

4.2 GREENHOUSE GAS EMISSIONS

4.2.1 INTRODUCTION

The Greenhouse Gas Emissions chapter of the EIR describes the potential impacts of the proposed project related to greenhouse gas (GHG) emissions and climate change. The chapter includes a discussion of the existing GHG setting, construction-related GHG impacts resulting from grading and equipment emissions, direct and indirect emissions associated with operations of the project, the impacts of these emissions on both the local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts. The chapter is primarily based on information and guidance within the Bay Area Air Quality Management District's (BAAQMD's) California Environmental Quality Act Air Quality Guidelines (Air Quality Guidelines),¹ the City of Petaluma General Plan² and associated EIR,³ and a Construction Health Risk and Greenhouse Gas Assessment prepared for the project by Illingworth & Rodkin, Inc. (see Appendix A of the Initial Study prepared for the proposed project [Appendix A of this EIR]).⁴ It should also be noted that while not yet adopted, the City has released a draft Blueprint for Carbon Neutrality (draft Blueprint).⁵ As such, further information was sourced from the draft Blueprint, as applicable.

4.2.2 EXISTING ENVIRONMENTAL SETTING

The following information provides an overview of the existing environmental setting in relation to climate change and GHG emissions within the proposed project area.

Background on GHG Emissions

GHGs are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the Earth's atmosphere. Some GHGs occur naturally and are emitted into the atmosphere through both natural processes and human activities. Other GHGs are created and emitted solely through human activities. The principal GHGs that enter the atmosphere due to human activities are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and fluorinated carbons. Other common GHGs include water vapor, ozone, and aerosols. The increase in atmospheric concentrations of GHG due to human activities has resulted in more heat being held within the atmosphere, which is the accepted explanation for global climate change.⁶

The primary GHG emitted by human activities is CO₂, with the next largest components being CH₄ and N₂O. A wide variety of human activities result in the emission of CO₂. Some of the largest sources of CO₂ include the burning of fossil fuels for transportation and electricity, industrial processes including fertilizer production, agricultural processing, and cement production. The

¹ Bay Area Air Quality Management District. *California Environmental Quality Act Air Quality Guidelines*. April 2023.

² City of Petaluma. *City of Petaluma General Plan 2025*. Adopted May 19, 2008.

³ City of Petaluma. *City of Petaluma General Plan 2025 Environmental Impact Report*. February 2008.

⁴ Illingworth & Rodkin, Inc. *Creekwood Subdivision Construction Health Risk and Greenhouse Gas Assessment, Petaluma, California*. July 11, 2022.

⁵ City of Petaluma. *Blueprint for Carbon Neutrality – Petaluma's Greenhouse Gas Reduction Plan*. September 2023.

⁶ U.S. Environmental Protection Agency. *Climate Change Indicators: Atmospheric Concentrations of Greenhouse Gases*. Available at: <https://www.epa.gov/climate-indicators/climate-change-indicators-atmospheric-concentrations-greenhouse-gases>. Accessed May 2024.



primary sources of CH₄ emissions include domestic livestock sources, decomposition of wastes in landfills, releases from natural gas systems, coal mine seepage, and manure management. The main human activities producing N₂O are agricultural soil management, fuel combustion in motor vehicles, nitric acid production, manure management, and stationary fuel combustion. Emissions of GHG by economic sector indicate that transportation-related activities account for the majority of U.S. emissions. Transportation is the largest single-source of GHG emissions, and energy generation is the second largest source, followed by industrial activities. The agricultural, commercial, and residential sectors account for the remainder of GHG emission sources.⁷

Emissions of GHG are partially offset by uptake of carbon and sequestration in trees, agricultural soils, landfilled yard trimmings and food scraps, and absorption of CO₂ by the Earth's oceans. Additional emission reduction measures for GHG could include, but are not limited to, compliance with local, State, or federal plans or strategies for GHG reductions, on-site and off-site mitigation, and project design features. Attainment concentration standards for GHGs have not been established by the federal or State government.

Global Warming Potential

Global warming potential (GWP) is one type of simplified index (based upon radiative properties) that can be used to estimate the potential future impacts of emissions of various gases. According to the United States Environmental Protection Agency (USEPA), the GWP of a gas, or aerosol, to trap heat in the atmosphere is the “cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas.” The reference gas for comparison is CO₂. GWP is based on a number of factors, including the heat-absorbing ability of each gas relative to that of CO₂, as well as the decay rate of each gas relative to that of CO₂. The GWP of each gas is determined by comparing the radiative forcing associated with emissions of that gas versus the radiative forcing associated with emissions of the same mass of CO₂, for which the GWP is set at one. Methane gas, for example, is estimated by the USEPA to have a comparative global warming potential 25 times greater than that of CO₂, as shown in Table 4.2-1.

As shown in the table, at the extreme end of the scale, sulfur hexafluoride is estimated to have a comparative GWP 22,800 times that of CO₂. The atmospheric lifetimes of such GHGs are estimated by the USEPA to vary from 50 to 200 years for CO₂, to 50,000 years for tetrafluoromethane (CF₄). Longer atmospheric lifetimes allow GHG to buildup in the atmosphere; therefore, longer lifetimes correlate with the GWP of a gas. The common indicator for GHG is expressed in terms of metric tons of CO₂ equivalents (MTCO₂e), which is calculated based on the GWP for each pollutant.

Effects of Global Climate Change

Globally, climate change has the potential to affect numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. The Intergovernmental Panel on Climate Change's (IPCC) Climate Change 2021: The Physical Science Basis report indicated that warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia.⁸

⁷ U.S. Environmental Protection Agency. *Sources of Greenhouse Gas Emissions*. Available at: <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>. Accessed May 2024.

⁸ Intergovernmental Panel on Climate Change. *Climate Change 2021: The Physical Science Basis Summary for Policymakers*. Available at: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf. Accessed May 2024.



Gas	Atmospheric Lifetime (years)	GWP (100 year time horizon)
Carbon Dioxide (CO ₂)	50-200 ¹	1
Methane (CH ₄)	12	25
Nitrous Oxide (N ₂ O)	114	298
Hydrofluorocarbon (HFC)-23	270	14,800
HFC-134a	14	1,430
HFC-152a	1.4	124
PFC: Tetrafluoromethane (CF ₄)	50,000	7,390
PFC: Hexafluoroethane (C ₂ F ₆)	10,000	12,200
Sulfur Hexafluoride (SF ₆)	3,200	22,800

^{1.} For a given amount of CO₂ emitted, some fraction of the atmospheric increase in concentration is quickly absorbed by the oceans and terrestrial vegetation, some fraction of the atmospheric increase will only slowly decrease over a number of years, and a small portion of the increase will remain for many centuries or more.

Source: U.S. Environmental Protection Agency. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019 [Table 1-2]. April 14, 2021.

Signs that global climate change has occurred include:

- Warming of the atmosphere and ocean;
- Diminished amounts of snow and ice;
- Rising sea levels; and
- Ocean acidification.

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. A scientific consensus confirms that climate change is already affecting California. The Office of Environmental Health Hazard Assessment (OEHHA) identified various indicators of climate change in California, which are scientifically based measurements that track trends in various aspects of climate change. Many indicators reveal discernable evidence that climate change is occurring in California and is having significant, measurable impacts in the State. Changes in the State’s climate have been observed, including:

- An increase in annual average air temperature with record warmth occurring in recent years;
- More frequent extreme heat events;
- More extreme drought;
- A decline in winter chill; and
- An increase in variability of statewide precipitation.

Warming temperatures and changing precipitation patterns have altered California’s physical systems—the ocean, lakes, rivers, and snowpack—upon which the State depends. Winter snowpack and spring snowmelt runoff from the Sierra Nevada and southern Cascade Mountains provide approximately one-third of the State’s annual water supply. Impacts of climate on physical systems have been observed, such as high variability of snow-water content (i.e., amount of water stored in snowpack), decrease in snowmelt runoff, glacier change (loss in area), rise in sea levels, increase in average lake water temperature and coastal ocean temperature, and a decrease in dissolved oxygen in coastal waters. Impacts of climate change on biological systems, including



humans, wildlife, and vegetation, have also been observed, including climate change impacts on terrestrial, marine, and freshwater ecosystems.

According to the City's draft Blueprint, projected climate change hazards within the City include sea level rise, flooding, severe weather such as drought and extreme precipitation, temperature increases, and wildfire.

In the City of Petaluma, specifically, the number of extreme heat days (defined as days where temperatures exceed 98 degrees Fahrenheit) could reach an average of 19 days per year, as compared to the three days per year that occur now on average. While California may not see the average annual precipitation changing significantly in the next 50 to 75 years, precipitation could likely be delivered in more intense storms and within a shorter wet season. For example, the 30-year average length of dry spell in the City is 118 days. By the end of the century, the average dry spell could be up to 130 days.⁹

Existing Project-Area GHGs

The project site is located in the northern portion of the nine-county San Francisco Bay Area Air Basin (SFBAAB) and is within the jurisdictional boundaries of the BAAQMD. The SFBAAB consists of coastal mountain ranges, inland valleys, and bays.

According to the City of Petaluma GHG Emissions Inventory, the primary source of GHG emissions in the City is from on-road transportation, which makes up approximately 57 percent of all GHG emissions in the City, followed by energy usage at 36 percent, solid waste at five percent, and off-road equipment at two percent. Water and wastewater combined accounted for less than one percent total of the City's GHG emissions. Overall, the City of Petaluma emits approximately 460,355 MTCO_{2e} annually.¹⁰

While the majority of the project site consists of undeveloped lands covered in grasses, one existing residence is currently located within the 280 Casa Grande Road (APN 017-040-016) parcel, and an additional residence, as well as several outbuildings, a landscaped backyard, and a small orchard, are located within the 270 Casa Grande Road (APN 017-040-051) parcel. Therefore, GHG emissions currently associated with the project site include emissions primarily generated by transportation to and from the existing on-site residences, as well as energy use associated with the residences.

4.2.3 REGULATORY CONTEXT

GHG emissions are monitored and regulated through the efforts of various international, federal, State, and local government agencies. Agencies work jointly and individually to reduce GHG emissions through legislation, regulations, planning, policy, education, and a variety of programs. The agencies responsible for monitoring or reducing GHG emissions are discussed below.

Federal Regulations

The following are the federal regulations relevant to GHG emissions.

⁹ Cal-Adapt. *Local Climate Change Snapshot for Petaluma, California*. Available at: <https://cal-adapt.org/tools/local-climate-change-snapshot/>. Accessed May 2024.

¹⁰ City of Petaluma. *2018 Community Greenhouse Gas Inventory*. October 2021.



Federal Vehicle Standards

In 2010, President Obama issued a memorandum directing the Department of Transportation, Department of Energy, USEPA, and National Highway Traffic Safety Administration (NHTSA) to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the USEPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017 through 2025 light-duty vehicles. The proposed standards were projected to achieve emission rates as low as 163 grams of CO₂ per mile by model year 2025 on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if the foregoing emissions level was achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017 through 2021 (77 FR 62624–63200), and NHTSA intended to set standards for model years 2022 through 2025 in future rulemaking.

In August 2016, the USEPA and NHTSA announced the adoption of the phase two program related to the fuel economy and GHG standards for medium- and heavy-duty trucks. The phase two program would have applied to vehicles with model years 2018 through 2027 for certain trailers, and model years 2021 through 2027 for semi-trucks, large pickup trucks, vans, and all types of sizes of buses and work trucks. The final standards were expected to lower CO₂ emissions by approximately 1.1 billion MT, and reduce oil consumption by up to two billion barrels over the lifetime of the vehicles sold under the program.

In August 2018, the USEPA and NHTSA proposed to amend certain fuel economy and GHG standards for passenger cars and light trucks and establish new, less-stringent standards for model years 2021 through 2026. Compared to maintaining the post-2020 standards that were previously in place, the 2018 proposal would increase U.S. fuel consumption by approximately 0.5 million barrels per day, and would impact the global climate by 3/1000th of one degree Celsius by 2100. California and other states stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures, and committed to cooperating with other countries to implement global climate change initiatives.

On September 27, 2019, the USEPA and NHTSA published the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program (84 FR 51,310), which became effective November 26, 2019. The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission-vehicle mandates in California. On March 31, 2020, the USEPA and NHTSA issued the Part Two Rule, which sets CO₂ emissions standards and corporate average fuel economy standards for passenger vehicles and light-duty trucks for model years 2021 through 2026. On January 20, 2021, an Executive Order (EO) was issued on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, which includes review of the Part One Rule by April 2021 and review of the Part Two Rule by July 2021. In response to the Part One Rule, in December 2021, the U.S. Department of Transportation withdrew its portions of the "SAFE I" rule. As a result, states are now allowed to issue their own GHG emissions standards and zero-emissions vehicle mandates.¹¹ In addition, the Part Two Rule was adopted to revise the existing national GHG emission standards for passenger cars and light trucks through model year 2026. These standards are the strongest

¹¹ National Highway Traffic Safety Administration. *In Removing Major Roadblock to State Action on Emissions Standards, U.S. Department of Transportation Advances Biden-Harris Administration's Climate and Jobs Goals*. Available at: <https://www.nhtsa.gov/press-releases/cape-preemption-final-rule>. Accessed May 2024.



vehicle emissions standards ever established for the light-duty vehicle sector and will result in avoiding more than three billion tons of GHG emissions through 2050.¹²

State Regulations

The statewide GHG emissions regulatory framework is summarized below. The following text describes EOs, legislation, regulations, and other plans and policies that would directly or indirectly reduce GHG emissions and/or address climate change issues. The following discussion does not include an exhaustive list of applicable regulations; rather, only the most prominent and applicable California legislation related to GHG emissions and climate change is included below.

State Climate Change Targets

California has taken a number of actions to address climate change, including EOs, legislation, and California Air Resources Board (CARB) plans and requirements, which are summarized below.

Executive Order S-3-05

EO S-3-05 (June 2005) established California's GHG emissions reduction targets and laid out responsibilities among the State agencies for implementing the EO and for reporting on progress toward the targets. The EO established the following targets:

- By 2010, reduce GHG emissions to 2000 levels;
- By 2020, reduce GHG emissions to 1990 levels; and
- By 2050, reduce GHG emissions to 80 percent below 1990 levels.

EO S-3-05 also directed the California Environmental Protection Agency (CalEPA) to report biannually on progress made toward meeting the GHG targets and the impacts to California due to global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry. The Climate Action Team was formed, which subsequently issues yearly GHG reduction report cards to track the progress of emission reduction strategies. Each report card documents the effectiveness of measures to reduce GHG in California, presents GHG emissions from State agencies' operations, and shows reductions that have occurred in the two years prior to publication.

Assembly Bill 32

In furtherance of the goals established in EO S-3-05, the Legislature enacted Assembly Bill (AB) 32 (Núñez and Pavley). The bill is referred to as the California Global Warming Solutions Act of 2006 (September 27, 2006). AB 32 provided initial direction on creating a comprehensive, multi-year program to limit California's GHG emissions at 1990 levels by 2020 and initiate the transformations required to achieve the State's long-range climate objectives. AB 32 also required that the CARB prepare a "scoping plan" for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020. The CARB's Scoping Plan is described in further detail below.

¹² U.S. Environmental Protection Agency. *Final Rule to Revise Existing National GHG Emissions Standards for Passenger Cars and Light Trucks Through Model Year 2026*. Available at: <https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-revise-existing-national-ghg-emissions>. Accessed May 2024.



Executive Order B-30-15

EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under EO S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing GHG emissions to 40 percent below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050 as set forth in EO S-3-05. To facilitate achieving this goal, EO B-30-15 called for an update to the CARB's Climate Change Scoping Plan: A Framework for Change (Scoping Plan) to express the 2030 target in terms of million metric tons (MMT) CO₂e. CARB's Scoping Plan is discussed in further detail below. The EO also called for State agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets.

Senate Bill 32 and Assembly Bill 197

Senate Bill (SB) 32 and AB 197 (enacted in 2016) are companion bills. SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40 percent below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, to provide ongoing oversight over implementation of the State's climate policies. AB 197 also added two members of the Legislature to the Board as non-voting members; requires CARB to make available and update (at least annually via the CARB's website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants (TACs) from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

CARB's Climate Change Scoping Plan

One specific requirement of AB 32 is for CARB to prepare a scoping plan for achieving the maximum technologically feasible and cost-effective GHG emission reductions by 2020 (Health and Safety Code Section 38561[a]), and to update the Scoping Plan at least once every five years. In 2008, CARB approved the first Scoping Plan. The Scoping Plan included a mix of recommended strategies that combined direct regulations, market-based approaches, voluntary measures, policies, and other emission reduction programs calculated to meet the 2020 statewide GHG emission limit and initiate the transformations needed to achieve the State's long-range climate objectives. The key elements of the Scoping Plan include the following:

1. Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
2. Achieving a statewide renewable energy mix of 33 percent;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85 percent of California's GHG emissions;
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
5. Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard (LCFS) (17 California Code of Regulations (CCR), Section 95480 et seq.); and
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.



The Scoping Plan also identified local governments as essential partners in achieving California's goals to reduce GHG emissions because they have broad influence and, in some cases, exclusive authority over activities that contribute to significant direct and indirect GHG emissions through their planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Specifically, the Scoping Plan encouraged local governments to adopt a reduction goal for municipal operations and for community emissions to reduce GHGs by approximately 15 percent from 2008 levels by 2020. Many local governments developed community-scale local GHG reduction plans based on this Scoping Plan recommendation.

In 2014, CARB approved the first update to the Scoping Plan. The First Update to the Climate Change Scoping Plan: Building on the Framework (First Update) defined the State's GHG emission reduction priorities for the next five years and laid the groundwork to start the transition to the post-2020 goals set forth in EO S-3-05 and EO B-16-2012. The First Update concluded that California is on track to meet the 2020 target but recommended a 2030 mid-term GHG reduction target be established to ensure a continuation of action to reduce emissions. The First Update recommended a mix of technologies in key economic sectors to reduce emissions through 2050, including energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the State's 1990 emissions level using more recent GWPs identified by the IPCC, from 427 MMT CO_{2e} to 431 MMT CO_{2e}.

In 2015, as directed by EO B-30-15, CARB began working on an update to the Scoping Plan to incorporate the 2030 target of 40 percent below 1990 levels by 2030 to keep California on a trajectory toward meeting or exceeding the long-term goal of reducing GHG emissions to 80 percent below 1990 levels by 2050, as set forth in EO S-3-05. In summer 2016, the Legislature affirmed the importance of addressing climate change through passage of SB 32 (Pavley, Chapter 249, Statutes of 2016).

In December 2017, the Scoping Plan was once again updated. The 2017 Scoping Plan built upon the successful framework established in the initial Scoping Plan and First Update, while identifying new, technologically feasible and cost-effective strategies that would serve as the framework to achieve the 2030 GHG target as established by SB 32 and define the State's climate change priorities to 2030 and beyond. For local governments, the 2017 Scoping Plan replaced the initial Scoping Plan's 15 percent reduction goal with a recommendation to aim for a communitywide goal of no more than six MTCO_{2e} per capita by 2030, and no more than two MTCO_{2e} per capita by 2050, which are consistent with the State's long-term goals. The 2017 Scoping Plan recognized the benefits of local government GHG planning (e.g., through Climate Action Plans [CAPs]) and provided more information regarding tools to support those efforts. The 2017 Scoping Plan also recognized the CEQA streamlining provisions for project-level review where a legally adequate CAP exists.

When discussing project-level GHG emissions reduction actions and thresholds in the context of CEQA, the 2017 Scoping Plan stated that "achieving no net additional increase in GHG emissions, resulting in no contribution to GHG impacts, is an appropriate overall objective for new development" for project-level CEQA analysis, but also recognized that such a standard may not be appropriate or feasible for every development project. The 2017 Scoping Plan further provided that "the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."



The most recent update to the Scoping Plan, the 2022 Scoping Plan for Achieving Carbon Neutrality (2022 Scoping Plan Update) was adopted by the CARB in December 2022.¹³ The 2022 Scoping Plan Update builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. The 2022 Scoping Plan Update, the most comprehensive and far-reaching Scoping Plan developed to date, 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 percent below 1990 levels by 2030, as called for in SB 32 and laid out in the 2017 Scoping Plan. The 2030 target is an interim but important stepping stone along the critical path to the broader goal of deep decarbonization by 2045. The relatively longer path assessed in the Scoping Plan incorporates, coordinates, and leverages many existing and ongoing efforts to reduce GHGs and air pollution, while identifying new clean technologies and energy. Given the focus on carbon neutrality, the Scoping Plan also includes discussion for the first time of the Natural and Working Lands (NWL) sectors as both sources of emissions and carbon sinks.

The 2022 Scoping Plan Update lays out a path to achieve targets for carbon neutrality and reduce GHG emissions by 85 percent below 1990 levels by 2045, as directed by AB 1279. The actions and outcomes in the plan will achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

CARB's Regulations for the Mandatory Reporting of GHG Emissions

CARB's Regulation for the Mandatory Reporting of GHG Emissions (17 CCR 95100–95157) incorporated by reference certain requirements that the USEPA promulgated in its Final Rule on Mandatory Reporting of GHGs (40 Code of Federal Regulations [CFR] Part 98). In general, entities subject to the Mandatory Reporting Regulation that emit more than 10,000 MTCO₂e per year are required to report annual GHGs through the California Electronic GHG Reporting Tool. Certain sectors, such as refineries and cement plants, are required to report regardless of emission levels. Entities that emit more than the 25,000 MTCO₂e per year threshold are required to have their GHG emission report verified by a CARB-accredited third party.

Senate Bill 1383

SB 1383 (enacted in 2016) establishes specific targets for the reduction of short-lived climate pollutants (SLCPs) (40 percent below 2013 levels by 2030 for CH₄ and hydrofluorocarbons (HFCs), and 50 percent below 2013 levels by 2030 for anthropogenic black carbon), and provides direction for reductions from dairy and livestock operations and landfills. Accordingly, CARB adopted its SLCP Reduction Strategy in March 2017. The SLCP Reduction Strategy establishes a framework for the statewide reduction of emissions of black carbon, CH₄, and fluorinated gases.

Executive Order B-55-18/Assembly Bill 1279

EO B-55-18 (September 2018) establishes a statewide policy for California to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net-negative emissions thereafter. The goal is an addition to the existing statewide targets of reducing the State's GHG emissions. CARB intends to work with relevant State agencies to ensure that future scoping plan updates identify and recommend measures to achieve the carbon neutrality goal.

¹³ California Air Resources Board. *2022 Scoping Plan for Achieving Carbon Neutrality*. November 16, 2022.



On September 16, 2022, AB 1279, also known as the California Climate Crisis Act, codified the carbon neutrality goal established by EO B-55-18.

Mobile Sources

The following regulations relate to the control of GHG emissions from mobile sources. Mobile sources include both on-road vehicles and off-road equipment.

Assembly Bill 1493

AB 1493 (Pavley) (July 2002) was enacted in response to the transportation sector accounting for more than half of California's CO₂ emissions. AB 1493 required CARB to set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles determined by the State board to be vehicles that are primarily used for non-commercial personal transportation in the State. The bill required that CARB set GHG emission standards for motor vehicles manufactured in 2009 and all subsequent model years. CARB adopted the standards in September 2004. When fully phased in, the near-term (2009–2012) standards would result in a reduction of approximately 22 percent of GHG emissions compared to the emissions from the 2002 fleet, and the mid-term (2013–2016) standards would result in a reduction of approximately 30 percent.

Senate Bill 375

SB 375 (Steinberg) (September 2008) addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. SB 375 requires CARB to adopt regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, and to update those targets every eight years. SB 375 requires the State's 18 regional metropolitan planning organizations to prepare a sustainable communities strategy as part of their Regional Transportation Plans that will achieve the GHG reduction targets set by CARB. If a metropolitan planning organization is unable to devise a sustainable communities strategy to achieve the GHG reduction target, the metropolitan planning organization must prepare an alternative planning strategy demonstrating how the GHG reduction target would be achieved through alternative development patterns, infrastructure, or additional transportation measures or policies.

Pursuant to California Government Code Section 65080(b)(2)(K), a sustainable communities strategy does not (1) regulate the use of land, (2) supersede the land use authority of cities and counties, or (3) require that a city's or county's land use policies and regulations, including those in a general plan, be consistent with the sustainable community strategy. Nonetheless, SB 375 makes regional and local planning agencies responsible for developing those strategies as part of the federally required metropolitan transportation planning process and the State-mandated housing element process.

Advanced Clean Cars Program and Zero-Emissions Vehicle Program

The Advanced Clean Cars program (January 2012) is an emissions-control program for model years 2015 through 2025. The program combines the control of smog- and soot-causing pollutants and GHG emissions into a single coordinated package. The package includes elements to reduce smog-forming pollution, reduce GHG emissions, promote clean cars, and provide the fuels for clean cars. To improve air quality, CARB has implemented new emission standards to reduce smog-forming emissions beginning with 2015 model year vehicles. By 2025, implementation of the rule is anticipated to reduce emissions of smog-forming pollution from cars by 75 percent compared to the average new car sold in 2015. To reduce GHG emissions, CARB, in conjunction with the USEPA and NHTSA, adopted GHG standards for model year 2017 to 2025



vehicles; the standards were estimated to reduce GHG emissions by 34 percent by 2025. The zero-emissions vehicle program acts as the focused technology of the Advanced Clean Cars program by requiring manufacturers to produce increasing numbers of zero-emissions vehicles and plug-in hybrid electric vehicles (EVs) in the 2018 to 2025 model years.

Executive Order B-16-12

EO B-16-12 (March 2012) required that State entities under the governor's direction and control support and facilitate the rapid commercialization of zero-emissions vehicles. The order directed CARB, California Energy Commission (CEC), California Public Utilities Commission (CPUC), and other relevant agencies to work with the Plug-In Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to help achieve goals by 2015, 2020, and 2025. On a statewide basis, EO B-16-12 established a target reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. EO B-16-12 did not apply to vehicles that have special performance requirements necessary for the protection of the public safety and welfare.

Assembly Bill 1236

AB 1236 (October 2015) (Chiu) required a city, county, or city and county to approve an application for the installation of EV charging stations, as defined, through the issuance of specified permits unless the city or county makes specified written findings based on substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and a feasible method to satisfactorily mitigate or avoid the specific, adverse impact does not exist. The bill provided for appeal of that decision to the planning commission, as specified. AB 1236 required EV charging stations to meet specified standards. The bill required a city, county, or city and county with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that created an expedited and streamlined permitting process for EV charging stations. The bill also required a city, county, or city and county with a population of less than 200,000 residents to adopt the ordinance by September 30, 2017.

Water

The following regulations relate to the conservation of water, which reduces GHG emissions related to electricity demands from the treatment and transportation of water.

Executive Order B-29-15

In response to a drought in California, EO B-29-15 (April 2015) set a goal of achieving a statewide reduction in potable urban water usage of 25 percent relative to water use in 2013. The term of the EO extended through February 28, 2016, although many of the directives subsequently became permanent water-efficiency standards and requirements. The EO includes specific directives that set strict limits on water usage in the State. In response to EO B-29-15, the California Department of Water Resources modified and adopted a revised version of the Model Water Efficient Landscape Ordinance (MWELO) that, among other changes, significantly increases the requirements for landscape water use efficiency, and broadens the applicability of the ordinance to include new development projects with smaller landscape areas. The City of Petaluma's landscape water use efficiency standards are included in Section 15.17.050 of the Petaluma Municipal Code (PMC).

Solid Waste

The following regulations relate to the generation of solid waste and means to reduce GHG emissions from solid waste produced within the State.



Assembly Bill 939 and Assembly Bill 341

In 1989, AB 939, known as the Integrated Waste Management Act (California Public Resources Code [PRC] Sections 40000 et seq.), was passed because of the observed increase in waste stream and the decrease in landfill capacity.

AB 341 (Chapter 476, Statutes of 2011 [Chesbro]) amended the California Integrated Waste Management Act of 1989 to include a provision declaring that the policy goal of the State is that not less than 75 percent of solid waste generated be source-reduced, recycled, or composted by 2020, and annually thereafter. In addition, AB 341 required the California Department of Resources Recycling and Recovery to develop strategies to achieve the State's policy goal.

Other State Actions

The following State regulations are broadly related to GHG emissions.

Senate Bill 97

SB 97 (Dutton) (August 2007) directed the Governor's Office of Planning and Research (OPR) to develop guidelines under CEQA for the mitigation of GHG emissions. In 2008, the Governor's OPR issued a technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents. The advisory indicated that the lead agency should identify and estimate a project's GHG emissions, including those associated with vehicular traffic, energy consumption, water usage, and construction activities. The advisory further recommended that the lead agency determine the significance of the impacts and impose all mitigation measures necessary to reduce GHG emissions to a level that is less than significant. The California Natural Resource Agency (CNRA) adopted the CEQA Guidelines amendments in December 2009, and the amended CEQA Guidelines became effective in March 2010.

Under the amended CEQA Guidelines, a lead agency has the discretion to determine whether to use a quantitative or qualitative analysis, or apply performance standards to determine the significance of GHG emissions resulting from a particular project (14 CCR 15064.4[a]). The CEQA Guidelines require a lead agency to consider the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]). The CEQA Guidelines also allow a lead agency to consider feasible means of mitigating the significant effects of GHG emissions, including reductions in emissions through the implementation of project features or off-site measures. The adopted amendments do not establish a GHG emission threshold, instead allowing a lead agency to develop, adopt, and apply the lead agency's own thresholds of significance or those developed by other agencies or experts. CNRA acknowledges that a lead agency may consider compliance with regulations or requirements implementing AB 32 in determining the significance of a project's GHG emissions.

With respect to GHG emissions, the CEQA Guidelines state that lead agencies should "make a good faith effort, to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions (14 CCR 15064.4[a]). The CEQA Guidelines note that an agency may identify emissions by either selecting a "model or methodology" to quantify the emissions or by relying on "qualitative analysis or other performance-based standards" (14 CCR 15064.4[a]). Section 15064.4(b) states that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment: (1) the extent to which a project may increase or reduce GHG emissions as compared to the existing environmental setting; (2) whether the project emissions exceed a threshold of significance that the lead agency determines



applies to the project; and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4[b]).

Executive Order S-13-08

EO S-13-08 (November 2008) is intended to hasten California's response to the impacts of global climate change, particularly sea-level rise. Therefore, the EO directs State agencies to take specified actions to assess and plan for such impacts. The final 2009 California Climate Adaptation Strategy report was issued in December 2009, and an update, Safeguarding California: Reducing Climate Risk, followed in July 2014. To assess the State's vulnerability, the report summarizes key climate change impacts to the State for the following areas: agriculture, biodiversity and habitat, emergency management, energy, forestry, ocean and coastal ecosystems and resources, public health, transportation, and water. Issuance of the Safeguarding California: Implementation Action Plans followed in March 2016. In January 2018, the CNRA released the Safeguarding California Plan: 2018 Update, which communicates current and needed actions that the State government should take to build climate change resiliency.

Local Regulations

The following are the regulatory agencies and regulations pertinent to the proposed project on a local level.

Plan Bay Area 2050

Plan Bay Area 2050 (PBA 50) is a long-range transportation and land use/housing strategy through 2050 for the San Francisco Bay Area, designed to reduce GHG emissions from the mobile sector.¹⁴ PBA 50 was approved by the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) on October 21, 2021. PBA 50 also meets all State and federal requirements for a Regional Transportation Plan and Sustainable Communities Strategy.

PBA 50 provides an outline for growth in four focus areas: Priority Development Areas (PDA); Transit-Rich Areas; Priority Production Areas; and High-Resource Areas. The project site is not located within a PDA. According to the PBA 50 Forecasting and Modeling Appendix, by 2050, housing in Sonoma County is projected to increase by 32,000 households, or 17 percent, and jobs are projected to increase by 251,000, or 17 percent.¹⁵

Local jurisdictions seeking to implement development projects consistent with PBA 50 are eligible for funding for PDA planning and transportation projects. In addition, jurisdictions have the option to streamline the development process for projects consistent with PBA 50 and meet the other criteria included in SB 375.

Bay Area Air Quality Management District

The BAAQMD is the public agency entrusted with regulating air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties.

¹⁴ Association of Bay Area Governments and Metropolitan Transportation Commission. *Plan Bay Area 2050: Final*. October 2021.

¹⁵ Association of Bay Area Governments and Metropolitan Transportation Commission. *Forecasting and Modeling Report, Appendix 1: Growth Pattern*. October 2021.



The BAAQMD has prepared Air Quality Guidelines, which are intended to be used for assistance with CEQA review. The BAAQMD Air Quality Guidelines include thresholds of significance and project screening levels for GHGs, as well as methods to assess and mitigate project-level and plan-level impacts. The most recent BAAQMD Air Quality Guidelines were released in April 2023.

Sonoma County Regional Climate Action Plan

The Sonoma County Regional CAP,¹⁶ developed in 2016, includes GHG emission reduction measures for the City of Petaluma, in combination with other cities within the County. The regional CAP is an advisory document that the City uses to assist in achieving reduction of GHG emissions. Development projects within the City of Petaluma are encouraged to comply with the intent of the CAP and realize GHG reductions through voluntary application of reduction measures. The reduction measures are categorized by goals for State and Regional Measures and then by Local Measures.

City of Petaluma General Plan

The following goals and policies from the City of Petaluma General Plan related to GHG emissions are applicable to the proposed project:

- | | |
|---------------|---|
| Goal 4-G-6 | Greenhouse Gas Emissions: Reduce the contribution to greenhouse gases from existing sources and minimize the contribution of greenhouse gases from new construction and sources. |
| Policy 4-P-24 | Comply with AB 32 and its governing regulations to the full extent of the City's jurisdictional authority. |
| Policy 4-P-25 | To the full extent of the City's jurisdictional authority, implement any additional adopted State legislative or regulatory standards, policies and practices designed to reduce greenhouse gas emissions, as those measures are developed. |
| Policy 4-P-26 | Implement all measures identified in the municipal Climate Action Plan to meet the municipal target set in Resolution 2005-118 (20% below 2000 levels by 2010). |
| Policy 4-P-30 | Continue to monitor new technology and innovative sustainable design practices for applicability to ensure future development minimizes or eliminates the use of fossil fuel and GHG-emitting energy consumption. |

Petaluma Municipal Code Chapter 17.09

PMC Chapter 17.09 requires that all newly constructed buildings and substantial building alterations satisfy the definition of an all-electric building and/or have an all-electric design, except as otherwise provided therein. Exceptions include additions and alterations to existing buildings, except for substantial building alterations; the use of portable propane appliances outside of the building envelope, such as for outdoor cooking and outdoor heating appliances; essential services buildings that are electric-ready; back-up power facilities for essential services buildings; and

¹⁶ Regional Climate Protection Authority. *Sonoma County Regional Climate Action Plan*. July 2016.



development projects that obtained vested rights prior to the effective date of the chapter (May 3, 2021). In addition, as detailed in PMC Section 17.09.050, the chief building official may grant a permit in response to an application to construct a new mixed-fuel building, notwithstanding the requirements of PMC Section 17.09.030, if the chief building official, in his or her sole discretion, determines in writing, based on sufficient information submitted by the permit applicant, that the application qualifies for a waiver, in accordance with the following:

1. The proposed newly constructed building cannot satisfy all-electric building or all-electric design prescriptive requirements based on the newly constructed building's intended use(s) when compared to the same building and intended use(s) modeled with natural gas under the California Energy Code; or
2. The proposed newly constructed building cannot satisfy all-electric building or all-electric design performance requirements based on the newly constructed building's intended use(s) when compared to the same building and intended uses modeled with natural gas using commercially available technology and an approved calculation method under the California Energy Code; and
3. The installation of natural gas piping systems, fixtures and/or infrastructure in the proposed newly constructed building is strictly limited to the system(s) and/or area(s) of the building regarding which the chief building official has determined that meeting all-electric building and/or all-electric design requirements is infeasible; and
4. The proposed newly constructed building is electric-ready.

Financial considerations are not a basis for determining the infeasibility for a proposed building to meet all-electric building and/or all-electric design requirements included in PMC Chapter 17.09.

City of Petaluma Blueprint for Carbon Neutrality

In 2019 the City of Petaluma declared a Climate Emergency and established a Climate Action Commission to inform City action towards climate neutrality. Over the course of 2020, the Climate Action Commission and City staff developed the Climate Emergency Framework, which was adopted on January 11, 2021.¹⁷ The purpose of the Climate Emergency Framework was to outline principles to guide the City's ongoing response to and discussion about the climate crisis and to guide and inform subsequent policies and implementation strategies. The framework consists of four sections: Equity and Climate Justice, Mitigation and Sequestration, Adaptation and Social Resilience, and Community Engagement. The Climate Emergency Framework is the foundation for community engagement and further input regarding climate action, but the actions proposed within the Framework do not commit the City to a specific action, nor does the Framework amend any existing City legislation or regulations.

In October 2023, the City released a draft Blueprint. The draft Blueprint is the product of Petaluma's Climate Emergency Framework, and was prepared through engagement with City staff, the Climate Action Commission, and members of the community. The draft Blueprint is intended to create a roadmap to achieve carbon neutrality (i.e., net zero carbon emissions) by 2030. The draft Blueprint contains GHG reduction actions, as well as adaptation measures, consistent with State climate mitigation targets (SB 32 and EO B-55-18) and new legislation that requires cities to plan for the impacts of climate change.

The GHG reduction actions included within the draft Blueprint were developed to reduce the City's GHG emissions to reach its adopted reduction target for 2030 through reductions related to seven

¹⁷ City of Petaluma. *Climate Emergency Framework*. January 11, 2021.



different emissions sectors: clean energy, buildings, transportation and land use, water, resource consumption, natural systems and sequestration, and municipal operations. The draft Blueprint includes both quantifiable actions that directly demonstrate how Petaluma will reach its adopted 2030 target, as well as non-quantifiable actions that support the City's general goal of GHG emission reductions.

As previously noted, the draft Blueprint has not yet been formally adopted by the City of Petaluma.

4.2.4 IMPACTS AND MITIGATION MEASURES

The following section describes the standards of significance and methodology used to analyze and determine the proposed project's potential impacts related to GHG emissions. A discussion of the project's impacts, as well as mitigation measures where necessary, is also presented.

Standards of Significance

Based on the recommendations of BAAQMD, City of Petaluma standards, and consistent with Appendix G of the CEQA Guidelines, the proposed project would result in a significant impact related to GHG emissions if the project would result in any of the following:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

Pursuant to CEQA Guidelines Section 15064.4(b)(2), the lead agency is charged with determining a threshold of significance that is applicable to the project. For the analysis within this EIR, the City has elected to use the BAAQMD's thresholds of significance, as discussed below.

As noted previously, in April 2023 the BAAQMD adopted updated Air Quality Guidelines. The updated guidelines included new GHG thresholds, which are qualitative and consist of two distinct categories of criteria that must be met: Buildings and Transportation.

The BAAQMD's Buildings criteria require that a project must meet the following minimum project design elements:

- 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 Sections 21100(b)(3) and 15126.2(b) of the State CEQA Guidelines.

The BAAQMD's Transportation criteria require that a project must meet the following:

- 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 SB 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:
 - i. Residential projects: 15 percent below the existing VMT per capita;
 - ii. Office projects: 15 percent below the existing VMT per employee; or



- iii. Retail projects: no net increase in existing VMT.
- b. Achieve compliance with off-street EV requirements in the most recently adopted version of CALGreen Tier 2.

Alternatively, a project is not required to implement the foregoing design elements if the project shows consistency with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b). In the case of the proposed project, as noted above, the City's draft Blueprint has not yet been formally adopted by the City of Petaluma. Thus, the City of Petaluma does not have an adopted GHG reduction strategy, and the option to evaluate consistency with a local GHG reduction strategy is not applicable.

Method of Analysis

A comparison of the proposed project to the BAAQMD's qualitative thresholds discussed above shall determine the significance of the potential impacts related to GHGs and climate change resulting from the proposed project. Where potentially significant impacts related to GHG emissions are identified, mitigation measures are described that would reduce or eliminate the impact.

In addition, for informational purposes, the project's construction and operational GHG emissions were quantified as part of the Construction Health Risk and Greenhouse Gas Assessment prepared for the project by Illingworth & Rodkin, Inc. The emissions were estimated using the CalEEMod version 2020.4.0, which is a statewide model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify air quality emissions from land use projects. The model applies inherent default values for various land uses, including trip generation rates based on the Institute of Transportation Engineers (ITE) Manual, vehicle mix, trip length, average speed, etc. However, where project-specific data was available, such data was input into the model. Results of the modeling are expressed in MTCO₂e/yr. All CalEEMod modeling results, as well as the further information regarding the inherent design features and project-specific information that was applied to the model is included within the Construction Health Risk and Greenhouse Gas Assessment (refer to Appendix A of the Initial Study prepared for the proposed project [Appendix A of this EIR]). It is noted that the estimated GHG emissions are presented for disclosure purposes only, as the BAAQMD no longer relies on quantitative thresholds of significance for GHG emissions.

Project-Specific and Cumulative Impacts and Mitigation Measures

Global climate change is, by nature, a cumulative impact. As defined in Section 15355 of the CEQA Guidelines, "cumulative impacts" refers to two or more individual effects which, when considered together, are considerable, compound, or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects.

Emissions of GHG contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change (e.g., sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental impacts). While GHG emissions from a project in combination with other past, present, and future projects contribute to global climate change and the associated environmental impacts, a single project could not generate enough GHG emissions to contribute noticeably to a change in the



global average temperature. Due to the existing regulations within the State, for the purposes of this analysis, the geographic context for the analysis of GHG emissions presented in this EIR is the State of California.

Because the effects of GHG emissions are cumulative by nature, separate discussions for project-level and cumulative-level impacts for the proposed project are not necessary for this chapter of the EIR.

4.2-1 Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Based on the analysis below and with implementation of mitigation, the project's incremental contribution to this significant cumulative impact is *cumulatively considerable and significant and unavoidable*.

An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHGs are inherently considered cumulative impacts.

Estimated GHG emissions attributable to future development would be primarily associated with increases of CO₂ and, to a lesser extent, other GHG pollutants, such as CH₄ and N₂O. Sources of GHG emissions include area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste.

Based on the modeling conducted for the proposed project, construction of the project was estimated to generate total unmitigated GHG emissions of 360 MTCO₂e/yr during the construction period. The total unmitigated annual operational GHG emissions are presented in Table 4.2-2.

As noted previously, the applicable BAAQMD thresholds of significance for GHG emissions are qualitative, and the foregoing information is provided for disclosure purposes only. Potential impacts related to GHG emissions resulting from implementation of the proposed project are considered in comparison with BAAQMD's adopted thresholds of significance below.

BAAQMD Thresholds of Significance

According to the BAAQMD thresholds of significance, a project must either include specific project design elements related to buildings and transportation or be consistent with a local GHG reduction strategy that meets the criteria under State CEQA Guidelines Section 15183.5(b). The City of Petaluma has not prepared a qualified CAP under State CEQA Guidelines Section 15183.5(b). Thus, this discussion evaluates project consistency with the BAAQMD's Buildings and Transportation criteria.



Table 4.2-2 Unmitigated Project Operational GHG Emissions	
Source	Annual GHG Emissions (MTCO_{2e}/yr)
Area	0.73
Energy	21.61
Mobile	443.58
Waste	26.67
Water	3.98
Total Annual Operational GHG Emissions	496.58

Source: Illingworth & Rodkin, Inc., 2022 (see Appendix A).

With regard to Buildings criterion a., pursuant to PMC Chapter 17.09, all newly constructed buildings within the City of Petaluma must be constructed to be all-electric and/or have an all-electric design. As shown in the Preliminary Utility Plan prepared for the proposed project (see Figure 3-6 in the Project Description chapter of this EIR), natural gas connections and infrastructure are not proposed on-site. Thus, the proposed project would be built in compliance with PMC Chapter 17.09 and, as a result, would not conflict with Buildings criterion a.

Consistency with Buildings criterion b. was evaluated in Section VI, Energy, of the Initial Study prepared for the proposed project (refer to Appendix A of this EIR). As noted therein, the temporary increase in energy use occurring during construction of the proposed project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. During project operations, the proposed project would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, including the Building Energy Efficiency Standards and the CALGreen Code, which would ensure that building energy use associated with the proposed project would not be wasteful, inefficient, or unnecessary. As a result, the proposed project would comply with Buildings criterion b.

Consistency with Transportation criterion a. is evaluated in Chapter 4.4, Transportation, of this EIR. As presented therein, the proposed project would generate VMT per resident that exceeds 15 percent below the existing citywide average VMT per capita. Therefore, the proposed project would conflict with Transportation criterion a.

With regard to Transportation criterion b., the proposed project would include 178 total parking spaces, including 83 covered garage parking spaces, 35 standard uncovered driveway parking spaces, and 35 compact uncovered parking spaces within the permeable areas adjacent to each driveway. In addition, a total of 17 on-street parking spaces would be provided along the main access street of the project site, and an additional eight standard uncovered parallel parking spaces would be provided immediately south of the tri-plex units. Eight of the 17 on-street parking spaces, as well as the eight standard uncovered parallel parking spaces, would be designated to a specific tri-plex unit, and are, therefore, considered as part of the residential parking associated with the proposed project. The remaining nine on-street parking spaces would not be designated to a unit and are, therefore, considered non-residential.



The 2022 CALGreen Code requires residential uses be EV capable (i.e., each dwelling unit must have a listed raceway to accommodate a dedicated 208/40-volt branch circuit), which would be suitable for EV charging. For the residential parking associated with the proposed project, compliance with the 2022 CALGreen Code would satisfy the requirements established by BAAQMD criterion b. However, with regard to the nine undesignated on-street parking spaces within the project site, as shown in Figure 3-5 of this EIR, one space is proposed to be EV capable. In order to meet the 2022 CALGreen Tier 2 requirements, the Code requires non-residential uses with zero to nine parking spaces to provide three EV capable spaces. Thus, the proposed project would not comply with Transportation criterion b. related to the nine undesignated on-street parking spaces on-site.

Conclusion

Based on the above, the proposed project could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, or conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Thus, a **cumulatively considerable** and **significant** impact related to GHG emissions could occur. In order to address the potentially significant impact, Mitigation Measure 4.2-1 shall be required. However, even with implementation of Mitigation Measure 4.2-1, the potential impact would remain cumulatively considerable and significant and unavoidable.

Mitigation Measure(s)

Mitigation Measure 4.2-1 would address Transportation criterion b. However, as discussed further in Chapter 4.4, Transportation, of this EIR, the proposed project's per capita VMT exceeds thresholds, and feasible mitigation measures to reduce VMT impacts to level below significance are not available. Evidence has not been established that VMT reduction measures, when applied to people working, living, or visiting areas of Petaluma with higher density and greater mixes of uses within a convenient walk, bike, or transit trip would reduce citywide VMT. As such, feasible measures are not currently available that would reduce VMT impacts to a less-than-significant level, given the uncertainties related to outside agency approval requirements, the timing necessary to implement such measures, the lack of design or plans in place, and the lack of a citywide administration plan to oversee the collection of VMT fees and the implementation and monitoring of VMT reductions. Consequently, the project would not comply with BAAQMD's Transportation criterion a., and the project's incremental contribution to the cumulatively significant effects of GHG emissions and global climate change would remain **cumulatively considerable** and **significant and unavoidable** even with implementation of all feasible mitigation measures.

4.2-1 *Prior to the approval of project improvement plans, the applicant shall implement the following measure:*

- *Consistent with BAAQMD's Transportation criterion b., a total of three EV Capable parking spaces shall be installed throughout the nine undesignated on-street parking spaces within the project site, consistent with the current CALGreen Tier 2 standards.*



*Compliance with the foregoing measure shall be ensured by the City of
Petaluma Community Development Department.*

