4.11 GREENHOUSE GAS EMISSIONS

This section summarizes existing greenhouse gas (GHG) emissions and discusses global climate change, its causes, and the contribution of human activities. This section also estimates the likely GHG emissions that would result from construction and operational activities associated with development of the proposed project, including vehicular traffic, energy consumption, and other emission sources. Mitigation measures are recommended, where appropriate, to reduce potential impacts to a less than significant level. The analysis performed for this section is based on guidance provided in the Bay Area Air Quality Management District (BAAQMD) *California Environmental Quality Act (CEQA) Air Quality Guidelines* and the BAAQMD *Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans* document.[1,2]

In addition to the references listed in this section, an Air Quality and Greenhouse Gas Emissions Technical Report (AQ/GHG Technical Report) was prepared for the proposed project by the project sponsor's consultant.[3] The Technical Report was peer reviewed by LSA[4] and finalized by the project sponsor. The final report was utilized in the analysis provided in this section, and is provided in Appendix I.

4.11.1 Setting

The following describes existing GHG emissions in San Rafael, beginning with typical GHG types and sources, impacts of global climate change, the regulatory framework surrounding these issues, and current emission levels.

4.11.1.1 Background

The following section provides background information on GHGs and global climate change.

Global Climate Change. Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. The Earth's average near-surface atmospheric temperature rose 0.6 ±0.2 degrees Celsius (°C) or 1.1 ±0.4 degrees Fahrenheit (°F) in the 20th Century. The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO_2) and other GHGs are the primary causes of the human-induced component of warming.

1 Bay Area Air Quality Management District (BAAQMD). 2017. *CEQA Air Quality Guidelines.* May.
2 Bay Area Air Quality Management District (BAAQMD). 2022. *Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans*. April.
3 Dudek. 2023. *Northgate Town Square Project Air Quality and Greenhouse Gas Emissions Technical Report.* August.
4 LSA Associates, Inc. 2023. *Peer Review of the Northgate Town Square Project Air Quality and Greenhouse Gas Emissions Technical Report and Energy Analysis Memorandum.* March 13.

GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect.[5]

GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced global climate change are the following:

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally-occurring GHGs such as CO_2, CH_4, and N_2O, some gases (e.g., HFCs, PFCs, and SF_6) are completely new to the atmosphere.

Certain gases, such as water vapor, are short-lived in the atmosphere. Others remain in the atmosphere for significant periods of time, contributing to climate change in the long term. Water vapor is excluded from the list of GHGs above because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation. For the purposes of this air quality analysis, the term "GHGs" will refer collectively only to the six gases listed above.

These gases vary considerably in terms of global warming potential (GWP), which is a concept developed to compare the ability of each GHG to trap heat in the atmosphere relative to another gas. GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG; the definition of GWP for a particular GHG is the ratio of heat trapped by 1 unit mass of the GHG to the ratio of heat trapped by 1 unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e). Table 4.11.A shows the GWP for each type of GHG. For example, SF_6 is 23,900 times more potent at contributing to global warming than carbon dioxide.

[5] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the heat escaping, GHGs like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of GHG results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

Table 4.11.A: Global Warming Potential of Greenhouse Gases

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-Year Time Horizon)
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	21
Nitrous Oxide (N_2O)	120	310
HFC-23	260	11,700
HFC-134a	1	140
HFC-152a	1	140
PFC: Tetrafluoromethane (CF_4)	50,000	6,500
PFC: Hexafluoromethane (C_2F_6)	10,000	9,200
Sulfur Hexafluoride (SF_6)	3,200	23,900

Source: *Second Update to the Climate Change Scoping Plan: Building on the Framework* (CARB 2017). Website: www.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2017-scoping-plan-documents (accessed August 2023).
CARB = California Air Resources Board
HFC = hydrofluorocarbon
PFC = perfluorocarbon

The following summarizes the characteristics of the six GHGs and black carbon. Black carbon also contributes to climate change and is therefore discussed below.

Carbon Dioxide. In the atmosphere, carbon generally exists in its oxidized form as CO_2. Natural sources of CO_2 include the respiration (breathing) of humans, animals and plants, volcanic out gassing, decomposition of organic matter, and evaporation from the oceans. Human-caused sources of CO_2 include the combustion of fossil fuels and wood, waste incineration, mineral production, and deforestation. Natural sources release approximately 150 billion tons of CO_2 each year, far outweighing the 7 billion tons of man-made emissions of CO_2 each year. Nevertheless, natural removal processes, such as photosynthesis by land- and ocean-dwelling plant species, cannot keep pace with this extra input of manmade CO_2; consequently, the gas is building up in the atmosphere.

In 2019, total annual CO_2 accounted for approximately 83 percent of California's overall GHG emissions.[6] Transportation is the single largest source of CO_2 in California, which is primarily comprised of on-road travel. Electricity production and industrial and residential sources also make important contributions to CO_2 emissions in California.

Methane. Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources include wetlands and oceans. Decomposition occurring in landfills accounts for the majority of human-generated CH_4 emissions in California and in the United States as a whole. Agricultural processes such as intestinal fermentation in dairy cows, manure management, and rice cultivation are also significant sources of CH_4 in California. Total

6 California Air Resources Board (CARB). 2021. GHGs Descriptions & Sources in California. Website: ww2.arb.ca.gov/ghg-descriptions-sources (accessed August 2023).

annual emissions of CH_4 accounted for approximately 9 percent of GHG emissions in California in 2019.[7]

Nitrous Oxide. Nitrous oxide is produced naturally by a wide variety of biological sources, particularly microbial action in soils and water. Tropical soils and oceans account for the majority of natural source emissions. Nitrous oxide is a product of the reaction that occurs between nitrogen and oxygen during fuel combustion. Both mobile and stationary combustion emit N_2O, and the quantity emitted varies according to the type of fuel, technology, and pollution control device used, as well as maintenance and operating practices. Agricultural soil management and fossil fuel combustion are the primary sources of human-generated N_2O emissions in California. N_2O emissions accounted for approximately 3 percent of GHG emissions in California in 2019.[8]

Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride. HFCs are primarily used as substitutes for ozone-depleting substances regulated under the Montreal Protocol.[9] PFCs and SF_6 are emitted from various industrial processes, including aluminum smelting, semicon-4.11-4octor manufacturing, electric power transmission and distribution, and magnesium casting. There is no aluminum or magnesium production in California; however, the rapid growth in the semiconductor industry has resulted in greater use of PFCs. HFCs, PFCs, and SF_6 accounted for about 5 percent of GHG emissions in California in 2019.[10]

Black Carbon. Black carbon is the most strongly light-absorbing component of particulate matter (PM) formed by burning fossil fuels such as coal, diesel, and biomass. Black carbon is emitted directly into the atmosphere in the form of particulate matter less than 2.5 microns in size ($PM_{2.5}$) and is the most effective form of PM, by mass, at absorbing solar energy. Per unit of mass in the atmosphere, black carbon can absorb 1 million times more energy than CO_2.[11] Black carbon contributes to climate change both directly (e.g., absorbing sunlight) and indirectly (e.g., affecting cloud formations). However, because black carbon is short-lived in the atmosphere, it can be difficult to quantify its effect on global warming.

Most U.S. emissions of black carbon come from mobile sources (52 percent), particularly from diesel-fueled vehicles.[12] The other major source of black carbon is open biomass burning, including wildfires, although residential heating and industry also contribute. Black carbon

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7 California Air Resources Board (CARB). 2021. GHGs Descriptions & Sources in California. Website: ww2.arb.ca.gov/ghg-descriptions-sources (accessed August 2023).

8 Ibid.

9 The Montreal Protocol is an international treaty that was approved on January 1, 1989, and was designated to protect the ozone layer by phasing out the production of several groups of halogenated hydrocarbons believed to be responsible for ozone depletion.

10 California Air Resources Board (CARB). 2021. GHGs Descriptions & Sources in California. Website: ww2.arb.ca.gov/ghg-descriptions-sources (accessed August 2023).

11 United States Environmental Protection Agency (EPA). 2017. Black Carbon, Basic Information. February 14, 2017. Website: 19january2017snapshot.epa.gov/www3/airquality/blackcarbon/basic.html (accessed August 2023).

12 Ibid.

emissions in the United States are projected to decline substantially by 2030, largely due to controls on new mobile diesel emissions.[13]

Effects of Global Climate Change. Effects from global climate change may arise from temperature increases, climate-sensitive diseases, extreme weather events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat-related problems include heat rash and heat stroke. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture. Global climate change may also result in impacts to local air quality from increased ground-level ozone and particulate matter.[14] Additionally, according to the 2006 California Climate Action Team (CAT) Report,[15] the following climate change effects, which are based on trends established by the United Nations Intergovernmental Panel on Climate Change (IPCC), can be expected in California over the course of the next century:

- The loss of sea ice and mountain snow pack, resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;[16]

- Rise in global average sea level, primarily due to thermal expansion and melting of glaciers and ice caps in the Greenland and Antarctic ice sheets;[17]

- Changes in weather that include widespread changes in precipitation, ocean salinity, wind patterns, and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;[18]

- Decline of the Sierra snowpack, which accounts for approximately one-half of the surface water storage in California by 70 percent to as much as 90 percent over the next 100 years;[19]

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13 United States Environmental Protection Agency (EPA). 2017. Black Carbon, Basic Information. February 14, 2017. Website: 19january2017snapshot.epa.gov/www3/airquality/blackcarbon/basic.html (accessed August 2023).

14 United States Environmental Protection Agency (EPA). 2020. Air Quality and Climate Change Research. Website: https://www.epa.gov/air-research/air-quality-and-climate-change-research (accessed August 2023).

15 California Environmental Protection Agency (CalEPA). 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

16 Ibid.

17 Ibid.

18 Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Science Basis, Summary for Policymakers*. February.

19 California Environmental Protection Agency (CalEPA). 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

- Increase in the number of days conducive to ozone (O_3) formation by 25 to 85 percent (depending on the future temperature scenario) in high O_3 areas of Los Angeles and the San Joaquin Valley by the end of the 21st century;[20] and

- High potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level.[21]

A summary of these potential effects is provided in Table 4.11.B.

Table 4.11.B: Potential Impacts of Global Warming and Expected Consequences for California

Potential Impacts	Anticipated Consequences Statewide
Reduction of the State's average annual snowpack	• The decline of the Sierra snowpack would lead to a loss in half of the surface water storage in California by 70% to 90% over the next 100 years • Potential loss of 5 million acre-feet or more of average annual water storage in the State's snowpack • Increased challenges for reservoir management and balancing the competing concerns of flood protection and water supply • Higher surface evaporation rates with a corresponding increase in tropospheric water vapor
Rise in average sea level	• Potential economic impacts related to coastal tourism, commercial fisheries, coastal agriculture, and ports • Increased risk of flooding, coastal erosion along the State's coastline, seawater intrusion into the Sacramento-San Joaquin River Delta (Delta) and levee systems
Changes in weather	• Changes in precipitation, ocean salinity, and wind patterns • Increased likelihood for extreme weather events, including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones
Changes in the timing, intensity, location, amount, and variability of precipitation	• Potential increased storm intensity and increased potential for flooding • Possible increased potential for droughts • Long-term changes in vegetation and increased incidence of wildfires • Changes in the intensity and timing of runoff • Possible increased incidence of flooding and increased sedimentation • Sea level rise and inundation of coastal marshes and estuaries • Increased salinity intrusion into the Delta • Increased potential for Delta levee failure • Increased potential for salinity intrusion into coastal aquifers (groundwater) • Increased potential for flooding near the mouths of rivers due to backwater effects
Increased water temperatures	• Increased environmental water demand for temperature control • Possible increased problems with foreign invasive species in aquatic ecosystems • Potential adverse changes in water quality, including the reduction of dissolved oxygen levels • Possible critical effects on listed and endangered aquatic species
Changes in urban and agricultural water demand	• Changes in demand patterns and evapotranspiration
Increase in the number of days conducive to O_3 formation	• Increased temperatures • Potential health effects, including adverse impacts to respiratory systems

Source: *Climate Change Impacts Across California* (LAO 2022).
LAO = Legislative Analyst's Office
O_3 = ozone

[20] California Environmental Protection Agency (CalEPA). 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. March.

[21] Ibid.

Emissions Inventories. An emissions inventory that identifies and quantifies the primary human-generated sources and sinks of GHGs is a well-recognized and useful tool for addressing climate change. This section summarizes the latest information on global, United States, and California GHG emission inventories.

Global Emissions. Worldwide emissions of GHGs in 2021, the latest inventory year available, totaled 19.2 billion metric tons of CO_2e. Global estimates are based on country inventories developed as part of the programs of the United Nations Framework Convention on Climate Change.[22]

United States Emissions. In 2021, the year for which the most recent data are available, the United States emitted about 6,340 million metric tons of CO_2e (MMT CO_2e). Overall, emissions in 2021 increased by approximately 5 percent since 2020, and were 15 percent of 2005 levels. The increase from 2020 levels was potentially explained by a resumption of activity after the impacts of the COVID-19 pandemic. Decreases in emissions from 2005 levels were largely driven by a decrease in emissions from fossil fuel combustion resulting from a decrease in total energy use, and a continued shift from coal to natural gas and renewables in the electric power sector. Of the six major sectors (i.e., residential, commercial, agricultural, industry, transportation, and electricity generation), transportation accounted for the highest amount of GHG emissions in 2021 (approximately 29 percent), with electricity generation second at 25 percent and emissions from industry third at 23 percent.[23]

State of California Emissions. The State emitted approximately 369.2 MMT CO_2e emissions in 2020, which is 35.3 MMT CO_2e lower than 2019 levels and almost 61.8 MMT CO_2e below the 2020 GHG limit of 431 MMT CO_2e.[24] The CARB estimates that transportation was the source of approximately 37 percent of the State's GHG emissions in 2020, followed by industrial sources at approximately 20 percent and electricity generation at 16 percent. The remaining sources of GHG emissions were agriculture at 8.6 percent, residential activities at 6.8 percent, commercial activities at 3.6 percent, high GWP at 5.8 percent, and waste at 2.4 percent.[25]

San Francisco Bay Area Emissions. The BAAQMD established a climate protection program in 2005 to acknowledge the link between climate change and air quality. The BAAQMD regularly prepares inventories of criteria and toxic air pollutants to support planning, regulatory and other programs. The most recent emissions inventory estimates GHG emissions produced by the San

22 United Nations Framework Convention on Climate Change (UNFCCC). 2023. GHG Data from UNFCCC. Website: unfccc.int/process-and-meetings/transparency-and-reporting/greenhouse-gas-data/ghg-data-unfccc/ghg-data-from-unfccc (accessed August 2023).

23 United States Environmental Protection Agency (EPA). 2023. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021. Website: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021 (accessed August 2023).

24 California Air Resources Board (CARB). 2022. *California Greenhouse Gas 2000-2020 Emissions Trends and Indicators Report*. Website: https://ww2.arb.ca.gov/ghg-inventory-data (accessed August 2023).

25 California Air Resources Board (CARB). 2021. *California Greenhouse Gas Emissions for 2000 to 2019, Trends of Emissions and Other Indicators Report*. July 28. Website: https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2019/ghg_inventory_trends_00-19.pdf (accessed August 2023).

Francisco Bay Area (Bay Area) in 2011.[26] The inventory, which was published i***n*** January 2015, updates the BAAQMD's previous GHG emissions inventory for base year 2007.

In 2011, 86.6 MMT CO_2e of GHGs were emitted in the Bay Area. Fossil fuel consumption in the transportation sector was the single largest source of the Bay Area's GHG emissions in 2011. The transportation sector (including on-road motor vehicles, locomotives, ships and boats, and aircraft) contributed 39.7 percent of GHG emissions, and the industrial and commercial sectors (excluding electricity and agriculture) contributed 35.7 percent of GHG emissions in the Bay Area. Energy production activities such as electricity generation and co-generation were the third largest contributor with approximately 14 percent of the total GHG emissions. Off-road equipment such as construction, industrial, commercial, and lawn and garden equipment contributed 1.5 percent of GHG emissions.

City San Rafael Emissions. San Rafael publishes annual community GHG emissions estimates through the Marin Climate & Energy Partnership (MCEP). The 2019 inventory shows that the San Rafael community has reduced emissions 27 percent since 2005. [27] Emissions dropped from approximately 469,735 MT CO_2e in 2005 to 343,305 MT CO_2e in 2019, which is equivalent to 14 percent below 1990 levels. The 2019 San Rafael community emissions are detailed in Table 4.11.C. The two primary sources of GHGs in the community are the transportation sector and the use of natural gas and propane in the built environment, which account for approximately 63 percent and 25 percent of the total communitywide emissions, respectively. Notably, San Rafael needs to reduce emissions another 103,740 MT CO_2e to meet the State and local target for 2030 and another 263,450 MT CO_2e to meet the State target for 2050, which is 80 percent below 1990 levels.

Table 4.11.C: City of San Rafael 2019 Greenhouse Gas Emissions Inventory

Source Category	GHG Emissions (MT CO_2e)	Percentage of GHG Emissions
Built environment – Electricity	25,464	7.42%
Built environment – Natural Gas	86,037	25.06%
Transportation	214,479	62.47%
Waste	13,470	3.92%
Water	89	0.03%
Wastewater	501	0.15%
Off-Road	3,264	0.95%
Total	**343,304**	**100%**

Source: City of San Rafael. 2021. *City of San Rafael Community Greenhouse Gas Emissions Inventory for the Year 2019*. May.
GHG = greenhouse gas
MT CO_2e = metric tons of carbon dioxide equivalent

[26] Bay Area Air Quality Management District (BAAQMD). 2015. *Source Inventory of Bay Area Greenhouse Gas Emissions.* January.

[27] City of San Rafael. 2021. *Community Greenhouse Gas Emissions Inventory for the Year 2019*. May. Website: https://docs.google.com/viewerng/viewer?url=https://storage.googleapis.com/proudcity/sanrafaelca/uploads/2021/05/San-Rafael-2019-GHG-Inventory-Report_final.pdf (accessed August 2023).

4.11.1.2 Regulatory Framework

Federal Regulations. Federal regulations applicable to GHG emissions are described below.

Federal Clean Air Act. The United States has historically had a voluntary approach to reducing GHG emissions. However, on April 2, 2007, the United States Supreme Court ruled that the United States Environmental Protection Agency (EPA) has the authority to regulate CO_2 emissions under the Federal Clean Air Act (FCAA). While there currently are no adopted federal regulations for the control or reduction of GHG emissions, the EPA commenced several actions in 2009 to implement a regulatory approach to global climate change.

This includes the 2009 EPA final rule for mandatory reporting of GHGs from large GHG emission sources in the United States. Additionally, the EPA Administrator signed an endangerment finding action in 2009 under the FCCA, finding that six GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) constitute a threat to public health and welfare, and that the combined emissions from motor vehicles cause and contribute to global climate change, leading to national GHG emission standards.

In October 2012, the EPA and the National Highway Traffic Safety Administration (NHTSA), on behalf of the United States Department of Transportation (DOT), issued final rules to further reduce GHG emissions and improve Corporate Average Fuel Economy (café) standards for light-duty vehicles for model years 2017 and beyond.[28] The NHTSA's CAFE standards have been enacted under the Energy Policy and Conservation Act since 1978. This national program requires automobile manufacturers to build a single light-duty national fleet that meets all requirements under both federal programs and the standards of California and other states. This program would increase fuel economy to the equivalent of 54.5 miles per gallon (mpg), limiting vehicle emissions to 163 grams of CO_2 per mile for the fleet of cars and light-duty trucks by model year 2025 (77 *Federal Register* 62630).

On March 31, 2022, the NHTSA finalized the CAFE standards for Model Years 2024–2026 Passenger Cars and Light Trucks. The amended CAFE standards would require an industry-wide fleet average of approximately 49 mpg for passenger cars and light trucks in model year 2026, by increasing fuel efficiency by 8 percent annually for model years 2024–2025, and 10 percent annually for model year 2026. The final standards are estimated to save about 234 billion gallons of gas between model years 2030 and 2050.

State Regulations. The CARB is the lead agency for implementing climate change regulations in the State. Since its formation, the CARB has worked with the public, the business sector, and local governments to find solutions to California's air pollution problems. Key efforts by the State are described below.

Assembly Bill 1493 (2002). In a response to the transportation sector's significant contribution to California CO_2 emissions, Assembly Bill (AB) 1493 was enacted on July 22, 2002. AB 1493

[28] United States Environmental Protection Agency. 2012. "2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards," 77 Federal Register 199, pp. 62624-63200.

requires the CARB to set GHG emission standards for passenger vehicles and light duty trucks (and other vehicles whose primary use is noncommercial personal transportation in the State) manufactured in 2009 and all subsequent model years. These standards (starting in model years 2009 to 2016) were approved by the CARB in 2004, but the needed waiver of Clean Air Act Preemption was not granted by the EPA until June 30, 2009. CARB responded by amending its original regulation, now referred to as Low Emission Vehicle III, to take effect for model years starting in 2017 to 2025. The Trump administration revoked California's waiver in 2019, but the Biden administration restored California's waiver in 2021.

Executive Order S-3-05 (2005). Governor Arnold Schwarzenegger signed Executive Order (EO) S-3-05 on June 1, 2005, which proclaimed that California is vulnerable to the impacts of climate change. To combat those concerns, the executive order established California's GHG emissions reduction targets, which established the following goals:

- GHG emissions should be reduced to 2000 levels by 2010.
- GHG emissions should be reduced to 1990 levels by 2020.
- GHG emissions should be reduced to 80 percent below 1990 levels by 2050.

The Secretary of the California Environmental Protection Agency (CalEPA) is required to coordinate efforts of various State agencies to collectively and efficiently reduce GHGs. A biannual progress report must be submitted to the Governor and State Legislature disclosing the progress made toward GHG emission reduction targets. In addition, another biannual report must be submitted illustrating the impacts of global warming on California's water supply, public health, agriculture, the coastline, and forestry, and report possible mitigation and adaptation plans to address these impacts.

The Secretary of CalEPA leads the CAT made up of representatives from State agencies as well as numerous other boards and departments. The CAT members work to coordinate statewide efforts to implement global warming emission reduction programs and the State's Climate Adaptation Strategy. The CAT is also responsible for reporting on the progress made toward meeting the statewide GHG targets that were established in EO S-3-05 and further defined under AB 32, the "Global Warming Solutions Act of 2006." The first CAT Report to the Governor and the Legislature was released in March 2006, in which it laid out 46 specific emission reduction strategies for reducing GHG emissions and reaching the targets established in EO S-3-05. The most recent report was released in December 2020.

Assembly Bill 32 (2006), California Global Warming Solutions Act. California's major initiative for reducing GHG emissions is AB 32, which was passed by the State legislature on August 31, 2006. This effort aims at reducing GHG emissions to 1990 levels by 2020. The CARB has established the level of GHG emissions in 1990 at 427 MMT CO_2e. The emissions target of 427 MMT requires the reduction of 169 MMT from the State's projected business-as-usual 2020 emissions of 596 MMT. AB 32 requires the CARB to prepare a Scoping Plan that outlines the main State strategies for meeting the 2020 deadline and to reduce GHGs that contribute to global climate change. The Scoping Plan was initially approved by the CARB on December 11, 2008, and contains the main strategies California will implement to achieve the reduction of

approximately 169 MMT CO_2e, or approximately 30 percent, from the State's projected 2020 emissions level of 596 MMT CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent from 2002–2004 average emissions). The Scoping Plan also includes CARB-recommended GHG reductions for each emissions sector of the State's GHG inventory. The Scoping Plan calls for the largest reductions in GHG emissions to be achieved by implementing the following measures and standards:

- Improved emissions standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e);
- The Low-Carbon Fuel Standard (15.0 MMT CO_2e);
- Energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e); and
- A renewable portfolio standard for electricity production (21.3 MMT CO_2e).

The CARB approved the First Update to the Climate Change Scoping Plan on May 22, 2014. The First Update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The First Update defines CARB climate change priorities until 2020 and sets the groundwork to reach long-term goals set forth in EO S-3-05 and EO B-16-2012. The Update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals as defined in the initial Scoping Plan. It also evaluates how to align the State's "longer-term" GHG reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use. CARB released a second update to the Scoping Plan, the 2017 Scoping Plan,[29] to reflect the 2030 target set by EO B-30-15 and codified by Senate Bill (SB) 32.

Most recently, the 2022 Scoping Plan[30] was approved in December 2022 and assesses progress toward achieving the SB 32 2030 target and laying out a path to achieve carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

Senate Bill 97 (2007). SB 97, signed by the Governor in August 2007 (Chapter 185, Statutes of 2007; Public Resources Code [PRC] Sections 21083.05 and 21097), acknowledges climate change as a prominent environmental issue that requires analysis under the California Environmental Quality Act (CEQA). This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for mitigating GHG emissions or the effects of GHG emissions, as required by CEQA. The California

29 California Air Resources Board (CARB). 2017. *California's 2017 Climate Change Scoping Plan*. November.

30 California Air Resources Board (CARB). 2022. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16. Website: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf (accessed August 2023).

Natural Resources Agency adopted the amendments to the *State CEQA Guidelines* in November 2018, which went into effect in December 2018. The amendments do not identify a threshold of significance for GHG emissions, nor do they prescribe assessment methodologies or specific mitigation measures. The amendments encourage lead agencies to consider many factors in performing a CEQA analysis, but preserve the discretion granted by CEQA to lead agencies in making their own determinations based on substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs when they perform individual project analyses.

Senate Bill 375 (2008). SB 375, the Sustainable Communities and Climate Protection Act, which establishes mechanisms for the development of regional targets for reducing passenger vehicle GHG emissions, was adopted by the State on September 30, 2008. On September 23, 2010, the CARB adopted the vehicular GHG emissions reduction targets that had been developed in consultation with the Metropolitan Planning Organization (MPOs); the targets require a 6 to 15 percent reduction by 2020 and a 13 to 19 percent reduction by 2035 for each MPO. SB 375 recognizes the importance of achieving significant GHG reductions by working with cities and counties to change land use patterns and improve transportation alternatives. Through the SB 375 process, MPOs such as the Association of Bay Area Governments (ABAG) will work with local jurisdictions in the development of a Sustainable Communities Strategy (SCS) designed to integrate development patterns and the transportation network in a way that reduces GHG emissions while meeting housing needs and other regional planning objectives. Pursuant to SB 375, the San Francisco Bay Area reduction targets for per capita vehicular emissions were 10 percent by 2020 and 19 percent by 2035 as shown in Table 4.11.D.

Table 4.11.D: Senate Bill 375 Regional Greenhouse Gas Emissions Reduction Targets

Metropolitan Planning Organization	By 2020 (%)	By 2035 (%)
San Francisco Bay Area	10	19
San Diego	15	19
Sacramento	7	19
Central Valley/San Joaquin	6–13	13–16
Los Angeles/Southern California	8	19

Source: *SB 375 Regional Greenhouse Gas Emissions Reduction Targets (*CARB 2018).

Executive Order B-30-15 (2015). Governor Jerry Brown signed EO B-30-15 on April 29, 2015, which added the immediate target of:

- GHG emissions should be reduced to 40 percent below 1990 levels by 2030.

All State agencies with jurisdiction over sources of GHG emissions were directed to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 targets. CARB was directed to update the AB 32 Scoping Plan to reflect the 2030 target and therefore is moving forward with the update process. The mid-term target is critical to help frame the suite of policy

measures, regulations, planning efforts, and investments in clean technologies and infrastructure needed to continue reducing emissions.

Senate Bill 350 (2015) Clean Energy and Pollution Reduction Act. SB 350, signed by Governor Jerry Brown on October 7, 2015, updates and enhances AB 32 by introducing the following set of objectives in clean energy, clean air, and pollution reduction for 2030:

- Raise California's renewable portfolio standard from 33 percent to 50 percent; and
- Increasing energy efficiency in buildings by 50 percent by the year 2030.

The 50 percent renewable energy standard will be implemented by the California Public Utilities Commission (CPUC) for the private utilities and by the California Energy Commission (CEC) for municipal utilities. Each utility must submit a procurement plan showing that it will purchase clean energy to displace other non-renewable resources. The 50 percent increase in energy efficiency in buildings must be achieved using existing energy efficiency retrofit funding and regulatory tools already available to State energy agencies under existing law. The addition made by this legislation requires State energy agencies to plan for and implement those programs in a manner that achieves the energy efficiency target.

Senate Bill 32, California Global Warming Solutions Act of 2016, and Assembly Bill 197. In summer 2016, the Legislature passed and the Governor signed SB 32 and AB 197. SB 32 affirms the importance of addressing climate change by codifying into statute the GHG emissions reductions target of at least 40 percent below 1990 levels by 2030 contained in Governor Brown's April 2015 EO B-30-15. SB 32 builds on AB 32 and keeps California on the path toward achieving the State's 2050 objective of reducing emissions to 80 percent below 1990 levels, consistent with an Intergovernmental Panel on Climate Change (IPCC) analysis of the emissions trajectory that would stabilize atmospheric GHG concentrations at 450 parts per million (ppm) CO_2e and reduce the likelihood of catastrophic impacts from climate change.

AB 197 (i.e., the companion bill to SB 32) provides additional direction to CARB related to the adoption of strategies to reduce GHG emissions. Additional direction in AB 197 meant to provide easier public access to air emissions data that are collected by CARB was posted in December 2016.

Senate Bill 100. On September 10, 2018, Governor Brown signed SB 100, which raises California's Renewables Portfolio Standard (RPS) requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also establishes a State policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all State agencies by December 31, 2045. Under SB 100, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18. EO B-55-18, signed September 10, 2018, sets a goal "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter." EO B-55-18 directs CARB to work with relevant State agencies to ensure

that future Scoping Plans identify and recommend measures to achieve the carbon neutrality goal. The goal of carbon neutrality by 2045 is in addition to other statewide goals, meaning not only should emissions be reduced to 80 percent below 1990 levels by 2050, but that by no later than 2045, the remaining emissions to be offset by equivalent net removals of CO_2e from the atmosphere, including through sequestration in forests, soils, and other natural landscapes.

Assembly Bill 1279. AB 1279 was signed in September 2022 and codifies the State goals of achieving net carbon neutrality by 2045 and maintaining net negative GHG emissions thereafter. This bill also requires California to reduce statewide GHG emissions by 85 percent compared to 1990 levels by 2045 and directs CARB to work with relevant State agencies to achieve these goals.

California Building Efficiency Standards (Title 24, Part 6).The California Building Standards Code, or Title 24 of the California Code of Regulations (CCR), contains the regulations that govern the construction of buildings in California. Within the Building Standards Code, two parts pertain to the incorporation of both energy efficient and green building elements into land use development. Part 6 is California's Energy Efficiency Standards for Residential and Non-Residential Buildings. These standards were first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption and are updated on an approximately 3-year cycle to allow consideration and possible incorporation of new energy efficient technologies and methods. In November 2008, the California Building Standards Commission established the California Green Building Standards Code (CALGreen Code), which sets performance standards for residential and non-residential development to reduce environmental impacts and encourage sustainable construction practices. The CALGreen Code addresses energy efficiency, water conservation, material conservation, planning and design, and overall environmental quality. The current set of standards were adopted in 2022 and will apply to projects seeking building permits on or after January 1, 2023. As further discussed in the Regional Regulations section, below, the City has also adopted reach codes which go beyond the State code requirements for certain building requirements. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions.

Cap and Trade. The development of a cap-and-trade program was included as a key reduction measure of the CARB AB 32 Climate Change Scoping Plan. The cap-and-trade emissions trading program developed by CARB took effect on January 1, 2012, with enforceable compliance obligations beginning January 1, 2013. The program aims to regulate GHG emissions from the largest producers in the State by setting a declining statewide firm limit, or cap, on allowable annual GHG emissions. The cap-and-trade program was initially slated to sunset in 2020, but the passage of SB 398 in 2017 extended the program through 2030.[31]

Executive Order N-79-20. EO N-79-20, which was signed by the Governor on September 23, 2020, sets the following goals for the State: (a) 100 percent of in-state sales of new passenger cars and trucks shall be zero-emission by 2035; (b) 100 percent of medium- and heavy-duty

[31] California Air Resources Board (CARB). 2014. Cap-and-Trade Program. Website: www.arb.ca.gov/cc/capandtrade/capandtrade.htm (accessed August 2023).

vehicles in the State shall be zero-emission by 2045 for all operations where feasible and by 2035 for drayage trucks; and (c) 100 percent of off-road vehicles and equipment in the State shall be zero-emission by 2035, where feasible.

California Integrated Waste Management Act. To minimize the amount of solid waste that must be disposed of in landfills, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB 939), effective January 1990. According to AB 939, all cities and counties were required to divert 25 percent of all solid waste from landfill facilities by January 1, 1995, and 50 percent by January 1, 2000. Through other statutes and regulations, this 50 percent diversion rate also applies to State agencies. In order of priority, waste reduction efforts must promote source reduction, recycling and composting, and environmentally safe transformation and land disposal. In 2011, AB 341 modified the California Integrated Waste Management Act and directed the California Department of Resources Recycling and Recovery (CalRecycle) to develop and adopt regulations for mandatory commercial recycling. The resulting 2012 Mandatory Commercial Recycling Regulation requires that on and after July 1, 2012, certain businesses that generate 4 cubic yards or more of commercial solid waste per week shall arrange recycling services. To comply with this requirement, businesses may either separate recyclables and self-haul them or subscribe to a recycling service that includes mixed waste processing. AB 341 also established a statewide recycling goal of 75 percent; the 50 percent disposal reduction mandate still applies for cities and counties under AB 939, the Integrated Waste Management Act. In April 2016, AB 1826 further modified the California Integrated Waste Management Act, requiring businesses that generate a specified amount of organic waste per week to arrange for recycling services for that organic waste in a specified manner. If CalRecycle determines that statewide disposal of organic waste has not been reduced by 50 percent below 2014 levels by 2020, businesses generating more than 2 cubic yards of organic waste per week would be subject to these waste collection requirements. In September 15, 2020, CalRecycle signed for the approval of the 2-cubic-yard threshold to take effect. Therefore, businesses that generate 2 cubic yards or more of commercial solid waste per week shall arrange for organic waste recycling services. Diverting organic waste from landfills reduces emissions of CH_4. This is equivalent to reducing anaerobic decomposition of organic waste that would have otherwise occurred in landfills where organic waste is often buried with other inorganic waste.

Low Carbon Fuel Standard. In January 2007, EO S-01-07 established a Low Carbon Fuel Standard (LCFS). EO S-01-07 calls for a statewide goal to be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and that an LCFS for transportation fuels be established for California. The LCFS applies to all refiners, blenders, producers, or importers ("Providers") of transportation fuels in California, including fuels used by off-road construction equipment. In June 2007, CARB adopted the LCFS under AB 32 pursuant to Health and Safety Code Section 38560.5, and, in April 2009, CARB approved the new rules and carbon intensity reference values with new regulatory requirements taking effect in January 2011. The standards require providers of transportation fuels to report on the mix of fuels they provide and demonstrate they meet the LCFS intensity standards annually. This is accomplished by ensuring that the number of "credits" earned by providing fuels with a lower carbon intensity than the established baseline (or obtained from another party) is equal to or

greater than the "deficits" earned from selling higher intensity fuels. In response to certain court rulings, CARB re-adopted the LCFS regulation in September 2015, and the LCFS went into effect on January 1, 2016. In 2018, CARB approved amendments to the regulation to readjust carbon intensity benchmarks to meet California's 2030 GHG reductions targets under SB 32. These amendments include opportunities to promote zero emission vehicle (ZEV) adoption, carbon capture and sequestration, and advanced technologies for decarbonization of the transportation sector.

Advanced Clean Cars Program. In January 2012, CARB approved the Advanced Clean Cars Program, which combines the control of GHG emissions and criteria air pollutants, as well as requirements for greater numbers of ZEVs, into a single package of regulatory standards for vehicle model years 2017 through 2025. The new regulations strengthen the GHG standard for 2017 models and beyond. This will be achieved through existing technologies, the use of stronger and lighter materials, and more efficient drivetrains and engines. The program's ZEVs regulation requires battery, fuel cell, and/or plug-in hybrid electric vehicles to account for up to 15 percent of California's new vehicle sales by 2025. The program also includes a clean fuels outlet regulation designed to support the commercialization of zero-emission hydrogen fuel cell vehicles planned by vehicle manufacturers by 2015 by requiring increased numbers of hydrogen fueling stations throughout the State. The number of stations will grow as vehicle manufacturers sell more fuel cell vehicles. By 2025, when the rules will be fully implemented, the statewide fleet of new cars and light trucks will emit 40 percent fewer GHGs and 75 percent fewer smog-forming emissions than 2012 model year vehicles.

Executive Order B-48-18. In January 2018, Governor Brown signed EO B-48-18 requiring all State entities to work with the private sector to have at least 5 million ZEVs on the road by 2030, as well as install 200 hydrogen fueling stations and 250,000 electric vehicle (EV) charging stations by 2025. It specifies that 10,000 of the EV charging stations should be direct current fast chargers. This order also requires all State entities to continue to partner with local and regional governments to streamline the installation of ZEV infrastructure. The Governor's Office of Business and Economic Development is required to publish a Plug-in Charging Station Design Guidebook and update the 2015 Hydrogen Station Permitting Guidebook to aid in these efforts. All State entities are required to participate in updating the 2016 Zero-Emissions Vehicle Action Plan to help expand private investment in ZEV infrastructure with a focus on serving low-income and disadvantaged communities. Additionally, all State entities are to support and recommend policies and actions to expand ZEV infrastructure at residential land uses, through the LCFS Program, and recommend how to ensure affordability and accessibility for all drivers.

Regional Regulations. Regional regulations that are applicable to GHG emissions generated by the proposed project are implemented by the Metropolitan Transportation Commission (MTC), ABAG, and BAAQMD, as discussed below.

Plan Bay Area 2050. Plan Bay Area 2050 is a State-mandated, integrated long-range transportation and land use plan. As required by SB 375, all metropolitan regions in California must complete an SCS as part of a Regional Transportation Plan (RTP). In the Bay Area, MTC and ABAG are jointly responsible for developing and adopting an SCS that integrates transportation, land use, and housing to meet GHG reduction targets set by the CARB. Plan Bay Area 2050

connects the elements of housing, the economy, transportation, and the environment through 35 strategies that will make the Bay Area more equitable for all residents and more resilient in the face of unexpected challenges. In the short-term, the plan's Implementation Plan identifies more than 80 specific actions for MTC, ABAG, and partner organizations to take over the next 5 years to make headway on each of the 35 strategies.

Bay Area Air Quality Management District. The BAAQMD is the regional government agency that regulates sources of air pollution and GHG emissions within the nine Bay Area counties.

BAAQMD's Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans. In April 2022, the BAAQMD adopted the *Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts from Land Use Projects and Plans* document, which incorporates updated GHG significance thresholds.[32] The BAAQMD recommends these thresholds of significance for use in determining whether a proposed project will have a significant impact related to climate change. These thresholds evaluate a project based on its effect on California's efforts to meet the State's long-term climate goals. Applying this approach, the BAAQMD identifies and provides supporting documentation, outlining the requirements for new land use development projects necessary to achieve California's long-term climate goal of carbon neutrality by 2045. Based on the analysis, the BAAQMD found that new land use development projects need to incorporate design elements to contribute their "fair share" to implement the goal of carbon neutrality by 2045. If a project is designed and built to incorporate the identified design elements, then it will contribute its portion of what is necessary to achieve California's long-term climate goals—its "fair share"—and an agency reviewing the project under CEQA can conclude that the project will not make a cumulatively considerable contribution to global climate change. The document concludes that if a project does not incorporate these design elements, then it should be found to make a significant climate impact because it will hinder California's efforts to address climate change.

Local Regulations. Local regulations that are applicable to GHG emissions generated by the proposed project are implemented by the City of San Rafael through the General Plan, Climate Change Action Plan, and Municipal Code, as discussed below.

City of San Rafael General Plan 2040. As discussed in the City of San Rafael General Plan 2040,[33] policies pertaining to climate change are addressed in multiple chapters of the General Plan. The Conservation and Climate Change Element is the most applicable chapter of the General Plan 2040, with additional goals and policies that would reduce GHGs contained in the Land Use Element and the Mobility Element. Policies applicable to climate change are described below.

[32] Bay Area Air Quality Management District (BAAQMD). 2022. *Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans*. April.

[33] City of San Rafael. 2021. *General Plan 2040.* August. Website: https://www.cityofsanrafael.org/gp-2040-document-library/ (accessed August 2023).

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.

Policy LU-2.2: Mixed Use Development. Encourage mixed-use development (combining housing and commercial uses) in Downtown San Rafael and on commercially designated properties elsewhere in the city. Mixed-use development should enhance its surroundings and be compatible with adjacent properties.

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 GHG emissions and traffic congestion by providing walkable, bikeable services and shopping close to residents.

Policy C-3.8: Water Conservation. Encourage water conservation and increased use of recycled water in businesses, homes, and institutions. Local development and building standards shall require the efficient use of water.

Policy C-3.9: Water-Efficient Landscaping. Encourage—and where appropriate require—the use of vegetation and water-efficient landscaping that is naturalized to the San Francisco Bay region and compatible with water conservation, fire prevention and climate resilience goals.

Policy C-4.1: Renewable Energy. Support increased use of renewable energy and remove obstacles to its use.

Policy C-4.2: Energy Conservation. Support construction methods, building materials, and home improvements that improve energy efficiency in existing and new construction.

Policy C-4.3: Managing Energy Demand. Reduce peak demands on the electric power grid through development of local sources, use of battery storage, deployment of "smart" energy and grid systems that use technology to manage energy more efficiently, and public education.

Policy C-4.4: Sustainable Building Materials. Encourage the use of building materials that reduce environmental impacts and the consumption of nonrenewable resources.

Policy C-4.5: Resource Efficiency in Site Development. Encourage site planning and development practices that reduce energy demand and incorporate resource- and energy-efficient infrastructure.

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 (CCAP) and other climate goals, including greenhouse gas reduction and adaptation.

City of San Rafael Climate Change Action Plan 2030. In 2006, San Rafael was one of the early signatories to the United States Conference of Mayors Climate Protection Agreement, committing the City to working toward meeting the goals of the Kyoto Protocol. The City Council adopted San Rafael's first Climate Change Action Plan (CCAP) on April 20, 2009, which set goals of a 25 percent reduction of GHGs by 2020, and an 80 percent reduction by 2050 to meet targets set by the State of California. As of 2019, the City of San Rafael (City) had met the State target of 15 percent reduction of GHG emissions, as well as a local 25 percent stretch goal. Meanwhile, the State issued a new interim target for 2030: 40 percent reduction of GHG emissions below 1990 levels. The City Council approved an updated version, the Climate Change Action Plan 2030 (CCAP 2030),[34] on May 20, 2019. CCAP 2030 includes a variety of regulatory, incentive-based, and voluntary strategies that are expected to reduce emissions from both existing and new development in San Rafael. The local actions included in the plan include a focus on low-carbon transportation, energy efficiency, renewable energy, waste reduction, water conservation, sequestration and adaptation, community engagement, and implementation and monitoring of the plan.

The CCAP 2030 establishes targets similar to the State's goals to reduce emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. Emissions reductions are estimated for each State and local strategy; combined, they show that the City could reduce emissions 19 percent below 1990 levels by 2020 (equivalent to 31 percent below 2005 levels), and 42 percent below 1990 levels by 2030, which is enough to surpass the City and State goals for those years. Community emissions are projected to be 233,920 MT CO_2e in 2030 with all State and local actions implemented, while the reduction target is 241,455 MT CO_2e. Overall, State actions represent about 40 percent of the reduction expected through implementation of CCAP 2030, while local actions represent about 60 percent.

City of San Rafael Municipal Code. In December 2022, the San Rafael City Council approved a reach code ordinance, codified as Chapter 12.245.020, Amendments, of the City's Municipal Code. The amendments prohibit new fuel gas and oil piping in new construction unless for use in emergency electrical generation when required by the code, commercial kitchen for preparing food, commercial laundry for laundry, or in an approved industrial process. Furthermore, at the discretion of the building official, the building official may approve fuel gas in new construction or expand fuel gas in existing construction when replacing with electric has been demonstrated to be technically infeasible or has a disproportionate cost to the project, thereby causing an insurmountable hardship.

Furthermore, the updated code requires the installation of electric vehicle infrastructure greater than the State code requirements. For single-family homes and duplexes, the City's code requires new construction to have the capacity, wiring, and equipment so that it would be easy for a homeowner to install the charger of their choice. For multifamily dwellings, it requires 100 percent of parking spaces attributed to tenants to be equipped with low-power Level 2 charger infrastructure with receptacles for charging at lower speeds, providing the flexibility to more easily add the charging equipment in the future. A total of 15 percent of those spaces are

[34] City of San Rafael. 2019. *Climate Change Action Plan 2030.* May. Website: https://www.cityofsanrafael.org/climate-change-action-plan/ (accessed August 2023).

required to have a Level 2 charger installed. For non-residential new construction, the City's code requires 35 percent of parking spaces to be EV Ready with low-Level 2 infrastructure, 10 percent EV Capable (meaning only the conduit installed), and 10 percent installed fully with level 2 chargers.

4.11.2 Impacts and Mitigation Measures

The following section presents a discussion of the impacts related to GHG emissions that could result from implementation of the proposed project.

4.11.2.1 Significance Criteria

Following the BAAQMD Guidelines, implementation of the proposed project would have a significant impact related to GHG emissions if it would:

Threshold 4.11.1: Generate GHG emissions, either directly or indirectly, that may have a significant effect on the environment. The project would be assumed to result in a less than significant impact related to GHG emissions if the project would either (must include A or B):

A. Include the following project design elements:

1. Buildings

   a. The project will not include natural gas appliances or natural gas plumbing (in both residential and nonresidential development).

   b. The project will not result in any wasteful, inefficient, or unnecessary electrical usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the *State CEQA Guidelines*.

2. Transportation

   a. Achieve compliance with electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

   b. Achieve a reduction in project-generated vehicle miles traveled (VMT) below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted SB 743 VMT target, reflecting the recommendations provided in the Governor's OPR Technical Advisory on Evaluating Transportation Impacts in CEQA:

      (1) **Residential Projects:** 15 percent below the existing VMT per capita

(2) **Office Projects:** 15 percent below the existing VMT per employee
(3) **Retail Projects:** No net increase in existing VMT.

B. Be consistent with a local GHG reduction strategy that meets the criteria under *State CEQA Guidelines* Section 15183.5(b).

Threshold 4.11.2: Not meet the general intent of reducing GHG emissions and thereby impede attainment of the GHG emission reduction goals set forth in an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, including:

- CARB 2022 Climate Change Scoping Plan,
- Plan Bay Area 2050,
- City's CCAP 2030,
- SB 32,
- AB 1279,
- EO S-3-05, and
- CARB Mobile Source Strategy and EO B-48-18.

4.11.2.2 Project Impacts

The following section describes potential impacts associated with GHG emissions that could occur with development of the proposed project.

Threshold 4.11.1: Generation of GHG Emissions. The proposed project would generate construction- and operations-related GHG emissions and contribute to global climate change through the phased redevelopment of the project site.

As discussed above, a project would have a less than significant impact related to GHG emissions if it would include project design elements related to natural gas, energy, VMT, and electric vehicles, as recommended by the BAAQMD under GHG Emissions Threshold "A", or if it would be consistent with a local GHG reduction strategy that meets the criteria under *State CEQA Guidelines* Section 15183.5(b).

Because the City's CCAP 2030 only analyzes emissions through the 2030 horizon year and does not include an assessment of emissions inventory and reductions necessary to meet the State's long-term GHG emissions goals, including the 2045 carbon neutrality goal established in AB 1279, this analysis evaluates the proposed project against the BAAQMD GHG Emissions Threshold "A", which requires projects to include certain design features, further outlined below, to ensure they are doing their "fair share" to meet the State's GHG emissions reductions goals. The estimated GHG emissions that would occur due to project construction and operation were quantified as a part of the Technical Report prepared for the proposed project and are available in Appendix I. The proposed project would have a potentially significant impact due to GHG emissions as analyzed against the recommended BAAQMD project design thresholds.

Impact GHG-1 The proposed project would generate GHG emissions, either directly or indirectly, that would have a significant effect on the environment. (S)

As demonstrated below, the proposed project would have a potentially significant impact due to GHG emissions as analyzed against the recommended BAAQMD project design thresholds.

Construction GHG Emissions: The BAAQMD has not addressed emissions thresholds for construction in its CEQA Guidelines; however, the BAAQMD encourages quantification and disclosure. Therefore, an estimate of the potential GHG emissions that could result from implementation of the proposed project was completed for the proposed project, and are included in the Technical Report (Appendix I) for reference.

Construction activities associated with the proposed project would produce combustion emissions from various sources. During construction, GHGs would be emitted through the operation of construction equipment and from worker and builder supply vendor vehicles, each of which typically use fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Furthermore, CH_4 is emitted during the fueling of heavy equipment. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change. GHG emissions generated during construction of the proposed project would be short term in nature, lasting only for the duration of the construction period, and would not represent a long-term source of GHG emissions. The implementation of mitigation measures included in Section 4.10, Air Quality, of this Environmental Impact Report (EIR) would also serve to reduce GHG emissions in some cases, such as the requirement for Level 3 diesel particulate filters or Tier 4 Final engines to be utilized in construction equipment, as included in Mitigation Measure AIR-4.

Operational GHG Emissions: The GHG emissions impact analysis for the proposed project focuses on comparing the project design to the recommended project design thresholds established by the BAAQMD. However, the estimated operational emissions from the proposed project were estimated using the California Emissions Estimator Model (CalEEMod) and are included in the Technical Report (Appendix I) for informational purposes.

As discussed above, because the proposed project includes construction and operational dates that would occur after the 2030 horizon year included in the City's CCAP 2030, and because the City's CCAP 2030 does not currently include an assessment of the emissions inventory and reductions necessary to meet the State's goal of carbon neutrality by 2045, as established in AB 1279, this analysis evaluates the proposed project against the BAAQMD GHG Emissions Threshold "A", which requires projects to include certain design features, further outlined below, to ensure that they are doing their "fair share" to meet the State's GHG emissions reductions goals. The proposed project's consistency with the project design elements established by the BAAQMD are further discussed below. The proposed project's consistency with the City's CCAP 2030 is discussed later in this Chapter under Threshold 4.11.2.

- **Natural Gas Usage:** As required by the BAAQMD, the project must not include natural gas appliances or natural gas plumbing in order to be consistent with this design element. While the proposed project would include all-electric residential buildings as specified in the project

application materials and detailed in Chapter 3.0, Project Description, the project design includes natural gas connections for commercial kitchen uses in restaurants. The proposed project would also include natural gas fire pits, and therefore would not be consistent with this design element as proposed. Mitigation Measure GHG-1 is required to be implemented to prohibit the use of natural gas in fire pits as part of the proposed project. However, as explained below, the City does not intend to prohibit natural gas connections for commercial kitchens, thus the proposed project would not be consistent with this project design element.

- **Energy Usage:** Per the BAAQMD CEQA Guidelines, the project must not result in any wasteful, inefficient, or unnecessary energy usage as determined by the analysis required under CEQA Section 21100(b)(3) and Section 15126.2(b) of the *State CEQA Guidelines*. Energy usage associated with the proposed project is evaluated in Section 4.15, Energy. As discussed in Section 4.15, energy use consumed by the proposed project would be associated with electricity consumption and fuel used for vehicle trips associated with the project. Electrical and natural gas demand associated with project operations would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region. Furthermore, the proposed project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. The project would also incorporate energy measures such as energy efficient windows, additional insulation, external and internal shade structures, light-emitting diode (LED) lighting, daylighting and occupancy controls, efficient space heating and cooling systems, and on-site renewable energy and energy storage. Therefore, the proposed project would be consistent with this design element.

- **Vehicle Miles Traveled:** In order to meet the BAAQMD's VMT threshold, the project must achieve a reduction in project-generated VMT below the regional average consistent with the current version of the California Climate Change Scoping Plan (currently 15 percent) or meet a locally adopted SB 743 VMT target, reflecting the recommendations provided in the Governor's OPR 2018 guidance, *Technical Advisory on Evaluating Transportation Impacts in CEQA*. As discussed in Section 4.9, Transportation, the VMT analysis conducted for the proposed project concluded that the proposed project, including both phases, would have a less than significant VMT impact. For the residential land uses, the proposed project would result in a VMT per capita below the 11.4 VMT per capita residential significance threshold that reflects 15 percent below the nine-county Bay Area regional average of 13.4 VMT per capita. For the commercial and retail land uses, the total retail VMT would not exceed the commercial and retail threshold under existing conditions because the project would reduce total commercial/retail VMT as compared to the existing uses. Therefore, the proposed project would be consistent with this design element.

- **Electric Vehicle Requirements:** This criterion requires that the project achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2 Voluntary Standards. Currently, these standards require that a project with 201 or more parking spaces provide 45 percent of total parking spaces as EV-capable spaces, and 33 percent of the EV-capable spaces (meaning 15 percent of total parking spaces) as EV charging stations. These requirements are applicable to the spaces that would be provided or reconfigured specifically to serve the proposed project and are not applicable to existing spaces that would not be modified

(e.g., the garage). For the residential development, the proposed project would provide 763 EV-ready residential parking spaces, which exceeds the CALGreen Tier 2 requirement of 359 spaces, and 134 chargers, which achieves the Tier 2 requirement. Regarding the non-residential (commercial) requirement, in Phase 1, the proposed project would include a total of 465 spaces, and would provide 210 spaces as EV capable, with 70 of those spaces as active charging stations, meeting the Tier 2 Voluntary Standards requirements. For Phase 2, the proposed project would include a total of 171 commercial parking spaces, and would provide an additional 77 spaces as EV capable, with 26 of those EV charging stations in line with the CalGreen Tier 2 Voluntary Standards. Therefore, the proposed project would be consistent with this project design threshold.

As detailed in the Technical Report, the proposed project is expected to have a net-negative impact on operational GHG emissions by replacing the existing land uses with less emissions-intensive buildings and proposed uses. The proposed project would be consistent with many of the BAAQMD recommended project design features included in the BAAQMD GHG Emissions Threshold "A," including exceeding the recommended amount of EV charging included in the CALGreen Tier 2 voluntary standards and meeting the BAAQMD project design thresholds for VMT. The proposed project would also include all-electric design for the residential buildings. The proposed project would incorporate numerous sustainability features, including water-efficient interior plumbing fixtures and appliances, dual plumbing to allow for use of recycled water, drought tolerant landscaping and low water use practices, green infrastructure techniques for stormwater runoff, energy-efficient lighting, solar panels and battery storage for residential buildings, and high-efficiency mechanical and hot-water systems.

However, the proposed project would not be consistent with the required natural gas prohibition because natural gas would be included in the project design for commercial kitchen uses at restaurants and for limited recreational uses. Therefore, the proposed project would conflict with the BAAQMD GHG Threshold "A". As such, the proposed project would result in the generation of GHG emissions that would have a significant impact on the environment. The following mitigation measure would be required to reduce the proposed project's potential GHG emissions impact to the extent feasible.

Mitigation Measure GHG-1 **Natural Gas Prohibition for Recreational Use.** Prior to the issuance of building permits, the project sponsor shall submit documentation to the City of San Rafael (City) Planning Department that demonstrates, to the satisfaction of the City, that natural gas-fired recreational fire pits are not included in the proposed project design. (SU)

Implementation of Mitigation Measure GHG-1 would prohibit natural gas-fueled fire pits from being included as part of the proposed project. However, the City has determined that requiring compliance with the BAAQMD design threshold to completely prohibit natural gas usage at the proposed project is inconsistent with the City's municipal code, specifically the recently adopted reach code, which prohibits natural gas for residential uses but allows installation of new natural gas connections and operations with natural gas for commercial kitchen uses. With adoption of the reach code, the City found that a ban on natural gas usage was infeasible due to cost-effectiveness

considerations, based in part on 2022 studies conducted by the CPUC and the CEC.[35] Furthermore, the legal precedence of prohibiting natural gas has been recently challenged in litigation,[36] and the court has upheld that a municipal ordinance to ban natural gas usage violates federal law, specifically the Energy Policy and Conservation Act. For these reasons, the City, as lead agency for the environmental review of the proposed project, has found that requiring mitigation to prohibit the usage of natural gas in the proposed commercial kitchens is not feasible.

Because the proposed project would not incorporate all of the project design thresholds necessary to meet the BAAQMD Threshold "A", for this criterion, the proposed project would have a **significant and unavoidable impact**.

Threshold 4.11.2: Conflict with a GHG Reduction Plan, Policy, or Regulation. Applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions include the City's CCAP 2030, the CARB Scoping Plan, EO S-3-05, SB 32, EO B-48-18, AB 1279, and Plan Bay Area 2050 (the regional MPOs' RTP/SCS). As such, the proposed project was evaluated for consistency with those plans to demonstrate whether the proposed project would conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the GHG emissions.

Impact GHG-2 The proposed project would conflict with a State or local GHG reduction plan, policy, or regulation. (S)

As discussed below, the proposed project would be consistent with the City's CCAP 2030 and with Plan Bay Area 2050. However, because the proposed project includes natural gas plumbing and the utilization of natural gas for use in commercial kitchens, the proposed project would potentially conflict with the 2022 Scoping Plan and long-term State goals for GHG emission reductions and carbon neutrality in 2045.

City of San Rafael Climate Change Action Plan 2030. The City's CCAP 2030 includes a checklist with required elements and a separate checklist with recommended elements. The project's consistency with the required regulations and recommended elements is evaluated in Table 4.11.E.

As shown in Table 4.11.E, the proposed project would comply with all applicable required elements of the City's CCAP 2030 and would further implement most of the recommended elements from the CCAP where feasible. The proposed project therefore can be considered generally consistent with the goals and measures included in CCAP 2030.

35 Southern California Edison (SCE). 2022. *2019 Reach Code Cost-Effectiveness Analysis. Full Service and Quick-Service Restaurants.* February.

36 *California Restaurant Association v. City of Berkeley*. 547 F. Supp. 3d 878, 891 (N.D. Cal. 2021).

Table 4.11.E: Project Consistency with City of San Rafael CCAP 2030

Regulation/Element	Project Consistency
CCAP Required Measures	
Green Building Ordinance (SRMC Chapter 12.44). Meets all sections of City's Green Building Ordinance, including Tier 1 for all new construction.	**Project Complies.** The proposed project would comply with all applicable City Green Building Ordinance requirements. Key requirements include enhancing the on-site bike racks, clean air vehicle parking, providing EV charging stations, reuse of existing structure, improving energy efficiencies across the full scope of the project, on-site solar/green power, and reduction of heat island through cool roof, vegetation, and light-colored hardscape.
Water Efficient Landscape Ordinance (SRMC Section 14.16.370). Meets water efficient landscape provisions in MMWD ordinance, including efficient equipment and monitoring requirements.	**Project Complies.** The proposed project would comply with the City's Water Efficient Land Ordinance, including drought-tolerant/native planting, hydro-zoning, efficient irrigation, and smart irrigation controllers.
Water Conservation Ordinance (MMWD Code Section 13.02.021). Meet water conservation requirements for interior plumbing fixtures, appliances, and equipment.	**Project Complies.** The proposed project would comply with MMWD's Water Conservation Ordinance. All new construction would meet current code and local agency requirements.
Graywater Water Ordinance (MMWD Ord. 429). All development new residential and commercial structures requesting water service and all substantial remodels requesting an enlarged water service must install a graywater recycling system.	**Project Complies.** The proposed project would comply with MMWD's Graywater Water Ordinance. This proposed project would be connected to the existing municipal graywater system and would use it for landscape irrigation. Where feasible, dual plumbing may be installed for toilet/urinal use.
Wood-Burning Appliance Ordinance (SRMC Chapter 12.45). Meets requirements restricting certain types of wood-burning appliances.	**Project Complies.** The proposed project would comply with the City's Wood-Burning Appliance Ordinance because it would not include wood-burning fireplaces or stoves within the residential units or retail space.
Commercial/Multi-Family Recycling Regulations (AB 341, AB 1826, SB 1383). CA State law requires recycling and composting at various levels. Confirm compliance based on date of application. Also, ensure there is adequate space for recycling and composting containers in facility as well as outside to accommodate landfill, recycling, and composting carts. Consult with Marin Sanitary Service before approving plans for commercial new construction or major remodels.	**Project Complies.** The proposed project would comply with Commercial/ Multi-Family Recycling regulations by providing adequate space for recycling and composting containers inside the facility as well as outside to accommodate landfill, recycling, and composting carts.
Polystyrene Take-Out Food Container Ordinance [restaurant and retail food purveyors only] (SRMC Chapter 10.92). Retail food vendors in San Rafael are prohibited from carrying expanded polystyrene foam (EPS) containers, sometimes known by the brand name Styrofoam™.	**Project Complies.** The proposed project would include retail land uses that are anticipated to include restaurants. The restaurant tenants would be required to comply with SRMC Chapter 10.92 and therefore would not use EPS.
Employer Trip Reduction Requirements (SRMC Chapter 5.81). Employers with over 100 employees must comply with Chapter 5.81 – Trip Reduction and Travel Demand Requirements.	**Project Complies.** Future retail tenants that employ more than 100 employees would be required to comply with the City's Employer Trip Reduction Requirements.
Bicycle Parking Regulations (SRMC Section 14.18.090). Bicycle parking is required for all new non-residential buildings and major renovations.	**Project Complies.** The proposed project would comply with bicycle parking regulations and would provide a total of 181 bicycle parking spaces consisting of 91 bike racks (open) and 91 bike lockers (closed). The 181 bicycle parking spaces equate to 10 percent of the total minimum vehicle parking spaces required. In addition, the proposed project also features new multimodal pathways for pedestrian and bicycle circulation throughout the interior of the site. The proposed project also includes a proposed financial contribution toward the City's development of an off-site multimodal pedestrian and bicycle pathway connecting the project site to the nearby SMART Marin Civic Center station.
Clean-Air Vehicle Parking Regulations (SRMC Section 14.18.045). Parking spaces in new non-residential buildings shall be designated for clean-air vehicles, as defined by Section 5.102 of CALGreen.	**Project Complies.** The proposed project would comply with the City's clean-air vehicle parking regulations for new non-residential buildings, which require 10 percent of total parking to be labeled CLEAN AIR/VANPOOL/EV. The project would provide 8% of total stalls with EV charging stations, labeled EV ONLY, and 2% labeled CLEAN

Table 4.11.E: Project Consistency with City of San Rafael CCAP 2030

Regulation/Element	Project Consistency
	AIR/VANPOOL/EV. EV-capable and EV charging stations would be provided that meet the CALGreen Tier 2 Voluntary Standards for both residential and non-residential (commercial) parking.
Affordable Housing Ordinance [Multi-Family and Non-Residential Projects] (SRMC Chapter 14.16.30). Requirement to provide for low- and moderate-income housing units in residential development projects.	**Project Complies.** The proposed project would provide approximately 10% of the total residential units as affordable housing units. Specifically, under the 2025 Master Plan (Phase 1), 96 of the 922 total units (10.4%) would be low-income units. Under the 2040 Vision Plan (Phase 2), 51 of the 500 total units (10.2%) would be low-income units. At buildout, 138 of the 1,422 units (10.2%) would be low-income units. As such, the project would comply with the City's Affordable Housing Ordinance.
Single-Use Carryout Bag Ordinance [retail projects only] (SRMC Chapter 10.94). Retailers must not offer certain types of plastic carryout bags and must adhere to certain charges and restrictions.	**Project Complies.** Future retail land use operators at the project site would be required to comply with the City's Single-Use Carryout Bag Ordinance by not offering certain types of plastic carryout bags and adhering to certain charges and restrictions.
Residential Solar Regulations [only applies to housing development projects] (CA State CALGreen Requirements). New homes built in CA after Jan 1, 2020, must be equipped with a solar electric system.	**Project Complies.** The proposed residential buildings would be subject to the applicable solar and battery storage requirements by code. The proposed project includes solar power generation on top of all residential buildings and the parking structure, and all other new buildings would be made ready for installation of photovoltaic solar panels. Battery storage would also be provided in apartment-style residential buildings.
CCAP Recommended Elements/Opportunities	
Energy Efficiency (Marin County Programs). Conduct an energy efficiency audit. Implement efficiency measures where feasible. Rebates and other incentives are available through utilities, State and Federal programs.	**Project Complies.** The proposed project would implement efficiency measures where feasible. As specified in Chapter 3.0, Project Description, the project would include the following energy efficiency measures: (a) energy-efficient LED lighting would be installed throughout the project; (b) photovoltaic solar panels would be installed on top of all residential buildings and the parking structure, and all other new buildings would be made ready for installation of photovoltaic solar panels; (c) battery storage would be provided in apartment-style residential buildings; and (d) high-efficiency mechanical and hot-water systems would be installed in residential buildings.
Renewable Energy On-Site (Marin County Solar Programs). Conduct a feasibility assessment for on-site solar and battery storage. Implement renewable energy installations where feasible.	**Project Complies.** The proposed project includes solar power generation on top of all residential buildings and the parking structure, and all other new buildings would be made ready for installation of photovoltaic solar panels. Battery storage would be provided in apartment-style residential buildings.
Renewable Energy Purchase (MCE Programs). Subscribe to MCE Clean Energy's Deep Green or PG&E's Solar Choice 100% renewable electricity option.	**Project Complies.** The proposed project would encourage and allow for future residents and tenants to subscribe to MCE Clean Energy's Deep Green or PG&E's Solar Choice 100% renewable electricity option. However, future residents and tenants are permitted to opt out.
Electric Vehicle Charging (California Resources). New and remodeled Multi-Family and Commercial projects should install electrical service and conduits for EV charging, and where possible EV charging stations at a minimum of 5% of spaces. Gas stations should install DC fast chargers when on-site public parking exceeds 2 spaces. Rebates and other incentives are available through utilities, State and Federal programs.	**Project Complies.** The proposed project would exceed this requirement by providing EV-capable parking spaces and EV charging that meets the CALGreen Tier 2 Voluntary Standards.
Electrification. Assess feasibility of electrifying building systems such as HVAC, hot water heaters, and appliances. Implement where feasible. Rebates and other incentives may be available through utilities and County of Marin.	**Project Partially Complies.** All the proposed project's residential buildings and non-restaurant retail building would be 100% electric to support the City's goals. Electrification of the residential building systems includes HVAC, water heaters, and appliances. The proposed new restaurant buildings will include both electricity and natural gas potential.
Rainwater Storage and Reuse	**Project Does Not Comply.** The proposed project does not plan to implement a rain catchment system.

Table 4.11.E: Project Consistency with City of San Rafael CCAP 2030

Regulation/Element	Project Consistency
Use of Recycled Water for Landscape or Toilets/Urinals	**Project Complies.** The proposed project would use the municipal recycled water system for the landscape, and new construction would have dual plumbing for consideration of toilet and urinal use.
Natural Filtration of Parking Lot Runoff	**Project Complies.** The proposed project would incorporate permeable surfaces within landscaped portions of the parking lots to facilitate natural filtration of water runoff from the parking lots.
Green Roof	**Project Does Not Comply.** Because the proposed project would use existing roofs for some buildings, a green roof is not feasible due to the added structural load. Furthermore, the proposed project includes rooftop solar panels as part of the proposed new construction, which would present a challenge to successfully installing and operating a green roof due to the blockage of sunlight by the panels. The new construction/residential portion of the project is not currently designed to have a green roof but would rather include solar panels with an energy-star cool roof.
High Albedo (Reflective) Roofing or Paving	**Project Complies.** Where roofing is replaced on the non-residential scope, a white thermoplastic polyolefin (TPO) roof would be installed. Residential roofing would also be white TPO roofing, improving the heat island effect reduction for the site.
Low-Carbon Concrete. Consider using low-carbon concrete as feasible such as that required by County of Marin code.	**Project Potentially Complies.** The project applicant would consider using low-carbon concrete; however, use of low-carbon concrete cannot be guaranteed at this time.
Preserve Significant Trees	**Project Complies.** The proposed project would preserve the one oak tree that was identified as a significant tree on the project site.
Bicycle Lane Upgrade	**Project Complies.** The proposed project would provide a Class II bike lane along Northgate Drive and a connection to the SMART Marin Civic Center station.
Installation/Upgrade of Bus Shelter	**Project Does Not Comply (Not Necessary).** The bus shelter near the project site was upgraded in 2008 and is currently functional. As such, it is not necessary at this time to upgrade the bus shelter. Refer to discussion in Section 4.9, Transportation, regarding transit infrastructure and capacity, which is sufficient to serve the proposed project.
Participation in Car Share, Bike Share, Rideshare, or Other Alternative Commute Programs such as Transit Subsidies. Consider as feasible, Marin Commutes resources.	**Project Complies.** The proposed project would participate in regional bike shares and rideshares available to the project site.
Environmentally Preferable Purchasing Policy. For building/development where the owner is the project developer and will utilize the facility for commercial purposes, excluding Multi-Family housing.	**Project Complies.** The proposed project would encourage future tenants to use preferred environmental products as available and feasible.

Source: *Northgate Town Square Air Quality and Greenhouse Gas Emissions Technical Report* (Dudek 2023).

AB = Assembly Bill
CA = California
CALGreen = California's Green Building Standards
CCAP = Climate Change Action Plan
City = City of San Rafael
EV = electric vehicle
GHG = greenhouse gas
HVAC = heating, ventilation, and air conditioning
LED = light-emitting diode
MMWD = Marin Municipal Water District
PG&E = Pacific Gas and Electric Company
SB = Senate Bill
SMART = Sonoma-Marin Area Rail Transit
SRMC = San Rafael Municipal Code
TPO (thermoplastic polyolefin): a single-ply white membrane used in both commercial and residential roofing. Because TPO is white, it reflects heat instead of absorbing it.

2022 Scoping Plan. The following discussion evaluates the proposed project according to the goals of EO B-30-15, AB 1279, SB 32, AB 197, and the 2022 Scoping Plan.

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

The CARB 2022 Scoping Plan assesses progress toward the statutory 2030 target, while laying out a path to achieving carbon neutrality no later than 2045. The 2022 Scoping Plan focuses on outcomes needed to achieve carbon neutrality by assessing paths for clean technology, energy deployment, natural and working lands, and others, and is designed to meet the State's long-term climate objectives and support a range of economic, environmental, energy security, environmental justice, and public health priorities.

As detailed in the preceding section, the proposed project would have a significant and unavoidable GHG emissions impact, as evaluated against the BAAQMD GHG significance thresholds. In recent guidance, BAAQMD found that new land use development projects must incorporate design elements in order to achieve the project's "fair share" of Statewide emissions reductions needed to implement the goal of carbon neutrality by 2045.[37] If a project is designed and built to incorporate the identified design elements, then it will contribute its portion of what is necessary to achieve California's long-term climate goals—its "fair share"—and an agency reviewing the project under CEQA can conclude that the project will not make a cumulatively considerable contribution to global climate change. The document concludes that if a project does not incorporate these design elements, then it should be found to make a significant climate impact because it will hinder California's efforts to address climate change.

The CARB has included project attributes that are recommended to reduce GHGs in the 2022 Scoping Plan. Table 3 of Appendix D of the 2022 Scoping Plan includes key project attributes that reduce GHGs from residential and mixed-use development projects, which include the following measures:

- Provides EV charging infrastructure that, at a minimum, meets the most ambitious voluntary standard in the CALGreen Code at the time of project approval.

[37] Bay Area Air Quality Management District (BAAQMD). 2022. *Justification Report: CEQA Thresholds for Evaluating the Significance of Climate Impacts From Land Use Projects and Plans.* April.

- Is located on infill sites that are surrounded by existing urban uses and reuses or redevelops previously undeveloped or underutilized land that is presently served by existing utilities and essential public services (e.g., transit, streets, water, sewer).

- Consists of transit-supportive densities (minimum of 20 residential dwelling units per acre), or is in proximity to existing transit stops (within 0.5 mile), or satisfies more detailed and stringent criteria specified in the region's SCS.

- Uses all-electric appliances without any natural gas connections and does not use propane or other fossil fuels for space heating, water heating, or indoor cooking.

Because the proposed project would include natural gas connections for use in cooking in commercial kitchens, the proposed project would not achieve its "fair share" of emissions reductions necessary to achieve carbon neutrality by 2045. Therefore, the proposed project could conflict with the 2022 Scoping Plan, SB 32, EO B-48-18, EO S-3-05, and AB 1279. Mitigation to prohibit the use of natural gas in commercial kitchens was found to be infeasible to implement, as discussed further above. Therefore, the proposed project would conflict with the 2022 Scoping Plan and related State legislation.

Plan Bay Area 2050. As described above, Plan Bay Area 2050 is a State-mandated, integrated long-range transportation and land use plan that integrates transportation, land use, and housing to meet GHG reduction targets set by the CARB. Plan Bay Area 2050 connects the elements of housing, the economy, transportation, and the environment through 35 strategies that will make the Bay Area more equitable for all residents and more resilient in the face of unexpected challenges.

The proposed project would support the overarching intent of Plan Bay Area 2050 by reducing GHG emissions within San Rafael from both residential and non-residential development. The proposed project specifically includes transportation/land-use-related GHG reduction strategies that either reduce VMT (e.g., supporting alternative modes of transportation, including bicycles and transit) or reduce emissions associated with vehicle travel on the technology side (e.g., electrification of vehicles by providing EV chargers). The proposed project would bring multifamily housing to a site that is both a Priority Development Area (PDA) under Plan Bay Area 2050 and, except for its northwesternmost corner, a Transit Priority Area (TPA). The proposed project site is a designated PDA and a TPA because it is well served by passenger rail and bus services. In addition, the project would comply with regulations such as the City's Employer Trip Reduction requirements and the City's clean-air vehicle parking regulations.

The proposed project VMT analysis concluded that both Phase 1 and Phase 2 would have a less than significant VMT impact under 2019 baseline and 2040 cumulative scenarios based on the City's established significance thresholds. Therefore, the proposed project would support and not conflict with applicable goals and strategies set forth in the Plan Bay Area 2050.

Conclusion. As described above, the proposed project would result in a net decrease in GHG emissions as compared to the existing uses. The project also consists of infill development and includes many sustainable design features. The proposed project would comply with the City's

CCAP 2030 and would support the VMT reduction goals included in the CARB Mobile Source Strategy and Plan Bay Area 2050. However, because the proposed project would include the use of natural gas in the proposed commercial kitchens, the proposed project would not meet the project design thresholds recommended by the BAAQMD and would be considered inconsistent with the long-term State GHG reduction goals and emission targets outlined in AB 32, SB 32, EO B-30-15, EO B-48-18, and AB 1279. As such, the proposed project would conflict with applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. This impact would be ***significant and unavoidable***.

4.11.2.3 Cumulative Impacts

GHG impacts are by their nature cumulative impacts. Localized impacts of climate change are the result of the cumulative impact of global emissions. The combined benefits of reductions achieved by all levels of government help to slow or reverse the growth in GHG emissions. In the absence of comprehensive international agreements on appropriate levels of reductions achieved by each country, another measure of cumulative contribution is required. This serves to define the State's share of the reductions regardless of the activities or lack of activities of other areas of the United States or the world. Therefore, a cumulative threshold based on consistency with State targets and actions to reduce GHGs is an appropriate standard of comparison for significance determinations.

As described above in Section 4.11.2.2, CARB most recently updated the Scoping Plan in 2022 to include a framework to meet the State's carbon neutrality goals by 2045, and the BAAQMD has determined that projects need to incorporate design elements to do their "fair share" of implementing that goal. If a project is designed and built to incorporate the design elements, then it will contribute its portion of what is necessary to achieve its "fair share" and it can be concluded that the project would result in a less than significant impact related to GHG emissions. If a project does not incorporate these design elements, then a project would result in a significant GHG impact. As described above, the proposed project would not be consistent with the BAAQMD's project design elements included under "Threshold A" due to the inclusion of natural gas connections for potential natural gas use in the proposed commercial kitchens. Mitigation to prohibit the use of natural gas in proposed restaurants was found to be infeasible. Therefore, the proposed project would result in the generation of GHG emissions that would have a significant impact on the environment, and the cumulative GHG impacts would be considered ***significant and unavoidable***.

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