

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 Larkspur Ferry Service Expansion and Parking Project (Project) and mitigation measures that would reduce significant impacts, where feasible and appropriate.

3.7.1 Existing Conditions

3.7.1.1 Regulatory Setting

The Golden Gate Bridge, Highway and Transportation District, as the owner of the Larkspur Ferry Terminal, is the California Environmental Quality Act (CEQA) Lead Agency for the Project and has prepared this Draft Environmental Impact Report to evaluate potential impacts and identify required mitigation to avoid or reduce potentially significant impacts. The federal, state, and regional and local regulations applicable to the Project are provided in this section.

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 could regulate GHGs as pollutants under the CAA.

On February 12, 2026, EPA finalized its rescission of the Greenhouse Gas Endangerment Finding, which served as a prerequisite for regulating emissions from new motor vehicles and new motor vehicle engines. Absent this finding, EPA lacks statutory authority under Section 202(a) of the CAA to prescribe standards for GHG emissions. Therefore, EPA also finalized the repeal of all subsequent GHG emission standards from its regulations for light-, medium-, and heavy-duty on-highway vehicles and engines.

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. 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% each year through model year 2026; the standards issued in 2012 would have required annual fuel-efficiency increases of about 5%. California, 22 other states, and the District of Columbia filed a petition for review of the final rule on May 27, 2020. On December 5, 2025, the National Highway Traffic Safety Administration published a notice of proposed rulemaking, entitled the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule III for Model Years 2022 to 2031 Passenger Cars and Light Trucks" (SAFE III). The notice of proposed rulemaking proposes a "complete reset" of the Corporate Average Fuel Economy Standards program, which was first established by Congress in 1975.

State

California has taken proactive steps, summarized 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. 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. Relevant regulations, policies, 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% below the 1990 levels by 2050. The California Environmental Protection Agency secretary is required to coordinate development and implementation of strategies to achieve the GHG reduction targets.

Global Warming Solutions Act of 2006

In 2006, the California State Legislature signed the Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32), which provides the framework for regulating GHG emissions in California. This law requires California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures such that statewide GHG emissions are reduced in a technologically feasible and cost-effective manner to 1990 levels by 2020.

Climate Change Scoping Plan

Part of CARB's direction under AB 32 was to develop a scoping plan that contains the main strategies California will use to reduce GHG emissions that cause climate change. The scoping plan includes a range of GHG reduction actions that include direct regulations, alternative compliance mechanisms, monetary and nonmonetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 cost of implementation fee regulation to fund the program (CARB 2008). CARB first approved the AB 32 Scoping Plan in 2008, and its latest adopted plan is the *2022 Scoping Plan for Achieving Carbon Neutrality* (CARB 2022). The 2022 scoping plan lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions to 85% below 1990 levels no later than 2045. This path includes strategies for reducing California's dependency on petroleum (for example, by electrifying the transportation sector and continuing to build out renewable energy resources), minimizing the use of chemicals and refrigerants with high global warming potential (GWP), and expanding the role of natural and working lands in capturing and storing carbon (CARB 2022).

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% by 2020.

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

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 to 2025 in 2012. Together, the two standards are expected to increase average fuel economy to roughly 54.5 miles per gallon in 2025.

Senate Bills 1078, 107, and 2

Senate Bills (SBs) 1078 (2002), 107 (2006), and 2 (2011), California's Renewables Portfolio Standard, 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% 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 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 sustainable community strategies (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 CEQA review requirements. The applicable RTP/SCS for the Project area is *Plan Bay Area 2050+* (MTC and ABAG 2026), discussed under "Local."

Senate Bill 743

SB 743 was signed into law in 2013. It 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 recommends that vehicle miles traveled (VMT) serve as the primary analysis metric, replacing the existing criteria of delay and level of service. In 2018, Office of Planning and Research 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% less than existing (2015 to 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.

Executive Order B-30-15

In April 2015, Governor Brown signed Executive Order B-30-15 that added the intermediate target of reducing GHG emissions to 40% below 1990 levels by 2030.

Clean Energy and Pollution Reduction Act

In 2015, SB 350 was signed into law, establishing new clean energy, clean air, and GHG reduction goals for 2030 and beyond. SB 350 requires the state to double statewide energy efficiency savings in electricity

and natural gas end uses by 2030 and increases California's renewable electricity procurement goal from 33% by 2020 to 50% by 2030.

Senate Bill 32 and Assembly Bill 197

SB 32 (2016) requires CARB to ensure that statewide GHG emissions are reduced to at least 40% 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 (CARB 2017a) and 2022 *Climate Change Scoping Plan* (CARB 2022) to meet the GHG reduction requirement set forth in SB 32.

Short-Lived Climate Pollutant Reduction Strategy

To best support the reduction of GHG emissions consistent with AB 32, CARB published the *Short-Lived Climate Pollutant Reduction Strategy* in March 2017 (CARB 2017b). This plan, developed pursuant to SB 605 and SB 1383, establishes targets for statewide reductions in short-lived climate pollutant emissions of 40% below 2013 levels by 2030 for methane (CH₄) and hydrofluorocarbons and 50% below 2013 levels by 2030 for anthropogenic black carbon. This strategy was integrated into the 2022 Scoping Plan (CARB 2022).

The 100 Percent Clean Energy Act of 2018

SB 100, signed into law in 2018, requires California utilities to reach 50% renewable resources by December 31, 2026, and 60% by December 31, 2030. Through initial SB 100 analysis, increased energy storage and advancements in zero-carbon technologies can reduce natural gas capacity needs. SB 100 also establishes policy that renewable energy resources and zero-carbon resources supply 100% of all retail sales of electricity by December 31, 2045; however, the policy acknowledges that retaining some natural gas power capacity may minimize costs while ensuring uninterrupted power supply during the transition.

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. The 2025 updates to California's Title 24 (effective January 1, 2026) introduce major changes across the Energy Code (Part 6) and California Green Building Standards Code (CALGreen) (Part 11) to advance statewide energy efficiency, grid integration, and climate resilience.

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 Larkspur. The first per capita GHG emissions-reduction targets for the SFBAAB were 7% by 2020 and 15% 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% and 16% reductions in per-capita GHG emissions by 2020 and 2035, respectively (MTC 2013). *Plan Bay Area 2050+* was adopted in March 2026 by the Association of Bay Area Governments (ABAG) and MTC (MTC and ABAG 2026). This updated plan builds on *Plan Bay Area 2050+*, adopted in 2021, to reflect new data about external forces and integrate input from thousands of residents. It identifies the policy and financial commitments needed to make meaningful progress on shared long-term planning goals and introduces new initiatives, such as Transit 2050+, to confront the deep transportation and land-use issues the region faces today. The plan achieves a 21% per capita reduction of GHG emissions by 2035, exceeding the 19% target set by CARB.

Bay Area Air Quality Management District

As discussed in Section 3.2, Air Quality, the Bay Area Air District (BAAD) is responsible for air quality planning within the SFBAAB, including projects in the City of Larkspur. BAAD 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 (for example general plans, specific plans), which are outlined in its *California Environmental Quality Act: Air Quality Guidelines* (BAAQMD 2022). These guidelines also outline methods for quantifying GHG emissions and potential mitigation measures.

The Bay Area Air Quality Management District's (BAAQMD's) 2017 *Spare the Air, Cool the Climate: A Blueprint for Clean Air and Climate Protection in the Bay Area* plan (called the Clean Air Plan in this chapter) 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% 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, which make up the Clean Air Plan's control strategy for emissions, including GHGs (BAAQMD 2017). Some measures applicable to the proposed Project include the following:

- TR2—TR2 Trip Reduction Programs
- TR9—Bicycle and Pedestrian Access and Facilities
- NW2—Urban Tree Planting

City of Larkspur Climate Change Action Plan 2030

In 2021, the City adopted its Climate Change Action Plan (CCAP) 2030 to reduce GHG emissions using a baseline year of 2005. The Climate Action Plan establishes targets that meet the State's goals to reduce emissions to 40% below 1990 levels by 2030 and 80% below 1990 levels by 2050. In Larkspur, that means emissions would need to drop to 47,227 metric tons carbon dioxide equivalent (MTCO₂e) by 2030 and 15,740 MTCO₂e by 2050. The Plan lays out measures that will meet the 2030 target and put the City on a trajectory to meet the 2050 goal (City of Larkspur 2021).

The CCAP includes a variety of regulatory, incentive-based, and voluntary strategies that are expected to reduce emissions from both existing and new development in Larkspur. Several of the strategies build on existing programs, while others provide new opportunities to address climate change. State actions will have a substantial impact on future emissions. Local strategies will supplement these State actions and achieve additional GHG emissions reductions (City of Larkspur 2021).

CCAP 2030 includes goals, policies, performance standards, and implementation measures for achieving GHG emission reductions and meeting the requirements of AB 32. CCAP 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 2022). 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 before 2030 (City of Larkspur 2021).

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 (for example, 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 because 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 carbon dioxide (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 as follows.

Anthropogenic CO₂ enters the atmosphere through fossil fuels (oil, natural gas, and coal) combustion, solid waste decomposition, plant and animal respiration, and chemical reactions (such as 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.

CH₄ 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.

N₂O is emitted during agricultural and industrial activities and 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 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 GWP of 1 by definition). Table 3.7-1 lists the GWP of CO₂, CH₄, and N₂O from IPCC Fifth Assessment Report (IPCC 2014) and their lifetimes in the atmosphere.

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

Greenhouse Gas	GWP (100 years)	Lifetime (years)
CO ₂	1	50 to 200
CH ₄	28	12
N ₂ O	265	114

Source: IPCC 2014

Greenhouse Gas Inventory

A GHG inventory is a quantification of all GHG emissions and sinks¹ within a selected physical or economic boundary. GHG inventories can be performed on a large scale (such as for global and national entities) or on a small scale (such as 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 national, statewide, and local GHG inventories to help contextualize the magnitude of potential Project-related emissions.

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

Emissions Inventory	MTCO ₂ e (millions)
2022 EPA National GHG Emissions Inventory	6,343
2023 CARB State GHG Emissions Inventory	360.4
2022 San Francisco Bay Area GHG Emissions Inventory	66

Sources: EPA 2024; CARB 2025; BAAD 2026

As discussed in Section 3.7.1.1, Regulatory Setting, the City adopted its CCAP to reduce GHG emissions. CCAP outlines state and local actions that would support the City's GHG emission-reduction goals. Table 3.7-3 provides a summary of the CCAP local action reductions. The projected reductions from state and local actions total 26,506 MTCO₂e by 2030. Community emissions are projected to be 47,094 MTCO₂e in 2030 with the full implementation of the CCAP. This is 40% less than 1990 levels and meets the reduction target set by the State.

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

Local Action Strategy	GHG Reductions by 2030 (MTCO ₂ e)	Percent of Reductions
Low-Carbon Transportation	8,557	46%
Renewable Energy and Electrification	4,352	23%
Energy Efficiency	3,278	17%
Waste Reduction	2,581	14%
Water Conservation	2	<1%
Sequestration and Adaptation	N/A	N/A
Community Engagement	N/A	N/A
Implementation and Monitoring	N/A	N/A
Total	18,770	100%

Source: City of Larkspur 2021

N/A = not applicable (emissions reductions not quantified)

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

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 exceeding 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 degree Celsius (°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 the following:

- Declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in atmospheric water vapor because of the atmosphere's ability to hold more water vapor at higher temperatures (CNRA 2018)
- Rising average global sea levels primarily because of 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% to as much as 90% over the next 100 years (CNRA 2018)

- Increasing the number of days conducive to ozone formation (including clear days with intense sunlight) by 25% to 85% (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 because of 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 because of 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, given people will experience earlier death and worsening illnesses. Indirect impacts on public health include increased vector-borne diseases, stress, and mental trauma because of extreme events and disasters, economic disruptions, and residential displacement (CNRA 2018).

3.7.2 Environmental Impacts

The Build Alternatives are analyzed for GHG impacts. The following sections describe the methodology and the level of impacts from Project's GHG emissions.

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 as follows.

Construction Emissions

The construction of the Project would occur in two phases. Construction on the North Lot would occur from 2033 and 2034, and the construction of the Main Lot would occur from 2037 to 2040. Construction GHG emissions were estimated using California Emissions Estimator Model (CalEEMod), version 2022.1 and the same methodologies and assumptions as described in Chapter 3.2.2.1 for criteria pollutants in the air quality analysis.

Operational Emissions

Direct GHG emissions from the Project operation were qualified for the No-Build and Build Alternatives. Direct emissions from the Project include GHG emitted from the diesel engines on the ferries and the emissions from the vehicles driven by the passengers to and from the ferry terminals. For the No-Build Alternative, vehicle trips made by passengers that have to drive to San Francisco because of ferry operation capacity limit are also included. Maintenance activities are anticipated to be similar to existing conditions; therefore, emissions changes because of maintenance activities changes would be negligible and are not further evaluated. Emission calculation methodologies for ferry and vehicle trips are the same as described in Section 3.2.2.1 for criteria pollutants.

In addition, Project operation would have indirect GHG emissions from energy consumption because of electricity use by the two new parking garages. While the Project would install solar canopy installations

that may cover the electricity needs of the terminal operation, it was conservatively assumed that the parking garage electricity may be taken from the power grid. To estimate the GHG emissions associated with generating the electricity, default energy consumption rate per building square footage from CalEEMod was used.

3.7.2.2 Thresholds of Significance

State CEQA Guidelines Significance Criteria

The following 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) (referred to as 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.

Bay Area Air District Thresholds

BAAD has recommended climate change impacts thresholds in its 2022 CEQA Air Quality Guidelines Appendix B: CEQA Thresholds for Evaluating the Significance of Climate Impacts for Land Use Projects and Plans (BAAQMD 2022). BAAD recommends using the approach endorsed by the California Supreme Court in *Center for Biological Diversity v. Department of Fish & Wildlife* (2015) (62 Cal.4th 204), which evaluates a project based on its effect on California’s efforts to meet the State’s long-term climate goals. As the Supreme Court held in that case, a project that would be consistent with meeting those goals can be found to have a less-than-significant impact on climate change under CEQA. If a project would contribute its “fair share” of what is needed to achieve the State’s long-term GHG reduction goals, then the lead agency can find that the project is adequately contributing to solving the problem of global climate change and that project’s impact is not significant.

Applying this approach, BAAD has analyzed what will be required of new land-use development projects to achieve California’s long-term climate goal of carbon neutrality by 2045. Based on this analysis, BAAD found that a new land-use development project being built today needs to incorporate the following design elements to do its “fair share” of implementing the goal of carbon neutrality by 2045. BAAD’s threshold for land-use project is that it must include A or B, as described as follows:

A. Projects must include, at a minimum, 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 energy 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 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 Senate Bill 743 VMT target, reflecting the recommendations provided in the Governor's Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA:
 - Residential projects: 15 percent below the existing VMT per capita
 - Office projects: 15 percent below the existing VMT per employee
 - Retail projects: no net increase in existing VMT
- b. Achieve compliance with off-street electric vehicle requirements in the most recently adopted version of CALGreen Tier 2.

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

If a project is designed and built to incorporate the 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 result in a cumulatively considerable contribution to global climate change. Alternatively, a project for which these design elements are not implemented could still be determined to make a less-than-significant contribution of GHG emissions by demonstrating consistency with a local GHG reduction strategy that is consistent with state guidance (State CEQA Guidelines Section 15183.5[b]).

BAAD encourages local jurisdictions to develop climate action plans as a means of demonstrating that their communities—including existing and new buildings and infrastructure—will develop in accordance with meeting the statewide GHG reduction targets. CEQA Guidelines Section 15183.5(b)(2) provides that if a jurisdiction has adopted a climate action plan that satisfies all the Section 15183.5 requirements, the jurisdiction can find that a project that is consistent with the plan will not result in a cumulatively considerable contribution to global climate change under CEQA. 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 of Larkspur has adopted a qualified GHG emissions-reduction strategy: CCAP 2030 (City of Larkspur 2021). CCAP 2030 outlines state and local policies to reduce GHG emissions to meet the 2030 target of 40% less than 1990 levels, consistent with SB 32's target (City of Larkspur 2021).

3.7.2.3 Impacts

This section includes a discussion of each impact as it corresponds to the thresholds of significance discussed previously. Because GHGs have cumulative effects, the impacts are analyzed based on combined construction and operation effects from the Project. Within this section, Alternative 1 and Alternative 2 impacts are discussed together as the Build Alternatives when the associated impacts are substantively the same. Where necessary to differentiate between Build Alternatives, the impact analysis is separated by Build Alternative.

Generate Greenhouse Gas Emissions, Either Directly or Indirectly, that may have a Significant Impact on the Environment?

Construction and Operation

Alternative 1

Alternative 1 construction activities would generate GHG emissions of CO₂, CH₄, and N₂O from off-road construction equipment, construction employees' vehicles, and haul trucks, as well as indirect GHG emissions from electricity consumption. The total GHG emissions from construction of Alternative 1 are summarized in Table 3.7-4. Details of the construction emission summaries and modeling files are in Appendix B-1 and B-2, respectively.

As shown in Table 3.7-4, construction of the North Lot and the Main Lot with Auger Cast Pile (ACP) option would have lower GHG emissions than using the H-Pile option. Construction emissions would cease once construction is completed.

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

Scenarios	Total GHG Emissions (MTCO ₂ e)
North Lot	885.3
Main Lot with H-Pile Option	4,156.6
Main Lot with ACP Option	3,693.1
Total with H-Pile Option	5,041.9
Total with ACP Option	4,578.4

Because construction emissions are temporary and variable, BAAD has not developed a quantitative threshold of significance for construction-related GHG emissions. Construction of the Build Alternatives requires implementation of MM-AQ-CNST-1 requiring use of Tier 4 equipment during construction (refer to Section 3.2, Air Quality), which would further reduce and minimize construction-related GHG emissions. Applicable BAAD best management practices for reducing construction-related GHG emissions would also be incorporated when feasible and practical, which would further minimize and reduce GHG construction emissions (BAAQMD 2022). Potentially applicable BAAD BMPs include but are not limited to the following:

- Use zero-emission and hybrid-powered equipment to the greatest extent possible.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to no more than 2 minutes (a 5-minute limit is required by the state airborne toxics control measure [Title 13, Sections 2449(d)(3) and 2485 of the California Code of Regulations]). Provide clear signage that

posts this requirement for workers at the entrances to the site and develop an enforceable mechanism to monitor idling time to ensure compliance with this measure.

- Prohibit off-road diesel-powered equipment from being in the “on” position for more than 10 hours per day.
- Require all construction equipment to be maintained and properly tuned in accordance with manufacturer’s specifications. Equipment should be checked by a certified mechanic and determined to be running in proper condition before operation.
- Where grid power is available, prohibit portable diesel engines and provide electrical hook ups for electric construction tools, such as saws, drills, and compressors, and using electric tools whenever feasible.
- Recycle or salvage nonhazardous construction and demolition debris, with a goal of recycling at least 15% more by weight than the diversion requirement in Title 24.

Alternative 2

Construction of Alternative 2 would require less construction equipment and vehicles because of the smaller scale and shorter construction duration compared to Alternative 1. Therefore, construction emissions of GHG from Alternative 2 would be less than the emissions from Alternative 1. Similarly, MM-AQ-CNST-1 and BAAD BMPs implemented during Alternative 2 construction would further reduce and minimize GHG construction emissions.

Operation

Build Alternatives

Direct GHG emissions would be from ferry operation and vehicle trips. Indirect GHG emissions are because of electricity consumption during operation. Summary of the GHG emissions are summarized in Table 3.7-5. Net changes between the No-Build and Build Alternatives are in Table 3.7-6. Detailed emissions calculation, summaries, and modeling files are in Appendix B-3.

Table 3.7-5. Operation Greenhouse Gas Emissions

Alternatives	Ferry CO ₂ e (metric ton/year)	Vehicle Trips CO ₂ e (metric ton/year)	Electricity CO ₂ e (metric tons/year)	Total CO ₂ e (metric tons/year)
2025	34,724.1	5,337.1	0	40,061.2
2035 No Build	21,850.4	9,544.1	0	31,394.5
2035 Alternative 1	21,850.4	8,724.8	349.6	30,924.8
2035 Alternative 2	21,850.4	9,131.1	296.8	31,331.2
2050 No Build	21,850.4	28,567.9	0	50,418.3
2050 Alternative 1	37,004.7	21,765.7	349.6	59,120.0
2050 Alternative 2	37,004.7	18,696.3	296.8	56,050.6

Table 3.7-6. Operation Greenhouse Gas – Net Greenhouse Gas Emissions

	Alternatives	CO _{2e} (metric ton/year)
Net Change from 2025 Existing Condition	2035 No Build	-8,666.8
	2035 Alternative 1	-4,979.9
	2035 Alternative 2	-8,782.9
	2050 No Build	10,357.1
	2050 Alternative 1	19,005.9
	2050 Alternative 2	15,936.6
Net Change Compared to No Build	2035 No Build	NA
	2035 Alternative 1	-469.7
	2035 Alternative 2	-116.1
	2050 No Build	N/A
	2050 Alternative 1	8,648.8
	2050 Alternative 2	5,579.5

As shown in Tables 3.7-5 and 3.7-6, both Build Alternatives in 2035 would have a net decrease of GHG emissions when compared to existing condition of 2025. Ferry operation would be at similar level as the existing condition in 2035. VMT in 2035 for both the No-Build and Build Alternatives would be higher than 2025 because of regional growth. Lower emissions in 2035 are mainly because of the use of cleaner engines on ferries and the improved fuel efficiency and stringent vehicle emission standards in future years. GHG emissions from No-Build and Build Alternatives in 2050 would be higher than existing condition because of a combination of increased VMT under the No-Build and Build Alternatives and the increased level of ferry operation of the 2050 Build Alternatives.

When compared to the No-Build Alternative, the Build Alternatives would have lower GHG emissions in 2035. Emissions in 2050 for the Build Alternatives would be higher than the No-Build Alternative because of the increase of ferry operations.

The Project would have VMT reduction due to the shifting of travel mode from driving to using the expanded ferry service, as shown in Table 3.7-7. Reduced VMT from the eliminated vehicle trips would consequently reduce GHG emissions associated with these trips.

Table 3.7-7. Vehicle Miles Traveled Reduction in 2050

Alternatives	VMT	VMT Reduction Compared to No Build
2050 No Build	360,512	N/A
2050 Alternative 1	274,456	23.8%
2050 Alternative 2	234,552	34.6%

Conclusion

Operation of the proposed Project would reduce VMT and support the travel mode shift from automobiles to public transit. The proposed Project would increase ferry operation capacity and, by its nature, would encourage the use of public transit to reduce single-occupancy vehicle trips, VMT, and associated GHG emissions. Compliance with BAAD CEQA thresholds for GHG is described as follows:

- The Project meets the BAAD threshold A.1a for buildings: Two parking garages would be constructed under the Build Alternatives. The Project does not include natural gas appliances or natural gas plumbing in the two new parking garages, which meets the criteria in BAAD climate change threshold Item A.1a for buildings.
- The Project meets the BAAD threshold A.1b for energy use: As determined in Section 3.5, Energy, the Project will 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. Therefore, the Project also meets the criteria in BAAD climate change threshold Item A.1b.
- The Project meets the BAAD threshold A.2a for VMT reduction: The Project would eliminate the vehicle trips travel between Larkspur and San Francisco because of the expanded ferry service. The VMT after Project buildout is approximately 24% and 35% less than the No-Build condition for Alternative 1 and Alternative 2, respectively. This meets the BAAD threshold A.2a VMT reduction requirements, which is a state average of 15% VMT reduction,
- The Project meets the BAAD threshold A.2b for supporting electric vehicles: As discussed in Section 3.5, Energy, the Project will adhere to the CALGreen Code (Title 24, Part 11). Therefore, it meets the BAAD threshold A.2b.

The previous discussion indicates that the Project meets the BAAD threshold criteria for GHG emissions. Therefore, the Project would not generate greenhouse gas emissions that may have a significant impact on the environment. GHG impacts from the Project would be *less than significant*. No mitigation required.

Mitigation Measures

No mitigation required.

Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases?

Construction and Operation

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 of Larkspur's plan for reducing GHG emissions (City of Larkspur 2021). The proposed Project's consistency with AB 32 and SB 32 (including the 2022 Scoping Plan) and CCAP 2030 has been assessed to determine the significance of this impact. In addition, the proposed Project's consistency with BAAQMD's 2017 Clean Air Plan, SB 375/*Plan Bay Area 2050+* (MTC and ABAG 2026), have also been reviewed.

Assembly Bill 32, Senate Bill 32, and Scoping Plans

AB 32 codifies the state's GHG emissions-reduction targets for 2020. CARB adopted the 2008 Scoping Plan (CARB 2008) and 2014 first update (CARB 2014) 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 latest adopted scoping plan is the 2022 scoping plan that lays out a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85% less than 1990 levels no later than 2045 (CARB 2022).

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 Business As Usual conditions.

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 2022 Scoping Plan for Achieving Carbon Neutrality (CARB 2022) is the latest and most comprehensive and far-reaching scoping plan developed to date. It identifies a technologically feasible and cost-effective path to achieve carbon neutrality by 2045 while also assessing the progress California is making toward reducing its GHG emissions by at least 40% less than 1990 levels by 2030, as called for in SB 32 and laid out in the 2017 Scoping Plan (BAAQMD).

The proposed Project would provide landside access improvements and increased ferry service to accommodate forecast future ridership demand and would ensure that ferry service remains a reliable and competitive travel option that reduces VMT and GHG emissions. The proposed Project is included in the *Plan Bay Area 2050+* (MTC and ABAG 2026). *Plan Bay Area 2050+* (MTC and ABAG 2026) served as the Bay Area's RTP and the SCS, integrating transportation and land-use strategies to manage GHG emissions and plan for future population growth. The SCS includes the proposed actions toward achieving the regional GHG emissions-reduction targets that are consistent with the state's GHG reduction goals. 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 GHG emission-reduction strategies and measures in the scoping plans. In addition, the proposed Project's new construction 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.

City of Larkspur Climate Change Action Plan

As discussed, the City of Larkspur adopted revisions to its CCAP, resulting in CCAP 2030. Table 3.7-8 evaluates the proposed Project's consistency with applicable reductions measures in CCAP 2030 (City of Larkspur 2021).

Table 3.7-8. Consistency of the Proposed Project with the City of Larkspur Climate Change Action Plan

Local Measure	Measure Description	Project Consistency
LCT-C5: Public Transit	Provide safe routes to the ferry landing and other transit facilities that encourage bicycle and pedestrian connections. Encourage Golden Gate Bridge, Highway and Transportation District to provide secure bicycle parking at the Larkspur ferry landing.	Consistent: The proposed would make improvements to pedestrian and bicycle facilities for safe access to the ferry terminal. The increased ferry operation encourages people to walk or bike instead of using single-occupancy vehicle for travel.
EE-M1	Replace inefficient street, parking lot, and other outdoor lighting with LED (light-emitting diode) fixtures. Consider design options for new fixtures that retain the historic character of Downtown Historic District.	Consistent: The Project would install energy efficient lighting to the new parking garages.
WR-C3: Construction and Demolition Debris and Self-Haul Waste	Require all loads of construction and 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.	Consistent: The Project would require the proposed Project to recycle at least 15% of construction waste or demolition materials in accordance with BAAD best management practices.
SA-C1: Urban Forest	Increase carbon sequestration and improve air quality and natural cooling through increasing tree cover in Larkspur. - 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.	Consistent: The designs of each alternative would include a variety of landscape features such as trees, shrubs, and bushes for non-paved areas.
SA-C2: Carbon Sequestration	Increase carbon sequestration in the built environment, developed landscapes, and natural areas. Encourage use of building materials that store carbon, such as wood and carbon-intensive concrete through agency partnerships and engagement campaigns.	Consistent: The designs of each alternative would include a variety of landscape features such as trees, shrubs, and bushes.

As shown in Table 3.7-8, the proposed Project would be consistent with 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 (City of Larkspur 2021).

Bay Area 2017 Clean Air Plan

As described previously, the proposed Project includes numerous objectives and measures to reduce operational GHG emissions. The proposed Project would be consistent with BAAQMD's 2017 Clean Air Plan measures, including TR2 Trip Reduction Programs, and TR9, Bicycle and Pedestrian Access and Facilities. Based on this, the proposed Project would support the applicable control measures identified in BAAQMD's 2017 Clean Air Plan to meet the plan's primary goals.

Plan Bay Area 2050+/California Senate Bill 375

Under the requirements of SB 375, MTC and ABAG have developed an RTP/SCS with the adopted *Plan Bay Area 2050+* 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% reduction in GHG emissions per capita from passenger vehicles by 2020 compared with 2005 emissions; the adopted target for 2035 is a 19% reduction. The emissions-reduction targets are those associated with land use and transportation strategies only.

The proposed Project is included in the *Plan Bay Area 2050+*, which also serves as the region's SCS. 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 encouraging public transit and the reduction of VMT on roadways. Increased ferry service would provide a reliable and competitive alternative mode of travel to driving into San Francisco on United States Highway 101 from Larkspur and beyond that will reduce VMT and GHGs. The Project would reduce VMT by 24% to 35% from the No-Build condition in 2050 for Alternative 1 and Alternative 2, respectively, because of the shifting of travel mode from driving to using the expanded ferry service, as shown in Table 3.7-7. Therefore, the Project is consistent with *Plan Bay Area 2050+* (MTC and ABAG 2026) and SB 375.

Conclusion

The proposed Project includes measures that would be consistent with state regulations that will reduce GHG emissions and the applicable policies described in the Scoping Plans for AB 32, SB 32, the City of Larkspur's CCAP 2030, 2017 Clean Air Plan, and *Plan Bay Area 2050+* (City of Larkspur 2021; BAAQMD 2017; MTC and ABAG 2026). 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 required.

Mitigation Measures

No mitigation required.