod can be replaced with Project-specific/campus-specific information, where such information is readily available. In this instance, the GHG emissions inventories for the Project and existing campus conditions reflect the use of Project-specific/campus-specific and default inputs, as described further below. In this respect, the methodologies used in the emission calculations presented in this analysis differ from the campus reported inventory, which utilizes the Sustainability Tracking, Assessment & Rating System (STARS), a self-reporting framework for colleges and universities to gauge relative progress toward sustainability.

The total existing land uses within the CSUMB campus that are currently occupied and therefore evaluated comprise approximately 3,071,386 square feet (see Chapter 3, Project Description, Table 3-3). It should be noted that the emission calculations for both the Project and the existing land uses consider CSUMB Main Campus facilities. Emissions associated with the East Campus Housing were not estimated in CalEEMod for either the Project or existing conditions because the emissions associated with students moving to the Main Campus and being replaced by staff and faculty in those East Campus Housing units are expected to change minimally with buildout of the proposed Master Plan. Specifically, while faculty and staff will occupy the housing year round, while students typically do not, the occupancy per unit is expected to be reduced with the conversion to faculty and staff use thereby resulting in a minimal change in energy and water use and associated GHG emissions.

Existing and potential Project-generated operational GHG emissions were estimated for area sources (landscape maintenance), energy sources (natural gas and electricity), mobile sources, solid waste, and water and wastewater treatment. Emissions from each category are discussed in the following text with respect to the Project. For a discussion of operational emission calculation methodology and modeling inputs, specifically for area, energy (natural gas), and mobile sources, see Section 4.2.3.2, Analytical Method (Operational Emissions).

Area Sources

CalEEMod was used to estimate GHG emissions from the Project's area sources that would include operation of gasoline-powered landscape maintenance equipment, which produce minimal GHG emissions. Notably, emissions associated with landscape maintenance equipment are likely overestimated as such emissions are expected to be reduced over time with CARB's approval of amendments to the SORE regulations, which would require landscaping equipment be zero emission starting in 2024. See Section 4.2.3.2 for a discussion of landscaping equipment emissions calculations. Consumer product use and architectural coatings result in VOC emissions, which are analyzed in the air quality analysis only (see Section 4.2) and would generate little to no GHG emissions.

Energy Sources

The estimation of operational energy emissions was based on 2016-2017 consumption and future forecast data provided by CSUMB for both existing conditions and Project land uses.

Default values in CalEEMod were updated to reflect the energy use from existing and Project conditions (electricity usage and natural gas per year), which are based on the 2016-2017 consumption and future forecast data provided by CSUMB. In 2016-2017, CSUMB Main Campus facilities consumed approximately 11,468,472 kilowatt-hours (kWh) and 555,708 therms (55,571 Metric Million British Thermal Unit (MMBTU) of natural gas (CSUMB 2019). At Project buildout, the total electricity and natural gas consumption would be approximately 27,006,093 kWh of electricity and 1,106,827 therms (110,683 MMBTU) of natural gas. The total electricity and natural gas consumption includes reductions associated with demolished campus buildings (2,050,356 MWh of electricity and 97,627 therms [9,763 MMBTU] of natural gas) and additions associated with new development (17,587,977 kWh and 648,746 therms [64,875 MMBTU])(CSUMB 2019).

CalEEMod default energy intensity factors (CO_2, CH_4, and N_2O mass emissions per kilowatt-hour) for Pacific Gas and Electric Company (PG&E) are based on the value for PG&E's energy mix in 2008. As explained in Section 4.6.2.2, SB 100 increased the standards set forth by SB 350 calling for 52 percent of the total electricity sold to retail customers in California to come from renewable energy sources by 2027 and 60 percent by 2030. Therefore, the CO_2 emissions intensity factor for utility energy use in CalEEMod was adjusted based on the estimated PG&E CO_2 emissions rate of 167 pounds per megawatt-hour (MWh) in 2035.

Mobile Sources

All details for criteria air pollutants discussed in Section 4.2.3.2 are also applicable for the estimation of operational mobile source GHG emissions. Regulatory measures related to mobile sources include AB 1493, the ACC II program, and related federal standards. As previously

discussed, AB 1493 required that CARB establish GHG emission standards for automobiles, light-duty trucks, and other vehicles determined by CARB to be vehicles that are primarily used for non-commercial personal transportation in the state. In addition, the NHTSA and EPA have established corporate fuel economy standards and GHG emission standards, respectively, for automobiles and light-, medium, and heavy-duty vehicles. Implementation of these standards and fleet turnover (replacement of older vehicles with newer ones) will gradually reduce emissions from the Project's motor vehicles. The ACC II program is currently in development to establish the next set of LEV and ZEV requirements for model years after 2025 to contribute to meeting federal ambient air quality ozone standards and California's carbon neutrality standards. As indicated in Section 4.6.3.2, Analytical Method, PDFs that would reduce vehicle travel that were quantified in the Transportation Analysis and therefore incorporated into the GHG analysis include: PDF-MO-1, PDF-MO-2, PDF-MO-6(c), and PDF-MO-8. The effectiveness of fuel economy improvements was evaluated by using the CalEEMod emission factors for motor vehicles in 2035 for the Project and 2018 for existing conditions to the extent it was captured in EMFAC 2017, which is the CARB model incorporated into CalEEMod for purposes of estimating vehicle tailpipe emissions.

Solid Waste

Solid waste generation during existing conditions and as a result of the Project would generate solid waste and, therefore, result in CO_2e emissions associated with landfill off-gassing. CalEEMod default values for solid waste generation were used to estimate GHG emissions associated with solid waste for existing conditions and for the Project. For the Project, it was estimated that there would be a 90 percent solid waste diversion rate for non-construction and demolition waste per the CSUMB Campus Sustainability Plan. Default solid waste generation rates from CalEEMod were assumed for the existing land uses.

Water and Wastewater Treatment

Supply, conveyance, treatment, and distribution of water 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, along with GHG emissions generated during wastewater treatment. CalEEMod default values were adjusted based on the consumption and future forecast data provided by CSUMB. Based on campus data, total potable water use at CSUMB in 2018-2019 was approximately 316 acre-feet per year (AFY), of which 219 AFY was related to building use and 97 AFY was related to irrigation. Campus water use has declined over the years as a result of installation of water meters and implementation of water conservation measures. At buildout, the Project would result in 445 AFY, of which 291 AFY would be related to building use and 154 AFY would be related to irrigation. See Section 4.14, Utilities and Energy (Table 4.14-7) for existing and estimated CSUMB water demand.

Gain of Sequestered Carbon

The calculation methodology and default values provided in CalEEMod were used to estimate the one-time carbon-stock change from planting new trees. Trees sequester CO_2 while they are actively growing, and the amount of CO_2 sequestered depends on the type of tree. Thereafter, the accumulation of carbon in biomass slows with age and is assumed to be offset by losses from clipping, pruning, and occasional death. Active growing periods are subject to, among other things, species, climate regime, and planting density; however, for modeling purposes, CalEEMod assumes the IPCC active growing period of 20 years (CAPCOA 2021).

The sequestered carbon from new trees modeling does not include CO_2 emissions estimates associated with planting, care, and maintenance activities (e.g., tree planting and care vehicle travel and maintenance equipment operation). Landscape maintenance equipment emissions, which are anticipated to be minimal, were included in the area source emission estimates included in the operational GHG emissions calculations. Conservatively, this analysis does not consider carbon sequestration associated with land preservation or conservation.

CalEEMod calculates GHG sequestration that results from planting of new trees and has default carbon content values (in units of MT CO_2/tree/year) for ten different general tree species and a miscellaneous tree category.[5] The CSUMB Campus Sustainability Plan identifies a policy of planting approximately 2,030 trees on campus. Live oak trees would be planted within the Project site; a CO_2 sequestration rate of 0.0354 MT CO_2/tree/year was used in this analysis, which is an average of all CO_2 sequestration rates for the different tree categories, because the specific CO_2 sequestration rate for live oak tress is not included in CalEEMod. It is assumed that the 2,030 trees will grow for a minimum of 20 years. The gain in sequestered carbon resulting from planting 2,030 trees would be approximately 1,437 MT CO_2. To interpret an annual sequestration, the total sequestered CO_2 was divided by 30 years, resulting in 48 MT CO_2 annually.

[5] Aspen (*Populus* sp.), soft maple (*Acer* sp.), mixed hardwood, hardwood maple (*Acer* sp.), juniper (*Juniperus* sp.), cedar/larch (Cupressaceae/*Larix* sp.), Douglas fir (*Pseudotsuga menziesii*), true fir/hemlock (*Abies* sp./*Tsuga* sp.), pine (Pinaceae), spruce (*Picea* sp.), and miscellaneous.

4.6.3.3 Project Impacts and Mitigation Measures

This section provides a detailed evaluation of GHG emissions associated with the Project.

Impact GHG-1: **Greenhouse Gas Emissions (Threshold A).** The Project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. *(Potentially Significant)*

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Construction Emissions

Construction of the Project would result in GHG emissions, which are primarily associated with use of off-road construction equipment and on-road vehicles (haul trucks, vendor trucks, and worker vehicles). Construction GHG emissions were calculated, amortized over 30 years, and added to the total operational emissions for comparison with the campus-specific mass emissions threshold of 3,334 MT CO_2e per year. Therefore, the determination of significance is addressed in the operational emissions discussion below.

As discussed above, CalEEMod was used to calculate the annual GHG emissions based on the construction scenario described in Section 4.2.3.2, Analytical Method (Construction Emissions). Table 4.6-5 presents construction emissions for the Project from on-site and off-site emission sources. Construction of the Project was estimated to last a total of approximately 15 years (through 2035). Construction emissions for the Project were determined based on the conservative estimate that up to approximately 300,000 GSF of buildings could be constructed concurrently over a two-year duration (2022 to 2023). The estimated annual average GHG emissions from the maximum concurrent development construction scenario would be approximately 329 MT CO_2e (659 MT CO_2e ÷ 2 years). The annual average construction emissions were then multiplied over the Master Plan's 15-year buildout in order to estimate the total GHG emissions due to the Project's construction. Over the 15-year construction period, it is estimated that Project construction would result in approximately 4,939 MT CO_2e (329 MT CO_2e x 15 years). As shown in Table 4.6-5, the estimated Project-generated construction emissions amortized over 30 years would be approximately 165 MT CO_2e per year. Because there is no separate GHG threshold for construction, the evaluation of significance is discussed in the operational emissions analysis in the following text.

Table 4.6-5
Estimated Annual Construction GHG Emissions

Year	CO_2	CH_4	N_2O	CO_2e
	Metric Tons per Year			
2022	576.36	0.09	0.02	585.86
2023	71.70	0.01	<0.01	72.69
Construction Emissions Total for Maximum Concurrent Development Construction Scenario				**658.55**
Annual Average				**329.28**
Total Construction Emissions Over 15-Year Buildout (= Annual Average X 15)				**4,939.20**
Amortized Construction Emissions (= Total Construction Emissions ÷ 30)				**164.64**

Source: Appendix D.
Notes: GHG = greenhouse gas; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; <0.01 = reported value less than 0.01.

Operational Emissions

Operations attributable to Project-related campus development (both new development and redevelopment) and existing campus development that would remain with Project implementation, and operation under existing conditions would generate GHG emissions through motor vehicle trips; landscape maintenance equipment operation (area source); energy use (natural gas and electricity); solid waste disposal; water supply, treatment, and distribution; and wastewater treatment. CalEEMod was used to calculate the annual GHG emissions based on the operational parameters described in Section 4.6.3.2, Analytical Method (Operational Emissions).

As indicated in Section 4.6.3.2, Analytical Methods, PDF-MO-1, PDF-MO-2, PDF-MO-6(c), and PDF-MO-8 are incorporated quantitatively into the trip generation rates contained in the Transportation Analysis (Appendix H), and therefore are quantitatively incorporated into this operational GHG emissions analysis. Other mobility PDFs (PDF-MO-3 through PDF-MO-7, and PDF-MO-9 through PDF-MO-18) and water, wastewater and energy PDFs (PDF-W-1, PDF-E-1 through PDF-E-3) are considered qualitatively to provide for a conservative analysis. Likewise, comprehensive implementation of the CSU Sustainability Policy and CSUMB Campus Sustainability Plan and associated Carbon Neutrality Roadmap are also not quantitatively factored into the annual GHG emissions associated with Project operations. While not factored into the quantitative analysis, these PDFs and sustainability plans and polices would serve to reduce CSUMB GHG emissions over the planning horizon for the Project (2035).

The estimated operational Project-generated and existing GHG emissions from area sources, energy usage, motor vehicles, solid waste generation, and water usage and wastewater generation, and the net change in emissions (Project minus existing emissions) are shown in Table 4.6-6.

Table 4.6-6
Estimated Annual Operational GHG Emissions - Unmitigated

Emission Source	MT CO_2e per Year
Project Buildout	
Area	155.90
Energy	8,011.98
Mobile	2,765.53
Solid waste	422.79
Water supply and wastewater	182.52
Total Project Annual Emissions	**11,538.72**
Amortized Construction Emissions	164.64
Annual Gain from Sequestered Carbon/Tree Planting (Amortized Over 30 Years)	(47.97)
Total Annual Emissions	**11,655.39**
Existing Conditions	
Area	89.94
Energy	4,044.20
Mobile	1,854.01
Solid waste	1,685.96
Water supply and wastewater	68.44
Total Existing Annual Emissions	**7,742.55**
Net Operational Emissions (Project Minus Existing Conditions)	**3,912.84**
Mass Emissions Threshold	**3,334**
Exceed Threshold?	**Yes**

Source: Appendix D.
Notes: GHG = greenhouse gas; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; Numbers in parentheses represent negative numbers.
Totals may not sum due to rounding.
The Project emissions reflect operational year 2035.
The existing conditions emissions reflect operational year 2018.
Estimates for Project buildout and existing conditions are based on mobile, energy, and water consumption data provided by CSUMB.

As shown in Table 4.6-6, approximately 7,743 MT CO_2e per year are estimated to be generated under existing conditions. Comparatively, estimated annual Project-generated GHG emissions would be approximately 11,539 MT CO_2e per year as a result of Project operations only. With amortized construction emissions and the planting of trees, the Project would result in GHG emissions of approximately 11,655 MT CO_2e per year. Overall, the Project would result in a net increase of approximately 3,913 MT CO_2e per year.

As previously discussed, the campus-specific mass emissions threshold of 3,334 MT CO_2e per year was developed to assess if the Project's GHG emissions would result in a significant, cumulatively considerable contribution to climate change. Based on the estimated emissions presented in Table 4.6-6, the Project would result in the exceedance of the campus-specific mass

emission threshold of 3,334 MT CO_2e by approximately 579 MT CO_2e. Thus, the Project's GHG emissions prior to mitigation would be *potentially significant*.

Near-Term Development Components

Emissions from construction and operational activities associated with the Project's near-term development components were estimated using CalEEMod. Project construction emissions were based on a construction scenario where no more than approximately 300,000 GSF would be developed concurrently, which is greater than the GSF for any of the individual near-term development components, as follows: Academic IV (95,000 GSF), Academic IV (76,704 GSF), Recreation Center Phases I and II (70,000 GSF), Student Housing Phase IIB (160,000 GSF), and Student Housing Phase III (200,000 GSF). Predicted construction emissions are presented in Table 4.6-5 above and were evaluated over a 15-year buildout duration, amortized over 30 years and summed with the Project's operational emissions. As shown in Table 4.6-6 above, the net increase in GHG emissions associated with the Project, including the near-term development components, would exceed the mass emission threshold of 3,334 MT CO_2e per year. Because evaluation of the Project includes the near-term development components, impacts associated with construction and operational GHG emissions would also be *potentially significant*.

Mitigation Measures

MM-GHG-1: Building Decarbonization: Replace Natural Gas with Electricity in New and Existing Buildings. CSUMB shall replace natural gas energy use with electricity energy use in new and existing buildings to reduce natural gas consumption and associated greenhouse gas (GHG) emissions generated by CSUMB. Building electrification shall result in a minimum natural gas reduction of 174,590 therms (17,459 Metric Million British Thermal Unit [MMBTU]), which equates to an approximately 16 percent reduction in the 2035 Master Plan's estimated natural gas consumption (1,106,827 therms Master Plan buildout in 2035 – 174,590 therms reduction in natural gas = 932,237 therms in 2035 [110,683 MMBTU – 17,459 MMBTU = 93,224 MMBTU]). Replacing 174,590 therms of natural gas is estimated to require an increase in approximately 4,472 megawatt hours of electricity to achieve a reduction of approximately 600 metric tons per year of carbon dioxide equivalent per year (MT CO_2e) because electricity is a less GHG intensive energy source.

This building decarbonization requirement in new and existing buildings can be met using different combinations of building electrification in new and existing residential and non-residential buildings, provided that

174,590 therms of natural gas is replaced with 4,472 megawatt hours of electricity by 2035. To ensure that a minimum of 174,590 therms of natural gas is replaced by electricity-provided energy in new and existing buildings by 2035, building energy demand projections will be calculated and reported on during the building design phase for new and existing buildings to be retrofitted. Prior to the schematic design approval for each new building or existing building to be retrofitted, CSUMB shall provide a natural gas estimate with and without electrification, which shall be tracked internally. Annually, CSUMB shall review the amount of natural gas replaced by electricity in new buildings to ensure that substantial progress is being made towards meeting the 174,590 therms replacement requirement for new and existing buildings under the Master Plan by 2035.

CSUMB may pursue and implement other GHG-reducing strategies (e.g., additional solar PV, heat pump conversion) as a mechanism for achieving the required GHG reductions (approximately 600 MT CO_2e) by 2035. To ensure GHG emissions reductions from such strategies are properly accounted for, the GHG emissions reductions associated with such strategies shall be calculated and reported on during the design phase of these strategies. Annually, CSUMB shall review the amount of GHG emissions reductions associated with these other GHG-reducing strategies, along with the GHG reductions associated with building electrification, as indicated previously, to ensure that substantial progress is being made towards meeting the required GHG reductions under the Master Plan by 2035.

Significance After Mitigation

As discussed in Section 4.6.2, Regulatory Framework, CSU and CSUMB have adopted policies and plans in order to reduce the campus' overall GHG emissions, including the electrification of new and existing buildings, among many other measures. For purposes of this GHG analysis, it was conservatively assumed that new buildings would consume natural gas as discussed in Section 4.6.3.2, Analytical Method, because the extent of and the specific buildings to be electrified are unknown at this time. However, consistent with CSU and CSUMB goals, implementation of MM-GHG-1 would require building decarbonization via reductions in natural gas consumption in order to reduce significant GHG emission impacts associated with the Project, including the near-term development components, to less than significant.

The emission reductions associated with implementation of MM-GHG-1 have been quantified and are presented in Table 4.6-7. Implementation of MM-GHG-1 would reduce GHG emissions

associated with Project operations by converting a portion of the Project's forecasted natural gas consumption to electricity. As shown in Table 4.6-7, the Project would be required to reduce natural gas usage of proposed Master Plan development by 174,590 therms (17,459 MMBTU), to achieve the campus-specific mass emissions threshold of 3,334 MT CO_2e per year. CSUMB can achieve MM-GHG-1 through variable levels of electrification in new and existing buildings (i.e., some buildings may attain 100 percent electrification and some buildings may maintain use of natural gas).

For simplicity in demonstrating the feasibility and effectiveness of MM-GHG-1, Table 4.6-7 assumes that each new residential and non-residential building would implement a 27 percent reduction in natural gas, which equates to a replacement 174,590 therms of natural gas per year with 4,472 MWh per year of electricity. Note that MM-GHG-1 can be achieved by decarbonizing existing buildings and/or new buildings; the effectiveness demonstration below for MM-GHG-1 focuses on new buildings only. Relatedly, recognizing that the type and use of each new campus building may afford different levels of electrification opportunities and natural gas needs, the exact replacement of natural gas with electricity at each building is anticipated to be variable, provided that CSUMB is required to attain the overall natural gas reduction and associated GHG emission reduction targets set forth in MM-GHG-1.

Table 4.6-7
Estimated Energy Use and Corresponding GHG Emissions - Unmitigated and Mitigated

	Energy Use - Unmitigated			Energy Use - Mitigated		
Land Use Type	Electricity (MWh/yr)	Natural Gas (MMBtu/yr)	Total Project Associated GHG Emissions (MT CO_2e/yr)	Electricity (MWh/yr)	Natural Gas (MMBtu/yr)	Total Project Associated GHG Emissions (MT CO_2e/yr)
New Non-residential Buildings	7,585.44	20,402.78	1,676.78	9,014.51	14,894.03	1,490.62
New Residential Buildings	10,002.54	44,471.80	3,154.13	13,006.91	32,464.41	2,739.90
Existing Buildings minus Demolished Buildings	9,418.11	45,808.15	3,181.07	9,456.62	45,865.33	3,181.07
Total	**27,006.09**	**110,682.73**	**8,011.98**	**31,478.04**	**93,223.77**	**7,411.59**

Source: Appendix D.
Notes: yr = year; MWh = megawatt hour; MMBtu = metric million British thermal unit; MT CO_2e = metric tons of carbon dioxide equivalent.

As shown in Table 4.6-7, replacing 17,459 MMBtu of natural gas per year (110,683 MMBtu – 93,224 MMBtu) with 4,472 MWh of electricity per year (27,006 MWh - 31,478 MWh) reduces total Project-generated energy source GHG emissions from approximately 8,012 MT CO_2e per year (see Table 4.6-6) to approximately 7,412 MT CO_2e per year, resulting in a reduction of approximately 600 MT CO_2e per year.

Table 4.6-8 shows the Project's GHG emissions after the implementation of MM-GHG-1. The Project would result in a net increase of approximately 3,312 MT CO_2e per year after implementation of MM-GHG-1, which would be less than the mass emission threshold of 3,334 MT CO_2e. The detailed emissions assumptions and model outputs are provided in Appendix D. Therefore, with the implementation of the MM-GHG-1, the Project's GHG emissions would be reduced to *less than significant*.

Table 4.6-8
Estimated Annual Operational GHG Emissions - Mitigated

Emission Source	MT CO_2e per Year
Project Buildout	
Area	155.90
Energy	7,411.59 (from Table 4.6-7)
Mobile	2,765.53
Solid waste	422.79
Water supply and wastewater	182.52
Total Project Annual Emissions	**10,938.32**
Amortized Construction Emissions	164.64
Annual Gain from Sequestered Carbon/2030 trees Planted (Amortized Over 30 Years)	(47.97)
Total Annual Emissions	**11,054.99**
Existing Conditions	
Area	89.94
Energy	4,044.20
Mobile	1,854.01
Solid waste	1,685.96
Water supply and wastewater	68.44
Total Existing Annual Emissions	**7,742.55**
Net Operational Emissions (Project Minus Existing Conditions)	**3,312.44**
Mass Emissions Threshold	**3,334**
Exceed Threshold?	**No**

Source: Appendix D.
Notes: GHG = greenhouse gas; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2e = carbon dioxide equivalent; Numbers in parentheses represent negative numbers.
Totals may not sum due to rounding.
The Project emissions reflect operational year 2035.
The existing conditions emissions reflect operational year 2018.

Estimates for Project buildout and existing conditions are based on mobile, energy, and water consumption data provided by CSUMB.

Impact GHG-2: Conflict with an Applicable Greenhouse Gas Reduction Plan (Threshold B). The Project may conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Specifically, the Project may conflict with CARB's Scoping Plan and related GHG reduction targets for 2030 and 2050, but would not conflict with the CSU Sustainability Policy, the CSUMB Campus Sustainability Plan, or AMBAG's 2040 MTP/SCS. *(Potentially Significant)*

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Consistency with the CSU Sustainability Policy

The CSU Sustainability Policy was adopted in 2014 and is currently in the process of being updated. The policy focuses mainly on energy and GHG emissions, and largely aligns with the State of California energy and GHG emissions reduction goals. The policy aims to reduce the environmental impact of construction and operation of buildings and to integrate sustainability across the curriculum. The Project would comply with the CSU Sustainability Policy through meeting the State building code requirements, including use of energy-efficient HVAC systems, installing LED lighting, retrofitting campus water fixtures to low-flow plumbing equipment, and compliance with waste recycling requirements.

Consistency with the CSUMB Campus Sustainability Plan

As previously discussed, the CSUMB Campus Sustainability Plan (CSUMB 2020) includes a Carbon Neutrality Roadmap as a technical appendix in support of achieving carbon neutrality by 2030. The Roadmap includes 12 topic areas and associated goals in a variety of sectors including: water, energy, food, waste, procurement, build environment, transportation, habitat, resiliency, academic and curricular, student affairs and co-curricular, and community and engagement.

The Project would support progress towards meeting the carbon neutrality goal through implementation of PDF-MO-1 through PDF-MO-18, which would minimize the increase in consumption of petroleum by promoting alternative transportation methods such as bicycling and walking, and reducing overall campus vehicle trips. To support mode shift from single occupancy vehicles and encourage alternative transportation methods, the Project would develop a TDM Plan, per PDF-MO-6. The TDM Plan would include a variety of trip reduction strategies such as expanding upon existing alternative transportation programs; establishing an incentives-based commuter program to encourage students, faculty and staff commuters to carpool and take alternative modes of travel to campus; increase bicycle facilities; and prioritize carpool parking, etc.

The Project would also promote energy efficiency as provided by PDF-W-1, and PDF-E-1 through PDF-E-3. PDF-W-1 indicates that the campus would implement a range of water conservation measures for each new project, which would reduce energy use overall. PDF-E-1 calls for pursuing limited use of natural gas and sourcing heating needs instead from renewable or electric sources. PDF-E-2 calls for the design and retrofit of infrastructure and buildings to minimize energy use by: establishing district-scale on-site energy production and distribution strategies; studying expansion of district-scale electrical, chilled and hot water distribution; achieving a minimum 15 percent energy performance improvement target goal over current Title 24 code in new construction; achieving a minimum 5 percent energy performance improvement target goal over existing usage in existing facilities; establishing passive heating and cooling and thermal-mass building designs; establishing standards for campus-scale energy conversion systems; and meeting minimum requirements equivalent to LEED "Silver," while aiming for the highest green building energy standards possible (i.e., LEED Platinum or equivalent). PDF-E-3 would allow for the recommissioning of major buildings every five years, as funding is available and would also establish energy system efficiency retrofit projects. Overall, the Project would support progress towards meeting carbon neutrality, per the CSUMB Campus Sustainability Plan (CSUMB 2020) and the Carbon Neutrality Roadmap.

Consistency with the AMBAG's 2040 MTP/SCS

AMBAG's 2040 MTP/SCS is a regional growth-management strategy that targets per capita GHG reduction from passenger vehicles and light-duty trucks within the Monterey Bay Area. The 2040 MTP/SCS incorporates local land use projections and circulation networks in city and county general plans. Typically, a project would be consistent with the MTP/SCS if the project does not exceed the underlying growth parameters within the MTP/SCS.

The proposed Master Plan would support an increase in on-campus student enrollment to 12,700 FTE students by 2035, from 6,634 FTE students in 2016-17. In addition, faculty and staff needed to support student growth would increase to 1,776 FTE faculty and staff, compared with 1,024 FTE faculty and staff in 2016-17. CSUMB's population growth associated with the proposed Master Plan is included in the total projected population in Monterey County[6] in 2035 (489,451 people) and would represent approximately 1.7 or 2.0 percent of the total, as described in Section 4.11, Population and Housing. Therefore, the Project would not result in significant population growth that would exceed AMBAG growth projections for the County. Furthermore, the major goals of the 2040 MTP/SCS are outlined in Table 4.6-9, along with the Project's consistency with them. As shown in Table 4.6-9, the Project would be consistent with the goals within AMBAG's 2040 MTP/SCS.

[6] This analysis refers to Monterey County because a substantial majority of the CSUMB population (nearly 90 percent of students, faculty, and staff) lives in Monterey County.

In particular, the Project would beneficially contribute to achievement of AMBAG's 2040 MTP/SCS GHG-reduction targets for passenger vehicles. As indicated in Section 4.13, Transportation, on a per service population basis, vehicle miles travelled (VMT) would decrease by approximately 10 percent between existing and Project conditions. This decrease in VMT would result due to the planned increase in on-campus housing and, to a lesser extent, due to modifications to the campus street and parking system, each of which is a component of the Project. Other VMT-reducing components of the Project include student life buildings, indoor recreation buildings and facilities, outdoor athletics and recreation support buildings, as shown in Table 3-3 in Chapter 3, Project Description, which also would contribute to reducing or eliminating the need for students to drive off-campus. Notwithstanding, due to the complexities of accurately assessing the additional VMT reduction that would result from implementation of these latter referenced Project components, such reductions were not considered as part of the analysis and, as such, the transportation analysis overstates total VMT associated with the Project.

Table 4.6-9
Project Consistency with the AMBAG 2040 MTP/SCS

MTP/SCS Goal	Project Consistency
Provide convenient, accessible, and reliable travel options while maximizing productivity for all people and goods in the region.	*Consistent.* The Project would provide for continued free or discounted access to campus, local and regional transit services; maintenance of connections to regional transit from Main Campus and East Campus Housing; improvement of the campus shuttle; expansion of the para-transportation services on campus; and implementation of transit design standards.
Raise the region's standard of living by enhancing the performance of the transportation system.	*Consistent.* The Project would provide for the expansion of the campus multi-modal transportation system infrastructure and programs by establishing two multimodal hubs to provide centralized arrival points on campus from the four campus entries with signs that lead to two key arrival areas.
Promote environmental sustainability and protect the natural environment.	*Consistent.* The Project would establish bicycle mobility as an important travel consideration, prioritized before internal vehicle travel in campus development and programs by implementing a range of measures, including but not limited to establishing at least one form of bicycle route facility on or adjacent to all campus roadways.
Protect the health of our residents; foster efficient development patterns that optimize travel, housing, and employment choices and encourage active transportation.	*Consistent.* The Project would provide for mixed-use campus development with amenities, a mix of on-campus student housing types and a compact campus core that support and improve campus life, reduce vehicle travel off campus and promote on-campus pedestrian and bicycle access.
Provide an equitable level of transportation services to all segments of the population.	*Consistent.* The Project would provide continued free or discounted access to campus, local and regional transit services; maintenance of connections to regional transit from Main Campus and East Campus Housing; improvement of the campus shuttle; expansion of the para-transportation services on campus; and implementation of transit design standards.

Table 4.6-9
Project Consistency with the AMBAG 2040 MTP/SCS

MTP/SCS Goal	Project Consistency
Preserve and ensure a sustainable and safe regional transportation system.	*Consistent.* The Project would establish restrictions to general vehicle travel through the campus core and locates vehicle circulation and parking on the campus periphery. Vehicle travel through the campus core will be restricted to shuttles, transit vehicles, service vehicles, and emergency vehicles in certain locations.

Source: AMBAG 2018.

Consistency with CARB's Scoping Plan

The Scoping Plan, approved by CARB on December 12, 2008 and updated in 2014 and 2017, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. Relatedly, in the Final Statement of Reasons for the Amendments to the State CEQA Guidelines, the CNRA observed that "[t]he [Scoping Plan] may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009a). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (i.e., hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., Low Carbon Fuel Standard), among others. To the extent that these regulations are applicable to the Project, the Project would comply with all regulations adopted in furtherance of the Scoping Plan to the extent required by law.

As demonstrated under Impact GHG-1, the Project would result in a net increase of approximately 3,913 MT CO_2e per year and would exceed the campus-specific mass emissions threshold of 3,334 MT CO_2e, which is based on the state's established emissions reductions needed to achieve both the 2030 and 2050 GHG reduction targets established under SB 32 (goal of reducing GHG emissions to 40 percent below 1990 levels by 2030) and EO S-3-05 (goal of reducing GHG emissions to 80 percent below 1990 levels by 2050). Notably, CARB has expressed optimism with regard to both the 2030 and 2050 goals. It states in the *First Update to the Climate Change Scoping Plan* that "California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014). With regard to the 2050 target for reducing GHG emissions

to 80 percent below 1990 levels, the *First Update to the Climate Change Scoping Plan* states the following (CARB 2014):

> This level of reduction is achievable in California. In fact, if California realizes the expected benefits of existing policy goals (such as 12,000 megawatts of renewable distributed generation by 2020, net zero energy homes after 2020, existing building retrofits under Assembly Bill 758, and others) it could reduce emissions by 2030 to levels squarely in line with those needed in the developed world and to stay on track to reduce emissions to 80 percent below 1990 levels by 2050. Additional measures, including locally driven measures and those necessary to meet federal air quality standards in 2032, could lead to even greater emission reductions.

In other words, CARB believes that California is on a trajectory to meet the 2030 and 2050 GHG reduction targets set forth in AB 32, SB 32, and EO S-3-05. This is confirmed in the 2017 Scoping Plan, which states, "This Plan draws from the experiences in developing and implementing previous plans to present a path to reaching California's 2030 GHG reduction target. The Plan is a package of economically viable and technologically feasible actions to not just keep California on track to achieve its 2030 target, but stay on track for a low- to zero-carbon economy by involving every part of the state" (CARB 2017a). The 2017 Scoping Plan also states that although "the Scoping Plan charts the path to achieving the 2030 GHG emissions reduction target, we also need momentum to propel us to the 2050 statewide GHG target (80 [percent] below 1990 levels). In developing this Scoping Plan, we considered what policies are needed to meet our mid-term and long-term goals" (CARB 2017a).

With regard to EO B-55-18 (statewide goal of carbon neutrality by no later than 2045), the EO notes that CARB will work with relevant state agencies to ensure that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. With respect to future GHG targets under SB 32 and EO B-55-18, CARB has made clear its legal interpretation that it has the requisite authority to adopt whatever regulations are necessary to meet the long-term statewide goals; this legal interpretation by an expert agency provides evidence that future regulations will be adopted to continue the state on its trajectory toward meeting these future GHG targets. However, the Project would exceed the campus-specific mass emissions threshold of 3,334 MT CO_2e per year, established for consistency with GHG reduction goals for 2030 in SB 32 and for 2050 in EO S-3-05. Therefore, the Project may conflict with implementation of any of the above-described GHG-reduction goals for 2030 and beyond.

Based on the above considerations, the Project may conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. This impact would be *potentially significant.*

Near-Term Development Components

The near-term development components include: 1) Student Housing Phase III (600 student housing beds); 2) Academic IV (95,000 GSF of classroom/instructional space); 3) Student Recreation Center (70,000 GSF of recreation space); 4) Student Housing Phase IIB (400 student housing beds); and 5) Academic V (76,700 GSF of classroom/instructional space). The near-term development components would comply with the CSU Sustainability Policy and the CSUMB Campus Sustainability Plan, through meeting the State building code requirements, including use of energy-efficient HVAC systems, installing LED lighting, retrofitting campus water fixtures to low-flow plumbing equipment, and compliance with waste recycling requirements. In addition, the near-term development components would also support progress towards meeting the carbon neutrality goal through implementation of PDF-W-1, PDF-E-1 through PDF-E-3, and PDF-MO-1 through PDF-MO-18, which will minimize electricity, natural gas, and petroleum consumption. Regarding consistency with the AMBAG's 2040 MTP/SCS, the near-term development components would not result in significant population growth that would exceed AMBAG growth projections for the County and would not conflict with goals of the 2040 MTP/SCS through implementation of the above mobility PDFs, including development of a TDM Plan, which would include a variety of trip reduction strategies such as expanding upon existing alternative transportation programs and establishing an incentives-based commuter program to encourage students, faculty and staff commuters to carpool and take alternative modes of travel to campus. However, as previously discussed under Impact GHG-1, the Project, including the near-term development components, was determined to result in GHG emissions that would exceed the mass emissions threshold of 3,334 MT CO_2e per year. Because the near-term development components were evaluated as a part of the buildout of the Project, the near-term development components may impede the state's trajectory toward the above-described statewide GHG reduction goals for 2030 and beyond and therefore the impact would be *potentially significant*.

Mitigation Measures

Implement MM-GHG-1 (see Impact GHG-1 above for a description of this mitigation measure).

Significance After Mitigation

Implementation of MM-GHG-1 would require CSUMB to limit natural gas infrastructure and electrify new and existing buildings to reduce energy consumption and associated GHG emissions. Shifting to electricity rather than natural gas would help CSUMB make progress towards the goal of carbon neutrality, since it would provide a pathway for offsetting electricity consumption emissions. Implementation of MM-GHG-1 would reduce the Project's GHG emissions to 3,312 MT CO_2e per year, which would be below the campus-specific mass emissions threshold of 3,334 MT CO_2e per year. As previously discussed, the campus-specific mass emission threshold was based on the state's

established emissions reductions needed to achieve both the 2030 and 2050 GHG reduction targets. With implementation of MM-GHG-1, the Project, including the near-term development components, would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs and impacts would be *less than significant*.

4.6.3.4 Cumulative Impacts and Mitigation Measures

This section provides an evaluation of GHG emissions impacts associated with the Project, including near-term development components, when considered together with other reasonably foreseeable cumulative development, as identified in Table 4.0-1 in Section 4.0, Introduction to Analysis, and other cumulative development throughout the NCCAB region. The geographic area considered in the cumulative analysis for this topic is described in the impact analysis below.

Impact GHG-3: Cumulative Greenhouse Gas Impacts (Thresholds A and B). The Project would not result in a cumulatively considerable contribution to significant cumulative impacts related to GHG emissions, with the implementation of mitigation. *(Less than Significant)*

The geographic area for the analysis of cumulative impacts resulting from GHG emissions is global. Cumulative development throughout the NCCAB region would generate GHG emissions that could have a significant impact on the environment. Global climate change is an inherently cumulative impact issue, and there are currently no established thresholds for assessing whether the GHG emissions of a project would be considered a cumulatively considerable contribution to global climate change. However, statewide and regional GHG-reduction regulations or strategies would continue to improve and reduce cumulative GHG emissions.

As shown in Table 4.6-6 and Impact GHG-1, the Project would result in GHG emissions that would exceed the campus-specific mass emissions threshold of 3,334 MT CO_2e per year, resulting in a potentially significant impact related to GHG emissions. In addition, as described in Impact GHG-2 above, the Project may conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, resulting in a potentially significant impact related to conflicts with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. However, with the implementation of MM-GHG-1, the Project's GHG emissions would be reduced below the campus-specific mass emissions threshold. Therefore, based on the assessment included herein, with the implementation of MM-GHG-1, the Project would not result in a considerable contribution to a significant cumulative GHG impact and cumulative impacts would be *less than significant*.

4.6.4 References

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