

3.5 Energy

This section describes the environmental and regulatory setting for energy. It also describes impacts associated with energy that would result from implementing the proposed Larkspur Ferry Service Expansion and Parking Project (Project) and mitigation for significant impacts, where feasible and appropriate. Impacts related to the No-Project Alternative are discussed in Chapter 5, Alternatives to the Project.

3.5.1 Existing Conditions

3.5.1.1 Regulatory Setting

The Golden Gate Bridge, Highway and Transportation District (District), as the owner of the Larkspur Ferry Terminal (LFT), 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

As discussed in Sections 3.2, Air Quality, and 3.7, Greenhouse Gas Emissions, the National Highway Traffic Safety Administration sets the Corporate Average Fuel Economy standards to improve average fuel economy (that is, reduce fuel consumption) and reduce greenhouse gas (GHG) emissions generated by cars and light-duty trucks. The National Highway Traffic Safety Administration and the U.S. Environmental Protection Agency 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 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 Safer Affordable Fuel-Efficient 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.

State

California has adopted statewide legislation to address various aspects of climate change and GHGs, which often pertain directly or indirectly to energy resources and uses. This section is focused on state legislation that specifically mentions energy use or resources. For other state legislation mainly focused on GHG reduction and climate change, refer to Section 3.7, Greenhouse Gas Emissions.

Assembly Bill 1493, Pavley Rules (2002, Amendments 2009)/Advanced Clean Cars (2022)

Known as Pavley I, Assembly Bill (AB) 1493 provided the nation’s first GHG standards for automobiles. AB 1493 required the California Air Resources Board (CARB) to adopt vehicle standards to lower GHG

emissions from automobiles and light-duty trucks to the maximum extent feasible beginning in 2009. In 2012, strengthening of the Pavley standards (known previously as Pavley II but now referred to as the Advanced Clean Cars measures) was adopted for vehicle model years 2017 through 2025. Advanced Clean Cars II was adopted in 2022 and covers models from 2026 to 2035. The program is designed to cut harmful air pollution, greenhouse gas emissions, and toxic emissions from light-duty vehicles, improving public health and environmental outcomes (CARB 2026a).

California Energy Efficiency Standards for Residential and Nonresidential Buildings—California Green Building Standards Code (2025), Title 24 Updates

The California Green Building Standards Code (Part 6, Title 24), or CALGreen, was adopted as part of the California Building Standards Code (24 California Code of Regulations). CALGreen applies to the planning, design, operation, construction, use, and occupancy of newly constructed structures and requires energy-efficient infrastructure to be installed at all new projects beginning January 1, 2011. CALGreen also requires newly constructed structures to develop a waste management plan and divert at least 50% of the construction materials generated during Project construction.

The current 2025 Building Energy Efficiency Standards were adopted in 2025 and took effect on January 1, 2026. Under the 2025 standards, parking garages will be required to meet specific standards for lighting and ventilation systems (CEC 2025).

Executive Order B-16-12 (2012) and N-79-20 (2020)

Executive Order (EO) B-16-12 orders state entities under the direction of the governor, including CARB, California Energy Commission, and California Public Utilities Commission, to support rapid commercialization of zero-emission vehicles (ZEVs). It directs these entities to achieve various benchmarks related to ZEVs. EO N-79-20 calls for elimination of new internal combustion passenger vehicles by 2035. This EO establishes a target for the transportation sector that helps put the state on a path to carbon neutrality by 2045 (CARB 2026b).

Senate Bill 350, Chapter 547, Clean Energy and Pollution Reduction Act of 2015

Senate Bill (SB) 350 (DeLeon), also known as the Clean Energy and Pollution Reduction Act of 2015, was approved by the California legislature in September 2015 and signed by Governor Brown in October 2015. Its key provisions require the following by 2030: (1) a Renewables Portfolio Standard (RPS)¹ of 50% and (2) doubling of the statewide energy efficiency savings related to natural gas and electricity end uses (CEC 2020). To meet these provisions, the bill requires large utilities to develop and submit integrated resource plans that detail how the utilities will reduce GHG emissions and increase the use of clean energy resources while meeting customers' needs.

Senate Bill 100—The 100 Percent Clean Energy Act of 2018 (2018)

SB 100 builds on SB 350, the Clean Energy and Pollution Reduction Act of 2015. SB 100 increases the 2030 RPS target set in SB 350 to 60% and requires an RPS of 100% by 2045. SB 1020 added interim clean energy targets within SB 100's framework, which includes a 90% zero-carbon electricity target by 2035 and 95% by 2040 (CLI 2026).

¹ 1 The RPS is one of California's key programs for promoting renewable energy use within the state. The program sets forth continuous procurement of renewable energy for load-serving entities within California (CEC 2020).

Local

Pacific Gas and Electric Integrated Resource Plan

Pacific Gas and Electric Company (PG&E) adopted the 2022 Integrated Resource Plan (IRP) on November 1, 2022, to provide guidance for serving the electricity and natural gas needs of residents and businesses within its service area while fulfilling regulatory requirements (PG&E 2022). The IRP contains the following objectives that are relevant to the proposed Project:

- **Clean Energy:** In 2021, PG&E delivered nearly 91% of its electricity from GHG-free resources and 48% of its electricity from RPS-eligible renewable resources, such as solar, wind, geothermal, biomass, and small hydro.
- **Reliability:** Maintaining reliability is critical, both for the overall electric system and local segments of the system, especially as California transitions toward higher shares of GHG-free generation resources, many of which are intermittent resources.
- **Affordability:** PG&E's IRP analysis selects resources to meet the state's clean energy and reliability goals in a least-cost manner to customers. PG&E provides a system average rate forecast in compliance with the California Public Utilities Commission's requirements for investor-owned utilities.

Marin Clean Energy Integrated Resource Plan

Marin Clean Energy (MCE) adopted the 2026 IRP on July 16, 2026, to provide near-term, mid-term, and long-term guidance for serving the electricity and natural gas needs of its customers within its service area while fulfilling regulatory requirements (MCE 2026). The IRP contains the following planning policies that are relevant to the Project:

- Reduce GHG emissions and other pollutants associated with the electric power sector through increased use of renewable, GHG-free, and low-GHG energy sources.
- Maintain competitive electric rates and increase control over energy costs through management of a diversified resource portfolio.
- Benefit the local economy by offering competitive electricity rates and customer programs and investing in infrastructure, energy, and workforce development programs within MCE's service area.
- Help customers reduce energy consumption and electric bills by supporting and administering enhanced customer energy efficiency, cost-effective distributed generation, and other demand-side programs.
- Enhance system reliability through investments in supply- and demand-side resources.

City of Larkspur 2040 General Plan

The City of Larkspur 2040 General Plan (City of Larkspur 2024) provides a vision for long-range physical and economic development of the City of Larkspur, provides strategies and specific implementation actions, and establishes a basis for judging whether specific development proposals and public projects are consistent with the City of Larkspur's plans and policy standards. *The City of Larkspur 2040 General Plan* contains a Circulation Element and a Sustainability Element, which include policies related to energy resources (City of Larkspur 2024). The following policies are applicable to energy:

Circulation Element

Goal CIR-1: A multimodal transportation system that is safe, efficient, and incorporates the needs of all circulation system users

Goal CIR-6: Attractive alternatives to the use of private automobiles in order to reduce automobile traffic, especially peak hour traffic, vehicle miles traveled (VMT), and transportation-related sources of air pollution and energy consumption

Goal CIR-12: Circulation improvements that do not adversely affect the environment

Sustainability Element

- Land Use Policy 12.5 promotes energy efficient and green building practices for new, rehabilitated, or remodeled development, including recommended Green Building, Energy Efficiency and Renewable Energy programs in the City's Climate Action Plan (CAP) and the Green Building standards in the City Municipal Code.
- Housing Policy H4.1 calls for developing and promoting energy efficiency measures consistent with the CAP.
- Health and Safety Policy 10.1 recommends regularly updating the CAP and monitoring of the progress toward meeting established GHG goals and development codes to implement the recommended Green Building, Energy Efficiency and Renewable Energy programs and promote state-of-the-art energy efficiency in new homes and remodels.
- Natural Environment and Resources Policy 4.3 calls for continued implementation of the CAP.
- The CAP includes eight implementation programs to increase the efficient use of energy.
- The City of Larkspur is currently implementing a CAP recommendation to increase use of renewable energy by enrolling in MCE's 100% renewable energy option.
- The CAP contains many recommendations to increase the use and generation of renewable energy, including use of electric vehicles; energy efficient upgrades for buildings, lights, and pumps; solar energy systems; GHG-free energy generation; building and appliance electrification; innovative technologies; and energy efficiency protocols.
- Several General Plan policies (for example, Health and Safety Policies 2.4 and 10.1, Natural Environment and Resources Policy 4.3, Land Use Policy 11.5) all recommend maintenance and implementation of the CAP.

Larkspur Climate Action Plan 2030

The *Larkspur Climate Action Plan 2030* (CAP 2030), adopted in 2021 by the City of Larkspur, includes goals, policies, and strategies to reduce the City's GHG emissions, in compliance with AB 32 and SB 375. CAP 2030 was adopted with the purpose of reducing GHGs community-wide to achieve a reduction target of 40% less than 1990 emission levels by 2030 and drawdown climate warming GHG emissions such as carbon dioxide from the atmosphere to secure a safe future for its residents. The City of Larkspur's CAP 2030 provides strategies and specific actions for energy use, transportation, waste, water, and natural systems that substantial evidence demonstrates, if fully implemented, will collectively achieve the targeted emissions level for the year 2030 (City of Larkspur 2024). GHG emissions largely involve energy consumption (that is, fossil-fuel usage); therefore, a reduction in GHG emissions would also equate to a reduction in energy consumption.

The following GHG reduction measures are applicable to energy:

LCT-C1: Zero Emission Vehicles Develop a Zero Emission Vehicle Plan that will result in at least 33% of passenger vehicles in Larkspur to be zero emission vehicles (ZEVs), including plug-in electric vehicles (EVs) and hydrogen fuel cell electric vehicles, by 2030. Incorporate the following actions in the plan as feasible:

- a. Where there is paid parking restricted parking, provide free parking for ZEVs at City of Larkspur parking lots and parking spaces and other measures that incentivize use of ZEVs.
- b. Provide wayfinding signage to public EV chargers.
- c. Work with MCE, PG&E, and other entities to identify multi-family and workplace charging sites appropriate for available incentive programs, such as EV Charge Network.
- d. Participate in a countywide effort by MCE, PG&E, and others to provide rebates for new or used EVs or charging stations.
- e. Pursue opportunities to expand the City of Larkspur's EV charging network through innovative programs, such as installing chargers at existing streetlight locations.
- f. Require new and remodeled commercial and multi-family projects to install a minimum number of EV chargers for use by employees, customers, or residents.
- g. Accommodate new EV charging stations in existing commercial parking lots.
- h. Require new and remodeled single-family and multi-family projects to install electrical service and conduits for potential EV use.
- i. Consider requiring new and remodeled gas stations to provide EV fast chargers and hydrogen fueling stations.
- j. Participate in regional efforts and grant programs to encourage widespread availability of EV charging stations.
- k. Target policies to support ZEV adoption, including used vehicles, in low income and disadvantaged communities.
- l. Participate in programs to promote EV adoption, including "Drive an EV" events and other media and outreach campaigns.
- m. Encourage or require, as practicable, ride hailing and delivery service companies to use ZEVs.

LCT-C2: Bicycling and Micromobility

- a. Encourage bicycling and micromobility as an alternative to vehicular travel. Promote safe bicycling and micromobility, including e-bikes, electric scooters, and electric skateboards, through outreach channels and partner agencies.
- b. Establish and maintain a system of bicycle facilities that are consistent with the City of Larkspur's Bicycle and Pedestrian Master Plan and Complete Streets policies (City of Larkspur 2017).
- c. Implement the City of Larkspur's Bicycle and Pedestrian Master Plan's recommendations to support and expand bicycling and micromobility (City of Larkspur 2004).

- d. Update the Capital Improvement Program to maintain and improve the system of multiuse pathways and bicycling facilities that are consistent with the City of Larkspur's Bicycle and Pedestrian Master Plan and Complete Streets policies (City of Larkspur 2017).
- e. Support regional efforts to establish a bike or scooter share program.

LCT-C5: Public Transit Support and promote public transit by taking the following actions:

- a. Work with Marin Transit and Golden Gate Transit to maximize ridership by making transit more frequent, accessible, cost-beneficial, and convenient through expansion or improvement of transit routes, schedules, and bus shelters.
- b. Work with Transportation Authority of Marin (TAM), employers, and others to provide "first and last mile" programs to maximize utilization of public transit.
- c. Provide safe routes to the ferry landing and other transit facilities that encourage bicycle and pedestrian connections.
- d. Encourage school districts to restore a "Yellow School Bus" program and student use of regular transit to reduce school traffic.
- e. Encourage transit providers, including school buses, to use renewable diesel as a transition fuel and to purchase electric buses whenever replacing existing buses.
- f. Encourage District to provide secure bicycle parking at the Larkspur Ferry Landing.

LCT-C7: Employee Trip Reduction Reduce vehicle miles traveled commuting to work through the following actions:

- a. Work with the TAM, the Metropolitan Transportation Commission, and the Bay Area Air Quality Management District to promote transportation demand programs to local employers, including rideshare matching programs, vanpool incentive programs, emergency ride home programs, telecommuting, transit use discounts and subsidies, showers and changing facilities, bicycle racks and lockers, and other incentives to use transportation other than single-occupant vehicles.
- b. Update the City of Larkspur's Trip Reduction Ordinance to reflect the most recent Bay Area Air Quality Management District regulations.
- c. Work with Metropolitan Transportation Commission to identify and notify non-compliant businesses in the City Larkspur and encourage their participation in providing transportation demand management programs.
- d. Work with TAM on developing a countywide Transportation Demand Management Program to encourage trip reduction throughout the County.

RE-C1: Renewable Energy Generation and Storage Accelerate installation of residential and commercial solar and energy storage systems.

- a. Provide permit streamlining and reduce or eliminate fees, as feasible.
- b. Update building codes, development codes, design guidelines, and zoning ordinances, as necessary, to further facilitate small-, medium-, and large-scale installations, where appropriate.

- c. Encourage installation of solar panels over parking areas on commercial projects and large-scale residential developments through ordinance, engagement campaigns, or agency incentives.
- d. Identify and promote financing and loan programs for residential and nonresidential projects.
- e. Encourage battery storage in conjunction with renewable energy generation projects through engagement campaigns and partner agency incentives.

RE-C2. GHG Free Electricity. Encourage residents and businesses to switch to 100% renewable electricity (MCE Deep Green, MCE Local Sol, and PG&E Solar Choice) through engagement campaigns and partner agency incentives and work with MCE Clean Energy to assure that it reaches its goal to provide electricity that is 100% GHG-free by 2025.

RE-C3. Building and Appliance Electrification. Promote electrification of building systems and appliances that currently use natural gas, including heating systems, hot water heaters, stoves, and clothes dryers.

3.5.1.2 Environmental Setting

Energy resources in California include natural gas, electricity, water, wind, oil, coal, solar, geothermal, and nuclear resources. Energy production and energy use both result in the depletion of nonrenewable resources, such as oil, natural gas, and coal, and emissions of pollutants.

State Energy Resources and Use

California's diverse portfolio of energy resources produced 1,708.7 trillion British thermal units (Btu) in 2024 (EIA 2024). Excluding offshore areas, the state ranked eighth in the nation in crude oil production in 2025 (the most recent year for which data are available), producing the equivalent of 624.8 trillion Btu (EIA 2024). Other energy sources in the state include natural gas (141.7 trillion Btu), nuclear (191.9 trillion Btu), and biofuel (155.7 trillion Btu) (EIA 2024). In addition, because of the mild Mediterranean climate and strict conservation requirements for energy efficiency, California has lower energy consumption rates than most parts of the U.S. According to the U.S. Energy Information Administration, California consumed approximately 6,042.6 trillion Btu of energy in 2024 (EIA 2024). California's per capita energy consumption of 184 million Btu is the second lowest in the country and ranked 50th in the nation as of 2018 (EIA 2024).

In 2024, energy consumption by source was as follows, in order from most to least:

- Petroleum: 3,555.2 trillion Btu (59%)
- Natural gas: 1,424.3 trillion Btu (24%)
- Renewable energy, including nuclear electric power, hydroelectric power, biomass, and other renewables: 197.1 trillion Btu (3.3%)
- Distillates and jet fuel: 1,260.5 trillion Btu (16%)
- Interstate electricity: 838.4 trillion Btu (13%)
- Other sources: 7%

Of the natural gas consumed, commercial use consumed approximately 17%, followed by residential (23%) and industrial use (31%), among others (EIA 2024).

The transportation sector consumed the greatest quantity of energy at 3,108.2 trillion Btu (51%), followed by the industrial at 1,267.3 trillion Btu (21 %), residential at 863.1 trillion Btu (14%), and commercial at 804.1 trillion Btu) (13%) sectors (EIA 2024).

Per capita energy consumption, in general, is declining because of improvements in energy efficiency and designs. However, despite this reduction in per capita energy use, the state's total overall energy consumption (that is, non-per capita energy consumption) is expected to grow over the next several decades because of increases in population, jobs, and VMT.

Regional Energy Resources and Use

PG&E provides natural gas and electricity services to the vast majority of Northern California, including the City of Larkspur and the Project area. PG&E's service extends north to south from Eureka to Bakersfield and east to west from the Sierra Nevada to the Pacific Ocean. PG&E purchases gas and power from a variety of sources, including other utility companies. PG&E also obtains energy supplies from power plants and natural gas fields in Northern California. PG&E operates a grid distribution system that channels all power produced at the various generation sources into one large energy pool for distribution throughout the service territory. PG&E provides all the natural gas and electric infrastructure in south San Francisco. PG&E has two plan options, known as Solar Choice options, in addition to its base plan that give customers the option to purchase energy from solar resources. The first Solar Choice option provides up to 50% of a customer's energy from solar resources, while the other provides up to 100% of the customer's energy from solar resources. However, this program has been put on hold by the California Public Utility Commission directive in [Decision 21-12-036](#), and there is a waitlist for customers requesting to be added to it.

MCE is Marin County's official electricity provider. MCE's power comes from a mix of sources, including solar, wind, geothermal, biomass and biowaste, and hydroelectric generation. MCE delivers power to its customers via existing PG&E utility infrastructure.² MCE allows customers to choose between three different electricity product operations: Light Green (60% renewable resources), Deep Green (100% renewable resources from solar and wind power) and Local Sol (100% renewable resources from solar power) (MCE 2026).

In Marin County, 61.2 million therms of natural gas were consumed in 2024 (the most recent year for which data are available). In 2024, natural gas in Marin County was consumed primarily by the residential sector (71%), followed by the nonresidential sector (29%). In 2024, Marin County consumed a total of 1,309.4 million kilowatts. In Marin County, electricity was consumed primarily by the residential sector (53%), followed by the nonresidential sector (47%) (CEC n.d.). Electricity usage for different land uses varies substantially by the type of uses in a building, the types of construction materials used, and the efficiency of the electricity-consuming devices.

Energy consumption in the City of Larkspur has generally decreased over recent years despite a growing population. Electricity use decreased from approximately 20,000,000 kilowatt-hours (kWh) to approximately 10,000,000 kWh, and natural gas use decreased from approximately 4,000,000 therms to approximately 3,500,000 therms between 2018 and 2023 (City of Larkspur 2025)

² MCE charges each of its customers an electric delivery charge for maintenance of PG&E's wires and infrastructure and delivery of electricity to customers.

Project Site Energy Resources and Use

The LFT provides regular and special-event ferry service and is supported by multimodal access and two surface parking lots, the Main Lot and North Lot. The Main Lot and North Lot provide 2,023 parking spaces. Riders arrive via a mix of driving; drop-off/Transportation Network Company; bus transit; walking from the nearby Sonoma-Marin Area Rail Transit station, which is connected via the Cal Park Hill Pathway; and regional bicycle and pedestrian routes. Ferry service levels include up to 42 weekday crossings, with additional trips during events and for maintenance operations and deadhead movements. Overall, the terminal is a key regional mobility hub in the Bay Area. Terminal parking frequently reached capacity before the COVID-19 pandemic. At capacity, ferry ridership is constrained by parking, limited transit connections, and indirect pedestrian and bicyclist connections, which limit the terminal's ability to accommodate forecast ferry ridership growth. As explained in Chapter 2, there are two Build Alternatives occupying the same footprint that are essentially the same with the exception of (1) Main Lot Parking garage height (Alternative 1 is a five-level garage, and Alternative 2 is a four-level garage) and (2) Alternative 2 includes additional transportation demand management to fully address projected ridership demand with one less parking level in the Main Lot. As stated previously, PG&E and MCE provide natural gas and electricity to the City of Larkspur and therefore to the proposed Project site.

3.5.2 Environmental Impacts

Impacts were analyzed for the proposed Project area rather than specific Build Alternatives because the location of each Build Alternative would experience a nearly equivalent impact for each resource considered. Impacts for the Build Alternatives are presented together unless they differ substantially among alternatives.

3.5.2.1 Thresholds of Significance

The following CEQA Guidelines Appendix G thresholds identify significance criteria to be considered for determining whether a project could have significant impacts related to energy.

Would the proposed Project do the following:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?
- Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

3.5.2.2 Methodology

Because the proposed parking expansion would be in the City of Larkspur, the study area for the impact analysis is the City of Larkspur. Energy impacts associated with construction and operation of the Project were assessed and quantified where applicable using standard and accepted software tools and techniques. A summary of the methodology for calculating the proposed Project's energy use is provided as follows.

Appendix F of the CEQA Guidelines provides guidance on determining whether a project would result in the wasteful, inefficient, or unnecessary consumption of energy resources. As stated in Appendix F, the goal of conserving energy implies the wise and efficient use of energy. The means for achieving this goal include the following:

- Decreasing overall per capita energy consumption
- Decreasing reliance on fossil fuels such as coal, natural gas, and oil

- Increasing reliance on renewable energy sources

Based on Appendix F, environmental considerations in the assessment of energy consumption impacts may include the following:

- Project's energy requirements and its energy efficiency by amount and fuel type for each stage of the Project, including construction, operation, maintenance, or removal; if appropriate, the energy intensiveness of materials may be discussed
- Effects of the Project on local and regional energy supplies and requirements for additional capacity
- Effects of the Project on peak- and base-period demands for electricity and other forms of energy
- Degree to which the Project complies with existing energy standards
- Effects of the Project on energy resources
- Project's forecast transportation energy use requirements and its overall use of efficient transportation alternatives

Project Construction

Construction of the Project under both Build Alternatives would require energy usage, such as electricity for mobile offices and fuel for off-road equipment, haul trucks, vendor trips, and workers' trips. The construction schedule, equipment operating details, trip numbers and lengths, and material quantities provided by the Project sponsor were estimated for Alternative 1 only. An estimate was created only for Alternative 1 because the only difference in the Build Alternatives is one less level in the Main Lot garage in Alternative 2 (Phase II), which would likely result in a shorter construction duration and associated fuel consumption would be less but would still be on the same order of magnitude. For the purpose of this analysis, the Build Alternatives are considered substantively equivalent, except Alternative 2 requires proportionally less energy for one less level. The energy analysis represents the worst case or highest energy construction scenario. Fuel usage was quantified using the construction emissions profile generated by the California Emissions Estimator Model (CalEEMod), Version 2022.1.1.45. The number of metric tons of carbon dioxide equivalent associated with each construction activity (for example, off-road equipment usage, worker trips) was converted to gallons of diesel or gasoline and summed accordingly, assuming all off-road activities, hauling, and vendor activities would be carried out using diesel equipment and vehicles and that all workers would use gasoline vehicles while traveling to and from the Project area. For ease of comparison across all energy consumption amounts, gallons of diesel and gasoline were converted to Btu, assuming an energy intensity of 124,000 Btu per gallon of gasoline and 139,000 Btu per gallon of diesel (Environment and Ecology 2026), and megawatt-hours (MWh) of energy converted assuming an energy intensity of 3,412,141 Btu per MWh of electricity (Convert Units 2026). The modeling reflects implementation of state measures to reduce energy use and resulting GHG emissions (for example, SB 100, Pavley). Quantifiable features, consistent with the proposed Project, were incorporated into CalEEMod. The CalEEMod output files are provided in Appendix B.

Project Operation

Energy consumption associated with the proposed Project operations includes the combustion of natural gas, electricity usage, and fuel consumption for the ferry service. Natural gas is only used for heating within the administration building. There is no anticipated change in operating hours or days; therefore, there would be no change in natural gas usage, and it is not considered further within this analysis. Other operational considerations are discussed in detail as follows.

Electrical and fuel usage information was provided by the District for a baseline comparison with future operational energy use. Based on the data provided for 2025 and 2026 from PG&E for the LFT, daily energy consumption ranges from approximately 2,200 to 3,300 kWh per day. The Larkspur Ferry runs 362 days per year for an approximate annual energy consumption of 800,000 to 1, 200,000 kWh per year.

Most of the electricity is associated with overnight shore power consisting of 480-volt, 100-amp feeds to the vessels. Vessel shore power is used for maintenance activities when vessels layup at night and the onboard diesel generators are shut down and connected to shore electrical feed for vessel lighting, control computers, ventilation, freshwater pumps, and other required daily maintenance activities. Activities using electricity are summarized as follows:

- Landside ferry maintenance activities, such as machine shop and fabrication tooling, welders, air compressors, and parts cleaners
- Ferry terminal and vessel support operations, including Berth 1 and 2 hydraulics, fuel transfer pumps, bilge water transfer pumps, overnight vessel shore power, lighting, roll up gates, and ticket machines
- Ferry administration building, including offices, ventilation, heat, and air conditioning
- Outdoor lighting, including parking lot and site

Table 3.5-1 provides the most recent available fuel consumption data for the legacy fleet for 2024 and 2025. The District is currently in the process of retiring the legacy fleet and replacing it with state-of-the-art Liwa-class vessels. The District anticipates that the first Liwa-class vessel to be commissioned in 2027 and will receive one Liwa vessel each year. This would result in retirement of the entire legacy fleet in 2033.

Table 3.5-1. Golden Gate Bridge, Highway and Transportation District Legacy Fleet Hourly and Annual Fuel Consumption

Vessel Name	2024 (gallons per hour)	2025 (gallons per hour)
Del Norte	148	133
Mendocino	136	96
Golden Gate	190	185
Napa	176	183
Marin	75	76
San Francisco	73	64
Sonoma	73	69
Annual Total	2,123,990	1,938,049

3.5.2.3 Impacts

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.

Result in Potentially Significant Environmental Impact Due to Wasteful, Inefficient, or Unnecessary Consumption of Energy Resources, During Project Construction or Operation

Construction

Alternative 1

Construction activities for the Project would include mobilization, demolition, utility work, civil and vertical structures work, and vertical structures finishing and inspection. Construction-related energy usage would include the electricity needed to power electric construction equipment or deliver water to the construction site, the gasoline and diesel fuel used for transporting workers and materials to and from the construction site, and the fuel used for the operation of off-road equipment. Construction-related energy usage and consumption would vary throughout the course of Project buildout and depend on the level of activity, length of the construction period, specific construction operations, types of equipment, and number of personnel. Table 3.5-2 presents the estimated construction-related energy consumption for the Project. As shown, Project construction would consume approximately 3,160 MWh over the 18-month construction period for North Lot (Phase I) and 11,860 MWh over the 36-month construction period for the Main Lot (Phase II).

Table 3.5-2. Estimated Construction Energy Consumption from the Proposed Project (MWh)

Alternative 1	Estimated Year	Gasoline (Gallons)	Diesel (Gallons)	Total (MWh)
Phase I	2033	8,884	30,392	1,427
Phase I	2034	4,582	43,080	1,732
Phase II	2037	7,776	139,232	5,342
Phase II	2038	13,407	88,880	3,371
Phase II	2039	4,529	71,553	2,765
Phase II	2040	2,582	8,053	387

Source: Refer to Appendix B for CalEEMod outputs used for construction energy calculations.

As shown in Table 3.5-2, large quantities of energy in the form of gasoline and diesel will be required to build the new garages on both the North and Main Lots across a multi-year horizon. Because of the presence of unstable bay muds, the Project requires substantial earthwork operations across the Main Lot parking garage location. Approximately 5 to 7 feet of soil must be excavated and hauled away for disposal. Soil import will be returned to the site to fill the hole and provide the final grade above the anticipated near-term (2100) sea-level rise elevation. This creates a short-term, intensive demand for diesel fuel to power heavy excavation equipment and heavy-duty haul trucks, potentially resulting in a significant impact associated with wasteful or inefficient energy use.

The Project mitigation measure MM-AQ-CNST-1 mandates use of U.S. Environmental Protection Agency Tier 4 Certified off-road equipment (see Section 3.2 Air Quality). Tier 4 engines integrate advanced engine tuning, selective catalytic reduction, and high-pressure common-rail fuel injection systems. These components maximize thermal efficiency and optimize fuel burn rates compared to older, legacy equipment tiers. By combining MM-AQ-CNST-1 mandatory Tier 4 equipment fleets with required CARB anti-idling regulations, the Project would ensure efficient energy use and that construction-phase petroleum consumption would be minimized. Thus, Project construction would not result in wasteful,

inefficient, or unnecessary consumption of energy resources, and this impact would be ***less than significant with mitigation***. Recycling would further reduce the energy intensity associated with new building materials and discarded construction and demolition debris. Also, in addition to recycling, compliance with Bay Area Air Quality Management District best management practices—specifically, those associated with alternative fuel and recycling would further minimize energy use.

Alternative 2

Alternative 2 construction activities would consume slightly less energy than Alternative 1 because it would require a shorter construction schedule and fewer truck trips and less material deliveries associated with one less level on the Main Lot parking garage. However, overall construction energy impacts would be substantively the same as Alternative 1. For the same reasons discussed for Alternative 1, with implementation of MM-AQ-CNST-1 combined with required CARB anti-idling regulations, the Project would ensure efficient energy use and that construction-phase petroleum consumption would be minimized. Thus, project construction would not result in wasteful, inefficient, or unnecessary consumption of energy resources, and this impact would be ***less than significant with mitigation***.

Operation

Alternative 1

Anticipated operational energy uses associated with the incremental increase in ferry service from 42 up to a maximum of 76 daily revenue crossings by 2050 are summarized as follows:

- **Increased Ferry Service:** The District is making a major investment to retire the current fleet and replace it with the Liwa-class vessels. The Liwa-class vessel design is state of the art, with the latest technology that will reduce energy needs associated with overnight shore power. The Liwa-class vessels have Tier 4 engines that maximize thermal efficiency and optimize fuel burn rates compared to the legacy fleet, are equipped with jet propulsion, and have an improved haul design that will result in an estimated 36% fuel savings. In addition, the new Liwa-class vessels will have the capacity to carry 50 more passengers per trip.
- **Reduced VMT:** The ferry consolidates arrivals of those traveling to San Francisco from the City of Larkspur at the LFT and North Lot. These trips are removed from the roadways, resulting in a decrease in VMT of 2,165 miles per day in 2035, up to 86,056 miles per day in 2050 and beyond (refer to Section 3.14, Transportation). The reduction in VMT would displace thousands of gallons of petroleum fuel consumption over the life of the Project and result in a decrease in fuel use that would otherwise be required to drive to San Francisco.
- **Renewable Energy Generation:** Approximately 75% of the upper levels of both garages will feature solar canopy installations housing 9,852 solar photovoltaic modules (450 watts each), resulting in an annual clean energy output of 5,700,000 kWh per year. The system will fully cover the baseline terminal operations and localized parking garage lighting loads, which will replace the existing out-of-date lot lighting with new high-efficiency lighting. Overall, there is expected to be a net surplus of over 4.5 million kWh per year to power EV charging stations and elevators, and excess energy would be exported back into PG&E's regional grid.
- **EV Charging:** Both facilities will adhere to the CALGreen Code (Title 24, Part 11). The North Lot would have approximately 178 capable stalls with 128 chargers. The Main Lot would have approximately 800 capable stalls and 600 chargers.

- **High-Efficiency Lighting Design:** The Project will completely replace older, existing exterior lighting in the Main and North Lots. All luminaires will use high-efficiency light-emitting diodes (LEDs) with a minimum Color Rendering Index of 90. Energy usage is dynamically managed via integrated automation controls, including continuous daylight harvesting and occupancy-based dimming to minimize energy use.

As discussed, the proposed Project is increasing energy efficiency in all aspects of maintenance and operations, including clean energy generation to help offset future energy use. Operation of the proposed Project would not result in the wasteful, inefficient, or unnecessary consumption of energy resources, and this impact would be ***less than significant***. No mitigation is required.

Alternative 2

In addition to the energy efficiencies discussed for Alternative 1, Alternative 2 also include additional transportation demand management that would result in increased reductions in VMT compared to Alternative 1. Reductions in VMT for Alternative 2 in 2035 would be 4,930 miles per day and 124,749 miles per day in 2050 and beyond. Alternative 2 would displace even more petroleum fuel consumption over the life of the Project compared to Alternative 1. For the same reasons discussed for Alternative 1, construction of Alternative 2 would not result in wasteful, inefficient, or unnecessary consumption of energy resources during operation, and the impact would be ***less than significant***. No mitigation required.

Mitigation Measures

Refer to MM-AQ-CNST-1 in Section 3.2, Air Quality.

Conflict with or Obstruct a State or Local Plan for Renewable Energy or Energy Efficiency

Construction and Operation

Build Alternatives

State and local renewable energy and energy efficiency plans applicable to the proposed Project are discussed in Section 3.5.1.1, Regulatory Setting. State plans include the AB 1493 Pavley Rules, California Title 24 energy efficiency standards, EO B-16-12, EO N-79-20, SB 350, SB 100, and SB 1020. Each contains required standards related to energy efficiency and renewable energy development. Local plans that address energy efficiency and are designed to achieve the state's RPS mandates include the following:

- PG&E's 2022 IRP
- MCE's 2026 IRP
- City of Larkspur's CAP 2030 (City of Larkspur 2021)

The City of Larkspur 2040 General Plan (City of Larkspur 2024) also includes goals and policies related to energy use and energy reductions.

As discussed, the proposed Project would incorporate renewable energy through solar generation, along with other energy efficiency and sustainability features.

The proposed Project would be required to comply with state and local renewable energy and energy-efficiency plans. As a result, it would benefit from renewable energy development and increases in energy efficiency. Reductions in VMT would occur under the Project, and combined with the number of

average daily trips in the area, energy use is expected to become more efficient under regulations included in Pavley and EO B-16-12, which address average fuel economy and commercialization of ZEVs, respectively. Project energy use is expected to increase because of compliance with Title 24 building codes, which are expected to move toward zero net energy for new construction and 100% renewable energy under SB 350 and SB 100 regulations. With implementation of the proposed Project, the District would clean energy back to the grid, and PG&E and MCE would also continue to pursue the procurement of renewable energy sources to meet their RPS goals and comply with state regulations. Therefore, the proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and the impact would be *less than significant*. No mitigation required.

Mitigation Measures

No mitigation required.