4.8 GREENHOUSE GAS EMISSIONS

This chapter describes the potential impacts associated with the adoption and implementation of the proposed project that are related to greenhouse gas (GHG) emissions. A summary of the relevant regulatory framework and existing conditions is followed by a discussion of potential impacts and cumulative impacts from implementation of the proposed project.

The analysis in this chapter is based on buildout of the proposed General Plan 2040, which includes the buildout in the Downtown Precise Plan Area. The proposed buildout is modeled using California Air Resources Board's (CARB's) Emissions Factor Model (EMFAC2017), the Off-Road Emissions Factor Model (OFFROAD2017), and energy use data provided by Pacific Gas and Electric Company (PG&E) and Marin Clean Energy (MCE) compiled for the City's recent GHG emissions inventory. This analysis also uses the trip generation and vehicle miles traveled (VMT) provided by Fehr & Peers. Trip generation is in Appendix I, Transportation Data, and VMT calculation are in Chapter 4.16, Transportation, of this Draft EIR. GHG emissions modeling is in Appendix D, Air Quality and Greenhouse Gas Emissions Data, of this Draft EIR.

Discussions regarding climate-related hazards, such as air quality, landslides, sea-level rise, flooding, drought, and wildfires are located in Chapter 4.3, Air Quality; Chapter 4.7, Geology and Soils; Chapter 4.10, Hydrology and Water Quality; and Chapter 4.18, Wildfire, of this Draft EIR.

4.8.1 ENVIRONMENTAL SETTING

4.8.1.1 TERMINOLOGY

The following are definitions for terms used throughout this chapter.

- **Greenhouse gases (GHG).** Gases in the atmosphere that absorb infrared light, thereby retaining heat in the atmosphere and contributing to a greenhouse effect.
- **Global warming potential (GWP).** Metric used to describe how much heat a molecule of a GHG absorbs relative to a molecule of carbon dioxide (CO_2) over a given period (20, 100, and 500 years). CO_2 has a GWP of 1.
- **Carbon dioxide-equivalent (CO_2e)**. The standard unit to measure the amount of GHGs in terms of the amount of CO_2 that would cause the same amount of warming. CO_2e is based on the GWP ratios between the various GHGs relative to CO_2.
- **$MTCO_2e$.** Metric ton of CO_2e.
- **$MMTCO_2e$.** Million metric tons of CO_2e.

4.8.1.2 GREENHOUSE GASES AND CLIMATE CHANGE

Human activities contribute to global climate change by adding large amounts of heat-trapping gases, known as GHG, to the atmosphere. The primary source of GHGs is fossil fuel use. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, CO_2, methane (CH_4), and ozone (O_3)—that may cause an increase in global average temperatures. Other GHGs identified by the IPCC that contribute to global warming to a lesser extent include nitrous oxide (N_2O), sulfur hexafluoride

(SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.[1,2,3] The major GHGs are briefly described as follows:

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.
- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during combustion of fossil fuels and solid waste.

GHGs are dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Some GHGs have a stronger greenhouse effect than others. These are referred to as high GWP gases. The GWP of applicable GHG emissions are shown in Table 4.8-1. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential that different GHGs have to contribute to the greenhouse effect. For example, under IPCC's Fourth Assessment Report (AR4) GWP values for CH_4, a project that generates 10 metric tons (MT) of CH_4 would be equivalent to 250 MT of CO_2.[4]

TABLE 4.8-1 GHG EMISSIONS AND THEIR RELATIVE GLOBAL WARMING POTENTIAL COMPARED TO CO_2

GHGs	Second Assessment Report (SAR) Global Warming Potential Relative to CO_2[a]	Fourth Assessment Report (AR4) Global Warming Potential Relative to CO_2[a]	Fifth Assessment Report (AR5) Global Warming Potential Relative to CO_2[a]
Carbon Dioxide (CO_2)	1	1	1
Methane[b] (CH_4)	21	25	28
Nitrous Oxide (N_2O)	310	298	265

Notes:
a. Based on 100-year time horizon of the GWP of the air pollutant compared to CO_2.
b. The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.
Sources: Intergovernmental Panel on Climate Change, 1995, *Second Assessment Report: Climate Change 1995*; Intergovernmental Panel on Climate Change. 2007. *Fourth Assessment Report: Climate Change 2007*. New York: Cambridge University Press; Intergovernmental Panel on Climate Change. 2014. *Fifth Assessment Report: Climate Change 2014*. New York: Cambridge University Press.

[1] Intergovernmental Panel on Climate Change, 2001, *Third Assessment Report: Climate Change 2001*, New York: Cambridge University Press.

[2] Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant because it is considered part of the feedback loop of radiative forcing.

[3] Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities (California Air Resources Board, 2017, March 14. *Short-Lived Climate Pollutant Reduction Strategy*, https://www.arb.ca.gov/cc/shortlived/shortlived.htm). However, State and national GHG inventories do not include black carbon due to ongoing work resolving the precise GWP of black carbon. Guidance for CEQA documents does not yet include black carbon.

[4] CO_2e is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The GWP of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

California's GHG Sources and Relative Contribution

In 2019, the statewide GHG emissions inventory was updated for 2000 to 2017 emissions using the GWPs in IPCC's AR4.[5] Based on these GWPs, California produced 424.10 $MMTCO_2e$ GHG emissions in 2017. California's transportation sector was the single-largest generator of GHG emissions, producing 40.1 percent of the state's total emissions. Industrial-sector emissions made up 21.1 percent, and electric power generation made up 14.7 percent of the state's emissions inventory. Other major sectors of GHG emissions include commercial and residential (9.7 percent), agriculture and forestry (7.6 percent), high GWP (4.7 percent), and recycling and waste (2.1 percent).[6]

California's GHG emissions have followed a declining trend since 2007. In 2017, emissions from routine GHG emitting activities statewide were 424 $MMTCO_2e$, 5 $MMTCO_2e$ lower than 2016 levels. This represents an overall decrease of 14 percent since peak levels in 2004 and 7 $MMTCO_2e$ below the 1990 level and the state's 2020 GHG target. During the 2000 to 2017 period, per capita GHG emissions in California have continued to drop from a peak in 2001 of 14 $MTCO_2e$ per capita to 10.7 $MTCO_2e$ per capita in 2017, a 24-percent decrease. Overall trends in the inventory also demonstrate that the carbon intensity of California's economy (the amount of carbon pollution per million dollars of gross domestic product [GDP]) is declining, representing a 41-percent decline since the 2001 peak, while the state's GDP has grown 52 percent during this period. For the first time since California started to track GHG emissions, California uses more electricity from zero-GHG sources, such as hydro, solar, wind, and nuclear energy. [7]

Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHGs in the atmosphere remained relatively constant. During the twentieth century, however, scientists observed a rapid change in the climate and the quantity of climate change pollutants in the Earth's atmosphere that is attributable to human activities. The amount of CO_2 in the atmosphere has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million per year since 1960, mainly due to combustion of fossil fuels and deforestation.[8] These recent changes in the quantity and concentration of climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants.[9] In the past, gradual changes in temperature changed the distribution of species, availability of

[5] Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (2006).

[6] California Air Resources Board (CARB). 2019, August 26. 2019 Edition California Greenhouse Gas Inventory for 2000-2017: By Category as Defined in the 2008 Scoping Plan. https://www.arb.ca.gov/cc/inventory/data/data.htm.

[7] California Air Resources Board. 2019, August 26. California Greenhouse Emissions for 2000 to 2017: Trends of Emissions and Other Indicators. https://www.arb.ca.gov/cc/inventory/data/data.htm, accessed November 21, 2019.

[8] Intergovernmental Panel on Climate Change, 2007. Fourth Assessment Report: Climate Change 2007, New York: Cambridge University Press.

[9] California Climate Action Team, 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature.

water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame but in a human's lifetime.[10]

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are hard to predict. Projections of climate change depend heavily upon future human activity. Therefore, climate models are based on different emission scenarios that account for historical trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty; for example, on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas,
- Warmer and more frequent hot days and nights over most land areas,
- An increase in frequency of warm spells/heat waves over most land areas,
- An increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas,
- Larger areas affected by drought,
- Intense tropical cyclone activity increases, and
- Increased incidence of extreme high sea level (excluding tsunamis).

Potential Climate Change Impacts for California

Observed changes over the last several decades across the western United States reveal clear signs of climate change. Statewide average temperatures increased by about 1.7 degrees Fahrenheit (°F) from 1895 to 2011, and warming has been greatest in the Sierra Nevada.[11] The years from 2014 through 2016 have shown unprecedented temperatures with 2014 being the warmest.[12] By 2050, California is projected to warm by about 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.[13]

In California and western North America, observations of the climate have shown: (1) a trend toward warmer winter and spring temperatures; (2) a smaller fraction of precipitation falling as snow; (3) a decrease in the amount of spring snow accumulation in the lower and middle-elevation mountain zones; (4) advanced shift in the timing of snowmelt of 5 to 30 days earlier in the spring; and (5) a similar shift (5 to 30 days earlier) in the timing of spring flower blooms.[14] Overall, California has become drier over time, with five of the eight years of severe to extreme drought occurring between 2007 and 2016, and

[10] Intergovernmental Panel on Climate Change, 2007. Fourth Assessment Report: Climate Change 2007, New York: Cambridge University Press.

[11] California Climate Change Center, 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.

[12] Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf, accessed November 21, 2019.

[13] California Climate Change Center, 2012. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.

[14] California Climate Action Team, 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature.

unprecedented dry years in 2014 and 2015. Statewide precipitation has become increasingly variable from year to year, with the driest consecutive four years occurring from 2012 to 2015.[15]

According to the California Climate Action Team—a committee of state agency secretaries and the heads of agencies, boards, and departments, led by the Secretary of the California Environmental Protection Agency (CalEPA)—even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes (see Table 4.8-1), and the inertia of the Earth's climate system could produce as much as 0.6 degrees Celsius (°C) (1.1°F) of additional warming. Consequently, some impacts from climate change are now considered unavoidable. Global climate change risks to California are described herein and in Table 4.8-2.

- Water Resource Impacts. By late this century, all projections show drying, and half of the projections suggest 30-year average precipitation will decline by more than 10 percent below the historical average. Even in projections with relatively little or no decline in precipitation, central and southern parts of the state are expected to be drier from the warming effects alone because the spring snowpack will melt sooner, and the moisture in soils will evaporate during long, dry summer months.[16]
- Wildfire Risks. Earlier snowmelt, higher temperatures, and longer dry periods over a longer fire season will directly increase wildfire risk. Indirectly, wildfire risk will also be influenced by potential climate-related changes in vegetation and ignition potential from lightning. Human activities will continue to be the biggest factor in ignition risk. The number of large fires statewide is estimated to increase by 58 percent to 128 percent above historical levels by 2085. Under the same emissions scenario, estimated burned area will increase by 57 percent to 169 percent, depending on location.[17]
- Sea-Level Rise. Sea-level rise threatens existing or planned infrastructure, development, and ecosystems (wetlands, estuaries, and fisheries) along California's coast. Critical infrastructure lies less than four feet above the high tide, including two international airports—Oakland and San Francisco—and about 172,000 homes.[18] Thermal expansion of ocean waters and melting glaciers have contributed to the rise in global mean sea level by 7 inches. Along the California coast, sea levels have generally risen. Since 1900, mean sea level has increased by about 7 inches at San Francisco and by about 6 inches since 1924 at La Jolla. In contrast, sea level at Crescent City has declined by about 3 inches since 1933 due to an uplift of the land surface from the movement of the Earth's plates.[19]
- Health Impacts. Many of the gravest threats to public health in California stem from the increase of extreme conditions, principally more frequent, more intense, and longer heat waves. Particular concern centers on the increasing tendency for multiple hot days in succession, and simultaneous heat waves in several regions throughout the state. Public health could also be affected by climate

[15] Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf, accessed April 3, 2019.

[16] California Council on Science and Technology, 2012. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. https://ccst.us/wp-content/uploads/2012ghg.pdf, accessed November 21, 2019.

[17] California Council on Science and Technology, 2012. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. https://ccst.us/wp-content/uploads/2012ghg.pdf, accessed November 21, 2019.

[18] Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf, accessed April 3, 2019.

[19] Office of Environmental Health Hazards Assessment, 2018. Indicators of Climate Change in California. https://oehha.ca.gov/media/downloads/climate-change/report/2018caindicatorsreportmay2018.pdf, accessed April 3, 2019.

change impacts on air quality, food production, the amount and quality of water supplies, energy pricing and availability, and the spread of infectious diseases. Higher temperatures also increase ground-level ozone levels. Wildfires can increase particulate air pollution in the major air basins.[20]

- **Increased Energy Demand.** Increases in average temperature and higher frequency of extreme heat events, combined with new residential development across the state, will drive up the demand for cooling in the increasingly hot and longer summer season and decrease demand for heating in the cooler season. Warmer, drier summers also increase system losses at natural gas plants (reduced efficiency in the electricity generation process at higher temperatures) and hydropower plants (lower reservoir levels). Transmission of electricity will also be affected by climate change. Transmission lines lose 7 to 8 percent of transmitting capacity in high temperatures while needing to transport greater loads. This means that more electricity needs to be produced to make up for the loss in capacity and the growing demand.[21]

TABLE 4.8-2 SUMMARY OF GHG EMISSIONS RISK TO CALIFORNIA

Impact Category	Potential Risks
Public Health Impacts	▪ Heat waves will be more frequent, hotter, and longer ▪ Poor air quality made worse ▪ Higher temperatures increase ground-level ozone (i.e., smog) levels
Water Resource Impacts	▪ Decreasing Sierra Nevada snow pack ▪ Challenges in securing adequate water supply ▪ Potential reduction in hydropower ▪ Loss of winter recreation
Agricultural Impacts	▪ Increasing temperature ▪ Increasing threats from pests and pathogens ▪ Expanded ranges of agricultural weeds ▪ Declining productivity ▪ Irregular blooms and harvests
Coastal Sea-Level Impacts	▪ Accelerated sea-level rise ▪ Increasing coastal floods ▪ Shrinking beaches ▪ Worsened impacts on infrastructure
Forest and Biological Resource Impacts	▪ Increased risk and severity of wildfires ▪ Lengthening of the wildfire season ▪ Transitioning forest areas ▪ Conversion of forest to grassland ▪ Declining forest productivity ▪ Increasing threats from pests and pathogens ▪ Shifting vegetation and species distribution ▪ Altered timing of migration and mating habits ▪ Loss of sensitive or slow-moving species
Energy Demand Impacts	▪ Potential reduction in hydropower ▪ Increased energy demand

Sources: California Climate Change Center, 2012, Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California. California Energy Commission, 2006. Our Changing Climate: Assessing the Risks to California, 2006 Biennial Report, CEC-500-2006-077. California Energy Commission, 2009. The Future Is Now: An Update on Climate Change Science, Impacts, and Response Options for California. CEC-500-2008-0077. California Natural Resources Agency, 2014. Safeguarding California: Reducing Climate Risk, An Update to the 2009 California Climate Adaptation Strategy.

[20] California Council on Science and Technology, 2012. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. https://ccst.us/wp-content/uploads/2012ghg.pdf, accessed November 21, 2019.

[21] California Council on Science and Technology, 2012. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. https://ccst.us/wp-content/uploads/2012ghg.pdf, accessed November 21, 2019.

4.8.1.3 REGULATORY FRAMEWORK

This section summarizes key federal, state, regional, and local regulations and programs related to GHG emissions resulting from the proposed project.

Federal Regulations

The U.S. Environmental Protection Agency (USEPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The USEPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings did not themselves impose any emission-reduction requirements but allowed the USEPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation. [22]

To regulate GHGs from passenger vehicles, the USEPA issued an endangerment finding.[23] The finding identifies emissions of six key GHGs—CO_2, CH_4, N_2O, HCFCs, PFCs, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three are applicable to the proposed project's GHG emissions inventory because they constitute the majority of GHG emissions and, per Bay Area Air Quality Management District (BAAQMD) guidance, they are the GHG emissions that should be evaluated as part of a project's GHG emissions inventory.

- US Mandatory Reporting Rule for GHGs (2009). In response to the endangerment finding, the USEPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 metric tons (MT) or more of CO_2e per year are required to submit an annual report.
- Update to Corporate Average Fuel Economy Standards (2021 to 2026). The federal government issued new Corporate Average Fuel Economy (CAFE) standards in 2012 for model years 2017 to 2025, which required a fleet average of 54.5 miles per gallon in 2025. However, on March 30, 2020, the USEPA finalized updated CAFE and GHG emissions standards for passenger cars and light trucks and established new standards, covering model years 2021 through 2026, known as the Safer Affordable Fuel Efficient (SAFE) Vehicles Final Rule for Model Years 2021 through 2026. However, consortium of automakers and California have agreed on a voluntary framework to reduce emissions that can serve as an alternative path forward for clean vehicle standards nationwide. Automakers who agreed to the framework are Ford, Honda, BMW of North America, and Volkswagen Group of America. The framework supports continued annual reductions of vehicle GHG emissions through the 2026 model year, encourages innovation to accelerate the transition to electric vehicles, and provides industry the certainty needed to make investments and create jobs. This commitment means that the auto

[22] US Environmental Protection Agency (USEPA). 2009, December. USEPA: Greenhouse Gases Threaten Public Health and the Environment. Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity. https://archive.epa.gov/epapages/newsroom_archive/newsreleases/08d11a451131bca585257685005bf252.html.

[23] U.S. Environmental Protection Agency (USEPA), 2009. USEPA: Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act. https://www.epa.gov/ghgemissions/endangerment-and-cause-or-contribute-findings-greenhouse-gases-under-section-202a-c lean, accessed November 21, 2019.

companies party to the voluntary agreement will only sell cars in the United States that meet these standards. [24]

- USEPA Regulation of Stationary Sources under the Clean Air Act (Ongoing). Pursuant to its authority under the Clean Air Act, the USEPA has been developing regulations for new, large stationary sources of emissions, such as power plants and refineries. Under former President Obama's 2013 Climate Action Plan, the USEPA was directed to develop regulations for existing stationary sources as well. On June 19, 2019, the USEPA issued the final Affordable Clean Energy (ACE) rule, which became effective on August 19, 2019. The ACE rule was crafted under the current administration's Energy Independence Executive Order. It officially rescinds the Clean Power Plan rule issued during the previous administration and sets emissions guidelines for states in developing plans to limit CO+ emissions from coal-fired power plants.

State Regulations

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-03-05, Assembly Bill (AB) 32, Senate Bill (SB) 32, Executive Order B-30-15, and SB 375. These major GHG regulations are summarized as follows:

- Executive Order S-03-05. Executive Order S-03-05, signed June 1, 2005, set the following GHG reduction targets for the state:
  - 2000 levels by 2010.
  - 1990 levels by 2020.
  - 80 percent below 1990 levels by 2050.
- Assembly Bill 32. Also known as the Global Warming Solutions Act, AB 32 was signed August 31, 2006, to reduce California's contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-03-05. Under AB 32, CARB prepared the *2008 Climate Change Scoping Plan*, the *2014 Climate Change Scoping Plan,* and the *2017 Climate Change Scoping Plan,* which are discussed below.
- Executive Order B-30-15. Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions within the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires state agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, to ensure climate change is accounted for in state planning and investment decisions.
- Senate Bill 32 and Assembly Bill 197. In September 2016, SB 32 and AB 197 were signed into law, making the Executive Order goal for year 2030 into a statewide mandated legislative target. AB 197 established a joint legislative committee on climate change policies and requires CARB to prioritize direct emissions reductions rather than the market-based cap-and-trade program for large stationary,

[24] California Air Resources Board (CARB) 2019, July 25. California and major automakers reach groundbreaking framework agreement on clean emission standards. Accessed April 14, 2020. https://ww2.arb.ca.gov/news/california-and-major-automakers-reach-groundbreaking-framework-agreement-clean-emission

mobile, and other sources. Executive Order B-30-15 and SB 32 required CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. On December 14, 2017, CARB adopted the 2017 Climate Change Scoping Plan Update (2017 Scoping Plan) to address the 2030 target for the state. The 2017 Scoping Plan establishes a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40-percent decrease in 1990 levels by 2030.[25]

- Senate Bill 375. In 2008, SB 375, the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions-reduction targets for each of the 18 metropolitan planning organizations (MPOs). The Metropolitan Transportation Commission (MTC) is the MPO for the nine-county San Francisco Bay Area region. Pursuant to the recommendations of the Regional Transportation Advisory Committee (RTAC), CARB adopted per-capita reduction targets for each of the MPOs rather than a total magnitude reduction target.

Table 4.8-3 provides a summary list of regulations adopted in California that reduce GHG emissions. A complete description of these regulations is in included in Appendix D, Air Quality and Greenhouse Gas Emissions Data, of this Draft EIR.

TABLE 4.8-3 LIST OF STATE GHG REGULATIONS

Sector	Regulations
State GHG Targets	AB 32, SB 32, Executive Order S-03-05, Executive Order B-15-30
Transportation	AB 1493, Executive Order S-01-07, SB 375
Renewable Energy	SB 1078, SB 107, SB X1-2, Executive Order S-14-08, SB 350, SB 100, Executive Order B-55-18
Energy Efficiency	Title 24, Part 6, Building Energy Efficiency Standards, Title 24, Part 11, Green Building Standards Code (CALGreen), Title 20, Appliance Efficiency Regulations
Solid Waste	AB 939, AB 341, AB 1327, AB 1826
Water	SB X7-7, AB 1881
Short-Lived Pollutants	SB 1383

Source: PlaceWorks, 2020

Regional Plans and Regulations

Plan Bay Area: Strategy for a Sustainable Region

[25] California Air Resources Board, 2017, California's 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target, https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf, accessed on March 18, 2019.

Plan Bay Area is the Bay Area's Regional Transportation Plan (RTP)/Sustainable Community Strategy (SCS). *Plan Bay Area* 2040, adopted jointly by the Association of Bay Area Governments (ABAG) and MTC in July 26, 2017, is the current version of the plan. The 2040 *Plan Bay Area* is a limited and focused update to the 2013 *Plan Bay Area*, with updated planning assumptions that incorporate key economic, demographic, and financial trends from the last several years. This document describes how the San Francisco Bay Area will develop over the next two decades and the SCS integrates transportation, land use, and housing to meet GHG reduction targets set by CARB. *Plan Bay Area* 2040 proposes the Climate Initiatives Program, which promotes the densification of land use and a relative decrease in per-capita energy consumption, in addition to a net reduction in vehicle fuel use while also allowing growth within the region. An update to *Plan Bay Area*, moving the time horizon to 2050, was underway when the General Plan 2040 and Downtown Precise Plan were published.

As part of the implementing framework for *Plan Bay Area*, local governments have identified Priority Development Areas (PDAs) and Transit Priority Areas (TPAs) to focus growth. PDAs are transit-oriented, infill development opportunity areas within existing communities. TPAs are half-mile buffers surrounding major transit stops or terminals. Overall, well over two-thirds of all regional growth in the Bay Area by 2040 is allocated within PDAs. [26] San Rafael has three PDAs and three TPAs (see Figure 4-1 in Chapter 4, Environmental Analysis, of this Draft EIR). ABAG indicates that these areas are expected to absorb about 40 percent of the City's household growth in the next 20 years, although General Plan 2040 is anticipating an even higher capture rate. [27]

Bay Area Clean Air Plan

BAAQMD adopted the 2017 *Clean Air Plan, Spare the Air, Cool the Climate* (Clean Air Plan) on April 19, 2017. The 2017 Clean Air Plan also lays the groundwork for reducing GHG emissions in the Bay Area to meet the state's 2030 GHG reduction target and 2050 GHG reduction goal. It also includes a vision for the Bay Area in a post-carbon year 2050 that encompasses the following:

- Construct buildings that are energy efficient and powered by renewable energy.
- Walk, bicycle, and use public transit for the majority of trips and use electric-powered autonomous public transit fleets.
- Incubate and produce clean energy technologies.
- Live a low-carbon lifestyle by purchasing low-carbon foods and goods in addition to recycling and putting organic waste to productive use.[28]

A comprehensive multipollutant control strategy has been developed to be implemented in the next three to five years to address public health and climate change and to set a pathway to achieve the 2050 vision. The control strategy includes 85 control measures to reduce emissions of ozone, particulate matter, toxic

[26] Bay Area Air Quality Management District, 2017, Final 2017 *Clean Air Plan*, Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area, http://www.baaqmd.gov/plans-and-climate/air-quality-plans/current-plans, accessed on March 18, 2019.

[27] Metropolitan Transportation Commission and Association of Bay Area Governments, 2017, Plan Bay Area 2040 Plan.

[28] Metropolitan Transportation Commission, Priority Development Areas, http://opendata.mtc.ca.gov/datasets/priority-development-areas-current, and Transit Priority Areas, http://opendata.mtc.ca.gov/datasets/d97b4f72543a40b2b85d59ac085e01a0_0, accessed April 17, 2020.

air contaminants, and GHG from a full range of emission sources. These control measures cover the following sectors: (1) stationary (industrial) sources; (2) transportation; (3) energy; (4) agriculture; (5) natural and working lands; (6) waste management; (7) water; and (8) super-GHG pollutants. Overall, the proposed control strategy is based on the following key priorities:

- Reduce emissions of criteria air pollutants and toxic air contaminants from all key sources.
- Reduce emissions of "super-GHGs," such as methane, black carbon, and fluorinated gases.
- Decrease demand for fossil fuels (gasoline, diesel, and natural gas).
- Increase efficiency of the energy and transportation systems.
- Reduce demand for vehicle travel and high-carbon goods and services.
- Decarbonize the energy system.
- Make the electricity supply carbon-free.
- Electrify the transportation and building sectors.

Bay Area Commuter Benefits Program

Under Air District Regulation 14, Model Source Emissions Reduction Measures, Rule 1, Bay Area Commuter Benefits Program, employers with 50 or more full-time employees within the BAAQMD are required to register and offer commuter benefits to employees. In partnership with the BAAQMD and the MTC, the rule's purpose is to improve air quality, reduce GHG emissions, and decrease the Bay Area's traffic congestion by encouraging employees to use alternative commute modes, such as transit, vanpool, carpool, bicycling, and walking. The benefits program allows employees to choose from one of four commuter benefit options, including a pre-tax benefit, employer-provided subsidy, employer-provided transit, and alternative commute benefit.

Local Regulations

San Rafael General Plan 2020

The City of San Rafael 2020 General Plan goals, policies, and programs that are relevant to the reduction of GHG emissions are primarily in the Sustainability Element. As part of the proposed project, this element is being eliminated and its policies and programs are being reallocated to other elements. A comprehensive list of policy changes is provided in Appendix B, Proposed General Plan Goals, Policies, and Programs, of this Draft EIR. Applicable goals, policies, and programs are identified and assessed for their effectiveness and potential to result in an adverse physical impact later in this chapter under Section 4.8.3, Impact Discussion.

San Rafael Municipal Code

The San Rafael Municipal Code (SRMC) includes various directives pertaining to GHG emissions. The SRMC is organized by title, chapter, and section. Most provisions related to GHG emissions impacts are included in Title 5, Traffic Regulations; Title 10, Business, Professions, Occupations, Industries, and Trades; and Title 12, Building Regulations, as follows:

- Chapter 5.81, Trip Reduction and Travel Demand Requirements. Requires the City to implement a trip reduction and travel demand ordinance (Ord. 1657 Section 1 (part), 1994).

- Chapter 10.92, Prohibits Polystyrene Foam Disposal Food Packaging. Retail food vendors are prohibited from providing prepared food or takeout food to customers in, on, or with disposable food packaging, that includes polystyrene foam. This is a waste reduction measure, with secondary GHG reduction benefits.
- Chapter 10.94, Single Use Carry Out Bags. Prohibits store operators from providing customers with plastic carryout bags, except product bags for prescription medication. This is a waste reduction measure, with secondary GHG reduction benefits.
- Chapter 12.100, Adopted Codes. This chapter adopts all sections, with amendments to include Appendix 4a of CALGreen, of the California Code of Regulations Title 24, Part 11, California Green Building Standards Code.
- Chapter 12.320, Expedited Permit Process for Small Residential Rooftop Solar Systems. This chapter ensures a streamlined solar permitting process that complies with the Solar Rights Act and AB 2188, to achieve timely and cost-effective installations of small residential rooftop solar energy systems.
- Chapter 12.315, Expedited permitting Process for Electric Vehicle Charging Stations. This chapter is intended to promote the use of electric vehicles by streamlining the permitting process for electric vehicle charging stations.
- Chapter 14.18, Parking Standards. Section 14.18.45, Designated Parking for Clean Air Vehicles, requires parking spaces serving new nonresidential buildings be designated for low-emitting, fuel-efficient, and carpool/van pool vehicles, as defined by Section 5.102 of CALGreen. Section 14.18.090. Bicycle Parking, requires bicycle parking be provided for new nonresidential buildings and major renovations of nonresidential buildings that have 30 or more parking spaces, and for all public/quasi-public uses.
- Chapter 14.16, Site and Use Regulations. Section 14.16.305, Small Wind Energy Systems., establishes standards to regulate the design and placement of small wind energy systems on public and private property to minimize the potential safety and aesthetic impacts on neighboring property owners and the community. Section 14.16.307, Solar Installations, identifies requirements for solar installations on developed properties (e.g., rooftop solar) and solar energy production facilities for off-site power distribution.

San Rafael Climate Action Plan

The current San Rafael Climate Change Action Plan (2019 CCAP) was approved and adopted by the City on May 20, 2019. The 2019 CCAP focuses on mitigation measures aiming to reduce GHG emissions and includes a variety of regulatory, incentive-based, and voluntary strategies to reduce emissions from existing and future development in the city. It contains policies and actions focused on the reduction of GHG emissions and energy conservation across both government and community sectors. The 2019 CCAP builds off the 2009 CCAP and the San Rafael Greenhouse Gas Emission Inventory, providing a comparison between baseline 2005 and 2016 emissions to identify where reductions have occurred. Furthermore, the 2019 CCAP establishes targets similar to the state's GHG emission goals, to reduce emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. In San Rafael, that means emissions would need to drop to 241,455 $MTCO_2e$ by 2030 and 80,485 $MTCO_2e$ by 2050, which include energy reduction and efficiency measures. Actions provided in the 2019 CCAP to meet the City's reduction

targets involve initiatives focused on low-carbon transportation, energy efficiency, renewable energy, waste reduction, water conservation, sequestration and adaptation, and community engagement.

4.8.1.4 EXISTING CONDITIONS

Community Emissions

Land uses in the EIR Study Area generate GHG emissions from natural gas used for energy, heating, and cooking; electricity usage; vehicle trips; and area sources such as landscaping and consumer cleaning products. Emissions associated with the EIR Study Area are shown in Table 4.8-4.

TABLE 4.8-4 EXISTING 2019 GREENHOUSE GAS EMISSIONS INVENTORY

	Existing (2019) $MTCO_2e$			
Emissions Sector	City	Remainder of EIR Study Area	Total	% of Total
Building Electricity [a]	67,142	7,589	74,731	12%
Building Natural Gas [a]	63,511	10,154	73,666	12%
On-Road Transportation [b]	375,518	46,644	422,162	71%
On-Road Vehicles and Equipment [c]	2,582	161	2,742	0.5%
Solid Waste/Landfills [d]	19,632	3,169	22,801	4%
Water Use [e]	1,170	277	1,447	0.2%
Wastewater Treatment [f]	792	188	980	0.2%
Total Community Emissions	**530,347**	**68,182**	**598,529**	**100%**
Service Population (SP)	103,280	16,671	119,951	NA
$MTCO_2e$/SP	5.1	4.1	5.0	NA

Notes:
[a] Building electricity and natural gas are based on data provided by the City for the GHG emissions inventory conducted for their Climate Change Action Plan from PG&E and MCE. The electricity rates were adjusted to reflect the increase in dwelling unit and employment within the City since the CAP inventory was conducted.
[b] On-road transportation VMT is provided by Fehr & Peers and modeled with EMFAC2017. VMT for the General Plan is based on the "project's effect" of VMT in the EIR Study Area. As a result, unlike the CCAP inventory, the inventory conducted for the General Plan includes the full trip length of intrajurisdictional trips.
[c] On-road vehicles and equipment are based on the OFFROAD2017 emissions inventory and include construction equipment and commercial equipment.
[d] Solid waste/landfills is based on the Landfill Model based on disposal information from CalRecycle.
[e] Water use includes the embodied energy associated with water conveyance, treatment, and distribution.
[f] Wastewater includes the embodied energy associated with wastewater treatment as well as fugitive emissions from treatment processes.
Source: PlaceWorks, 2020.

4.8.1.5 METHODOLOGY

This GHG evaluation was prepared in accordance with the requirements of the California Environmental Quality Act (CEQA) to determine if significant GHG impacts are likely to occur in conjunction with future development that would be accommodated by the proposed project. The EIR Study Area's GHG emissions inventory includes the following sectors:

GREENHOUSE GAS EMISSIONS

- **Transportation:** Transportation emissions forecasts were modeled using emission rates from CARB's EMFAC2017, version 1.0.2, Project Level (PL) web database. Modeling includes the SAFE Part 1 and Part 2 EMFAC2017 model adjustment factors released by CARB. Model runs were based on daily VMT data provided by Fehr & Peers (see Chapter 4.16, Transportation, of this Draft EIR) and calendar year 2019 (existing) and 2040 emission rates. The VMT provided includes the full trip length for land uses in the city. This differs from the City's CCAP emissions inventory, which includes a 50-percent reduction in trip lengths for trips that start or end in the City but travel outside the City (intra-jurisdictional trips). Consistent with CARB's methodology within the Climate Change Scoping Plan Measure Documentation Supplement, daily VMT was multiplied by 347 days per year to account for reduced traffic on weekends and holidays to determine annual emissions.
- **Energy**: Energy use for residential and nonresidential land uses in the EIR Study Area were modeled using electricity and natural gas data provided by the City from the 2016 GHG emissions inventory conducted for the CCAP. The data from the 2016 GHG emissions inventory is based on electricity and natural gas use provided by PG&E and electricity provided by MCE and carbon intensity for direct access, PG&E, and MCE. Residential energy and non-residential energy forecasts are adjusted for increases in housing units and employment, respectively. The carbon intensity factor of the purchased electricity for the buildout year is based on MCE's reported CO intensity factor because it is based on a 60-percent renewable energy portfolio energy content label. Intensity factors for CO_2, CH_4, and N_2O provided in CARB's Local Governments Protocol (LGOP), version 1.1, were used for natural gas.
- **Off-Road Equipment**: Emission rates from CARB's OFFROAD2017, version 1.0.1, web database were used to estimate criteria air pollutant emissions from light commercial and construction equipment in the EIR Study Area. OFFROAD2017 is a database of equipment use and associated emissions for each county compiled by CARB. Emissions were compiled using OFFROAD2017 for the County of Marin for year 2019. To determine the percentage of emissions attributable to the EIR Study Area, light commercial equipment is estimated based on employment for the City of San Rafael as a percentage of Marin County. Construction equipment use is estimated based on building permit data for the City of San Rafael and County of Marin from data compiled by the US Census. The light commercial equipment emissions forecast is adjusted for changes in employment in the EIR Study Area. It is assumed that construction emissions for the forecast year would be similar to historical levels. Annual emissions are derived by multiplying daily emissions by 365 days.
- **Water/Wastewater**. GHG emissions from this sector include indirect GHG emissions from the embodied energy associated with water use and wastewater generation and fugitive GHG emissions from processing wastewater. The total annual existing and horizon year proposed project water demand and wastewater generation (gallons per year) in the EIR Study Area are based on the existing per-capita water use of 110 gallons per capita per day (gpcd) identified in the Marin Municipal Water District's 2015 Urban Water Management Plan (UWMP).[29] The per-capita water use includes water use from both residential and nonresidential land uses in the City. Electricity use from water use is estimated using energy rates identified by the California Energy Commission (CEC). [30] Then energy is

[29] Marin Municipal Water District. 2016, June 11. 2015 Urban Water Management Plan. http://marinwater.org/DocumentCenter/View/3828/MMWD-2015-UWMP-Final---Report-Only?bidId=

[30] California Energy Commission (CEC). 2006, December. Refining Estimates of Water-Related Energy Use in California. CEC-500-2006-118. Prepared by Navigant Consulting, Inc. Based on the electricity use for Northern California.

multiplied by the carbon intensity of energy for PG&E (see the previous Energy description). Wastewater treatment also results in fugitive GHG emissions from wastewater processing. Fugitive emissions from wastewater treatment in the EIR Study Area were calculated using the emission factor's in CARB's LGOP, Version 1.1, and conservatively assumes that 70 percent of water use is treated as wastewater, consistent with that identified in the UWMP.

- Solid Waste Disposal. GHG emissions from solid waste disposed of by residents and employees in the EIR Study Area generates GHG emissions. The degradable organic carbon (DOC) in waste decays slowly throughout a few decades, during which CH_4 and biogenic CO_2 are formed. If conditions are constant, the rate of CH_4 production depends solely on the amount of carbon remaining in the waste. As a result, emissions of CH_4 from waste deposited in a disposal site are highest in the first few years after deposition, then gradually decline as the degradable carbon in the waste is consumed by the bacteria responsible for the decay. Significant CH_4 production typically begins one or two years after waste disposal in a landfill and continues for 10 to 60 years or longer. The peak annual emissions from waste-in-place are reported. Jurisdiction reports for the Marin County Hazardous and Solid Waste Management Joint Powers Authority were obtained from CalRecycle. Waste from San Rafael was estimated based on the Service Population of Marin County v. the City of San Rafael. Waste disposal was averaged over a three-year period (2016 to 2018) for several years to account for fluctuations in average annual solid waste disposal for existing conditions. GHG emissions from solid waste disposal in the baseline year were modeled using CARB's Landfill Emissions Tool Version 1.3, which includes waste characterization data from CalRecycle. Because the landfill gas captured is not under the jurisdiction of the City of San Rafael, the landfill gas emissions from the capture system are not included in the inventory. Only fugitive sources of GHG emissions from landfills are included. Modeling assumes a 75-percent reduction in fugitive GHG emissions from the Landfill Gas Capture System. The landfill gas capture efficiency is based on CARB's LGOP, Version 1.1. Emissions were adjusted to the AR5 GWP assigned for CH_4. Total GHG emissions from waste disposal in 2040 were forecasted based on the percent increase in service population for the EIR Study Area. The emissions forecast does not account for reductions from increasing waste diversion.

Industrial sources of emissions that require a permit from BAAQMD are not included in the community inventory. However, due to the 15/15 Rule,[31] natural gas and electricity use data for industrial land uses may also be aggregated with the nonresidential land uses in the data provided by PG&E and MCE. Life-cycle emissions are not included in this analysis because not enough information is available for the proposed project; and therefore, they would be speculative. Black carbon emissions are not included in the GHG analysis because CARB does not include this pollutant in the state's GHG emissions inventory and treats this short-lived climate pollutant separately.

[31] The 15/15 Rule was adopted by the California Public Utility Commission (CPUC) in the Direct Access Proceeding (CPUC Decision 97-10-031) to protect customer confidentiality. The 15/15 Rule requires that any aggregated information provided by the utilities must be made up of at least 15 customers (100 for residential sectors) and a single customer's load must be less than 15 percent of an assigned category.

4.8.2 STANDARDS OF SIGNIFICANCE

Pursuant to Appendix G, Environmental Checklist Form, of the CEQA Guidelines, implementation of the proposed project would result in significant GHG emission impacts if it would:

1. Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
2. Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.
3. Result in significant cumulative impact and contribute to global climate change.

BAAQMD Thresholds

BAAQMD has adopted thresholds from the CEQA Guidelines to evaluate GHG emissions impacts from development projects.[32] Land use development projects include residential, commercial, industrial, and public land use facilities. Direct sources of emissions may include on-site combustion of energy, such as natural gas used for heating and cooking, emissions from industrial processes (not applicable for most land use development projects), and fuel combustion from mobile sources. Indirect emissions are emissions produced off-site from energy production, water conveyance due to a project's energy use and water consumption, and non-biogenic emissions from waste disposal. Biogenic CO_2 emissions are not included in the quantification of a project's GHG emissions, because biogenic CO_2 is derived from living biomass (e.g., organic matter present in wood, paper, vegetable oils, animal fat, food, animal, and yard waste) as opposed to fossil fuels. BAAQMD is currently updating their CEQA Guidelines.

Under the 2017 CEQA Guidelines, BAAQMD identified a tiered approach for assessing GHG emissions impacts of a project:

1. Consistency with a Qualified Greenhouse Gas Reduction Strategy. If a project is within the jurisdiction of an agency that has a "qualified" GHG reduction strategy, the project can assess consistency of its GHG emissions impacts with the reduction strategy.
2. BAAQMD Screening Level Sizes (AB 32). BAAQMD has adopted screening criteria for development projects, with a buildout year of 2020 and earlier, that would be applicable for a proposed project based on the square footage, units, acreage, students, and/or employees generated by a project. Typical projects that meet the screening criteria do not generate emissions greater than 1,100 $MTCO_2e$ per year and would not generate significant GHG emissions.
3. Brightline Screening Threshold (AB 32). BAAQMD adopted a brightline screening threshold for development projects of 1,100 $MTCO_2e$ per year that would be applicable for projects with an opening year of 2020 and earlier. If a project exceeds the BAAQMD Guidelines' GHG screening-level sizes or screening criteria of 1,100 $MTCO_2e$, the project would be required to conduct a full GHG analysis using based on GHG reduction goals of AB 32 and SB 32.

[32] Bay Area Air Quality Management Agency, 2017. California Environmental Quality Act Air Quality Guidelines. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed November 21, 2019.

4. Efficiency Threshold (AB 32). AB 32 requires statewide GHG emissions to be reduced to 1990 levels by 2020. On a per-capita basis, that means reducing the annual emissions of 14 tons of carbon dioxide for every person in California down to about 10 tons per person by 2020.[33] Hence, BAAQMD's per capita significance threshold is calculated based on the State's land use sector emissions inventory prepared by CARB and the demographic forecasts for the 2008 Scoping Plan. The land use sector GHG emissions for 1990 were estimated by BAAQMD, as identified in Appendix D of the BAAQMD CEQA Guidelines, to be 295.53 $MMTCO_2e$ and the 2020 California service population to be 64.3 million. Therefore, the threshold that would ensure consistency with the GHG reduction goals of AB 32 is estimated at 4.6 $MTCO_2e$ per service population per year ($MTCO_2e$/SP/yr) for year 2020.[34]

Proposed Project Thresholds

Based on BAAQMD's adopted 1,100 $MTCO_2e$ per year brightline screening threshold, and the GHG reduction target for year 2030 established under SB 32 (i.e., 40 percent of 1990 levels by 2030), the interpolated brightline screening threshold of 660 $MTCO_2e$ per year is utilized for the proposed project. If project emissions are below this brightline screening threshold, GHG emissions impacts would be considered less than significant.

This analysis also evaluates the potential for the proposed project to conflict with the GHG reduction goals established under SB 32 and Executive Order S-03-05, which require a reduction in statewide GHG emissions from existing conditions to achieve a 40-percent reduction in GHG emissions by 2030 and an 80-percent reduction in GHG emissions by 2050, respectively.

Mass Emissions and Health Effects

On December 24, 2018, in the case, *Sierra Club et al. v. County of Fresno et al.* (commonly referred to as the Friant Ranch Case), the California Supreme Court determined that the EIR for the proposed Friant Ranch project failed to adequately analyze the project's air quality impacts on human health. The EIR prepared for the Friant Ranch project, which involved a master-planned retirement community in Fresno County, showed that project-related mass emissions would exceed the San Joaquin Valley Air Pollution Control District's regional significance thresholds. In its findings, the California Supreme Court affirmed the holding of the Court of Appeal that EIRs for projects must not only identify impacts to human health, but also provide an "analysis of the correlation between the project's emissions and human health impacts" related to each criteria air pollutant that exceeds the regional significance thresholds or explain why it could not make such a connection. In general, the ruling focuses on the correlation of emissions of toxic air contaminants and criteria air pollutants and their impact to human health.

In 2009, the USEPA issued an endangerment finding for six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in order to regulate GHG emissions from passenger vehicles. The endangerment finding is based on

[33] California Air Resources Board, 2008. Climate Change Proposed Scoping Plan, a Framework for Change. https://ww3.arb.ca.gov/cc/scopingplan/document/psp.pdf, accessed November 21, 2019.

[34] Bay Area Air Quality Management Agency, 2017. California Environmental Quality Act Air Quality Guidelines. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en, accessed November 21, 2019.

evidence that shows an increase in mortality and morbidity associated with increases in average temperatures, which increase the likelihood of heat waves and ozone levels. The effects of climate change are identified in Table 4.8-2. While these identified effects, such as sea-level rise and increases in extreme weather, can indirectly impact human health, neither the CalEPA nor CARB has established ambient air quality standards for GHG emissions. California's GHG reduction strategy outlines a path to avoid the most catastrophic effects of climate change. Yet the state's GHG reduction goals and strategies are based on the state's path toward reducing statewide cumulative GHGs, as outlined in AB 32, SB 32, and Executive Order S-03-05.

The two significance thresholds that the City uses to analyze GHG impacts are based on achieving the statewide GHG reduction goals (see Impact GHG-1 in Section 4.8.3) and relying on consistency with policies or plans adopted to reduce GHG emissions (see impact discussion GHG-2). Further, because no single project is large enough to result in a measurable increase in global concentration of GHG emissions, climate change impacts of a project are considered on a cumulative basis. Without federal ambient air quality standards for GHG emissions and given the cumulative nature of GHG emissions and the City's significance thresholds that are tied to reducing the state's cumulative GHG emissions, it is not feasible at this time to connect the project's specific GHG emission to the potential health impacts of climate change.

4.8.3 IMPACT DISCUSSION

GHG-1 Implementation of the proposed project could generate GHG emissions, either directly or indirectly, that could have a significant impact on the environment.

General Plan 2040

Future potential development under the proposed General Plan 2040 would contribute to global climate change through direct and indirect emissions of GHGs in the EIR Study Area. However, a general plan is a long-range policy document that does not directly result in development without additional approvals. Before any development can occur in San Rafael, it must be analyzed for consistency with the General Plan, zoning requirements, and other applicable local and state requirements; comply with the requirements of CEQA if required; and obtain all necessary clearances and permits from regulatory agencies.

Buildout of the proposed General Plan 2040 is not linked to a specific development time frame but is assumed over a 20-year project horizon. Implementation of the proposed General Plan 2040 by the horizon year of 2040 would result in a net increase of 8,910 people and 4,115 employees in the EIR Study Area. Development that would be accommodated by the proposed General Plan 2040 would generate a net increase of 123,564 daily VMT at project buildout (see Chapter 4.16, Transportation, of the Draft EIR). Table 4.8-6 provides a comparison of the change in GHG emissions in the EIR Study Area between the CEQA baseline (2019) and the General Plan horizon year (2040) conditions.

Horizon Year 2040 Emissions Inventory Compared to Existing Conditions

As shown in Table 4.8-5, buildout of the land uses accommodated under the proposed General Plan 2040 would result in a net decrease of 120,126 $MTCO_2e$ of GHG emissions (20 percent decrease in GHG emissions) from existing conditions and would not exceed the 660 $MTCO_2e$ BAAQMD bright-line screening threshold. In addition, while buildout under the proposed General Plan 2040 is projected to increase service population by 13,025 persons[35] (an 11-percent increase), emissions per person would decrease compared to existing baseline. Emissions per service population would decrease to 3.6 $MTCO_2e$/SP in horizon year 2040 from 5.0 $MTCO_2e$/SP for the existing baseline year.

Consistency with SB 32 and Executive Order S-03-05 GHG Reduction Targets

While the proposed General Plan 2040 would not generate an increase in GHG emissions from the CEQA baseline in the 2040 horizon year forecast, this EIR also analyzes the potential for the proposed General Plan 2040 to conflict with the GHG reduction goals established under SB 32 and Executive Order S-03-05, which require a reduction in statewide GHG emissions from existing conditions to achieve a 40-percent reduction in GHG emissions below 1990 levels by 2030 and an 80-percent reduction in GHG emissions by 2050, respectively. This EIR assumes that the CEQA baseline (2019 emissions) reflects the AB 32 goal in 2020. As a result, at the General Plan horizon year of 2040, the City would need to reduce GHG emissions by 60 percent to ensure the City is on a trajectory to achieve the long-term goal under Executive Order S-03-05, which is equivalent to 359,117 $MTCO_2e$ in the EIR Study Area by year 2040.

As shown in Table 4.8-5 and as discussed previously, it is anticipated that implementation of the proposed General Plan 2040 would result in an overall net decrease in emissions in horizon year 2040 compared to existing baseline. However, GHG emissions reduction are only 20 percent less than the CEQA baseline and not the 60 percent necessary to ensure the City is on a trajectory to achieve the long-term year 2050 reduction goal of Executive Order S-03-05. The City has prepared a CCAP to align the City's local GHG reductions with the state goals of SB 32 and Executive Order S-03-05. As identified in the CCAP, local measures would result in 98,085 $MTCO_2e$ of additional reductions by 2030, a 42 percent reduction from 1990 levels, and would put the City on a trajectory to achieve the 2030 GHG targets.[36] Reduction strategies to meet the long-term 2050 GHG reduction goal, in addition to establishment of a 2050 reduction target, would be included in the planned future updates to the CCAP. Additionally, state strategies to achieve post-2030 targets would be necessary. Therefore, until such time, GHG emissions impacts for the proposed General Plan 2040 are considered potentially significant in regard to meeting the long-term year 2050 reduction goal.

[35] Service population is 8,910 people plus 4,115 employees.
[36] San Rafael. 2019, April 23. Climate Change Action Plan.

GREENHOUSE GAS EMISSIONS

TABLE 4.8-5 HORIZON YEAR 2040 GHG EMISSIONS FORECAST

	GHG Emissions ($MTCO_2e$/Year)											
	Existing (2019)				2040				Net Change			
Emissions Sector	City Limits	Planning Area	Total	%	City Limits	Planning Area	Total	%	City Limits	Planning Area	Total	%
Building Electricity	67,142	7,589	74,731	12%	49,167	5,263	54,430	11%	-17,975	-2,326	-20,301	-27%
Building Natural Gas	63,511	10,154	73,666	12%	72,479	10,867	83,346	17%	8,967	713	9,680	13%
On-Road Transportation	375,518	46,644	422,162	71%	277,721	31,938	309,659	65%	-97,797	-14,706	-112,503	-27%
Off-Road Vehicles and Equipment	2,582	161	2,742	0.5%	2,807	172	2,979	1%	225	12	237	9%
Solid Waste/Landfills	19,632	3,169	22,801	4%	21,924	3,352	25,277	5%	2,292	183	2,476	11%
Water Use	1,170	277	1,447	0.2%	1,323	295	1,617	0.3%	153	17	170	12%
Wastewater Treatment	792	188	980	0.2%	896	200	1,095	0.2%	104	12	115	12%
Total Community Emissions	**530,347**	**68,182**	**598,529**	**100%**	**426,317**	**52,086**	**478,403**	**100%**	**-104,030**	**-16,095**	**-120,126**	**-20%**
Service Population (SP)	103,280	16,671	119,951	NA	115,340	17,636	132,976	NA	12,060	965	13,025	11%
$MTCO_2e$/SP	5.1	4.1	5.0	NA	3.7	3.0	3.6	NA	-1.4	-1.1	-1.4	-28%

Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC Fifth Assessment Report (AR5).

General Plan 2040 Policies

While growth within the EIR Study Area would cumulatively contribute to GHG emissions impacts, the General Plan 2020 included goals, policies, and programs to reduce GHG emissions. The proposed General Plan 2040 builds off the language regarding the reduction of GHG emission in the General Plan 2020 and includes over 200 goals, policies, and programs to contribute to reducing GHG emissions. The proposed Land Use (LU) Element; Conservation and Climate Change (C) Element; Mobility (M) Element; Community Services and Infrastructure (CSI) Element; Housing (H) Element; Economic Vitality (EV) Element; Equity, Diversity, and Inclusion (EDI) Element; and Parks, Recreation, and Open Space (PROS) Element contain goals, policies, and programs that require local planning and development decisions to reduce GHG emissions. The following goals, policies, and programs would serve to minimize GHG emissions in the EIR Study Area.

Goal LU-1: Well-Managed Growth and Change. Grow and change in a way that serves community needs, improves fiscal stability, and enhances the quality of life.

- Policy LU-1.2: Development Timing. Allow new development only when adequate infrastructure is available, consistent with the following findings:
  - The project is consistent with adopted Vehicle Miles Traveled (VMT) standards, as well as any relevant requirements for Level of Service (LOS) specified in the Mobility Element.
  - Planned circulation improvements necessary to meet City standards for the project have funding commitments and completed environmental review.
  - Sewer, water, and other infrastructure improvements needed to serve the proposed development have been evaluated and confirmed to be in place or to be available to serve the development by the time it is constructed.
  - The project has incorporated design and construction measures to adequately mitigate exposure to hazards, including flooding, sea level rise, and wildfire.
- Policy LU-1.3: Land Use and Climate Change. Focus future housing and commercial development in areas where alternatives to driving are most viable and shorter trip lengths are possible, especially around transit stations, near services, and on sites with frequent bus service. This can reduce the greenhouse gas emissions associated with motor vehicle trips and support the City's climate action goals.
  - Program LU-1.3A: Benefits of Transit-Oriented Development. Seek ways to objectively quantify, monitor, and promote the benefits of focusing new development around transit nodes and corridors and shifting trips from cars to active (non-car) transportation modes. Programmatic changes and recommendations should be supportable by objective data and quality of life measures. This should include data on modes of travel, trip origins and destinations, trip lengths, vehicle ownership, greenhouse gas emissions, and other metrics in areas that are well served by transit.
- Policy LU-2.3: Neighborhood-Serving Commercial Uses. Encourage the retention and improvement of neighborhood-serving retail stores and services. In the event such spaces become vacant, consider other activities that reinforce their role as neighborhood centers. Neighborhood-serving commercial

areas should reinforce the city's goal of reducing greenhouse gas emissions and traffic congestion by providing walkable, bikeable services and shopping close to residents.

- Program LU-2.3B: Revitalization Incentives. Develop zoning and economic development incentives that keep local neighborhood centers viable, such as allowing additional floor area and housing units when neighborhood-serving uses are included or retained.
- Program LU-2.4A: Industrial Zoning. Periodically evaluate zoning standards for Light Industrial-Office and General Industrial areas in response to business and economic trends, market demand, changes in technology and the transportation sector, greenhouse gas reduction goals, and climate-related hazards such as sea level rise.

Goal C-5: Reduced Greenhouse Gas Emissions. Achieve a 40 percent reduction in 1990 greenhouse gas emission levels by 2030 and a 60 percent reduction by 2040. The City of San Rafael will implement the measures outlined in this General Plan and in its Climate Change Action Plan to reduce greenhouse gas (GHG) emissions, which are the leading cause of global climate change.

- Policy C-5.1: Climate Change Action Plan. Maintain and periodically update a Climate Change Action Plan that includes programs to reduce greenhouse gas emissions and metrics for monitoring success.
  - Program C-5.1A: Progress Reports. Prepare annual Climate Change Action Plan progress reports, including a list of priority actions. Local climate goals should align with regional goals, including those set through Drawdown Marin.
  - Program C-5.1B: Quarterly Forum. Continue to hold the Climate Change Action Plan Quarterly Forum, which provides oversight on the implementation progress of sustainability and GHG reduction programs.
  - Program C-5.1C: Funding. Identify funding sources for recommended actions, and pursue local, regional, state, and federal grants. Investigate creation of a local carbon fund or other permanent source of revenue.
- Policy C-5.2: Consider Climate Change Impacts. Ensure that decisions regarding future development, capital projects, and resource management are consistent with San Rafael's Climate Change Action Plan and other climate goals, including greenhouse gas reduction and adaptation.
- Policy C-5.3: Advocacy. Support and advocate for state and federal legislation and initiatives to reduce GHG emissions.
  - Program C-5.3A: Local Government Agency Involvement. Continue to provide a leadership role with other local governmental agencies to share best practices and successes.
  - Program C-5.3B: State and Federal Action. Recommend and support State and federal actions to update renewable energy portfolio standards, amend state building codes, and modify motor vehicle standards to reduce GHG emissions and achieve climate goals.
- Policy C-5.4: Municipal Programs. Implement and publicize municipal programs to demonstrate the City's commitment to sustainability efforts and reducing greenhouse gases.
  - Program C-5.4A: Low Carbon Municipal Vehicles. As finances allow, continue to shift the City's vehicle fleet to zero emission vehicles and use low carbon fuels as an interim measure until gasoline-powered vehicles are replaced.

  - Program C-5.4B: Advancing GHG and Sustainability Efforts. Monitor best practices in sustainability and the transition to GHG-free energy sources and evaluate the feasibility of applying such measures at the local level.
- Policy C-5.5: Carbon Sequestration. Enhance the ability of the City's natural and built environment to sequester (absorb and store) carbon emissions.
- Policy C-5.7: Climate Change Education. Continue community education and engagement in climate and sustainability efforts.
  - Program C-5.7A: Public Outreach Campaign. As recommended by the Climate Change Action Plan, implement a communitywide public outreach and behavior change campaign to engage residents, businesses, and consumers around the impacts of climate change and the ways individuals and organizations can reduce their GHG emissions and create a more sustainable, resilient, and healthier community.
  - Program C-5.7B: Resilient Neighborhoods. Continue participating in the Resilient Neighborhoods program and expand the program to include local businesses.
  - Program C-5.7D: Promote Sustainability Efforts. Promote sustainability and climate change awareness through education, publications, the City's website, community organizations, and special events such as Earth Day and an annual Green Festival.

Goal M-1: Regional Leadership in Mobility. Take a leadership role in developing regional transportation solutions.

- Policy M-2.3: Cost-Benefit Considerations. Consider the relative costs and benefits of transportation improvement projects, including the amount and source of funding, the potential number of people who will benefit, the expected impact on vehicle miles traveled and climate goals, the cost and time impacts on all travelers, the social and equity impacts, the effects on the environment and public safety, and similar factors.
  - Program M-2.3A: Cost-Benefit Analysis. Conduct cost-benefit analyses as part of the design process for proposed transportation projects, including the criteria listed above and other factors that may be relevant (see also Policy CSI-5.1 on cost-benefit analysis).
  - Program M-2.4B: Reducing Vehicle Idling. Support transportation network improvements to reduce vehicle idling, including synchronized signal timing.

Goal M-3: Cleaner Transportation. Coordinate transportation, land use, community design, and economic development decisions in a way that reduces greenhouse gas emissions, air and water pollution, noise, and other environmental impacts related to transportation.

- Policy M-3.1: VMT Reduction. Achieve State-mandated reductions in Vehicle Miles Traveled by requiring development and transportation projects to meet specific VMT metrics. In the event a proposed project does not meet these metrics, require measures to reduce the additional VMT associated with the project, consistent with thresholds approved by the City Council.
  - Program M-3.1A: VMT Analysis Guidelines. Develop local guidelines for calculating the projected VMT associated with future development projects and transportation improvements. The guidelines also should cover administration, screening criteria, and appropriate Transportation

Demand Management measures and monitoring procedures. All VMT metrics should be reassessed at least once every four years, and revised as needed to reflect changing conditions.

- Policy M-3.2: Using VMT in Environmental Review. Require an analysis of projected Vehicle Miles Traveled (VMT) as part of the environmental review process for projects with the potential to significantly increase VMT. As appropriate, this shall include transportation projects and land use/ policy plans as well as proposed development projects.
  - Program M-3.2C: Mitigation Measures for VMT Impacts. Develop and implement mitigation measures that can be applied to projects with potentially significant VMT impacts in order to reduce those impacts to less than significant levels (see Policy M-3.3 and Program M-3.3A).
- Policy M-3.3: Transportation Demand Management. Encourage, and where appropriate require, transportation demand measures that reduce VMT and peak period travel demand. These measures include, but are not limited to, transit passes and flextime, work schedules, pedestrian and bicycle improvements, ridesharing, and changes to project design to reduce trip lengths and encourage cleaner modes of travel.
  - Program M-3.3A: Develop TDM Program Guidelines. Develop TDM Program Guidelines – or work in partnership with other local governments to develop Guidelines-- than can be used to mitigate potential VMT increases in new development and encourage reductions in existing development.
- Policy M-3.6: Low-Carbon Transportation. Encourage electric and other low-carbon emission vehicles, as well as the infrastructure needed to support these vehicles.
  - Program M-3.6A: ZEV Plan. Consistent with the San Rafael CCAP, develop a Zero Emission Vehicle (ZEV) Plan with a goal of 25 percent of the passenger vehicles in San Rafael being ZEVs by 2030. The Plan should provide for additional charging stations, preferential parking for ZEVs, other programs that incentivize ZEV use by San Rafael residents.
  - Program M-3.6B: Zero Emission Municipal Vehicles. As finances allow, shift the municipal vehicle fleet to ZEVs. Use low-carbon fuels as an interim measure until gasoline-powered City vehicles are replaced.
- Policy M-3.8: Land Use and VMT. Encourage higher-density employment and residential uses near major transit hubs such as Downtown San Rafael, recognizing the potential for VMT reduction in areas where there are attractive alternatives to driving, concentrations of complementary activities, and opportunities for shorter trips between different uses.

Goal CSI-4: Reliable, Efficiently Managed Infrastructure. Support reliable, cost-effective, well-maintained, safe and resilient infrastructure and utility services.

- Policy CSI-4.4: Sustainable Design. Plan, design, and operate infrastructure to minimize non-renewable energy and resource consumption, improve environmental quality, promote social equity, and reduce greenhouse gas emissions. An evaluation of costs and benefits must be a factor in all improvements. This includes the potential costs of inaction and potential for "avoided costs," particularly with respect to climate change.
- Policy CSI-4.17: Reducing Landfilled Waste Disposal. Reduce landfilled waste disposal and related greenhouse gas emissions by reducing material consumption; requiring curbside collection and

composting of organic materials; increasing recycling, re- use, and resource recovery; and encouraging the use of recyclable goods and materials.

- Program CSI-4.17A: Waste Reduction. Implement waste reduction programs consistent with the San Rafael Climate Change Action Plan and Zero Waste Goal. These include partnerships with Zero Waste Marin, Marin Sanitary Service, and other organizations; requirements for construction and demolition debris recycling; increased monitoring of waste diversion targets; waste audits; and additional infrastructure for removal of recoverable materials from the waste stream.
- Program CSI-4.17B: Recycling. Continue recycling programs and expand these programs to increase waste diversion rates for homes, apartments and workplaces.
- Program CSI-4.17C: Construction and Demolition Waste. Continue to implement programs requiring recycling of construction and demolition debris. Encourage the reuse of recycled building materials in future projects.
- Program CSI-4.17D: Waste Reduction Programs. Continue efforts to reduce electronic waste, refrigerants, and single use plastics; and ensure proper disposal of household hazardous waste. This should include enforcement of City bans on plastic bags and polystyrene foam and potential new programs to reduce microplastics from waterways.
- Program CSI-4.17E: Community Composting. Consider a mandatory community-scale program for curbside collection and composting of food and green waste, as well as vegetation cleared through fire prevention efforts.
- Program CSI-4.17F: Food to Energy. Support the Central Marin Sanitation/ Marin Sanitary Food to Energy Program.
- Program CSI-4.17G: Recyclable Waste Receptacles. Support efforts by Marin Sanitary to install waste receptacles for recyclables in areas of heavy pedestrian traffic.

Goal EDI-2: Healthy Communities and Environmental Justice. Support public health and wellness through community design in all parts of the city.

- Policy EDI-2.6: Neighborhood Greening. Encourage the greening of San Rafael's multi-family districts, including tree planting, landscaping, and other improvements that enhance aesthetics, reduce pollutants, and improve climate resilience.
  - Program EDI-2.6A: Greening Priorities. Prioritize City-sponsored urban greening and tree planting projects in residential areas that currently have lower rates of tree cover, higher residential densities, and limited access to open space (for example, the Canal area and Montecito).
- Policy EDI-2.9: Urban Agriculture. Promote and support small-scale, neighborhood-based, food production, urban agriculture, and reliable food supply lines from regional growers.
- Policy EDI-2.8: Food Access. Expand access to healthy food and nutritional choices in San Rafael through conveniently located grocery stores, small markets, farmers markets, and community gardens, particularly in lower income areas where existing fresh food options are limited.

Proposed goals that are supported by policies and programs that have co-benefits (indirectly) to reduce GHG emissions include proposed Goal C-1, which aims to reduce air pollution. Specifically, Policy C-2.3 recognizes the air quality benefits of reducing dependency on gasoline-powered vehicles and implements

land use and transportation policies, supportable by objective data, to reduce the number and length of car trips, improve alternatives to driving, and support the shift to electric and cleaner-fuel vehicles.

Goal CDP-3 supports the creation of attractive streets and public spaces, which incentivizes walking and cycling and recognizes the role of street trees and landscaping in absorbing and sequestering carbon (see Policy CDP-3.5). Goal EV-1 supports a healthy and resilient economy. Specifically, Policy EV-1.8 supports more sustainable business practices and growth in "green" jobs and green business practices. Goal PROS-1 supports high-quality parks for residents and visitors to San Rafael. Specifically, Policy PROS-3.10 recognizes the importance of open space in sequestering carbon.

Because transportation is the leading source of GHG emissions in San Rafael, many of the climate-related measures in the proposed General Plan 2040 appear in the Mobility Element. Goal M-5 supports local streets that are safe, attractive, and provide easy access to homes and businesses. Policies aim to reduce VMT by encouraging carpooling, working from home, flextime, micromobility (e-bikes, e-scooters), and similar strategies. Policies also support a continued shift to cleaner fuel vehicles and more electric charging stations. Goal M-4 supports a more robust public transit system, to make it easier to travel without a car. Goal M-6 supports pedestrian and bicycle improvements, making it safer and easier to walk or cycle around the city. Goal M-7 supports parking to accommodate a more sustainable transportation system, including parking for transit users and charging stations for electric vehicles. Goal CSI-3 supports public safety services to maintain safe streets for all users. Collectively, these goals, policies, and programs will have the greatest measurable impacts on moving the City toward its GHG reduction targets.

Implementation of these goals, policies and programs of the proposed General Plan 2040 would result in additional GHG emissions reductions associated with the EIR Study Area to the extent feasible. As described and shown in Table 4.8-5, GHG emissions reduction are only 20 percent less than the CEQA baseline and not the 60 percent necessary to ensure the City is on a trajectory to achieve the long-term year 2050 reduction goal of Executive Order S-03-05.

Impact GHG-1: Implementation of the proposed project may not meet the long-term GHG reduction goal under Executive Order S-03-05.

Significance without Mitigation: Significant and unavoidable. Implementation of the General Plan 2040 goals, policies, and programs would ensure that the City's GHG emissions are reduced to the degree feasible. Policy C-5.1, Climate Change Action Plan, requires the City maintain and periodically update the CCAP. Policy C-5.1 is supported by Programs C-5.1A, C-5.1B, and C-5.1C, which require annual progress reports, quarterly forums, and identification of funding sources. Implementation of this Policy and its associated Programs would ensure the City is monitoring the CCAP's progress toward achieving the City's GHG reduction target and requires amendments if the CCAP is not achieving the specified level. The update would ensure the CCAP is on the trajectory consistent with the GHG emissions-reduction goal established under Executive Order S-03-05 for year 2050 and the latest applicable statewide legislative GHG emission reduction that may be in effect at the time of the CCAP update (e.g., Senate Bill 32 for year 2030). Routine updates of the CCAP typically include the following:

- GHG inventories of existing and forecast year GHG levels.
- Tools and strategies for reducing GHG emissions to ensure a trajectory with the long-term GHG reduction goal of Executive Order S-03-05.

- Plan implementation guidance that includes, at minimum, the following components consistent with the proposed CCAP:
  - Administration and Staffing
  - Finance and Budgeting
  - Timelines for Measure Implementation
  - Community Outreach and Education
  - Monitoring, Reporting, and Adaptive Management
  - Tracking Tools

Policy C-5.1 would specifically ensure the City is tracking and monitoring the City's GHG emissions in order to chart a trajectory to achieve the long-term year 2050 GHG reduction goal set by Executive Order S-03-05. However, at this time, there is no plan that extends beyond 2030 that achieves the long-term GHG reduction goal established under Executive Order S-03-05. As identified by the California Council on Science and Technology, the state cannot meet the 2050 goal without major advancements in technology.[37] Advancement in technology in the future could provide additional reductions to allow the state and City to meet the 2050 goal; however, no additional statewide measures are currently available. Therefore, Impact GHG-1 would be *significant and unavoidable*.

Downtown Precise Plan

The Downtown Precise Plan Area is an existing urban area in the City of San Rafael where roughly half of the anticipated development by 2040 is expected to occur. Potential future development would occur on a limited number of vacant parcels and in the form of infill/intensification on sites either already developed and/or underutilized, and/or in close proximity to existing development. As described in Section 4.8.1.3, Regulatory Framework, approximately half of the Downtown Precise Plan Area is located in a *Plan Bay Area* PDA and TPA, which are designated in areas that are in close proximity to major transit stops or terminals. One primary goal of the *Plan Bay Area* PDA and TPA designations is to encourage transit-oriented development which would in turn reduce VMT and subsequent GHG emissions. Therefore, potential future development which occurs as a result of the Downtown Precise Plan would be inherently designed to reduce GHG emissions. However, as discussed above, GHG emissions are not confined to a particular air basin but are dispersed worldwide. Therefore, the impacts discussed above for the proposed General Plan 2040 include GHG emissions from potential future development in the Downtown Precise Plan Area and impacts would be the same.

Significance with Mitigation: Significant and Unavoidable.

[37] California Climate Change Center (CCCC). 2012, July. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.

GHG-2 Implementation of the proposed project could conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions.

General Plan 2040

Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan, ABAG's/MTC's Plan Bay Area, and the City's CCAP. A consistency analysis with these plans is presented herein.

CARB Scoping Plan

The CARB Scoping Plan is applicable to state agencies but is not directly applicable to cities/counties and individual projects (i.e., the Scoping Plan does not require the City to adopt policies, programs, or regulations to reduce GHG emissions). However, new regulations adopted by the state agencies outlined in the Scoping Plan result in GHG emissions reductions at the local level. As a result, local jurisdictions benefit from reductions in transportation emissions rates, increases in water efficiency in the building and landscape codes, and other statewide actions that would affect a local jurisdiction's emissions inventory from the top down. Statewide strategies to reduce GHG emissions include the Low Carbon Fuel Standard (LCFS) and changes in the CAFE standards.

Project GHG emissions shown in Table 4.8-5 include reductions associated with statewide strategies that have been adopted since AB 32 and SB 32. Development projects accommodated under the proposed General Plan 2040 are required to adhere to the programs and regulations identified by the Scoping Plan and implemented by state, regional, and local agencies to achieve the statewide GHG reduction goals of AB 32 and SB 32. Future development projects would be required to comply with these state GHG emissions reduction measures as they are statewide strategies. For example, new buildings associated with land uses accommodated by implementing the proposed General Plan 2040 would be required to meet the CALGreen and Building Energy Efficiency Standards in effect at the time when applying for building permits. Furthermore, as discussed under impact discussion GHG-1, the proposed General Plan 2040 includes goals, policies, and programs that would help reduce GHG emissions and therefore, help achieve GHG reduction goals. Therefore, implementation of the proposed General Plan 2040 would not obstruct implementation of the CARB Scoping Plan.

Plan Bay Area

Plan Bay Area is the Bay Area's regional transportation plan to achieve the passenger vehicle emissions reductions identified under SB 375. *Plan Bay Area* 2040 is the current SCS for the Bay Area, which was

adopted July 26, 2017.[38] ABAG and MTC are currently in the process of updating *Plan Bay Area*. Adoption of *Plan Bay Area* 2050 by ABAG and MTC is scheduled for fall 2021.[39]

In addition to significant transit and roadway performance investments to encourage focused growth, *Plan Bay Area* 2040 directs funding to neighborhood active transportation and complete streets projects, climate initiatives, lifeline transportation and access initiatives, safety programs, and PDA planning. In San Rafael, a PDA and TPA has been designated around the Downtown San Rafael SMART Station. ABAG indicates that this area is expected to absorb about 40 percent of the City's household growth in the next 20 years, although General Plan 2040 is anticipating an even higher capture rate. [40] More recently, PDAs have been designated in North San Rafael and Southeast San Rafael.

As identified previously, the proposed General Plan 2040 places higher-density uses near transit stations and in areas that are less auto dependent. This is supported by Policy LU-1.3, which strives to reduce GHG emissions through the way the City designs and locates new housing, offices, public buildings, and other uses. The proposed General Plan 2040 also includes implementation of the Downtown Precise Plan, which is consistent with the Downtown San Rafael SMART Station PDA identified in *Plan Bay Area*. Thus, the project would be consistent with the overall goals of *Plan Bay Area* 2040 in concentrating new development in locations where there is existing infrastructure and transit. Therefore, the proposed project would not conflict with the land use concept plan in *Plan Bay Area* 2040 and impacts would be *less than significant*.

San Rafael Climate Action Plan

As identified in the CCAP, San Rafael has met the state GHG reduction target for 2020. The CCAP provides additional measures and strategies to achieve a GHG reduction target of 40 percent below 1990 levels by 2030, consistent with SB 32. The CCAP lays out measures that would exceed the 2030 target and put the City on a trajectory to meet the 2050 goal under Executive Order S-03-05.[41] The proposed project would further the goals of the CCAP by introducing policies and programs that align with the CCAP (see Table 4.8-6). Additionally, the General Plan Land Use Map places higher-density uses near transit stations and in areas that are less auto-dependent. Consequently, the proposed project is consistent with the City's CCAP and impacts are *less than significant*.

[38] ABAG/MTC. 2017, July 26. Plan Bay Area 2040. http://2040.planbayarea.org/sites/default/files/2020-02/Final_Plan_Bay_Area_2040.pdf

[39] ABAG/MTC. 2020, Accessed June 8. Key Phases of Plan Bay Area 2050. https://www.planbayarea.org/about/key-phases-plan-bay-area-2050.

[40] Metropolitan Transportation Commission and Association of Bay Area Governments, 2017, Plan Bay Area 2040 Plan.

[41] As noted previously, the methodology for calculating VMT for General Plan 2040 differs from the methodology used for the CCAP. As a result, the emissions inventory and forecast conducted for General Plan 2040 cannot be directly compared with the inventory and forecast conducted for the CCAP.

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
Low Carbon Transportation	
LCT-C1. Zero Emissions Vehicles. Develop a Zero Emission Vehicle Plan that will result in 25% of passenger vehicles in San Rafael to be zero emission vehicles (ZEVs), including plug-in electric vehicles (EVs) and hydrogen fuel cell electric vehicles, by 2030. Incorporate the following actions in the plan as feasible: a. Provide free parking for ZEVs at City parking lots and metered parking spaces. b. Provide wayfinding signage to public EV chargers. c. Work with PG&E and other entities to identify multi-family and workplace charging sites appropriate for available incentive programs, such as EV Charge Network. d. Participate in a countywide effort by MCE, PG&E and others to provide rebates for new or used electric vehicles and/or charging stations. e. Pursue opportunities to expand the City's EV charging network through innovative programs, such as installing chargers at existing streetlight locations. f. Require new and remodeled commercial and multi-family projects to install a minimum number of electric vehicle chargers for use by employees, customers, and residents. g. Require new and remodeled single-family and multi-family projects to install electrical service and conduits for potential electric vehicle use. h. Consider requiring new and remodeled gas stations to provide EV fast chargers and hydrogen fueling stations. i. Participate in regional efforts and grant programs to encourage widespread availability of EV charging stations. j. Target policies to support ZEV adoption, including used vehicles, in low income and disadvantaged communities. k. Participate in programs to promote EV adoption, including "Drive an EV" events and other media and outreach campaigns. l. Encourage or require, as practicable, ride hailing and delivery service companies to utilize zero emission vehicles. m. Promote adoption of electric bicycles, scooters and motorcycles.	**Consistent.** Transportation in California will result in used of mixed fuels (gasoline, diesel, natural gas, electric) through 2050. The State has adopted programs to accelerate use of alternative fuels, such as the Advanced Clean Car Program. In addition, the General Plan includes policies and programs that assist the State in this regard including: ▪ Program C-4.1B. PACE Financing ▪ Policy M-7.8. Parking for Alternative Modes of Transportation ▪ Policy M-3.6: Low-Carbon Transportation ▪ Program M-3-6A: ZEV Plan ▪ Program P-3.6B: Zero Emission Municipal Vehicles ▪ Policy M-4.7: Intermodal Transit Hubs ▪ Program M-7.8A: Charging Station ▪ Program M-7.8B. Parking Standards ▪ Program M-6.3D: Electric Bicycles
LCT-C2: Bicycling. Encourage bicycling as an alternative to vehicular travel through outreach channels and partner agencies. Establish and maintain a system of bicycle facilities that are consistent with the City's Bicycle and Master Pedestrian Plan and Complete Streets policies. a. Provide bicycle racks and lockers for public use. b. Participate in a bike share program.	**Consistent.** The Mobility Element provides for accessibility and mobility options for all users of the transportation network, including pedestrians and bicyclists. The General Plan includes policies and programs for expanding the pedestrian and bicycle network, consistent with the City's Bicycle and Pedestrian Master Plan, under Goal M-6: Safe Waling and Cycling: ▪ Policy M-6.1: Encouraging Walking and Cycling ▪ Program M-6.1A: Bicycle and Pedestrian Master Plan Implementation ▪ Program M-6.1B: Station Area Plans ▪ Program M-6.1C: Canal Community Based Transportation Plan (CBTP) ▪ Program M-6.1D: Funding ▪ Program M-6.2A Pedestrian and Bicycle Safety

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
	▪ Program M-6.2B: Vision Zero ▪ Program M-6.2C: Enforcement ▪ Program M-6.2D: Safe Routes Programs ▪ Policy M-6.3L Connectivity ▪ Program M-6.3A: Implementation of Pathway Improvements ▪ Program M-6.3B: Improvements in Unincorporated Areas ▪ Program M-6.3C: Bicycle Parking ▪ Program M-6.3D: Electric Bicycles ▪ Policy M-6.4: Urban Trails Network ▪ Program M-6.4A: Urban Trails Master Plan ▪ Policy M-6.5: Pilot Projects ▪ Policy M-6.6: Coordination ▪ Program M-6.6A: Bikeshare Program ▪ Program M-6.6B: Monitoring ▪ Policy M-6.7: Universal Design ▪ Program M-6.7A: ADA Compliance ▪ Program M-6.7A: Best Practices ▪ Policy M-6.8: Pedestrian and Bicycle Programming ▪ Program M-6.8A: Public Information ▪ Program M-6.8B: Bike to Work Day ▪ Program M-6.8C: Maintenance of Pedestrian Facilities In addition, the following policies and programs also support bicycle and pedestrian safety and improvements in the City. ▪ Policy M-1.1: Regional Transportation Planning ▪ Policy M-1.2: Regional Funding ▪ Policy M-2.2: Safety ▪ Policy M-3.3: Transportation Demand Management ▪ Program M-3.5C: Micro-Mobility ▪ Policy M-4.3L Smart Improvements ▪ Policy M-4.7: Intermodal Transit Hubs ▪ Program M-4.7A: Transit Center Relocation ▪ Program M-5.1B: Emergency Access Considerations ▪ Program M-5.4A: Interchange Improvements ▪ Policy M-5.6: Truck Impacts ▪ Policy M-7.B: Parking Standards ▪ Policy M-7.9: Parking for Transit Users ▪ Policy CSI-3.5: Traffic Safety ▪ Policy EV-3.7: Business Access ▪ Program EDI-2.1A: Pedestrian and Bicycle Improvements ▪ Program EDI-4.7B: Bicycle and Pedestrian Improvements ▪ Program PROS-3.8A: Trails Master Plan
LCT-C3: Walking. Encourage walking as an alternative to vehicular travel through outreach channels and partner agencies. Establish and maintain a system of pedestrian facilities that are consistent with the City's Bicycle and Pedestrian Master Plan and Complete Streets policies	**Consistent.** See above for LCT-C2. The General Plan includes policies and programs for expanding the pedestrian and bicycle network, consistent with the City's Bicycle and Pedestrian Master Plan, under Goal M-6: Safe Waling and Cycling:
LCT-C4: Safe Routes to School. Continue to support the Safe Routes to School Program and strive to increase bicycling, walking, carpooling, and taking public transit to school.	**Consistent.** See above for LCT-C2. The General Plan includes policies and programs for Safe Routes to Schools: ▪ Program M-6.2D: Safe Routes Programs

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
a. Promote school and student participation. b. Identify issues associated with unsafe bicycle and pedestrian facilities between neighborhoods and schools, apply for Safe Routes to School grants, and execute plans to improve pedestrian and bicycle facilities.	▪ Policy M-5.5: School-Related Traffic ▪ Program M-5.5A: School Transportation
LCT-C5: Public Transit. Support and promote public transit by taking the following actions: a. Work with Marin Transit and Golden Gate Transit to maximize ridership through expansion and/or improvement of transit routes and schedules. b. Work with SMART, TAM, employers and others to provide first and last mile programs to maximize utilization of the train, including shuttle buses. c. Support the development of an attractive and efficient multi-modal transit center and provide safe routes to the transit center that encourage bicycle and pedestrian connections. d. Support a "Yellow School Bus" program and student use of regular transit to reduce school traffic. e. Encourage transit providers, including school buses, to use renewable diesel as a transition fuel and to purchase electric buses whenever replacing existing buses.	**Consistent.** The Mobility Element provides for accessibility and mobility options for all users of the transportation network, including transit users. The General Plan includes policies and programs for encouraging use of transit and coordination with the transit agencies under Goal M-4: ▪ Policy M-4.1: Sustaining Public Transportation ▪ Program M-4.1A: Transit Advocacy ▪ Program M-4.1B: Evaluating Transit Needs ▪ Program M-4.1C: Partnerships ▪ Program M-4.1D: Transit for Tourism ▪ Program M-4.1E: Transit Information ▪ Program M-4.1: Public Health ▪ Policy M-4.2: Regional Transit Options ▪ Program M-4.2A: Regional Bus Service ▪ Program M-4.2B: Rail Service ▪ Program M-4.2C: Ferry and Water Taxi Service ▪ Policy M-4.3: Smart Improvements ▪ Program M-4.3A: Rail Safety ▪ Program M-4.3B: Passenger Pickup and Drop-off ▪ Program M-4.3C: Arrival Experience ▪ Program M-4.3D: Service Reliability ▪ Program M-4.3E: Downtown Crossings ▪ Policy M-4.4: Local Transit Options ▪ Program M-4.4A: Local Bus Service ▪ Program M-4.4B: Improved Bus Stops ▪ Program M-4.4C: Local Shuttle Programs ▪ Policy M-4.5: Transit and the Environment ▪ Policy M-4.6: Paratransit Options ▪ Program M-4.6A: Other Local Transit ▪ Program M-4.6-B: Paratransit Service ▪ Policy M-4.7: Intermodal Transit Hubs ▪ Program M-4.7A: Transit Center Relocation ▪ Program M-4.7B: First Mile/Last Mile Trips ▪ Program M-4.7C: Implementation of Other Plans In addition, the following policies and programs also support transit use and service in the City. ▪ Policy M-1.1: Regional Transportation Planning ▪ Policy M-1.1A: Participation in Countywide and Regional Transportation Planning. ▪ Policy M-1.1B. Public Information about Transportation ▪ Policy M-1.2: Regional Funding ▪ Policy M-3.3: Transportation Demand Management ▪ Program M-3-3B: Support for TDM ▪ Program M3-3C: City TDM Program ▪ Policy M-3.5: Alternative Transportation Modes ▪ Program M-3.5A: Carpooling and Vanpooling ▪ Program M-3.5B: Shared Mobility

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
	▪ Program M-3.5C: Micro-Mobility ▪ Program M-3.5D: Transportation Network Companies (TNCs) ▪ Policy M-3.7: Design Features that Support Transit ▪ Policy M-3.8: Land Use and VMT ▪ Program M-5.4A: Interchange Improvements ▪ M-6.6: Coordination ▪ Policy M-7.9: Parking for Transit Users ▪ Program M-7.8A: Commuter Parking
LCT-C6: Employee Trip Reduction. Reduce vehicle miles traveled commuting to work through the following actions: a. Work with the Transportation Authority of Marin, the Metropolitan Transportation Commission, and the Bay Area Air Quality Management District (BAAQMD) to promote transportation demand programs to local employers, including rideshare matching programs, vanpool incentive programs, emergency ride home programs, telecommuting, transit use discounts and subsidies, showers and changing facilities, bicycle racks and lockers, and other incentives to use transportation other than single occupant vehicles. b. Update the City's Trip Reduction Ordinance to reflect the most recent BAAQMD regulations and to increase the number of employers subject to the ordinance. c. Embark on a behavior change and educational campaign to encourage employees to reduce vehicle trips	**Consistent.** The BAAQMD's Commuter Benefit Program requires employers with 50 or more employees in the Bay Area to implement transportation demand management (TDM) program. The Mobility Element includes policies and programs TDM programs, including: ▪ Policy M-3.3: Transportation Demand Management ▪ Program M-3.3A: Develop TDM Program Guidelines ▪ Program M-3.3B: Support for TDM ▪ Program M-3.3C: City TDM Program ▪ Program M-3.3D: Shifting Peak Hour Trips ▪ Program C-2.3: Air Pollution Reduction Measures
LCT-C7: Parking Requirements. Promote a walkable city by reducing parking requirements wherever feasible. Allow new development in the Downtown area to reduce minimum parking requirements by 20 percent from current levels. Elsewhere, reduce parking requirements based on robust transportation demand programs and proximity and frequency of transit services. Encourage unbundling of parking costs.	**Consistent.** The General Plan allows for flexibility in meeting parking as a result of changing technologies and trends. The Mobility Element goal M-7 identifies the City's parking policies. Policies and programs on parking are include: ▪ Policy M-7.1: Optimizing Existing Supply ▪ Program M-7.1A: Shared Parking ▪ Policy M-7.2: Parking Districts ▪ Policy M-7.3 Parking Technology ▪ Program M-7.3A: Downtown Parking and Wayfinding Study Recommendations ▪ Policy M-7.4: Downtown Parking ▪ Program M-7.4A: Monitoring Demand ▪ Program M-7.4B: Assessment District Expansion ▪ Program M-7.4C: Private Garages ▪ Program M-7.4D: Wayfinding Signage ▪ Program M-7.4E: Design Standards for Parking Garages ▪ Policy M-7.5: Dynamic Pricing ▪ Program M-7.5A: Adjustments to Parking Rates ▪ Policy M-7.6: Off-Street Parking Standards ▪ Program M-7.6A: Adjustments to Parking Standards ▪ Program M-7.6B: Parking Reductions ▪ Policy M-7.7: Parking Management ▪ Program M-7.7A: Residential Permit Parking ▪ Program M-7.7B: Parking Studies ▪ Policy M-7.8: Parking for Alternative Modes of Transportation ▪ Program M-7.8A: Charging Stations

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
	▪ Program M-7.8B: Parking Standards ▪ Policy M-7.9: Parking for Transit Users ▪ Program M-7.9A: Commuter Parking ▪ Policy M-7.10: Curbside Management ▪ Program LU-3.7B: Parking Regulations
LCT-C8: Traffic System Management and Vehicle Idling. a. Implement signal synchronization to minimize wait times at traffic lights and to reduce congestion through increased traffic flow. b. Utilize intelligent traffic management systems to improve traffic flow and guide vehicles to available parking. c. Encourage drivers and autonomous vehicles to limit vehicle idling through implementing behavior change and engagement campaigns. d. Investigate adopting an ordinance to regulate idling beyond State requirements.	**Consistent.** The General Plan include policies and programs to improve the efficiency of the transportation network, to reduce vehicle idling time under Goal M-2, including: ▪ Policy M-1.4 Transportation Innovation ▪ Program M-1.4A: Transportation Technology ▪ Program M-1.4B: Delivery Services ▪ Program M-1.4C: Autonomous Vehicles ▪ Policy T-1.5: Travel Data and Modeling ▪ Policy M-2.1: Road Hierarchy ▪ Program M-2.1A: Complete Streets ▪ Policy M-2.4: Transportation Efficiency ▪ Program M-2.4A: Intelligent Transportation Systems ▪ Program M-2.4B: Reducing Vehicle Idling ▪ Program M-7.4D: Wayfinding Signage
LCT-C9: Smart Growth Development. Prioritize infill, higher density, transit-oriented, and mixed-use development.	**Consistent.** The General Plan Land Use Map places higher density uses near transit stations and in areas that are less auto- dependent. Additionally, Mobility Element. Goal M-3 includes a series of policies to reduce vehicle miles traveled (VMT) by encouraging carpooling, working from home, flextime, micro-mobility (e-bikes, e-scooters), and similar strategies: ▪ LU-1.3: Land Use and Climate Change ▪ LU-1.3 A: Benefits of Transit Oriented Development ▪ LU-2.2A: Mixed Use Development ▪ Policy M-3.1: VMT Reduction Standard ▪ Policy M-3.4: Reducing Commute Lengths ▪ Program M-3.4A: Telecommuting ▪ Program M-3.4B: Housing Services ▪ Policy M-3.: Design Features that Support Transit ▪ Policy M-3.8: Land Use and VMT
LCT-C10: Electric Landscape Equipment. Encourage the use of electric landscape equipment instead of gasoline-powered equipment through engagement campaigns.	**Consistent.** The Conservation and Climate Change Element includes policies and programs that support the transition to cleaner fuels including: ▪ Policy C-2.3: Improving Air Quality Through Land Use and Transportation choices ▪ Policy C-2.6: Education and Outreach ▪ Program C-2.6B: Equipment and Generators.
LCT-M2: Low Carbon Fuels. Use low-carbon fuel such as renewable diesel as a transition fuel in the City's fleet and encourage the City's service providers to do the same, until vehicles are replaced with zero-emissions vehicles.	**Consistent.** The Conservation and Climate Change Element includes policies and programs that support the transition of the City's fleet to low carbon fuels including: ▪ Program C-2.3A: Air Pollution Reduction Measures ▪ Policy C-5.4: Municipal Programs ▪ Program C-5.4A: Low Carbon Municipal Vehicles ▪ Program C-5.4B: Advancing GHG and Sustainability Efforts ▪ Policy M-3.6: Low Carbon Transportation

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
	▪ Program M-3.6A: ZEV Plan ▪ Program M-3.6B: Zero Emission Municipal Vehicles ▪ Policy M-4.5 Transit and the Environment ▪ Program EV-1.9C: CCAP Implementation
LCT-M3: City Employee Commute. Continue to provide City employees with incentives and/or reduce barriers to use alternatives to single occupant auto commuting, such as transit use discounts and subsidies, bicycle facilities, showers and changing facilities, ridesharing services, vanpools, emergency ride home service, flexible schedules, and telecommuting when practicable.	**Consistent.** The Mobility Element. Goal M-3 includes a series of policies to reduce vehicle miles traveled (VMT) by encouraging carpooling, working from home, flextime, micro-mobility (e-bikes, e-scooters), and similar strategies: ▪ Policy M-3.1: VMT Reduction Standard ▪ Policy M-3.4: Reducing Commute Lengths ▪ Program M-3.4A: Telecommuting ▪ Program M-3.4B: Housing Services ▪ Policy M-3.: Design Features that Support Transit ▪ Policy M-3.8: Land Use and VMT ▪ Policy M-6.8: Pedestrian and Bicycle Programming ▪ Program M-6.8B: Bike to Work Day
LCT-M4: Municipal Electric Landscape Equipment. Replace gas-powered leaf blowers and other landscape equipment with electric models.	**Consistent.** The Conservation and Climate Change Element includes policies and programs that support the transition to cleaner fuels including: ▪ Policy C-2.3: Improving Air Quality Through Land Use and Transportation choices ▪ Policy C-2.6: Education and Outreach ▪ Program C-2.6B: Equipment and Generators
Energy Efficiency	
EE-C1: Energy Efficiency Programs. Promote and expand participation in residential and commercial energy efficiency programs. a. Work with organizations and agencies such as the Marin Energy Watch Partnership, the Bay Area Regional Network, Resilient Neighborhoods, and the Marin Climate & Energy Partnership to promote and implement energy efficiency programs and actions. b. Continue and expand participation in energy efficiency programs such as Energy Upgrade California, California Energy Youth Services, and Smart Lights. c. Promote utility, state, and federal rebate and incentive programs. d. Participate and promote financing and loan programs for residential and non-residential projects such as Property Assessed Clean Energy (PACE) programs, PG&E on-bill repayment, and California Hub for Energy Efficiency Financing (CHEEF) programs.	**Consistent.** The Community Design and Preservation Element and the Conservation and Climate Change Element, Goal 4: Sustainable Energy Management, include policies and programs that encourage energy efficiency: ▪ Policy CDP-5.11: Sustainability ▪ Program CDP-5.11A: Energy Retrofits ▪ Policy C-4.1: Renewable Energy ▪ Program C-4.1A: Marin Clean Energy Targets ▪ Program C-4.1B: PACE Financing ▪ Program C-4.1C: Regulatory Barriers ▪ Program C-4.1D: Reducing Natural Gas ▪ Program C-4.1E: Municipal Buildings ▪ Policy C-4.2: Energy Conservation ▪ Program C-4.2A: Energy Efficiency Outreach ▪ Program C-4.2B: Green Building Standards ▪ Program C-4.2C: Energy Efficiency Incentives ▪ Program C-4.2D: Time-of-Sale Energy Audits ▪ Program C-4.2E: Cool Roofs and Pavements ▪ Policy C4.3 Managing Energy Demand ▪ Program C-4.3A: innovative Technologies ▪ Policy H-19: Energy Conservation and Sustainability ▪ Program H-19A: Sustainability Policies and Programs
EE-C2: Energy Audits. Investigate requiring energy audits for residential and commercial buildings prior to completion of sale, including identification of cost savings from energy efficiency measures and potential rebates and financing options.	**Consistent.** The Conservation and Climate Change Element includes policies and programs for time-of-sale energy audits: ▪ Program C-4.2D: Time-of-Sale Energy Audits

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Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
EE-C3: Cool Pavement and Roofs. Use high albedo material for roadways, parking lots, sidewalks and roofs to reduce the urban heat island effect and save energy. a. Evaluate the use of high albedo pavements when resurfacing City streets or re-roofing City facilities. b. Encourage new development to use high albedo material for driveways, parking lots, walkways, patios, and roofing through engagement and behavior change campaigns.	**Consistent.** The Community Design and Preservation Element and the Conservation and Climate Change Element include policies and programs for 'cool' building materials: ▪ Policy CDP-5.11: Sustainability ▪ Program CDP-5.11A: Energy Retrofits ▪ Program C-4.2B: Green Building Standards ▪ Program C-4.2E: Cool Roofs and Pavements ▪ Policy C-4.4: Sustainable Building Materials ▪ Program C-4.4A: Use of Alternative Building Materials
EE-C4: Green Building Reach Code. Investigate adopting a green building ordinance for new and remodeled commercial and residential projects that requires green building methods and energy efficiency savings above the State building and energy codes. Consider utilizing the County's green building ordinance as a model and including the use of photovoltaic systems and all-electric building systems as options to achieve compliance.	**Consistent.** The Community Design and Preservation Element and the Conservation and Climate Change Element include policies and programs for energy efficiency and sustainability: ▪ Policy CDP-5.11: Sustainability ▪ Program CDP-5.11A: Energy Retrofits ▪ Policy C-4.1: Renewable Energy ▪ Program C-4.1B: PACE Financing ▪ Program C-4.1C: Regulatory Barriers ▪ Program C-4.1D: Reducing Natural Gas ▪ Program C-4.1E: Municipal Buildings ▪ Policy C-4.2: Energy Conservation ▪ Program C-4.2A: Energy Efficiency Outreach ▪ Program C-4.2B: Green Building Standards ▪ Program C-4.2C: Energy Efficiency Incentives ▪ Program C-4.2D: Time-of-Sale Energy Audits ▪ Program C-4.2E: Cool Roofs and Pavements ▪ Policy C4.3 Managing Energy Demand ▪ Program C-4.3A: innovative Technologies ▪ Policy C-4.4: Sustainable Building Materials ▪ Program C-4.4A: Use of Alternative Building Materials ▪ Policy C-4.5: Resource Efficiency in Site Development ▪ Program C-4.5A: Solar Site Planning
EE-C5: Streamline Permit Process and Provide Technical Assistance. Analyze current green building permit and inspection process to eliminate barriers and provide technical assistance to ensure successful implementation of green building requirements. Work county-wide to make it easier for contractors and building counter staff to simplify applications and identify incentives.	**Consistent.** The Conservation and Climate Change Element includes policies and programs for to remove barrier to successful implementation of green building requirements: ▪ Program C-4.1B: PACE Financing ▪ Program C-4.1C: Regulatory Barriers
EE-M1: Streetlights. Complete replacement of inefficient street, parking lot and other outdoor lighting with LED fixtures.	**Consistent.** The Community Services and Infrastructure Element Program CSI-4.7D: Street Lighting Program. Additionally, Program C-4:1E: Municipal Buildings directs the City to incorporate renewable energy for municipal facilities.
EE-M2: Energy Efficiency Audit and Retrofits. Work with the Marin Energy Management Team to identify and implement energy efficiency projects in municipal buildings and facilities and electrification of existing building systems and equipment that use natural gas.	**Consistent.** The Conservation and Climate Change Element includes policies and programs for energy efficiency upgrades/retrofits: ▪ Program CDP-5.11A: Energy Retrofits ▪ Policy C-4.1: Renewable Energy ▪ Program C-4.1A: Marin Clean Energy Targets ▪ Program C-4.1B: PACE Financing

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Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
	▪ Program C-4.1C: Regulatory Barriers ▪ Program C-4.1D: Reducing Natural Gas ▪ Program C-4.1E: Municipal Buildings ▪ Policy C-4.2: Energy Conservation ▪ Program C-4.2A: Energy Efficiency Outreach ▪ Program C-4.2B: Green Building Standards ▪ Program C-4.2C: Energy Efficiency Incentives ▪ Program C-4.2D: Time-of-Sale Energy Audits
EE-M3: Energy Conservation. Reduce energy consumption through behavioral and operational changes. a. Establish energy efficiency protocols for building custodial and cleaning services and other employees, including efficient use of facilities, such as turning off lights and computers, thermostat use, etc. b. Incorporate energy management software, electricity monitors, or other methods to monitor energy use in municipal buildings. c. Investigate 9/80 work schedule for City facilities where feasible and where facilities can be shut down entirely.	**Consistent.** See response for EE-C-1, regarding energy conservation. The General Plan includes the following additional policies for municipal buildings and services: ▪ Program C-4:1E: Municipal Buildings ▪ Program EV-2A: Responding to Workplace Trends ▪ Policy M-3.3: Transportation Demand Management ▪ Program M-3-3C: City TDM Program ▪ Program M-3.4A: Telecommuting ▪ CSI-4.5: Infrastructure Technology ▪ Program C-4.1E: Municipal Buildings ▪ Policy C4.3 Managing Energy Demand ▪ Program C-4.3A: innovative Technologies
Renewable Energy	
RE-C1: Renewable Energy Generation. Accelerate installation of residential and commercial solar and other renewable energy systems. a. Provide permit streamlining and reduce or eliminate fees, as feasible. b. Amend building codes, development codes, design guidelines, and zoning ordinances, as necessary, to facilitate small, medium, and large-scale installations. c. Encourage installation of solar panels on carports and over parking areas on commercial projects and large-scale residential developments through ordinance, engagement campaigns, or agency incentives. d. Participate and promote financing and loan programs for residential and non-residential projects such as Property Assessed Clean Energy (PACE) programs and California Hub for Energy Efficiency Financing (CHEEF) programs. e. Encourage installation of battery storage in conjunction with renewable energy generation projects through engagement campaigns and partner agency incentives.	**Consistent.** The Conservation and Climate Change Element includes policies and programs for encouraging use of renewable energy. ▪ Policy CDP-5.11: Sustainability ▪ Program CDP-5.11A: Energy Retrofits ▪ Policy C-4.1: Renewable Energy ▪ Program C-4.1B: PACE Financing ▪ Program C-4.1C: Regulatory Barriers ▪ Program C-4.1D: Reducing Natural Gas ▪ Program C-4.1E: Municipal Buildings ▪ Policy C-4.5: Resource Efficiency in Site Development ▪ Program C-4.5A: Solar Site Planning ▪ Policy C-5.3: Advocacy ▪ Program C-5.3B: State and Federal Actions ▪ Program C-5.3C: Regional Collaboration
RE-C2: GHG-Free Electricity. Encourage residents and businesses to switch to 100 percent renewable electricity (MCE Deep Green, MCE Local Sol, and PG&E Solar Choice) through engagement campaigns and partner agency incentives and work with MCE Clean Energy to assure that it reaches its goal to provide electricity that is 100 percent GHG-free by 2025	**Consistent.** The Conservation and Climate Change Element includes policies and programs to align the City's goals with that of Marin Clean Energy (MCE). ▪ Policy C-4.1: Renewable Energy ▪ Policy C-4.1A: Marin Clean Energy Targets ▪ Program C-4.1E: Municipal Buildings ▪ Policy C-4.5: Resource Efficiency in Site Development ▪ Program C-4.5A: Solar Site Planning ▪ Policy C-5.3: Advocacy ▪ Program C-5.3B: State and Federal Actions ▪ Program C-5.3C: Regional Collaboration

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Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
RE-C3: Building and Appliance Electrification. Promote electrification of building systems and appliances that currently use natural gas, including heating systems, hot water heaters, stoves, and clothes dryers	**Consistent.** The Conservation and Climate Change Element includes Program C-4.1D: Reducing Natural Gas Use to transition to carbon free energy sources.
RE-C4: Innovative Technologies. Investigate and pursue innovative technologies such as micro-grids, battery storage, and demand-response programs that will improve the electric grid's resiliency and help to balance demand and renewable energy production.	**Consistent.** The Safety and Resilience Element Program C-4.1D: Reducing Natural Gas Use to transition to carbon free energy sources.S-4.9B: Energy Storage Plan and Community Services and Infrastructure Element Program CSI-4.13B: Microgrids, direct the City to develop a plan, including microgrid and expanded battery capacity, to improve reliability of the power system following a major disaster. Additionally, the Conservation and Climate Change Element includes the following policy and program for new technologies: ▪ Policy C-4.3: Managing Energy Demand ▪ Program C-4.3A: Innovative Technologies
RE-M1: Solar Energy Systems for Municipal Buildings. Install solar energy systems at municipal buildings and facilities where feasible and investigate and pursue innovative technologies such as battery storage and demand response programs.	**Consistent.** The Conservation and Climate Change Element includes Program C-4.1E: Municipal Buildings : directs the City to incorporate renewable energy into the construction or retrofit of municipal buildings, where feasible.
RE-M2: Municipal Deep Green Electricity. Continue to purchase MCE Deep Green electricity for all City facilities	**Consistent.** The Conservation and Climate Change Element includes Program C-4.1E: Municipal Buildings which identifies continued use of MCE Deep Green (100 percent renewable power).
Waste Reduction	
WR-C1: Commercial Organic Waste. Work with Zero Waste Marin, Marin Sanitary Service, and non-profits such as Extra Food to divert commercial organic waste from the landfill through recycling, composting, and participation in waste-to-energy and food recovery programs. a. Conduct outreach and education to businesses subject to State organic waste recycling mandates (AB 1826) and encourage or enforce compliance with the law. b. Refer new and major remodel commercial and multi-family residential project proposals to the City's waste hauler for review and comment and require projects to provide adequate waste and recycling facilities and access as feasible. c. Encourage and facilitate commercial and multi-family property owners to require responsible use of on-site recycling facilities in lease and rental agreements and to train and regularly evaluate janitorial, landscape, and other property management services.	**Consistent.** The Community Services and Infrastructure Element includes the following policies and programs to reduce landfilled waste: ▪ Policy CSI-4.17: Reducing Landfilled Waste Disposal ▪ Program CSI-4.17A: Waste Reduction ▪ Program CSI-4.17B: Recycling ▪ Program CSI-4.17C: Construction and Demolition Waste ▪ Program CSI-17D: Waste Reduction Programs ▪ Program CSI-4.17E: Community Composting ▪ Program CSI-4.17F: Food to Energy ▪ Program CSI-4.17G: Recyclable Waste Receptacles ▪ Policy CSD-4.18: Waste Reduction Advocacy and Education ▪ Program CSI-4.18A: Recycling Education
WR-C2: Residential Organic Waste. Work with Zero Waste Marin, Marin Sanitary Service, and other organizations to educate and motivate residents to utilize curbside collection services and home composting for food waste.	**Consistent.** See response to WR-C2. Program CSI-4.17A directs the city to implement waste reduction programs consistent with the Zero Waste Marin's reduction goals.
WR-C3: Construction & Demolition Debris and Self-Haul Waste. Require all loads of construction & demolition debris and self-haul waste to be processed for recovery of materials as feasible. Investigate creation of an ordinance requiring deconstruction of buildings proposed for demolition or remodeling when materials	**Consistent.** See response to WR-C2. Program CSI-4.17C identifies continued implementation of the City's Construction and Demolition Debris diversion goals. Consistent with the California Green Building Standards Code (CALGreen) waste diversion requirements.

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Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
of significant historical, cultural, aesthetic, functional or reuse value can be salvaged.	
WR-C4: Mandatory Waste Diversion. Adopt an ordinance requiring mandatory subscription to and participation in waste diversion activities, including recycling and organics collection provided by Marin Sanitary Service. Consider including phased implementation of the ordinance, penalties, and practical enforcement mechanisms.	**Consistent.** See response to WR-C2. Residents in the City have access to the City's existing recycling programs. Assembly Bill 341 requires commercial recycling. Program CSI-4.17B identifies continued implementation of the City's recycling programs for homes, apartments, and workplaces.
WR-C5: Waste Processing Infrastructure. Review and revise the City's franchise agreement with Marin Sanitary Service to ensure waste reduction and diversion targets are met. Conduct a feasibility study and consider investing in new solid waste processing infrastructure to remove recoverable materials (recycling and organics) from the waste stream and reduce contamination. Require regular residential and commercial waste audits and waste characterization studies to identify opportunities for increased diversion and to track progress in meeting targets.	**Consistent.** See response to WR-C2, which identifies policies and programs to support the City's waste diversion goals. Program CSI-4.17F identifies support for a waste-to-energy facility.
WR-C6: Extended Producer Responsibility. Encourage the State to regulate the production and packaging of consumer goods and take-back programs. Encourage on-demand delivery services like Amazon and Blue Apron to reduce packaging waste and investigate requirements and incentives for same through ordinance or engagement campaigns.	**Consistent.** See response to WR-C2, which identifies policies and programs to support the City's waste diversion goals.
WR-C7: Inorganic Waste. Promote reuse, repair, and recycling of inorganic materials, and encourage reduced use of packaging and single use items through engagement campaigns. Investigate supporting a local building material reuse center.	**Consistent.** See response to WR-C2. Program CSI-4.17E directs the City to consider mandatory community scale food and greenwaste composting.
WR-M1: Waste from Public Facilities. Increase opportunities for recycling, reuse, and composting at City facilities.	**Consistent.** See response to WR-C2. Residents in the City have access to the City's existing recycling programs. Assembly Bill 341 requires commercial recycling. Program CSI-4.17B identifies continued implementation of the City's recycling programs for homes, apartments, and workplaces.
WR-M2: Waste from City Operations. Embark on an educational and social marketing-based campaign to increase recycling, composting, reuse, and waste reduction within municipal operations. Conduct periodic waste audits of City facilities to understand where opportunities for increased diversion lie and to track progress.	**Consistent.** See response to WR-C2. The following goal and policy support education to support the City's waste diversion goals: ▪ Policy CSD-4.18: Waste Reduction Advocacy and Education ▪ Program CSI-4.18A: Recycling Education
Water Conservation	
WC-C1: Community Water Use. Reduce indoor and outdoor water use in residential and commercial buildings and landscaping. a. Work with Marin Municipal Water District (MMWD) and other organizations to promote water conservation programs and incentives. b. Educate residents and businesses about local and State laws requiring retrofit of non-compliant plumbing fixtures during remodeling and at resale. c. Ensure all projects requiring building permits, plan check, or design review comply with State and MMWD regulations.	**Consistent.** The Conservation and Climate Change Element includes the following policies and programs to increase plumbing water efficiency and reduce landscape water use: ▪ Policy C-3.8: Water Conservation ▪ Program C-3.8A: Water Conservation Programs ▪ Program C-3.8B: Public Education ▪ Program C-3.8C: Reclaimed Water Use ▪ Program C-3.8D: Greywater and Rainwater ▪ Program C-3.8E: Reducing Municipal Water Use ▪ Policy C-3.9: Water Efficient Landscaping ▪ Program C-3.9A: Demonstration Gardens ▪ Policy CSI-4.12: Recycled Water ▪ Program CSI-4.12A: CMSA Capacity Expansion

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Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
d. Encourage the installation of greywater and rainwater collection systems and the use of recycled water where available through ordinance or engagement campaigns.	▪ Program CSI-4.12B: Las Gallinas Expansion Project ▪ Program CSI-4.12C: Sewer Line Replacement
WC-M1: Municipal Water Use. Reduce indoor and outdoor water use in municipal facilities and operations. a. Replace high water use plants and inefficient irrigation systems with water-efficient landscaping. b. Investigate synthetic turf that uses organic infill for ball fields and parks to reduce water, herbicide use, and maintenance costs, while increasing field use throughout the year. c. Replace inefficient plumbing fixtures with high-efficiency fixtures. d. Use recycled water as available and practicable.	**Consistent.** See response to WC-C1. Program C-3.9E: Reducing Municipal Water Use directs the City to reduce water use for municipal operations through water efficient landscaping, maintenance, and using recycled water, where applicable.
Sequestration and Adaption	
SA-C1: Urban Forest. Increase carbon sequestration and improve air quality and natural cooling through increasing tree cover in San Rafael. a. Plant additional trees on City-owned land, including public parks, open space, medians, and rights of way, where feasible. b. Review parking lot landscape standards to maximize tree cover, size, growth, and sequestration potential. c. Regulate and minimize removal of large trees and require planting of replacement trees. d. Require that the site planning, construction and maintenance of new development preserve existing healthy trees and native vegetation on site to the maximum extent feasible. Replace trees and vegetation not able to be saved. e. Encourage community members to plant trees on private land. Consider creating a tree giveaway event or providing lower-cost trees to the public through a bulk purchasing program. f. Encourage the creation of community gardens on public and private lands by community groups. g. Provide information to the public, including landscape companies, gardeners and nurseries, on carbon sequestration rates, drought tolerance, and fire resistance of different tree species. h. Manage trees and invasive species in the open space for forest health and reduction of fuel load. i. Require new development, redevelopment, and infrastructure projects to implement best management practices as feasible, including low-impact development techniques, the minimal use of non-pervious surfaces in landscape design, and the integration of natural features into the project design, to naturally filter and biodegrade contaminants and to minimize surface runoff into drainage systems and creeks.	**Consistent.** The General Plan includes the following policies and programs on carbon sequestration: ▪ Policy CDP-3.5: Street Trees ▪ Program CDP-3.5A: Street Tree Planting and Maintenance ▪ Program CDP-3.5B: Street Tree Inventory ▪ Program CDP-3.5C: Street Trees for New Development ▪ Program CDP-3.5D: Street tree Maintenance ▪ Policy C-1.9: Enhancement of Creeks and Drainageways ▪ Policy C-3.3: Low Impact Development ▪ Program C-3.3B: Non-Traditional Gardens ▪ Policy C-3.4: Green Streets ▪ Program C-3.4A: Green Streets Planning ▪ Program C-3.4B: Funding ▪ Policy C-5.5: Carbon Sequestration ▪ Policy CD-3.5 ▪ Policy PROS-1.18: Sustainable Park Operations ▪ Program PROS-1.18A: Sustainable Design ▪ Policy PROS-3.3: Open Space Management Plan ▪ Program PROS-3.3A: Open Space Management Plan ▪ Policy PROS-3.10: Public Education ▪ Program S-4.1G: Open Space and Forestry Management
SA-C2: Carbon Sequestration. Increase carbon sequestration in the built environment, developed landscapes, and natural areas. a. Encourage use of building materials that store carbon, such as wood and carbon-intensive concrete through agency partnerships and engagement campaigns. b. Encourage and support composting to develop healthy, carbon-rich soils.	**Consistent.** See response to SA-C1. The General Plan includes policies and programs to increase carbon sequestration.

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Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
c. Manage parks and open spaces to steadily increase carbon in vegetation and soil. d. Increase the extent and carbon sequestration potential of bay wetlands, through improvements such as horizontal levees	
SA-C3: Carbon Offsets. Reduce the impact of greenhouse gas emissions through the purchase of carbon offsets. a. Encourage community members to purchase carbon offsets to reduce their carbon footprint through engagement campaigns. b. Consider partnering with a local non-profit organization to promote a carbon offset program. c. Focus on offsetting emissions that are difficult to mitigate otherwise, such as airplane travel.	**Consistent.** The General Plan Goal C-5 ensures that the City's General Plan is aligned with the State's GHG reduction targets. Program C-5.1C: Funding, directs the City to investigate creation of a local carbon fund.
SA-C4: Sea Level Rise. Prepare for and adapt to a rising sea level. a. Consider the potential for sea level rise when processing development applications that might be affected by such a rise. Use current Flood Insurance Rate Maps and National Oceanic and Atmospheric Administration (NOAA) recommendations associated with base flood elevation adjustments for sea level rise in the review of development proposals. Adopt requirements to assess sea level rise risks on new development, infrastructure, and transit corridors. b. Prepare a guidance document for incorporating sea level rise into the City's capital planning process. c. Work with local, County, state, regional, and federal agencies with Bay and shoreline oversight and with owners of critical infrastructure and facilities in the preparation of a plan for responding to rising sea levels. Make sure all local stakeholders are kept informed of such planning efforts. d. Investigate developing flood control projects and modifying the City's land use regulations for areas subject to increased flooding from sea level rise. e. Update GIS (Geographic Information System) maps to include new data as it becomes available; utilize GIS as a tool for tracking sea level rise and flooding and make available to the public. f. Study the creation of a Bayfront overlay zone or similar that would establish standards for developing in areas subject to flooding from SLR.	**Consistent.** Policy C-5.2: Consider Climate Change Impacts, ensures that future projects consider the City's GHG reduction targets and adaptation goals. Additionally, the goals and policies of the Land Use Element and the Safety and Resilience Element ensure that sea level rise and other climate hazards are considered. Goal S-3: Resilience to Flooding and Sea Level Rise, ensures the City considers City's vulnerabilities to this climate change impact. ▪ Policy LU-1.2: Development Timing ▪ Program LU-1.2A: Development Review ▪ Policy LU-1.4: Reasonable Interim Use of Property ▪ Program LU-1.4A: Reasonable Interim Uses ▪ Policy LU-1.8: Density of Residential Development ▪ Policy LU-1.10: Intensity of Non-Residential Development ▪ Policy LU-1.12: Transfer of Development Rights ▪ Program LU-1.12A: Transfer of Development Rights (TDR) Program ▪ Policy LU-1.17: Building Heights ▪ Program LU-2.1A: Zoning Amendments ▪ Program LU-2.4A: Industrial Zoning ▪ Policy C-1.2: Wetlands and Sea Level Rise ▪ Program C-1.3D: System Improvements ▪ Program PROS-1.3C: Adaptation Projects ▪ Program PROS-1.18A: Sustainable Design ▪ Program S-1.3B: Use of Hazard Maps in Development Review ▪ Policy S-3.1: Sea Level Rise Projection Map ▪ Program S-3.1A: Incorporate into City GIS ▪ Program S-3.1B: Periodic Update of Sea Level Rise Projection Map ▪ Program S-3.1C: Sea Level Rise Overlay Zone ▪ Policy S-3.2: Data Consistency ▪ Program S-3.2A: Coordination with County of Marin ▪ Policy S-3.3: Awareness and Disclosure ▪ Program S-3.3A: Residential Building Resale (RBR) Reports ▪ Policy S-3.4: Mitigating Flooding and Sea Level Rise Impacts ▪ Program S-3.4A: Development Projects

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
	▪ Program S-3.4B: Capital Projects ▪ Program S-3.4C: Coordination with Utilities and Services ▪ Policy S-3.5: Minimum Elevations ▪ Program S-3.5A: Code Amendments for Floor Elevation ▪ Program S-3.5B: Ground Elevation Surveys ▪ Program S-3.5C: National Flood Insurance Program (NFIP) ▪ Policy S-3.6: Resilience to Tidal Flooding ▪ Program S-3.6A: Sea Level Rise Adaptation Plan ▪ Program S-3.6B: Partnerships ▪ Program S-3.6C: Countywide Agency/Joint Powers Authority ▪ Policy S-3.7: Shoreline Levees ▪ Program S-3.7A: Levee Improvement Plans ▪ Program S-3.7B: Financing Levee Improvements ▪ Policy S-3.8 Storm Drainage Improvements ▪ Program S-3.8A: Storm Drainage Improvements ▪ Program S-3.8B: Green Infrastructure Guidelines ▪ Policy S-3.9: Flood Control Improvements Funding ▪ Program S-3.9A: Incremental Flood Control Improvements ▪ Program S-3.9B: Flood Hazard Mitigation Projects ▪ Program S-3.9C: Restoration and Dredging Projects ▪ Policy M-2.11: Sea Level Rise ▪ Policy CSI-4.6: Climate Change Impacts ▪ Program CSI-4.6A: Guidance Document ▪ Program CSI-4.6B: Coordination with Service Providers ▪ Policy CSI-4.9: Wastewater Facilities ▪ Policy CSI-4.11: Canal Dredging ▪ Program CSI-4.11A: Funding ▪ Program CSI-4.14B: Prioritizing of Undergrounding Projects ▪ Policy EDI-2.10 Resiliency Planning
SA-C5: Climate Change Adaptation. Prepare for and respond to the expected impacts of climate change. a. Continue to incorporate the likelihood of sea level rise and increased risk of wildfire and extreme heat and storm events in the City's Local Hazard Mitigation Plan. b. Incorporate the likelihood of climate change impacts into City emergency planning and training. c. Coordinate with water districts, wildlife agencies, flood control and fire districts, Marin County, and other relevant organizations to develop a comprehensive plan addressing climate change impacts and adaptation strategies. Address human health and the health and adaptability of natural systems, including the following: ▪ Water resources, including expanded rainwater harvesting, water storage and conservation techniques, water reuse, water-use and irrigation efficiency, and reduction of impervious surfaces.	**Consistent.** See response to SA-C4. Policy C-5.2: Consider Climate Change Impacts, ensures that future projects consider the City's GHG reduction targets and adaptation goals. Additionally, the goals and policies of the Land Use Element and the Safety and Resilience Element ensure that sea level rise and other climate hazards are considered. In addition to the policies and programs listed under SA-C4 for sea level rise, the Safety and Resilience Element includes the following policies on increased frequency and severity of fire impacts: ▪ Policy S-4.1: Wildfire Hazards ▪ Program S-4.1A: Wildfire Prevention and Action Plan ▪ Program S-4.1B: Wildfire Hazard Maps ▪ Program S-4.1C: Fire Protection Ordinance ▪ Program S-4.1D: Wildfire Fuel Breaks ▪ Program S-4.1E: Goat Grazing ▪ Program S-4.1F: Encampment Related Hazards ▪ Program S-4.1G: Open Space and Forestry Management ▪ Policy S-4.2: Fire Resilience in Developed Areas ▪ Program S-4.2A: Reduction of Structure Hazards

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
▪ Biological resources, including land acquisition, creation of marshlands/wetlands as a buffer against sea level rise and flooding, and protection of existing natural barriers. ▪ Public health, including heat-related health plans, vector control, air quality, safe water, and improved sanitation. ▪ Environmental hazard defenses, including seawalls, storm surge barriers, pumping stations, and fire prevention and suppression. d. Ensure fair and robust inclusion of lower-income households and our diverse communities in the planning and response to climate change impacts, including sea level rise, wildfire, public health, and emergency preparedness.	▪ Program S-4.2B: Tree Maintenance ▪ Program S-4.2C: Public Education on Fire Resilience and Response ▪ Policy S-4.3: New Development in Fire Hazard Areas ▪ Program S-4.3A: Fire Hazard Mitigation in New Development ▪ Program S-4.3B: Development Review for Emergency Response ▪ Program S-4.3C: Wildfire Prevention Funding ▪ Policy EDI-2.10 Resiliency Planning
Community Engagement	
CE-C1: Community Education. Work with community-based outreach organizations, such as Resilient Neighborhoods, to educate and motivate community members on ways to reduce greenhouse gas emissions in their homes, businesses, transportation modes, and other activities.	**Consistent.** The Conservation and Climate Change Element Policy C-5.7, Climate Change Education, outlines the City's Climate Change Education measures. ▪ Policy C-5.7: Climate Change Education ▪ Program C-5.7A: Public Outreach Campaign ▪ Program C-5.7B: Resilient Neighborhoods ▪ Program C-5.7C: Financial Incentives ▪ Program C-5.7D: Promote Sustainability Efforts
CE-C2: Community Engagement. Implement a communitywide public outreach and behavior change campaign to engage residents, businesses, and consumers around the impacts of climate change and the ways individuals and organizations can reduce their GHG emissions and create a more sustainable, resilient, and healthier community. Create an overarching theme to articulate a long-term goal, motivate community members, and brand a comprehensive suite of GHG-reduction programs. Prioritize promotion of programs that have the greatest greenhouse gas reduction potential while utilizing the latest social science on behavior change. Emphasize and encourage citizens' involvement in reaching the community's climate goals, including innovative means of tracking milestones and comparing San Rafael's performance with other communities and with state, national and global benchmarks. a. Conduct outreach to a wide variety of neighborhood, business, educational, faith, service, and social organizations. b. Conduct outreach and education to the Latino community by using media, organizations, and gathering places favored by Latinos and translating materials into Spanish. c. Inform the public about the benefits of installing energy and water efficient appliances and fixtures, electrifying homes and commercial buildings, installing solar energy systems, and purchasing 100% renewable electricity. d. Inform the public about the benefits of using carbon-free and low-carbon transportation modes, such as driving electric vehicles, walking, bicycling, taking public transportation, and ridesharing. e. Utilize and tailor existing marketing materials when available.	**Consistent.** See response to CE-C-1. The Conservation and Climate Change Element Policy C-5.7, Climate Change Education, outlines the City's Climate Change Education measures. In addition, the following measure inform the public about benefits of efficiency programs and awareness of climate change impacts: ▪ Program C-4.1A: Marin Clean Energy Targets ▪ Program C-4.1B: PACE Financing ▪ Program C-4.2A: Energy Efficiency Outreach ▪ Policy S-3.3: Awareness and Disclosure ▪ Program S-6.1C: Emergency Preparedness Plan ▪ Policy S-6.2: Neighborhood Disaster Preparedness Programs ▪ Program S-6.2A: Educational and Training Programs ▪ Program S-6.2B: Neighborhood Disaster Plans ▪ Program S-6.2C: Website Improvements ▪ Program S-6.2D: Outreach to Vulnerable Populations ▪ Program S-6.2E: Disaster Management Drills ▪

TABLE 4.8-6 SAN RAFAEL CLIMATE CHANGE ACTION PLAN 2030 / GENERAL PLAN 2040 CONSISTENCY ANALYSIS

Measure (San Rafael CCAP 2030)	General Plan 2040 Policy/Program Direction
f. Inform the public about the environmental benefits of eating less meat and dairy products, growing food at home, and purchasing locally-produced food. g. Partner with MCE, PG&E, MMWD, Marin Sanitary Service, Transportation Authority of Marin, Marin Transit, Golden Gate Transit, SMART, and other entities to promote available financing, audits, rebates, incentives, and services to the San Rafael community. h. Utilize the City's website, newsletters, social media, bill inserts, public service announcements and advertisements, recognition programs, and other forms of public outreach. i. Create stories and "shareable content" that can be used by bloggers, businesses, non-profits, social media, and traditional media. j. Use creative methods to engage the public, such as games, giveaways, prizes, contests, simple surveys, digital tools, and "pop-up" events. k. Develop pilot programs using community-based social marketing and other social science-based techniques to effect behavior change. l. Participate in countywide outreach and education efforts, such as Drawdown Marin.	
CE-C3: Advocacy. Advocate at the state and federal levels for policies and actions that support the rapid transition to GHG-free energy sources, electrification of buildings and the transportation fleet, and other impactful measures to sharply reduce greenhouse gas emissions.	**Consistent.** The Conservation and Climate Change Element includes goals and policies that support the transition to carbon free energy under Goal 4: Sustainable Energy Management.
CE-C4: Innovation and Economic Development. Convene an economic development and innovation working group to explore public-private partnerships and develop ways to decarbonize our local economy while spurring sustainable enterprise	**Consistent.** The Conservation and Climate Change Element includes goals and policies that support the transition to carbon free energy under Goal 4: Sustainable Energy Management. The Mobility Element also includes goals and policies to decarbonize the transportation sector. The Economic Vitality Element includes Policy EV-1.11: Innovation, to support best practices for innovation, diversification, and pathways to a low-carbon economy. ▪ Policy EV-1.9: Sustainable Business Practices ▪ Program EV-1.9A: Green Economy ▪ Program EV-1.9B: Green Business Practices ▪ Program EV-1.9C: CCAP Implementation ▪ Policy EV-1.11: Innovation ▪ Program EV-1.1A: Innovative Working Group
CE-C5: Green Businesses. Encourage local businesses to participate in the Marin County Green Business Program through partnerships with the County, Chamber, and other business groups.	**Consistent.** See response to CE-C4. The Economic Vitality Element includes Policy EV-1.9: Sustainable Business Practices, to encourage green business practices in the City.

Source: San Rafael. 2019, April 23. Climate Change Action Plan.

Significance without Mitigation: Less than significant.

Downtown Precise Plan

As discussed in Impact Discussion GHG-1, approximately half of the Downtown Precise Plan Area is located in a *Plan Bay Area* PDA and TPA and potential future development in this portion of the Downtown Precise Plan Area and potential future development would be inherently designed to reduce GHG emissions and would be in compliance with *Plan Bay Area*. Therefore, implementation of the Downtown Precise Plan would further the overall goals of the General Plan 2040 with respect to reducing GHG emissions and the impacts from the Downtown Precise Plan would be *less-than-significant,* the same as General Plan 2040 discussed previously.

Significance without Mitigation: Less than significant.

GHG-3 Implementation of the proposed project could cumulatively contribute to GHG emissions and global climate change.

Project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Therefore, impacts under Impact GHG-1 are not project-specific impacts to global warming, but are the proposed project's contribution to this cumulative impact. As discussed under Impact GHG-1, implementation of the proposed project would result in a decrease in GHG emissions in horizon year 2040 from existing baseline but may not meet the long-term GHG reduction goal under Executive Order S-03-05. Implementation of General Plan Policy C-5.1 would ensure that the City is tracking and monitoring the City's GHG emissions to chart a trajectory to achieve the long-term year 2050 GHG reduction goal set by Executive Order S-03-05. However, at this time, there is no plan that extends beyond 2030 that achieves the long-term GHG reduction goal established under Executive Order S-03-05. Therefore, project-related GHG emissions and their contribution to global climate change would be cumulatively considerable, and GHG emissions impacts would be *significant and unavoidable*.

Significance without Mitigation: Significant and unavoidable. As described in Impact Discussion GHG-1, the City currently tracks and monitors the City's GHG emissions in order to chart a trajectory to achieve the long-term year 2050 GHG reduction goal set by Executive Order S-03-05. However, at this time, there is no plan that extends beyond 2030 that achieves the long-term GHG reduction goal established under Executive Order S-03-05. As identified by the California Council on Science and Technology, the state cannot meet the 2050 goal without major advancements in technology.[42] Advancement in technology in the future could provide additional reductions to allow the state and City to meet the 2050 goal; however, no additional statewide measures are currently available. Therefore, impacts would be *significant and unavoidable*.

[42] California Climate Change Center (CCCC). 2012, July. Our Changing Climate 2012: Vulnerability and Adaptation to the Increasing Risks from Climate Change in California.

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