

Section 3.7

Greenhouse Gas Emissions

This section describes the regulatory setting and environmental setting for greenhouse gas (GHG) emissions. It also describes the GHG impacts that would result from implementation of the San Rafael Transit Center Replacement Project (proposed project) and other build alternatives and mitigation measures that would reduce significant impacts, where feasible and appropriate. Impacts related to the No-Project Alternative are discussed in Chapter 5, Alternatives to the Project.

3.7.1 Existing Conditions

3.7.1.1 Regulatory Setting

This section summarizes the federal, state, and local policies and plans related to GHG emissions.

Federal

There is currently no federal overarching law specifically related to climate change or the reduction of GHG emissions. Under the Obama administration, the U.S. Environmental Protection Agency (EPA) had been developing regulations under the Clean Air Act (CAA). There have also been settlement agreements among EPA, several states, and nongovernmental organizations to address GHG emissions from electric generating units and refineries, as well as EPA's issuance of an "Endangerment Finding" and a "Cause or Contribute Finding." These findings established that EPA can regulate GHGs as pollutants under the CAA. EPA has also adopted a Mandatory Reporting Rule and Clean Power Plan. Under the Clean Power Plan, EPA issued regulations to control carbon dioxide (CO₂) emissions from new and existing coal-fired power plants. However, on February 9, 2016, the Supreme Court issued a stay of these regulations pending litigation. Former EPA Administrator Scott Pruitt also signed a measure to repeal the Clean Power Plan. The fate of the proposed regulations is uncertain given the 2021 change in federal administrations and the pending deliberations in federal courts.

The National Highway Traffic Safety Administration sets the Corporate Average Fuel Economy standards to improve average fuel economy and reduce GHG emissions generated by cars and light-duty trucks. The National Highway Traffic Safety Administration and EPA have proposed amendments to the current fuel-efficiency standards for passenger cars and light-duty trucks and new standards for model years 2021 through 2026. Under the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, current 2020 standards would be maintained through 2026. California, 22 other states, the District of Columbia, and two cities filed suit against the proposed action on September 20, 2019 (*California et al. v. United States Department of Transportation et al.*, 1:19-cv-02826, U.S. District Court for the District of Columbia). The lawsuit requests a "permanent injunction prohibiting defendants from implementing or relying on the preemption regulation" but does not stay its implementation during legal deliberations. Part 1 of the SAFE Vehicles Rule went into effect on November 26, 2019. Part 2 of the rule was finalized on March 30, 2020. The rule will decrease the stringency of the Corporate Average Fuel Economy standards 1.5 percent each year through model year 2026; the standards issued in 2012 would have required annual fuel efficiency increases of

about 5 percent. California, 22 other states, and the District of Columbia filed a petition for review of the final rule on May 27, 2020. The fate of the SAFE Vehicles Rule remains uncertain in the face of pending litigation and potential rulemakings by the Biden Administration.

State

California has taken proactive steps, briefly described in this section, to address the issues associated with GHG emissions and climate change. Much of this legislation establishes a broad framework for the state's long-term GHG reduction and climate change adaptation program. The state's governors have also issued several executive orders (EOs) related to the state's evolving climate change policy. Of particular importance are Assembly Bill (AB) 32 and Senate Bill (SB) 32, which outline the state's GHG reduction goals of achieving 1990 emissions levels by 2020 and a level 40 percent below 1990 emissions levels by 2030. In the absence of federal regulations, control of GHGs is generally regulated at the state level. It is typically approached by setting emission-reduction targets for existing sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans. The following state regulations, polices, and programs are applicable to the proposed project.

Executive Order S-3-05

On June 1, 2005, Governor Arnold Schwarzenegger signed California EO S-3-05. The goal of this EO was to reduce California's GHG emissions to (1) 2000 levels by 2010 (achieved); (2) 1990 levels by 2020; and (3) 80 percent below the 1990 levels by 2050. EO S-3-05 also calls for the California Environmental Protection Agency to prepare biennial science reports on the potential impact of continued global warming on certain sectors of the California economy. As a result of the scientific analysis presented in these biennial reports, a comprehensive Climate Adaptation Strategy was released in December 2009 following extensive interagency coordination and stakeholder input. The latest of these reports, *Climate Action Team Biennial Report*, was published in December 2010.

Executive Order S-01-07

With EO S-01-07, Governor Schwarzenegger set forth the low-carbon fuel standard for California in 2007. Under this EO, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Executive Order B-55-18

In June 2017, former President Donald Trump announced his intention to withdraw from the Paris Agreement. Following former President Trump's decision, California decided to join the Under2 Coalition, which is an international coalition of jurisdictions that signed the Global Climate Leadership Memorandum of Understanding (Under2 MOU). The Under2 MOU aims to limit global warming to 2 degrees Celsius (°C), to limit GHGs to below 80 to 95 percent below 1990 levels, and/or achieve a per-capita annual emissions goal of less than 2 metric tons by 2050. The Under2 MOU has been signed or endorsed by 135 jurisdictions that represent 32 countries and 6 continents. EO B-55-18 acknowledges the environmental, community, and public health risks posed by future climate change. It further recognizes the climate stabilization goal adopted by 194 states and the European Union under the Paris Agreement. Based on the worldwide scientific agreement that carbon neutrality must be achieved by midcentury, EO B-55-18 establishes a new state goal to achieve carbon neutrality as soon as possible, and no later than 2045, and to achieve and maintain

net negative emissions thereafter. The EO charges the California Air Resources Board (CARB) with developing a framework for implementing and tracking progress toward these goals. This EO extends EO S-3-05 but is only binding on state agencies. On November 4, 2019, the United States formally announced its resignation. However, on January 20, 2021, President Biden signed an EI to have the United States rejoin the Paris Agreement (NPR 2021).

Assembly Bill 1493

With the passage of AB 1493, also known as Pavley I, in 2002, California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires ~~the California Air Resources Board (CARB)~~ to develop and implement regulations to reduce automobile and light-truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with model year 2009. Although litigation challenged these regulations and EPA initially denied California's related request for a waiver of CAA preemption, the waiver request was granted. Additional strengthening of the Pavley standards (referred to previously as Pavley II and now referred to as the Advanced Clean Cars measure) was adopted for vehicle model years 2017–2025 in 2012. Together, the two standards are expected to increase average fuel economy to roughly 54.5 miles per gallon in 2025.

Assembly Bill 32

One goal of EO S-03-05 was further reinforced by AB 32 (Chapter 488, Statutes of 2006), the Global Warming Solutions Act of 2006, which requires the state to reduce GHG emissions to 1990 levels by 2020. Since AB 32 was adopted, CARB, the California Energy Commission, the California Public Utilities Commission, and the Building Standards Commission have been developing regulations that will help meet the goals of AB 32. Under AB 32, CARB is required to prepare a Scoping Plan and update it every 5 years. The Scoping Plan was approved in 2008, the first update approved in 2014, and an additional update was approved in 2017 (see discussion of SB 32 below). *California's 2017 Climate Change Scoping Plan* (CARB 2017a) identifies specific measures to reduce GHG emissions to 1990 levels by 2020 and requires CARB and other state agencies to develop and enforce regulations and other initiatives for reducing GHGs. Specifically, the 2017 Scoping Plan articulates a key role for local governments, recommending they establish GHG reduction goals for both their municipal operations and the community consistent with those of the state.

Assembly Bill 939 (1989) and Assembly Bill 341 (2011)

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 Mandatory Commercial Recycling Regulation (2012) requires that on and after July 1, 2012, certain businesses that generate 4 cubic yards or more of commercial solid waste per week must arrange recycling services. To comply with

this requirement, businesses may either separate recyclables and self-haul them to a recycling facility 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.

Senate Bill 375

SB 375, signed into law by Governor Schwarzenegger on September 30, 2008, became effective January 1, 2009. This law requires the state's 18 Metropolitan Planning Organizations to develop a sustainable communities strategy (SCS) as part of their Regional Transportation Plans (RTPs) through integrated land use and transportation planning, and to demonstrate an ability to attain the GHG emissions-reduction targets that CARB established for the region by 2020 and 2035. This would be accomplished through either the financially constrained SCS as part of the RTP or an unconstrained alternative planning strategy. If regions develop integrated land use, housing, and transportation plans that meet the SB 375 targets, new projects in these regions can be relieved of certain California Environmental Quality Act (CEQA) review requirements. The applicable RTP/SCS for the project area is *Plan Bay Area 2040* (MTC and ABAG 2017), discussed under "Local" below.

Senate Bills 1078, 107, and 2

SBs 1078 (2002), 107 (2006), and 2 (2011), California's Renewables Portfolio Standard (RPS), obligates investor-owned utilities, energy service providers, and Community Choice Aggregators to procure additional retail sales per year from eligible renewable sources with the long-range target of procuring 33 percent of retail sales from renewable resources by 2020. The California Public Utilities Commission and California Energy Commission are jointly responsible for implementing the program.

Senate Bill 32 and Assembly Bill 197

SB 32 (2016) requires CARB to ensure that statewide GHG emissions are reduced to at least 40 percent below the 1990 level by 2030, consistent with the target set forth in EO B-30-15. The companion bill to SB 32, AB 197, creates requirements to form a Joint Legislative Committee on Climate Change Policies, requires CARB to prioritize direct emission reductions and consider social costs when adopting regulations to reduce GHG emissions beyond the 2020 statewide limit, requires CARB to prepare reports on sources of GHGs and other pollutants, establishes 6-year terms for voting members of CARB, and adds two legislators as non-voting members of CARB. CARB adopted *California's 2017 Climate Change Scoping Plan* in November 2017 to meet the GHG reduction requirement set forth in SB 32. It proposes continuing the major programs of the previous Scoping Plan including Cap-and-Trade Regulation; low-carbon fuel standard; more efficient cars, trucks, and freight movement; RPS; and reduction of methane (CH₄) emissions from agricultural and other wastes (CARB 2017a).

Senate Bill 605 and Senate Bill 1383

SB 605 directed CARB, in coordination with other state agencies and local air districts, to develop a comprehensive Short-Lived Climate Pollutant (SLCP) Reduction Strategy (CARB 2017b). SB 1383 directed CARB to approve and implement the SLCP Reduction Strategy to achieve the following reductions in SLCPs:

- 40-percent reduction in CH₄ below 2013 levels by 2030

- 40-percent reduction in hydrofluorocarbon gases below 2013 levels by 2030
- 50-percent reduction in anthropogenic black carbon below 2013 levels by 2030

The bill also establishes the following targets for reducing organic waste in landfills and CH₄ emissions from dairy and livestock operations:

- 50-percent reduction in organic waste disposal from the 2014 level by 2020
- 75-percent reduction in organic waste disposal from the 2014 level by 2025
- 40-percent reduction in CH₄ emissions from livestock manure management operations and dairy manure management operations below the dairy sector's and livestock sector's 2013 levels by 2030

CARB and CalRecycle are currently developing regulations to achieve the organic waste reduction goals under SB 1383. In January 2019 and June 2019, CalRecycle proposed new and amended regulations in Titles 14 and 27 of the California Code of Regulations. Among other things, the regulations set forth minimum standards for organic waste collection, hauling, and composting. The final regulations will take effect on or after January 1, 2022.

Short-Lived Climate Pollutant Reduction Strategy

CARB adopted the SLCP Reduction Strategy in March 2017 as a framework for achieving the CH₄, hydrofluorocarbon, and anthropogenic black carbon reduction targets set by SB 1383 (CARB 2017b). The SLCP Reduction Strategy includes 10 measures to reduce SLCPs, which fit within a wide range of ongoing planning efforts throughout the state, including CARB's and CalRecycle's proposed rulemaking on organic waste diversion (discussed above).

Senate Bill 100

The state's existing RPS requires all retail sellers to procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt-hours of those products sold to their retail end-use customers achieve 25 percent of retail sales by December 31, 2016 (achieved); 33 percent by December 31, 2020; 40 percent by December 31, 2024; 45 percent by December 31, 2027; and 50 percent by December 31, 2030. SB 100 revises and extends these renewable resource targets to 50 percent by December 31, 2026; 60 percent December 31, 2030; and 100 percent by December 31, 2045.

Senate Bill 743

SB 743 requires revisions to the State CEQA Guidelines that establish new impact analysis criteria for the assessment of a project's transportation impacts. The intent behind SB 743 and revising the State CEQA Guidelines is to integrate and better balance the needs of congestion management, infill development, active transportation, and GHG emissions reduction. The California Governor's Office of Planning and Research (OPR) recommends that vehicle miles traveled (VMT) serve as the primary analysis metric, replacing the existing criteria of delay and level of service. In 2018, OPR released a technical advisory outlining potential VMT significance thresholds for different project types. For example, it would be reasonable to conclude that residential and office projects demonstrating a VMT level that is 15 percent less than existing (2015–2018 average) conditions are consistent with statewide GHG reduction targets. With respect to retail land uses, any net increase of VMT may indicate a significant transportation impact.

Senate Bill X7-7

SB X7-7, the Water Conservation Act of 2009, sets an overall goal of reducing per-capita urban water use by 20 percent by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per-capita water use by at least 10 percent by December 31, 2015. This is an implementing measure of the Water Sector of the 2017 Scoping Plan that will continue to be implemented beyond 2020. Reduction in water consumption reduces the energy necessary and the associated emissions to convey, treat, and distribute the water; it also reduces emissions from wastewater treatment.

Cap-and-Trade (2011 and 2017)

CARB adopted the Cap-and-Trade program in October 2011. The California Cap-and-Trade program is a market-based system with an overall emissions limit for affected emission sources. Affected sources include in-state electricity generators, hydrogen production, petroleum refining, and other large-scale manufacturers and fuel suppliers and distributors. The original Cap-and-Trade program set a compliance schedule through 2020. AB 398 extends the program through 2030 and requires CARB to make refinements, including establishing a price ceiling. Revenue generated from the Cap-and-Trade program is used to fund various programs. AB 398 established post-2020 funding priorities, to include (1) Air Toxics and Criteria Pollutants, (2) Low and Zero Carbon Transportation, (3) Sustainable Agricultural Practices, (4) Healthy Forests and Urban Greening, (5) Short-lived Climate Pollutants, (6) Climate Adaptation and Resiliency, and (7) Climate and Clean Energy Research.

Green Building Code and Title 24 Updates

The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (24 California Code of Regulations). Part 11 established voluntary standards that became mandatory under the 2010 edition of the code. These involved sustainable site development, energy efficiency (in excess of California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The current energy-efficiency standards were adopted in 2019 and took effect on January 1, 2020. The standards are revised every 3 years, with the next update taking effect on January 1, 2023.

Local

Metropolitan Transportation Commission

The Metropolitan Transportation Commission (MTC) is the Metropolitan Planning Organization for the nine counties that compose the San Francisco Bay Area and the San Francisco Bay Area Air Basin (SFBAAB), which includes the City of San Rafael (City). The first per-capita GHG emissions-reduction targets for the SFBAAB were 7 percent by 2020 and 15 percent by 2035 from 2005 levels. MTC adopted an SCS as part of its RTP for the SFBAAB in 2013 known as *Plan Bay Area*. The plan exceeds the regional per-capita targets, achieving 10-percent and 16-percent reductions in per-capita GHG emissions by 2020 and 2035, respectively (MTC 2013). On July 26, 2017, the strategic update to this plan, known as *Plan Bay Area 2040*, was adopted by the Association of Bay Area Governments (ABAG) and MTC (MTC and ABAG 2017). As a limited and focused update, *Plan Bay Area 2040* builds upon the growth pattern and strategies developed in the original *Plan Bay Area* but with updated planning assumptions that incorporate key economic, demographic, and financial trends since 2013.

As required by SB 375, CARB updated the per-capita GHG emissions-reduction targets in 2018. The new targets will be addressed in MTC's forthcoming RTP/SCS and are a 10-percent per-capita GHG reduction by 2020 and 19-percent per-capita reduction by 2035 from 2005 levels (CARB 2018). The next update to *Plan Bay Area, Plan Bay Area 2050*, is currently in its planning stages and will outline the strategies for growth and investment through the year 2050 (ABAG and MTC 2020). The Transportation Authority of Marin contributed to *Plan Bay Area 2040* by serving as the Congestion Management Agency for Marin County.

Bay Area Air Quality Management District

As discussed in Section 3.2, Air Quality, the Bay Area Air Quality Management District (BAAQMD) is responsible for air quality planning within the SFBAAB, including projects in the City. BAAQMD has adopted advisory emission thresholds to assist CEQA lead agencies in determining the level of significance of a project's GHG emissions, including long-range plans (e.g., general plans, specific plans), which are outlined in its *California Environmental Quality Act: Air Quality Guidelines* (BAAQMD 2017a). These guidelines also outline methods for quantifying GHG emissions, as well as potential mitigation measures.

BAAQMD's 2017 Clean Air Plan includes performance objectives that are consistent with the state's climate protection goals under AB 32 and SB 375, which are designed to reduce GHG emissions to 1990 levels by 2020 and 40 percent below 1990 levels by 2030. The 2017 Clean Air Plan identifies a range of transportation control measures, land use and local impact measures, and energy and climate measures. These make up the Clean Air Plan's control strategy for emissions, including GHGs (BAAQMD 2017b). Some measures applicable to the proposed project include the following:

- TR3— Local and Regional Bus Services
- TR9—Bicycle and Pedestrian Access and Facilities
- BL1—Green Buildings
- WR2—Support Water Conservation
- NW2—Urban Tree Planting

San Rafael General Plan 2040

San Rafael General Plan 2040 was adopted in 2021. The Conservation and Climate Change Element outlines goals and policies that will reduce GHG emissions in the City and mitigate climate change. The relevant policies are summarized below. For the full text of the policies, refer to the Conservation and Climate Change Element (City of San Rafael 2021):

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

- **Policy LU-1.3: Land Use and Climate Change.** Focus future housing and commercial development in areas where alternatives to driving are most viable and shorter trip lengths are possible, especially around transit stations, near services, and on sites with frequent bus service. This can reduce the greenhouse gas emissions associated with motor vehicle trips and support the City's climate action goals.
 - **Program LU-1.3A: Benefits of Transit-Oriented Development.** Seek ways to objectively quantify and monitor the benefits of focusing new development around transit nodes and corridors and shifting trips from cars to active (non-car).

transportation modes. Programmatic changes and recommendations should be supportable by objective data and quality of life measures. This should include data on modes of travel, trip origins and destinations, trip lengths, vehicle ownership, traffic congestion and duration of idling traffic, greenhouse gas emissions, and other metrics in areas that are well served by transit.

Goal C-4: Sustainable Energy Management Use. energy in a way that protects the environment, addresses climate change, and conserves natural resources.

- **Policy C-4.1: Renewable Energy.** Support increased use of renewable energy and remove obstacles to its use.
 - **Program C-4.1A: Marin Clean Energy Targets.** Support Marin Clean Energy (MCE) efforts to reach the goal of providing energy that is 100 percent GHG free by 2025.
 - **Program C-4.1D: Reducing Natural Gas Use.** Pending further financial analysis and community input, implement electrification of building systems and appliances in new buildings and those that currently use natural gas. This should be achieved by requiring new or replacement furnaces and appliances to be electric and utilize fossil free energy.
- **Policy C-4.2: Energy Conservation.** Support construction methods, building materials, and home improvements that improve energy efficiency in existing and new construction.
 - **Program C-4.2B: Green Building Standards.** Implement State green building and energy efficiency standards for remodeling projects and new construction. Consider additional measures to incentivize green building practices, low carbon concrete, and sustainable design.

Goal C-5: Reduced Greenhouse Gas Emissions. Achieve a 40 percent reduction in 1990 greenhouse gas emission levels by 2030 and a 60 percent reduction by 2040.

- **Policy C-5.1: Climate Change Action Plan (CCAP).** Maintain and periodically update a CCAP that includes programs to reduce greenhouse gas emissions and metrics for monitoring success.
 - **Program C-5.1A: CCAP Updates.** Conduct complete updates of the CCAP at least once every 10 years, adjusting programs to achieve updated GHG goals. These goals should align with those adopted by Drawdown Marin, including reductions of 40% below 1990 levels by 2030, 60% below 2005 levels by 2040, and levels conforming to Executive Orders S-03-05 and B-55-18 by 2050. More aggressive goals may be adopted.
- **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 CCAP and other climate goals, including greenhouse gas reduction and adaptation.
- **Policy C-5.5: Carbon Sequestration.** Enhance the ability of the city's natural and built environment to sequester (absorb and store) carbon emissions.

San Rafael Climate Change Action Plan 2030

In 2009, the City adopted its Climate Change Action Plan (CCAP) to reduce GHG emissions using a baseline year of 2005. The CCAP set goals of a 25-percent reduction of GHG emissions by 2020 and an ambitious 80-percent reduction by 2050 to meet state targets. The state issued new targets for 2030 and the City responded by convening a working group to revise the CCAP to meet the new 2030 targets. The product of the working group was the *San Rafael Climate Change Action Plan 2030*

(CCAP 2030) (City of San Rafael 2019). CCAP 2030 was developed using information from the previous CCAP and the City's GHG inventory, which provided estimates to compare the progress in GHG reductions between baseline years for the 2009 CCAP (2005) and CCAP 2030 (2016). CCAP 2030 outlines state and local actions focused on low-carbon transportation, energy efficiency, renewable energy, waste reduction, water conservation, sequestration and adaptation, and community engagement. CCAP 2030 targets would be similar to state targets to reduce GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

Overall, CCAP 2030 includes goals, policies, performance standards, and implementation measures for achieving GHG emission reductions and meeting the requirements of AB 32. CCAP 2030 is also intended to meet the mandates outlined in the BAAQMD *California Environmental Quality Act: Air Quality Guidelines* and the recent standards for "qualified plans" set forth by BAAQMD (BAAQMD 2017a). Individual development projects that comply with CCAP 2030 can be determined to not have cumulatively considerable GHG emissions impacts under CEQA (State CEQA Guidelines Section 15183.5) for emissions generated prior to 2030.

3.7.1.2 Environmental Setting

GHG emissions become well mixed within the atmosphere and are transported over long distances. Consequently, unlike other resource areas that are concerned primarily with localized project impacts (e.g., within 1,000 feet of the project area), the global nature of climate change requires a broader analytic approach. Although this section focuses on GHG emissions generated in the project area as a result of construction and operation, the analysis considers potential regional and global GHG impacts.

Greenhouse Gases

The principal anthropogenic (human-made) GHGs contributing to global warming are CO₂, CH₄, nitrous oxide (N₂O), and fluorinated compounds, including sulfur hexafluoride, hydrofluorocarbons, and perfluorocarbons. Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic sources.

The primary GHGs of concern associated with the proposed project are CO₂, CH₄, and N₂O. Principal characteristics of these pollutants are discussed below.

Carbon dioxide enters the atmosphere through fossil fuels (oil, natural gas, and coal) combustion, solid waste decomposition, plant and animal respiration, and chemical reactions (e.g., manufacture of cement). CO₂ is also removed from the atmosphere (or *sequestered*) when it is absorbed by plants as part of the biological carbon cycle.

Methane is emitted during the production and transport of coal, natural gas, and oil. CH₄ emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal solid waste landfills.

Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the global warming potential (GWP) methodology defined in Intergovernmental Panel on Climate

Change (IPCC) reference documents. IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalent (CO₂e), which compares the gas in question to that of the same mass of CO₂ (CO₂ has a global warming potential of 1 by definition). Table 3.7-1 lists the global warming potential of CO₂, CH₄, and N₂O and their lifetimes in the atmosphere.

Table 3.7-1. Lifetimes and Global Warming Potentials of Key Greenhouse Gases

Greenhouse Gas	Global Warming Potential (100 years)	Lifetime (years)
CO ₂	1	50–200
CH ₄	25	12
N ₂ O	298	114

Sources: CARB 2019a; IPCC 2001

All GWPs used for CARB's GHG inventory and to assess attainment of the state's 2020 and 2030 reduction targets are considered over a 100-year timeframe (as shown in Table 3.7-1). However, CARB recognizes the importance of SLCPs and reducing these emissions to achieve the state's overall climate change goals. SLCPs have atmospheric lifetimes on the order of a few days to a few decades, and their relative climate-forcing impacts, when measured in terms of how they heat the atmosphere, can be tens, hundreds, or even thousands of times greater than that of CO₂ (CARB 2017b). Recognizing their short-term lifespan and warming impact, SLCPs are measured in terms of CO₂e using a 20-year time period. The use of GWPs with a time horizon of 20 years better captures the importance of the SLCPs and gives a better perspective on the speed at which SLCP emission controls will affect the atmosphere relative to CO₂ emission controls. The SLCP Reduction Strategy, which is discussed in Section 3.7.1.1, Regulatory Setting, addresses the three primary SLCPs—CH₄, hydrofluorocarbon gases, and anthropogenic black carbon. CH₄ has lifetime of 12 years and a 20-year GWP of 72 compared to a GWP of 25 over a 100-year timeframe. Hydrofluorocarbon gases have lifetimes of 1.4 to 52 years and a 20-year GWP of 437 to 6,350. Anthropogenic black carbon has a lifetime of a few days to weeks and a 20-year GWP of 3,200 (CARB 2017b). The proposed project is evaluated with the 100-year GWPs in Table 3.7-1 to be consistent with CARB's emission inventory and plans. Additionally, the proposed project would not include emission sources that emit substantial amounts of SLCPs; therefore, the 20-year GWP is presented for informational purposes only.

Greenhouse Gas Reporting

A GHG inventory is a quantification of all GHG emissions and sinks¹ within a selected physical and/or economic boundary. GHG inventories can be performed on a large scale (e.g., for global and national entities) or on a small scale (e.g., for a building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources. Table 3.7-2 outlines the most recent global, national, statewide, and local GHG inventories to help contextualize the magnitude of potential project-related emissions.

¹ A GHG sink is a process, activity, or mechanism that removes a GHG from the atmosphere.

Table 3.7-2. Global, National, State, and Regional Greenhouse Gas Emission Inventories

Emissions Inventory	CO ₂ e (metric tons)
2017 IPCC Global GHG Emissions Inventory	53,500,000,000
2018 EPA National GHG Emissions Inventory	6,677,000,000
2018 CARB State GHG Emissions Inventory	425,300,000
2015 BAAQMD GHG Emissions Inventory	85,000,000

Sources: United Nations 2018; EPA 2020; CARB 2019b; BAAQMD 2017b

As discussed above in Section 3.7.1.1, Regulatory Setting, the City adopted its CCAP to reduce GHG emissions. CCAP 2030 outlines state and local actions that would support the City's goal of meeting the 2030 target of 40 percent below 1990 levels. Table 3.7-3 provides a summary of the CCAP 2030 local action reductions.

Table 3.7-3. City of San Rafael Climate Change Action Plan Local Action Reduction Forecast

Local Action Strategy	GHG Reductions by 2030 (MTCO ₂ e)	Percent of Reductions
Low Carbon Transportation	37,030	38%
Energy Efficiency	18,280	19%
Renewable Energy	31,925	33%
Waste Reduction	10,025	10%
Water Conservation	830	1%
Sequestration and Adaptation	n/a	n/a
Community Engagement	n/a	n/a
Implementation and Monitoring	n/a	n/a
Total	98,085	100%

Source: City of San Rafael 2019.

n/a = Emissions reductions not quantified. For sequestration and adaptation, reduction credits were not assigned because sequestered carbon was not included in the community GHG inventory. Community engagement and implementation and monitoring were not assigned reduction credits because these are not sources of GHG emissions and the reduction strategies in them are more qualitative and behavioral measures to inform the community on how to reduce GHG emissions, as well as have a system for accounting the community's GHG reduction progress.

MTCO₂e = metric tons of carbon dioxide equivalent

Climate Change

Global Climate Change

The process known as the *greenhouse effect* keeps the atmosphere near Earth's surface warm enough for the successful habitation of humans and other life forms. The greenhouse effect is created by sunlight that passes through the atmosphere. Some of the sunlight striking Earth is absorbed and converted to heat, which warms the surface. The surface emits a portion of this heat as infrared radiation, some of which escapes into space and some of which is absorbed by atmospheric GHGs and re-emitted toward the surface. Human activities that generate GHGs increase the amount of infrared radiation absorbed by the atmosphere, thus enhancing the greenhouse effect and amplifying the warming of Earth.

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution (IPCC 2007). Rising atmospheric

concentrations of GHGs in excess of natural levels result in increasing global surface temperatures—a process commonly referred to as *global warming*. Higher global surface temperatures, in turn, result in changes to Earth’s climate system, including increased ocean temperature and acidity, reduced sea ice, variable precipitation, and increased frequency and intensity of extreme weather events (IPCC 2018). Large-scale changes to Earth’s system are collectively referred to as *climate change*.

IPCC was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. IPCC estimates that human-induced warming reached approximately 1°C above pre-industrial levels in 2017, increasing at 0.2°C per decade. Under the current nationally determined contributions of mitigation from each country until 2030, global warming is expected to rise to 3°C by 2100, with warming to continue afterward (IPCC 2018).

Potential Climate Change Effects

Climate change is a complex process that has the potential to alter local climatic patterns and meteorology. Although modeling indicates that climate change will result in sea level rise (both globally and regionally) as well as changes in climate and rainfall, among other effects, there remains uncertainty about characterizing precise local climate characteristics and predicting precisely how various ecological and social systems will react to any changes in the existing climate at the local level. Regardless of this uncertainty, it is widely understood that substantial climate change is expected to occur in the future, although the precise extent will take further research to define. Specifically, significant impacts from global climate change worldwide and in California include:

- Declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in atmospheric water vapor, due to the atmosphere’s ability to hold more water vapor at higher temperatures (CNRA 2018)
- Rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets (IPCC 2018)
- Changing weather patterns, including changes to precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones (IPCC 2014)
- Declining Sierra Mountains snowpack levels, which account for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years (CNRA 2018)
- Increasing the number of days conducive to ozone formation (e.g., clear days with intense sunlight) by 25 percent to 85 percent (depending on the future temperature scenario) by the end of the 21st century in high-ozone areas (CNRA 2018)
- Increasing the potential for erosion of California’s coastlines and seawater intrusion into the Sacramento Delta and associated levee systems due to the rise in sea level (CNRA 2018)
- Exacerbating the severity of drought conditions in California such that durations and intensities are amplified, ultimately increasing the risk of wildfires and consequential damage incurred (CNRA 2018)

- Lower crop yields for agriculture due to extreme heat waves, heat stress, and increased water needs of crops and livestock (particularly during dry and warm years), and new and changing pest and disease threats (CNRA 2018)

The impacts of climate change pose direct and indirect risks to public health, as people will experience earlier death and worsening illnesses. Indirect impacts on public health include increased vector-borne diseases, stress, and mental trauma due to extreme events and disasters, economic disruptions, and residential displacement (CNRA 2018).

3.7.2 Environmental Impacts

Four different build alternatives, which are all in Downtown San Rafael within 500 feet of the existing transit center, are being evaluated. GHG impacts were analyzed for the project area rather than specific build alternatives because the location of each build alternative would experience a nearly equivalent impact for each resource considered here. Impacts for the build alternatives are presented together unless they differ substantially among alternatives.

3.7.2.1 Methodology

GHG and climate change impacts associated with construction and operation of the proposed project were assessed and quantified using standard and accepted software tools, techniques, and emissions factors. A summary of the methodology is provided below.

Construction Emissions

Construction GHG emissions were estimated using California Emissions Estimator Model (CalEEMod), version 2016.3.2; and CARB's Emission FACTor 2017 (EMFAC2017) model, and relied upon a combination of CalEEMod default data values, as well as project-specific information for each alternative provided by the project ~~sponsor~~proponent, such as phase durations and quantities for demolition, grading, and paving activities. Emissions from gasoline light-duty vehicles (e.g., construction workers) were adjusted to account for the impact of the implementation of Part 2 of the SAFE Vehicles Rule.

Project construction is estimated to begin in ~~2023 or 2024~~2025 and last approximately 18 months. It was assumed each build alternative would have the same schedule and phasing. The GHG analysis approach is consistent with approach presented in Section 3.2, Air Quality. Total GHG emissions for each build alternative were estimated. See Appendix ~~B~~D for the construction modeling outputs and detailed assumptions.

Operational Emissions

This proposed project would generate minimal GHG emissions from area, energy, water, and waste sources. Area sources are associated with combustion of fuel from landscaping equipment. Energy sources are associated with the combustion of natural gas and the use of electricity. Water consumption results in indirect GHG emissions from the conveyance and treatment of water. Waste generation results in fugitive CH₄ and N₂O emissions from the decomposition of organic matter. Emissions from the proposed project were estimated using CalEEMod.

Based on information in Section 3.14, Transportation, all build alternatives primarily represent a shifting of bus activity from location to another; the proposed project would not change the amount of bus service provided. Although the proposed project would improve the efficiency of bus operations and create operational flexibility for bus movements into and out of the transit center, no future expansion of transit service was planned at the time of this EIR's preparation and thus cannot be reasonably forecasted. Therefore, no mobile emissions were evaluated for project operations. The operations modeling outputs and detailed assumptions are provided in Appendix BD.

3.7.2.2 Thresholds of Significance

State CEQA Guidelines Significance Criteria

The following State CEQA Guidelines Appendix G thresholds identify significance criteria to be considered for determining whether a project could have significant impacts related to existing GHG emissions and climate change.

Would the proposed project:

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

In the 2015 California Supreme Court decision in the *Center for Biological Diversity et al. vs. California Department of Fish and Wildlife, the Newhall Land and Farming Company* (November 30, 2015, Case No. S217763) (hereafter Newhall Ranch) the Court identified several potential approaches that may be appropriate for determining significance of project-level GHG emissions in CEQA documents. Several air quality management agencies throughout the state have also drafted or adopted varying threshold approaches and guidelines for analyzing GHG emissions in CEQA documents. Common threshold approaches include (1) compliance with a qualified GHG reduction strategy, (2) performance-based reductions, (3) numeric "bright-line" thresholds, (4) efficiency-based thresholds, and (5) compliance with regulatory programs.

Applicability of Available Thresholds

The following sections discuss the threshold approaches recommended by the Courts and supported by CEQA and analyzes their applicability to the proposed project.

Compliance with a Qualified GHG Reduction Strategy

OPR acknowledges that the State Legislature encourages lead agencies to tier or streamline their environmental documents whenever feasible, and that GHG emissions may be best analyzed and mitigated at the programmatic level (OPR 2018). A qualified plan may be used in the cumulative impact analysis for later projects when the analysis "identifies those requirements specified in the plan that apply to the project." For a GHG reduction plan to be considered a qualified plan, it must meet certain criteria established under State CEQA Guidelines Sections 15183.5 (b) and 15064.4, also specified above. Consequently, if a project is consistent with a local climate action plan that was created to meet that area's fair-share reductions toward the AB 32 GHG target for 2020, then the project would be considered consistent with statewide GHG reduction goals for 2020. Additionally, if

a climate action plan was adopted that was consistent with the state’s overall goals for post-2020, including the downward trajectory as clarified in SB 32 and EO S-03-05, and a project is consistent with that climate action plan, it would be considered consistent with the state’s post-2020 GHG emission strategy. Section 15183.5 also specifies that the project’s CEQA analysis “must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project.”

As discussed in Section 3.7.1.1, Regulatory Setting, the City has adopted a qualified GHG emissions-reduction strategy: CCAP 2030. Because the City is not the lead agency for CEQA, this analysis does not rely on CCAP 2030 for tiering purposes. Rather, project consistency with applicable GHG reduction measures outlined in CCAP 2030 is discussed for informational purposes below. CCAP 2030 outlines state and local policies to reduce GHG emissions to meet the 2030 target of 40 percent below 1990 levels, consistent with SB 32’s target. To make significance findings under CEQA, GHG emissions from the proposed project are evaluated on a sector-by-sector (e.g., energy, mobile, and water) basis using the most applicable regulatory programs, policies, and thresholds recommended by BAAQMD, CARB, and OPR.

Performance-Based Reductions

Performance-based thresholds are based on a percentage reduction from a projected future condition; for example, reducing future business-as-usual (BAU) emissions by the AB 32 target of 29 percent (below 2020 BAU levels) through a combination of state measures, project design features (e.g., renewable energy), or mitigation. BAAQMD recommends a 26-percent reduction from 2020 BAU levels to meet the AB 32 target (BAAQMD 2017a).

Based on the Court’s reasoning in the Newhall Ranch decision, relating a given project to the achievement of state reduction targets may require adjustments to CARB’s statewide BAU model to not only isolate new development emissions, but also to consider unique geographic conditions and operational characteristics that may affect the performance of reduction measures in certain locations. To date, this type of adjustment to the statewide BAU target has not been performed and, therefore, is not appropriate for the proposed project’s analysis. The primary value of a performance-based target, as indicated in the Newhall Ranch decision, is that it can provide a scenario by which to evaluate the effectiveness of a project’s reduction efficiency relative to an unmitigated condition. As such, future year targets can be used to benchmark performance, using either statewide or regional emission targets, to determine a project’s fair share of mitigation.

Numeric Bright-Line Thresholds

Numerical bright-line thresholds identify the point at which additional analysis and mitigation of project-related GHG emission impacts is necessary. BAAQMD has not developed bright-line thresholds for construction, but has set 1,100 metric tons of CO₂e per year for the operation of land use development projects. The land use development threshold is based on a gap analysis² and ties back to the state’s AB 32 reduction target (1990 levels by 2020).³ Because the buildout year for the

² The gap analysis demonstrates the reductions needed at the residential and commercial land use levels to achieve state targets. Capture is the process of estimating the portion of projects that would result in emissions that exceed a significance threshold and would be subject to mitigation.

³ The AB 32 Scoping Plan identifies specific measures to reduce GHG emissions to 1990 levels by 2020.

proposed project is ~~2023~~2025, use of BAAQMD's numeric-bright line land use development threshold tailored to 2020 reduction targets would not be appropriate for the proposed project's analysis because the bright-line threshold was developed based on 2020 targets. Additionally, the bright-line threshold is intended for typical land use development projects, whereas the proposed project is a transit infrastructure project.

Efficiency-Based Thresholds

Another type of quantitative threshold is an efficiency-based threshold. Efficiency-based thresholds represent the GHG efficiency needed for development to achieve California's GHG emissions targets. While the Newhall Ranch decision did not specifically recommend the efficiency-based approach, the ruling did note that numerical threshold approaches may be appropriate for determining significance of GHG emissions and to emphasize the consideration of GHG efficiency. Efficiency-based thresholds allow lead agencies to compare projects of various types, sizes, and locations equally, and determine whether a project is consistent with the state's reduction goals. Efficiency-based thresholds for a residential project can be expressed on a per-capita basis, for an office project on a per-employee basis, or for a mixed-use project on a per-service-population (the sum of jobs and residents) basis. For a transit project, however, an efficiency-based threshold is not applicable, because such projects are fundamentally different from land use development projects.

Compliance with Regulatory Programs

A lead agency could rely on regulatory compliance to show less-than-significant GHG impacts if the proposed project complies with or exceeds those programs adopted by CARB or other state agencies. However, such analysis is only applicable within the area governed by the regulations. For example, consistency with regulations addressing building efficiency would not suffice to determine that the proposed project would not have significant GHG emissions from transportation.

The Newhall Ranch decision specifically mentions consistency with both the SCS (per SB 375) and AB 32 as potential mechanisms for evaluating significance. A lead agency could assess project-level consistency with AB 32 in whole or part by evaluating whether the proposed project complies with applicable policies in the 2017 Scoping Plan. The 2017 Scoping Plan does not consider deeper reductions needed to meet the state's 2030 target under SB 32. Accordingly, exclusively relying on consistency with the 2017 Scoping Plan and related programs to evaluate emissions generated by land use development projects constructed after 2020 would not fully consider a project's potential GHG impacts on the state's long-term reduction trajectory.

More recent guidance on GHG reduction strategies and thresholds for operational emissions has been provided at the state level through the 2017 Scoping Plan, OPR, and CARB. The 2017 Scoping Plan outlines GHG reduction strategies by emission sector (water, transportation, and energy) required to meet the state's 2030 target under SB 32. OPR (2018) guidance specifies that a "land use development project that produces low VMT, achieves applicable building energy efficiency standards, uses no natural gas or other fossil fuels, and includes Energy Star appliances where available, may be able to demonstrate a less-than-significant greenhouse gas impact associated with project operation."

To the extent the proposed project's applicable GHG policies comply with or exceed the regulations outlined in the 2017 Scoping Plan and adopted by CARB or other state agencies, the proposed project could appropriately rely on their use as showing compliance with performance-based standards adopted to fulfill the statewide goal for reducing GHG emissions. The proposed project's

compliance with regulatory programs adopted by CARB and other state agencies is therefore used to evaluate the significance of the proposed project's GHG emissions. While the regulatory framework to achieve long-term (post-2030) emissions reductions is in its infancy, many of the programs outlined in the 2017 Scoping Plan are likely to be carried forward or have already been adopted with post-2030 requirements (e.g., RPS). Accordingly, evaluating consistency with these programs and relevant guidance published by OPR and CARB for the reduction of long-term emissions is therefore also considered in the analysis of the proposed project's emissions.

Project Threshold Approach

As discussed above, BAAQMD's *California Environmental Quality Act: Air Quality Guidelines* do not identify a GHG emission threshold for construction-related emissions. Instead, BAAQMD recommends that GHG emissions from construction be quantified and disclosed, and that a determination regarding the significance of these GHG emissions be made with respect to whether a project is consistent with the emission-reduction goals. BAAQMD further recommends incorporation of best management practices to reduce GHG emissions during construction, as feasible and applicable. This approach is used to evaluate construction-generated emissions for the proposed project.

While BAAQMD has adopted GHG thresholds for operational emissions from land use development projects (numeric and efficiency), these thresholds are based on the state's 2020 target under AB 32 and do not consider deeper reductions needed to meet the state's 2030 target under SB 32. Accordingly, exclusively relying on BAAQMD's adopted thresholds to evaluate emissions generated by land use development projects constructed after 2020 would not fully consider a project's potential GHG impacts on the state's long-term reduction trajectory. As noted above, the City's CCAP 2030 is consistent with state reduction targets for 2030, and the proposed project's consistency with reduction measures in CCAP 2030 is discussed for informational purposes.

Based on the available threshold concepts recommended by air districts and the courts, GHG emissions from the project are evaluated on a sector-by-sector (e.g., energy, mobile, and water) basis using the most applicable regulatory programs, policies, and thresholds recommend by BAAQMD, CARB, and OPR. The buildout year for the proposed project is ~~2023~~2025. The state has a reduction goal of carbon neutrality set by B-55-18. However, the state's goal has not been codified in law, and the state has not adopted a plan or framework to achieve the 2045 reduction goal. The state's 2030 target has been codified in law through SB 32 and the 2017 Scoping Plan adopted to meet this goal. Therefore, 2030 marks the next statutory statewide milestone target applicable to the proposed project. The analysis focuses on the 2030 target and the plans, policies, and regulations adopted pursuant to achieving 2030 reductions. Where applicable, guidance from CARB, OPR, and other agencies related to long-term emissions-reduction requirements is incorporated into the analysis.

Mobile sources: The proposed project would not result in an increase of VMT or daily trips; therefore, mobile-source emissions were not evaluated for the proposed project.

Energy, water, waste, area, and land sources. CARB's 2017 Scoping Plan, which relies heavily on state programs (e.g., Title 24 and SB 100), outlines strategies required to reduce statewide GHG emissions in order to achieve California's SB 32 reduction target. Projects that implement applicable strategies from the 2017 Scoping Plan would be consistent with the state's GHG reduction framework and requirements for these sectors. Accordingly, a sector-by-sector review of the

respective project features and sustainability measures included in the proposed project is conducted to evaluate consistency with the 2017 Scoping Plan. This assessment also considers recent OPR (2018) guidance related to the long-term reduction of statewide emissions. Accordingly, energy, water, waste, area, and land use source emissions would be considered less than significant if the proposed project is consistent with all applicable 2017 Scoping Plan strategies and supporting regulations and guidance.

3.7.2.3 Impacts

This section includes a discussion of each impact as it corresponds to the thresholds of significance discussed above.

Impact GHG-1: Generate Greenhouse Gas Emissions During Construction, Either Directly or Indirectly, that May Have a Significant Impact on the Environment

All Build Alternatives

Construction

Construction of each build alternative would be expected to span approximately 18 months, beginning in ~~2023 or 2024~~2025. Construction activities would generate emissions of CO₂, CH₄, and N₂O from off-road construction equipment, construction employees' vehicles, and haul trucks, as well as from indirect GHG emissions from water and electricity consumption. The total GHG emissions generated from construction of each build alternative are summarized in Table 3.7-4. Construction emissions would cease once construction of the proposed project is complete; therefore, they are considered short term.

As shown in Table 3.7-4, the Adapt Whistlestop Alternative would result in the least GHG emissions and the Move Whistlestop and Under the Freeway Alternatives would result in the most GHG emissions. Each of the build alternatives are similar in size and it was conservatively assumed each would have identical off-road construction equipment fleets; however, one alternative may require more truck hauling trips than another depending on the site characteristics of the alternative, such as the amount of demolition debris to be hauled off site.

Table 3.7-4. Total Construction GHG Emissions from the Build Alternatives

Build Alternative	Total GHG Emissions (MTCO _{2e})
Move Whistlestop	611.67
Adapt Whistlestop	590.83
4th Street Gateway	604.72
Under the Freeway	611.67

MTCO_{2e} = metric tons carbon dioxide equivalent, including the relative warming capacity (i.e., GWP) of each GHG

The BAAQMD *California Environmental Quality Act: Air Quality Guidelines* do not identify a GHG emissions threshold for construction-related emissions; however, they do recommend that GHG emissions from construction be quantified and disclosed and a determination regarding the

significance of the GHG emissions be made with respect to whether the project in question is consistent with state goals regarding reductions in GHG emissions.

If the proposed project does not implement feasible best management practices, it is anticipated that it would conflict with statewide emission goals and construction-related GHG emission impacts would be **significant**. Therefore, Mitigation Measure MM-GHG-CNST-1 would be implemented to avoid any conflict with statewide emission-reduction goals. With implementation of this mitigation measure, the proposed project would ensure that GHG emissions during construction would be minimized and that the impact would be ***less than significant with mitigation***.

Mitigation Measures

Under any build alternative that is selected and constructed, the following measure would be implemented.

MM-GHG-CNST-1: Implement BAAQMD's Best Management Practices and Applicable California Green Building Code Requirements to Reduce GHG Emissions from Construction

- Use alternative-fuel (e.g., biodiesel, electric) construction vehicles/equipment (at least 15 percent of the fleet).
- Use local building materials (at least 10 percent).
- Recycle at least ~~50-65~~ percent of construction waste or demolition materials.

Operations

To assist lead agencies in determining whether operational GHG emissions require further analysis and whether a project may exceed the BAAQMD GHG mass emissions or efficiency threshold, BAAQMD developed screening criteria in its *California Environmental Quality Act: Air Quality Guidelines*. However, BAAQMD's screening criteria do not apply to the proposed project because they apply only to projects with buildout years prior to 2020 and the buildout of the proposed project is anticipated to occur in ~~2023~~2025.

As previously discussed, the proposed project would not result in an increase of VMT or daily trips; therefore, the proposed project would not generate new GHG emissions from mobile sources. GHG emissions related to project operations were estimated using CalEEMod. The operational emissions would be the same for all build alternatives. Table 3.7-5 shows the proposed project's annual GHG emissions.

Table 3.7-5. Project Operational Greenhouse Gas Emissions

Source Category	Annual GHG Emissions (MTCO ₂ e/year) ^a
Area	<0.01
Electricity	3.0
Natural Gas	0.7
Waste	1.6
Water	0.5
Total Project Emissions	5.8

^a Sum of individual values may not equal total due to rounding.
MTCO₂e = metric tons carbon dioxide equivalent

As shown in Table 3.7-5, the proposed project's GHG emissions would total approximately 6 metric tons of CO_{2e} per year. The proposed project's GHG analysis is conservative because it does not take reduction credits from operational GHG emissions related to the existing transit center, which is likely less energy-efficient than the proposed project because the customer service building would be Leadership in Energy and Environmental Design (LEED) Gold certified. This analysis evaluates operational GHG impacts, based on compliance with regulatory programs, which is recognized by the Supreme Court as an acceptable pathway for evaluating project-level GHG emissions under CEQA (*Center for Biological Diversity et al. vs. California Department of Fish and Wildlife, the Newhall Land and Farming Company*). Where applicable, the analysis considers guidance issued by CARB and OPR. Because the proposed project would be in operation in ~~2023~~2025, the 2017 Scoping Plan, which outlines reduction targets through 2030, is the most relevant regulatory document for evaluating the proposed project.

Area Emissions

Area sources include gasoline-powered landscaping equipment (e.g., trimmers, mowers). Area source emissions are based on CalEEMod's default assumptions, which represent a conservative estimate of equipment usage, based on the square footage of new building space. The proposed project would mainly constitute impervious surfaces and landscaped areas with California native trees, plants, and shrubs appropriate for the climatic conditions of the project area. As shown in Table 3.7-5, area emissions would contribute the least amount of GHG emissions for the proposed project. Although there are no relevant measures in the 2017 Scoping Plan related to area sources, the proposed project's minimal area emissions and use of California native plants that require minimal maintenance would be in line with the 2017 Scoping Plan's overall goal of reducing emissions.

Energy Emissions

OPR's 2018 *Discussion Draft CEQA and Climate Change Advisory* recommends that a land use development project that "achieves applicable building energy efficiency standards, uses no natural gas or other fossil fuels, and includes Energy Star appliances where available, may be able to demonstrate a less than significant greenhouse gas impact associated with project operation." Although OPR recommends new buildings do not consume fossil fuels, the 2017 Scoping Plan does not assume all-electric buildings in its 2030 reduction analysis. Rather, the 2017 Scoping Plan assumes new gas appliances will be high-efficiency units.

The proposed project would utilize the U.S. Green Building Council's LEED green building certification system as a tool for evaluating and measuring achievements in sustainable design. proposed The project's new construction and substantial renovation goal is to achieve, at a minimum, LEED Gold certification. Attaining LEED Gold certification would ensure the building component of each build alternative would be energy efficient and would be consistent with the assumptions and emissions-reduction requirements of the 2017 Scoping Plan.

Land Use Emissions

Each of the build alternatives would remove trees during construction. However, the project designs of each alternative would include landscape features such as trees, shrubs, and bushes. Additionally, the design of each alternative would incorporate natural materials, such as wood, which would store carbon, in the canopies of bus platforms and other components. Although there are no relevant measures in the 2017 Scoping Plan or explicit regulatory requirements related to tree planting, the

project design and landscape designs would be consistent with the 2017 Scoping Plan's overall goal of avoiding losses in carbon sequestration.

Waste Emissions

The proposed project would install trash/recyclable receptacles to meet the City's Mandatory Recycling Priority. These features are consistent with the 2017 Scoping Plan's overall goal of reducing waste emissions and its specific strategy to avoid landfill CH₄ emissions by reducing the disposal of landfill waste and organics. In addition, these features would support and comply with AB 341's mandatory recycling requirement and support the state's recycling goal and the 2017 Scoping Plan.

Water Use Emissions

The project building would attain LEED Gold certification at a minimum. Furthermore, the proposed project would comply with all applicable City and state water conservation (indoor and outdoor) measures, including Title 24, Part 6, the California Energy Code baseline standard requirements for energy efficiency, based on the 2019 Energy Efficiency Standards requirements, and the 2019 California Green Building Standards Code. These features are consistent with the 2017 Scoping Plan's overall goal of reducing water emissions and serve to support ongoing regulatory programs (e.g., SB X7-7, Title 24) that aim to reduce GHG emissions associated with conveying and distributing water.

Conclusion

Operation of the proposed project is not expected to increase VMT and would support the shift from automobiles to public transit. Additionally, the proposed project is a transportation project (specifically a transit-supportive project) and by its nature would encourage the use of public transit to reduce single-occupancy vehicle trips, VMT, and associated GHG emissions. The customer service building would also be designed to achieve LEED Gold certification. Overall, the proposed project would be consistent with regulatory programs, such as SB 743, that expressly aim to reduce VMT and incorporate energy-efficient designs, which would be consistent with the state's climate change goals. Therefore, operational GHG impacts would be *less than significant*.

Impact GHG-2: Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases

All Build Alternatives

AB 32 and SB 32 are the state's plans for reducing GHG emissions. At the local level, CCAP 2030 is the City's plan for reducing GHG emissions. The proposed project's consistency with AB 32 and SB 32 (including the 2017 Scoping Plan) and CCAP 2030 has been assessed to determine the significance of this impact. In addition, the proposed project's consistency with the 2017 Clean Air Plan, SB 375/*Plan Bay Area 2040*, and EO S-3-05 has also been reviewed.

Assembly Bill 32 and Senate Bill 32

AB 32 codifies the state's GHG emissions-reduction targets for 2020. CARB adopted the 2008 Scoping Plan and 2014 first update as a framework for achieving AB 32. The 2008 Scoping Plan and 2014 first update outlined a series of technologically feasible and cost-effective measures to reduce

statewide GHG emissions. CARB adopted *California's 2017 Climate Change Scoping Plan* in November 2017 as a framework for achieving the 2030 GHG emissions-reduction goal described in SB 32.

The 2008 and 2014 Scoping Plans indicate that some reductions would need to come in the form of changes pertaining to vehicle emissions and mileage standards. Some would come from changes pertaining to sources of electricity and increased energy efficiency at existing facilities. The remainder would need to come from state and local plans, policies, or regulations to lower carbon emissions, relative to BAU conditions. The 2017 Scoping Plan carries forward GHG emissions-reduction measures from the 2014 first update as well as new measures to help achieve the state's 2030 target across all sectors of the California economy, including transportation, energy, and industry. Local governments will continue to play a vital role in reducing GHG emissions at the local level. Currently, 60 percent of cities and more than 70 percent of counties in California have completed a GHG inventory. In addition, 42 percent of local governments have completed a climate, energy, or sustainability plan that addresses GHG emissions (CARB 2017a).

Applicable transportation-related GHG emissions-reduction strategies and policies outlined in the 2008, 2014, and 2017 Scoping Plans include the mobile-source strategy, which encourages a reduction in VMT through implementation of SB 375 and regional SCS as well as other VMT reduction strategies. Energy-efficiency measures, including implementation of green building standards, the use of solar power, and the installation of electric vehicle charging stations, are outlined in the Scoping Plans. The Scoping Plans also discuss existing and proposed water conservation measures, including drought-resistant landscaping. GHG emissions-reduction strategies related to trees and vegetation are also described in the Scoping Plans.

The proposed project would redevelop a transportation center in the City of San Rafael. The proposed project is consistent with the *Marin Strategic Vision Plan* (Transportation Authority of Marin 2017), *Plan Bay Area 2040* (MTC and ABAG 2017), and the *San Rafael Downtown Station Area Plan* (City of San Rafael 2012). The proposed project is one of the major projects included in these documents, which serve as the RTP/SCS for the respective areas, integrating transportation and land-use strategies to manage GHG emissions and plan for future population growth. On the state level, the proposed project is consistent with *California Transportation Plan 2050* (Caltrans 2021), which is the state's blueprint for meeting future mobility needs. One of the main policies identified in the regional and local plans of the jurisdictions where the proposed project would be located is the reduction of VMT on roadways. Operation of the proposed project is not expected to increase VMT and would support the shift from automobiles to public transit. Additionally, the proposed project would encourage the use of public transit to reduce single-occupancy vehicle trips, VMT, and associated GHG emissions, which would support the 2017 Scoping Plan. Additionally, the proposed project's new construction and substantial renovation goal is to achieve, at a minimum, LEED Gold certification for the customer service building and would ensure the building component of each build alternative would be energy efficient. Accordingly, the proposed project would not conflict with applicable policies described in the Scoping Plans for AB 32 and SB 32.

California's 2017 Climate Change Scoping Plan

The consistency of the proposed project with the policies in the 2017 Scoping Plan for achieving the 2030 GHG target is analyzed in Table 3.7-6.

Table 3.7-6. Consistency of the Proposed Project with 2017 Scoping Plan Policies^a

Policy	Primary Objective	Proposed Plan Consistency Analysis
SB 350	Reduce GHG emissions in the electricity sector by implementing the 50% RPS, doubling energy savings, and taking other actions as appropriate to achieve the GHG emissions-reductions planning targets in the Integrated Resource Plan process.	This policy is a state program that requires no action at the local or project level. Nonetheless, the proposed project would be designed to meet LEED Gold standards. These design guidelines and standards would reduce energy demands.
Low-Carbon Fuel Standard	Transition to cleaner/less-polluting fuels that have a lower carbon footprint.	This policy is a state program that requires no action at the local or project level. Nonetheless, implementation of the proposed project would not reduce or minimize access to any bicycle and pedestrian facility and is intended to enhance or create new multimodal connectivity to transit-oriented services in the region. Such connectivity reduces the need for single-occupancy vehicle trips.
Mobile-Source Strategy (Cleaner Technology and Fuels Scenario)	Reduce GHGs and other pollutants from the transportation sector by transitioning to zero-emission and low-emission vehicles, operating cleaner transit systems, and reducing VMT.	This policy is a state program that requires no action at the local or project level. Nonetheless, the proposed project is not expected to increase VMT and would support the shift from automobiles to public transit. Additionally, the proposed project is a transit-supportive project that would encourage the use of public transit to reduce single-occupancy vehicle trips and associated GHG emissions. The proposed project would not reduce or minimize access to any bicycle and pedestrian facility and is intended to enhance or create new multimodal connectivity to transit-oriented services in the region. Such connectivity reduces the need for single-occupancy vehicle trips.
SB 1383	Approve and implement SLCP strategy to reduce highly potent GHGs.	This policy is a state program that requires no action at the local or project level and is not applicable to the proposed project.
California Sustainable Freight Action Plan	Improve freight efficiency, transition to zero-emission technologies, and increase competitiveness of California's freight system.	This policy is a state program that requires no action at the local or project level and is not applicable to the proposed project.
Post-2020 Cap-and-Trade Program	Reduce GHGs across largest GHG emissions sources.	This policy is a state program that requires no action at the local or project level and is not applicable to the proposed project.

^a The 2017 Scoping Plan policies included in this table are those representing the state strategy for meeting the 2030 GHG target of SB 32.

As shown, the proposed project would not conflict with or hinder implementation of the policies in the 2017 Scoping Plan.

City of San Rafael Climate Change Action Plan

As discussed above, the City adopted revisions to its CCAP, resulting in CCAP 2030. Table 3.7-7 evaluates the proposed project's consistency with applicable reductions measures in CCAP 2030.

Updated Table 3.7-7. Consistency of the Proposed Project with the City of San Rafael Climate Change Action Plan

Local Measure	Measure Description	Project Consistency
LCT-C5: Public Transit	<p>Support and promote public transit by taking the following actions:</p> <ul style="list-style-type: none"> Support the development of an attractive and efficient multi-modal transit center and provide safe routes to the transit center that encourage bicycle and pedestrian connections. 	<p>Consistent: The proposed project is the development of an attractive and efficient multi-modal transit center that would provide alternatives to single-occupancy vehicle travel by providing safe access to transit by bicyclists and pedestrians. Such connectivity reduces the need for single-occupancy vehicle trips and associated GHG emissions.</p>
WR-C3: Construction & Demolition Debris and Self-Haul Waste	<p>Require all loads of construction & demolition debris and self-haul waste to be processed for recovery of materials as feasible. Investigate creation of an ordinance requiring deconstruction of buildings proposed for demolition or remodeling when materials of significant historical, cultural, aesthetic, functional, or reuse value can be salvaged.</p>	<p>Consistent: Mitigation Measure MM-GHG-CNST-1 would require the proposed project to recycle at least 50 percent of construction waste or demolition materials in accordance with BAAQMD best management practices. <u>Higher waste diversion requirements may also be applicable, such as the waste diversion requirements under the California Green Building Standards Code (i.e., Title 24, Part 11, Section 5.408.1) and/or local ordinances.</u></p>
WC-C1: Community Water Use	<p>Reduce indoor and outdoor water use in residential and commercial buildings and landscaping.</p> <ul style="list-style-type: none"> Ensure all projects requiring building permits, plan check, or design review comply with state and Marin Municipal Water District regulations. 	<p>Consistent: The customer service building would be designed to achieve LEED Gold certification at a minimum. This certification would ensure the proposed project is designed to conserve water in its water fixtures such as toilets and sinks.</p>
SA-C1: Urban Forest	<p>Increase carbon sequestration and improve air quality and natural cooling through increasing tree cover in San Rafael.</p> <ul style="list-style-type: none"> Regulate and minimize removal of large trees and require planting of replacement trees. Require that the site planning, construction, and maintenance of new development preserve existing healthy trees and native vegetation on site to the maximum extent feasible. Replace trees and vegetation not able to be saved. 	<p>Consistent: Although the proposed project would remove trees to develop the build alternatives, the designs of each alternative would include a variety of landscape features such as trees, shrubs, and bushes.</p>

Local Measure	Measure Description	Project Consistency
SA-C2: Carbon Sequestration	<p>Increase carbon sequestration in the built environment, developed landscapes, and natural areas.</p> <ul style="list-style-type: none"> Encourage use of building materials that store carbon, such as wood and carbon-intensive concrete through agency partnerships and engagement campaigns. 	Consistent: Although the proposed project would remove trees to develop the build alternatives, the designs of each alternative would include a variety of landscape features such as trees, shrubs, and bushes and incorporate natural materials, such as wood, in the canopies of bus platforms.

As shown in Table 3.7-7, the proposed project would be consistent with all applicable measures in the City's CCAP 2030. Because the proposed project would be consistent with all applicable GHG reduction measures, it would not conflict with CCAP 2030.

Bay Area 2017 Clean Air Plan

As described above, the proposed project includes numerous objectives and measures to reduce operational GHG emissions. The proposed project would be consistent with Clean Air Plan measures, including Transportation Control Measures TR3, Local and Regional Bus Services; and TR9, Bicycle and Pedestrian Access and Facilities. The proposed project also would be consistent with Buildings Control Measure BL1, Green Buildings; Water Control Measure WR2, Support Water Conservation; and Natural and Working Lands Control Measure NW2, Urban Tree Planting. Based on this, the proposed project would support the applicable control measures identified in the 2017 Clean Air Plan to meet the plan's primary goals.

Plan Bay Area 2040/California Senate Bill 375

Under the requirements of SB 375, MTC and ABAG have developed an RTP/SCS with the adopted *Plan Bay Area 2040* for achieving the Bay Area's regional GHG emissions-reduction target. Targets for the San Francisco Bay Area, approved in March 2018 by CARB, include a 10-percent reduction in GHG emissions per capita from passenger vehicles by 2020 compared with 2005 emissions; the adopted target for 2035 is a 19-percent reduction. The emissions-reduction targets are those associated with land use and transportation strategies only.

The proposed project is one of the major projects included in the *Marin Strategic Vision Plan* and would support the regional plans of the Transportation Authority of Marin and transportation goals in *Plan Bay Area 2040*. On the state level, the proposed project is consistent with the state's blueprint for meeting future mobility needs. One of the main policies identified in the regional and local plans of the jurisdictions where the proposed project would be located is the reduction of VMT on roadways. Operation of the proposed project is not expected to increase VMT and would support the shift from automobiles to public transit. Additionally, the proposed project would encourage the use of public transit to reduce single-occupancy vehicle trips, VMT, and associated GHG emissions, which would be consistent with *Plan Bay Area 2040*.

Executive Order S-3-05

Achieving EO S-3-05 will require even more aggressive changes in all sectors of the economy and participation at all levels of government to reduce GHG emissions even further. Although many GHG emissions-reduction measures outlined in the 2017 Scoping Plan will most likely continue to be

implemented and enhanced beyond 2030, no plan for meeting the 2050 GHG emissions-reduction goal described in EO S-3-05 has been adopted.

Based on the 2017 Scoping Plan, many of the reductions needed to meet the 2050 target will come from state regulations, including cap-and-trade, the requirement for increased renewable energy sources in California's energy supply, updates to Title 24, and increased emission-reduction requirements for mobile sources. The 2017 Scoping Plan indicates that reductions would need to come in the form of changes pertaining to vehicle emissions and mileage standards, changes related to sources of electricity and increased energy efficiency at existing facilities, and state and local plans, policies, or regulations that will lower GHG emissions relative to BAU conditions. The 2017 Scoping Plan carries forward GHG reduction measures from the First Update, as well as new potential measures to help achieve the state's 2030 target across all sectors of the California economy, including transportation, energy, and industry.

The proposed project includes measures to reduce operational and construction-related GHG emissions, which include meeting LEED Gold certification for the customer service building and measures in Mitigation Measure MM-GHG-CNST-1. It is also possible that future adopted state and federal actions will reduce the proposed project's emissions, as shown in Table 3.7-7, even further. Accordingly, the proposed project's emissions levels would be consistent with the goals in EO S-3-05.

Other State Regulations

As discussed above in the analysis of consistency with SB 32 and EO S-3-05/B-55-18, systemic changes will be required at the state level to achieve the statewide future GHG reduction goals. Regulations, such as the SB 100-mandated 100-percent carbon-free RPS by 2045; implementation of the state's SLCP Reduction Strategy, including forthcoming regulations for composting and organics diversion; and future updates to the state's Title 24 standards (including requirements for net-zero energy buildings), will be necessary to attain the magnitude of reductions required for the state's goals. The proposed project would be required to comply with these regulations in new construction (in the case of updated Title 24 standards) or would be directly affected by the outcomes (e.g., energy consumption would be less carbon intensive due to the increasingly stringent RPS). Unlike the Scoping Plans, which explicitly call for additional emissions reductions from local governments and new projects, none of these state regulations identify specific requirements or commitments for new development beyond what is already required by existing regulations or will be required in forthcoming regulation. Therefore, for the foreseeable future, the proposed project would not conflict with any other state-level regulations pertaining to GHGs in the post-2020 era.

Conclusion

The proposed project includes measures that would be consistent with state regulations that will reduce GHG emissions (e.g., SB 100, SLCP Reduction Strategy) and the applicable policies described in the Scoping Plans for AB 32, SB 32, the City's CCAP 2030, 2017 Clean Air Plan, and *Plan Bay Area 2040*. Consequently, the proposed project would not conflict with achievement of AB 32 reduction goals for 2020, SB 32 reduction goals for 2030, or the RTP/SCS reduction goals for 2020 and 2035. Therefore, this impact would be ***less than significant***. No mitigation is required.