3.4 Energy, Greenhouse Gases, and Climate Change

Environmental Setting

PHYSICAL SETTING

Energy

Energy usage is typically quantified using the British thermal unit (BTU[1]). California has a diverse portfolio of energy resources. The state ranked third in the nation in 2016 in conventional hydroelectric generation and crude oil production (excluding federal offshore areas), and, as of January 2017, third in oil refining capacity. Also in 2016, the state was ranked first as a producer of electricity from biomass, geothermal, and solar energy, and second in net electricity generation from all other renewable energy resources combined. Other energy production sources in the state include natural gas, nuclear, and biofuels (U.S. Energy Information Administration, 2017).

Energy efficiency efforts have dramatically reduced statewide per capita energy consumption relative to historical averages. According to the U.S. Energy Information Administration (2017), California consumed approximately 7,676 trillion BTUs of energy in 2015. Per capita energy consumption (i.e., total energy consumption divided by the population) in California is amongst the lowest in the country, with 197 million BTU in 2015, which ranked 49th among all states in the country. Natural gas accounted for the majority of energy consumption (33 percent), followed by motor gasoline (23 percent), distillate and jet fuel (16 percent), interstate electricity (11 percent), nuclear and hydroelectric power (4 percent), and a variety of other sources (U.S. Energy Information Administration, 2017). The transportation sector consumed the highest quantity of energy (39 percent), followed by the industrial and commercial sectors (U.S. Energy Information Administration, 2017).

California's per capita energy consumption, in general, is declining due to improvements in energy efficiency and design. However, despite this reduction in per capita energy use, the state's overall (i.e., non-per capita energy consumption) energy consumption is expected to increase over the next several decades due to growth in population, jobs, and demand for vehicle travel. For example,

[1] A British thermal unit is a standard unit of energy measure, which is the quantity of heat required to raise the temperature of 1 pound of water 1 degree Fahrenheit at or near the temperature at which water has its greatest density (39.2 degrees Fahrenheit). A therm is a unit of heat equivalent to 100,000 BTUs.

electricity usage is anticipated to grow about five to 12 percent by 2027 over 2015 consumption (California Energy Commission, 2017).

Regionally, Pacific Gas & Electric (PG&E), the provider for electricity and natural gas in the Planning Area, has a diverse power production portfolio, which consists of a variety of renewable and non-renewable sources. Energy production typically varies by season and by year depending on hydrologic conditions. Regional electricity loads also tend to be higher in the summer because the higher summer temperatures drive increased demand for air-conditioning. In contrast, natural gas loads are higher in the winter because the colder temperatures drive increased demand for natural gas heating. In 2015, PG&E's energy resources consisted of 30 percent from eligible renewable sources (biomass and biowaste, geothermal, eligible hydroelectric, solar and wind), 6 percent from large hydroelectric, 25 percent from natural gas, 23 percent from nuclear, and 17 percent from unspecified power (California Energy Commission, 2015).

At the local level, Alameda County consumes a small amount of energy relative to the state. Electricity and natural gas usage are individually about 4 and 3 percent of the statewide total, respectively (California Energy Commission, 2016a). Gasoline is about 4 percent of statewide usage, whereas diesel fuel usage is about 5 percent of the statewide total (California Air Resources Board, 2015). For reference, Alameda County is home to about 4 percent of California residents. As a whole, Alameda County consumed 10,815 gigawatt-hour (GWh) of electricity and 361 million therms of natural gas in 2016. Table 3.4-1 provides a summary of total and per capita Alameda County energy consumption in 2016.

Table 3.4-1: Alameda County Total and Per Capita Energy Consumption (2016)[a]

	Mass	*Million BTUs*	Per Capita BTUs
Electricity	10,815 GWh	36,922,410	22,408,400
Natural Gas	361 million therm	35,983,036	21,838,289
Gasoline	634 million gallons	77,578,776	47,082,957
Diesel	168 million gallons	23,266,320	14,120,449

Notes:

BTU = British thermal unit

kWh = Kilowatt-hours

GWh = Gigawatt-hours

3,414 BTU per 1kWh

99,976 BTU per Therm

122,364 BTU per 1 gallon gasoline (average of 120,388–124,340)

138,490 BTU per 1 gallon diesel

Alameda County 2016 Population = 1,647,704

a. As data provided by the CEC for electricity and natural gas consumption and data provided by CARB for gasoline and diesel fuel consumption are currently only available at the county level, energy consumption data for the City of Livermore and the Planning Area have not been provided

Sources: California Energy Commission 2016a; California Air Resources Board 2015; U.S. Census Bureau 2016; U.S. Department of Energy 2014.

Greenhouse Gases

Greenhouse Effect and Climate Change

The phenomenon known as the greenhouse effect keeps the atmosphere near Earth's surface warm enough for the successful habitation of humans and other life forms. The greenhouse effect is created by sunlight that passes through the atmosphere. Some of the sunlight striking Earth is absorbed and converted to heat, which warms the surface. The surface emits a portion of this heat as infrared radiation, some of which is re-emitted toward the surface by greenhouse gases (GHGs). The presence of GHGs increase the amount of infrared radiation absorbed by the atmosphere, thus enhancing the greenhouse effect and amplifying the warming of Earth. Human activities including the burning of fossil fuels and changes in land use, such as agriculture and deforestation, generate GHG emissions that contribute to the warming of the Earth (Center for Climate and Energy Solutions, 2016).

Increases in fossil fuel combustion and deforestation have exponentially increased concentrations of GHGs in the atmosphere since the Industrial Revolution. Rising atmospheric concentrations of GHGs in excess of natural levels result in increasing global surface temperatures—a phenomenon commonly referred to as global warming. Higher global surface temperatures, in turn, result in changes to Earth's climate system, including increased ocean temperature and acidity, reduced sea ice, variable precipitation, and increased frequency and intensity of extreme weather events (Intergovernmental Panel on Climate Change, 2007). Large-scale changes to Earth's system are collectively referred to as climate change.

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC estimates that the average global temperature will rise by 0.3 to 4.8°C (0.5 to 8.6°F) during the 21st century (Intergovernmental Panel on Climate Change, 2013). Large increases in global temperatures could have substantial adverse effects on the natural and human environments worldwide and in California.

Greenhouse Gases

The principle anthropogenic (human-made) GHGs contributing to global warming are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and fluorinated compounds, including sulfur hexafluoride (SF6), hydrofluorocarbons (HFCs), and perfluorinated carbons (PFCs). Water vapor, the most abundant GHG, is not included in this list because its natural concentrations and fluctuations far outweigh its anthropogenic sources. Characteristics of the principle anthropogenic GHGs are discussed below.

CO2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products; respiration; and as a result of other chemical reactions (e.g., manufacture of cement). CO2 is also removed from the atmosphere (or sequestered) when it is absorbed by plants as part of the biological carbon cycle.

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

N2O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.

SF6, an anthropogenic chemical, is used as an electrical insulating fluid for power distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer chemical for the study of oceanic and atmospheric processes.

HFCs are anthropogenic chemicals used in commercial, industrial, and consumer products and have high global warming potential (GWP). HFCs are generally used as substitutes for ozone-depleting substances in automobile air conditioners and refrigerants.

PFCs are typically emitted as byproducts of industrial and manufacturing processes. They were originally introduced as alternatives to ozone-depleting substances.

Methods have been set forth to describe emissions of GHGs in terms of a single gas to simplify reporting and analysis. The most commonly accepted method to compare GHG emissions is the GWP methodology defined in the IPCC reference documents. The IPCC defines the GWP of various GHG emissions on a normalized scale that recasts all GHG emissions in terms of carbon dioxide equivalent (CO2e), which compares the gas in question to that of the same mass of CO2 (CO2 has a global warming potential of 1 by definition). The GWP values used in this analysis are based on the IPCC Fourth Assessment Report (AR4) and United Nations Framework Convention

on Climate Change reporting guidelines (Intergovernmental Panel on Climate Change, 2007). The AR4 GWP values are used in ARB's California GHG inventory and 2017 Climate Change Scoping Plan Update.

Table 3.4-2 lists the global warming potential of CO2, CH4, and N2O along with their lifetimes and most recent abundances in the atmosphere.

Table 3.4-2: Atmospheric Lifetimes and Global Warming Potentials of Key Greenhouse Gases

Greenhouse Gases	*GWP (100 years)*[a]	*Lifetime (years)*	*2014 Atmospheric Abundance*
CO_2	1	50–200	400 ppm
CH_4	25	9–15	1,834 ppb
N_2O	298	121	328 ppb

Notes:

CH_4 = methane

CO_2 = carbon dioxide

N_2O = nitrous oxide

Ppb = parts per billion

Ppm = parts per million

a. The GWPs listed above and included in this analysis are from the IPCC's Forth Assessment Report (AR4). The IPCC has released slightly revised GWPs as part of their Fifth Assessment Report (AR5). However, the AR4 GWP values are used by California for statewide emissions planning, and have been incorporated into both the most recent 2015 California GHG inventory and 2017 Climate Change Scoping Plan Update.

Sources: Myhre et al. 2013; Blasing 2016.

Greenhouse Gas Emissions Inventories

A GHG inventory is a quantification of all GHG emissions and sinks[2] within a selected physical or economic boundary. GHG inventories can be performed on a large scale (e.g., for global and national entities) or on a small scale (e.g., for a particular building or person). Although many processes are difficult to evaluate, several agencies have developed tools to quantify emissions from certain sources. Table 3.4-3 outlines the most recent global, national, statewide, and regional GHG inventories.

In 2012, the City of Livermore adopted their Climate Action Plan (CAP) to reduce GHG emissions. As a component of the CAP analysis, the City's GHG emissions in 2005, 2008, and 2020 (forecasted) were quantified. A 'business-as-usual' forecast was prepared for 2020 to determine the level of emissions reductions the City would need to achieve to meet their GHG reduction goal. GHG emissions produced by the community in 2005 and 2008, and the expected level of emissions in 2020 are shown in Table 3.4-4. The inventory and forecast data indicate that transportation sources in the City represent the largest source of community emissions in each analysis year.

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

Table 3.4-3: Global, National, and State GHG Emissions Inventories

Emissions Inventory	*CO_2e (metric tons)*
2010 IPCC Global GHG Emissions Inventory	52,000,000,000
2015 EPA National GHG Emissions Inventory	6,587,000,000
2015 ARB State GHG Emissions Inventory	440,400,000
2011 BAAQMD GHG Emissions Inventory	86,600,000

Sources: Intergovernmental Panel on Climate Change 2014; U.S. Environmental Protection Agency 2017; California Air Resources Board 2017a; Bay Area Air Quality Management District 2011.

In addition to the CAP's reported community emissions shown below, the CAP also evaluated municipal GHG emissions. Municipal emissions are those emissions that are generated as the result of municipal (i.e. city or county) government operations. The regulatory framework for the CAP is described below under the Regulatory Setting section. Refer to the City's CAP for a summary of the municipal GHG emissions.[3]

Table 3.4-4: City of Livermore Community Greenhouse Gas Emissions Inventories and Forecast (metric tons CO_2e)

	2005 Inventory		*2008 Inventory*		*2020 Forecast*	
Emission Sector	*Metric Tons CO_2e*	*Percent*	*Metric Tons CO_2e*	*Percent*	*Metric Tons CO_2e*	*Percent*
Transportation	147,327	35.8%	150,881	35.4%	182,643	36.7%
Water Conveyance	5,246	1.3%	5,374	1.3%	6,073	1.2%
Wastewater Treatment	826	0.2%	846	0.2%	956	0.2%
Solid Waste Generation	32,783	8.0%	33,580	7.9%	37,948	7.6%
Residential Energy	121,572	29.5%	129,177	30.3%	140,726	28.3%
Commercial/Industrial Energy	104,183	25.3%	106,320	24.9%	128,956	25.9%
Total	**411,937**	**100%**	**426,177**	**100%**	**497,302**	**100%**

Source: City of Livermore 2012 Climate Action Plan.

Climate Change

Even with the efforts of municipalities throughout the state, a certain amount of climate change is inevitable because of existing and unavoidable future GHG emissions. With respect to the San Francisco Bay Area Air Basin (SFBAAB), including the City of Livermore, climate change effects are expected to result in the following conditions:

- Sea level rise, with present projections estimating a 6- to 32-centimeter increase above 1990 levels by the 2035 to 2064 timeframe. By the 2070 to 2100 timeframe, an increase of 11 to

[3] The City's CAP is accessible online at the following address: http://www.cityoflivermore.net/civicax/filebank/documents/9789/.

72 centimeters is expected, depending on which scenario of emissions actually occurs (e.g. lower, middle-upper, higher) (PRBO Conservation Science, 2011);

- A hotter and drier climate, with average annual temperatures increasing by up to 6°F in Alameda County by 2099, relative to baseline conditions (1961–1990) (California Energy Commission, 2016b);
- Increased frequency and intensity of winter storm events that could affect peak stream flows and increase flooding as large amounts of runoff move over pavement and other built surfaces. Although modeling results can vary, climate scientists predict an increase in warmer temperatures and months (California Energy Commission, 2012). Changes in precipitation patterns may amplify the existing flood risk in the Planning Area;
- Changes in growing season conditions and species distribution (PRBO Conservation Science, 2011); and
- Increased heat and decreased air quality, with the result that public health will be placed at risk, and native plant and animal species may be lost (PRBO Conservation Science, 2011).

REGULATORY SETTING

Energy

Federal Regulations

The Energy Policy Act of 2005 establishes a comprehensive, long-term federal energy policy to be implemented by the U.S. Department of Energy. The Energy Policy Act addresses energy production in the United States, including oil, gas, coal, and alternative forms of energy and energy efficiency and tax incentives. Energy efficiency and tax incentive programs include credits for the construction of new energy efficient homes, production or purchase of energy efficient appliances, and loan guarantees for entities that develop or use innovative technologies that avoid the production of GHGs. The federal government has also adopted the Energy and Independence Security Act of 2007 (EISA), which sets energy management requirements in several areas.

State Regulations

Assembly Bill 2076, Reducing Dependence on Petroleum (2000)

The California Energy Commission (CEC) and California Air Resources Board (ARB) are directed by Assembly Bill (AB) 2076 to develop and adopt recommendations for reducing dependence on petroleum. A performance-based goal is to reduce petroleum demand to 15 percent less than 2003 demand by 2020.

Senate Bill 1389 (2002) and California Integrated Energy Policy Report

Senate Bill (SB) 1389 requires the CEC to develop an integrated energy plan for electricity, natural gas, and transportation fuels. The energy plan is to be updated biannually and support improvements to the California energy system that reduce air pollution, congestion, and wasteful energy use. The current Integrated Energy Policy Report (IEPR) was updated in 2016 and covers a broad range of topics, including, but not limited to, environmental performance of the electricity generation system, landscape-scale planning, transportation fuel supply reliability, climate adaptation activities, and climate and sea level rise scenarios.

California Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Code (2011), Title 24 Update (2014/2016)

The Green Building Standards Code (CALGreen) applies to the planning, design, operation, construction, use, and occupancy of newly constructed buildings and requires the installation of energy- and water-efficient indoor infrastructure for all new projects beginning after January 1, 2011. CALGreen now requires newly constructed buildings to develop a waste management plan and to recycle or salvage for reuse at least 65 percent of the construction and demolition waste materials generated during project construction.

Administrative regulations for CALGreen Part 11 and the California Building Energy Efficiency Standards were adopted in 2013 and took effect on January 1, 2014. The 2013 Building Energy Efficiency Standards are 25 percent more efficient than previous standards for residential construction. Part 11 also established voluntary standards that became mandatory in the 2010 edition of the code, including planning and design for sustainable site development, energy efficiency, water conservation, material conservation, and internal air contaminants. The standards offer builders better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

The 2016 Building Energy Efficiency Standards took effect on January 1, 2017. According to CEC, single-family homes built to the 2016 standards will use about 28 percent less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2013 standards. While the 2016 standards do not require zero net energy (ZNE) buildings, which on an annual basis would produce approximately the same amount of energy as they consume, the 2019 standards are expected to take the final step toward achieving ZNE for newly constructed residential buildings throughout California. Later standards are expected to require ZNE for newly constructed commercial buildings.

Local Regulations

City of Livermore General Plan

The Open Space and Conservation Element of the City of Livermore General Plan addresses energy conservation and identifies policies to protect and improve this resource (City of Livermore, 2004). The goal, objective, and policies relevant to the proposed Plan's energy analysis include minimizing Livermore's energy consumption by promoting energy conservation in the public and private realms.

In addition, the Infrastructure and Public Services Element of the General Plan includes goals to provide utilities and manage solid waste in ways that are environmentally acceptable by considering the energy efficiency of proposed development and promoting the recovery ore recyclable materials and energy from solid waste generated in the city.

Climate Change

Federal Regulations

There is no federal overarching law specifically related to climate change or the reduction of GHGs. Under the Obama Administration, the EPA was developing regulations under the Clean Air Act (CAA) pursuant to the EPA's authority under the CAA. In Coalition for Responsible Regulation,

Inc., et al. v. EPA, the United States Court of Appeals upheld the EPA's authority to regulate GHG emissions under the CAA. Foremost among recent developments have been the settlement agreements between the EPA, several states, and non-governmental organizations (NGOs) to address GHG emissions from electric generating units and refineries; the U.S. Supreme Court's decision in Massachusetts v. EPA; and the EPA's "Endangerment Finding," "Cause or Contribute Finding," Mandatory Reporting Rule, light-duty and heavy-duty vehicle fuel economy standards, and EPA's Clean Power Plan Final Rule. Under the Clean Power Plan, EPA issued regulations to control CO2 emissions from new and existing coal-fired power plants. However, on February 9, 2016 the Supreme Court issued a stay of these regulations pending litigation. The fate of the proposed regulations is uncertain given the change in federal administrations and the pending deliberations in federal courts.

State Regulations

California has adopted statewide legislation addressing various aspects of GHG emissions reduction and climate change. The legislation establishes a broad framework for the State's long-term GHG reduction program. The Governor of California has also issued several executive orders related to the State's evolving climate change policy. Summaries of key policies, regulations, and legislation at the state levels that are relevant to the proposed Plan are provided below.

Executive Order S-3-05 (2005)

California Executive Order (EO) S-3-05 sets forth a series of target dates by which statewide emissions of GHGs need to be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 million metric tons of carbon dioxide equivalent [MT CO2e]); by 2020, reduce emissions to 1990 levels (approximately 427 million metric tons CO2e); and by 2050, reduce emissions to 80 percent below 1990 levels (approximately 85 million metric tons CO2e). Executive orders are binding only on state agencies. Accordingly, California EO S-3-05 will guide State agencies' efforts to control and regulate GHG emissions, but will have no direct binding effect on local government or private actions. The Secretary of the California Environmental Protection Agency is required to report to the Governor and State legislature biannually on the impacts of global warming on California, mitigation and adaptation plans, and progress made toward reducing GHG emissions to meet the targets established in this executive order.

Assembly Bill 1493, Pavley Rules (2002, amendments 2009)/Advanced Clean Cars (2012)

Known as "Pavley I," AB 1493 established the nation's first GHG standards for automobiles. AB 1493 required ARB to adopt vehicle standards to lower GHG emissions from new light duty autos to the maximum extent feasible beginning in 2009. Additional strengthening of the Pavley standards (referred to previously as "Pavley II," and now referred to as the "Advanced Clean Cars" measure) was adopted for vehicle model years 2017 to 2025 in 2012. Together, the two standards are expected to increase average fuel economy to roughly 54.5 miles per gallon by 2025.

Assembly Bill 32 (2006) and California Climate Change Scoping Plan (2008/2014)

In 2006, the California legislature passed AB 32 (California Health and Safety Code Division 25.5, Sections 38500 et seq., or AB 32), also known as the California Global Warming Solutions Act. AB 32 requires ARB to implement emission limits, regulations, and other feasible and cost-effective measures such that statewide GHG emissions are reduced to 1990 levels by 2020.

Pursuant to AB 32, ARB adopted the Climate Change Scoping Plan (Scoping Plan) in December 2008, which outlines measures for meeting the 2020 GHG emissions reduction limits. The Scoping Plan must be updated every five years to evaluate AB 32 policies and ensure that California is on track to achieve the 2020 GHG emissions reduction goal. In 2014, ARB released the First Update to the Climate Change Scoping Plan (First Update), which builds upon the initial scoping plan with new strategies and recommendations. The First Update identifies opportunities to leverage existing and new funds and drive GHG emissions reductions through strategic planning and targeted low-carbon investments. This update defines ARB's climate change priorities for the next five years and sets the groundwork for reaching the long-term goals set forth in California EO S-3-05. The First Update highlights California's progress toward meeting the near-term 2020 GHG emissions reduction goals in the initial scoping plan. It also evaluates actions to align the State's longer-term GHG emissions reduction strategies with other State policy priorities for water, waste, natural resources, clean energy, transportation, and land use.

Executive Order S-01-07, Low Carbon Fuel Standard (2007)

California EO S-01-07 mandates (1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020, and (2) that a low-carbon fuel standard for transportation fuels be established in California. The executive order initiates a research and regulatory process at ARB.

Senate Bill 375 (Steinberg) (2008)

SB 375 provides for a new planning process that coordinates land use planning, regional transportation plans (RTPs), and funding priorities to help California meet the GHG reduction goals established in AB 32. SB 375 requires regional transportation plans, developed by metropolitan planning organizations (MPOs), to incorporate a sustainable communities strategy (SCS). The goal of the SCS is to reduce regional vehicle miles traveled (VMT) through land use planning and consequent transportation patterns. ARB released the regional targets in September 2010.

The Metropolitan Transportation Commission (MTC) is the MPO for the nine counties that comprise the San Francisco Bay Area and the SFBAAB, which includes the City of Livermore. The per capita GHG emissions reduction targets for the SFBAAB are seven percent by 2020 and 15 percent by 2035 from 2005 levels (California Air Resources Board, 2011). MTC adopted an SCS as part of their regional transportation plan (RTP) for the SFBAAB in 2013 known as Plan Bay Area. The plan exceeds the regional per capita targets, achieving 10 percent and 16 percent reduction in per capita GHG emissions by 2020 and 2035, respectively (Association of Bay Area Governments and Metropolitan Transportation Commission, 2012). On July 26, 2017, the strategic update to this plan, known as Plan Bay Area 2040, was adopted by the Association of Bay Area Governments (ABAG) and the MTC. As a limited and focused update, Plan Bay Area 2040 builds upon the growth pattern and strategies developed in the original Plan Bay Area but with updated planning assumptions that incorporate key economic, demographic, and financial trends since 2013.

SB 375 includes provisions for streamlined CEQA review for certain types of mixed-use and transit priority projects that meet specific criteria established by SB 375. According to State CEQA Guidelines Section 15183.5, quantified plans, such as the RTP/SCS EIR, "may be used in the cumulative impacts analysis of later projects." More specifically, "[l]ater project-specific

environmental documents may tier from and/or incorporate by reference" the "programmatic review" conducted for the GHG reduction plan. Section 15183.5 also states:

> An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project.

Environmental documents prepared for residential and mixed-use projects that are consistent with the RTP/SCS EIR are not required to reference, describe, or discuss the following in their GHG impact analysis (Public Resource Code Section 21159.28):

- Growth-inducing impacts;
- A reduced-density alternative to address impacts on transportation or climate change of increased car and truck VMT induced by the project; or
- Any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network.

Senate Bill 97 (2009)

SB 97 required the Governor's Office of Planning and Research to develop recommended amendments to the CEQA Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bills 1078/107 and Senate Bill X1-2 (2011)—Renewables Portfolio Standard

SBs 1078 and 107, California's Renewables Portfolio Standard (RPS), obligates investor-owned utilities (IOUs), energy service providers (ESPs), and Community Choice Aggregations (CCAs) to procure an additional one percent of retail sales per year from eligible renewable sources until 20 percent is reached, no later than 2010. The California Public Utilities Commission (CPUC) and CEC are jointly responsible for implementing the program. SB X1-2 (2011), called the California Renewable Energy Resources Act, obligates California electricity providers to obtain at least 33 percent of their energy from renewable resources by 2020. The RPS has been extended by SB 350, discussed further below, to 50 percent for 2030.

Senate Bill 350—De Leon (Clean Energy and Pollution Reduction Act of 2015) (2015)

SB 350 was approved by the California legislature in September 2015 and signed by Governor Brown in October 2015. Its key provisions are to require the following by 2030: (1) a renewables portfolio standard of 50 percent and (2) a doubling of energy efficiency (electrical and natural gas) by 2030, including improvements to the efficiency of existing buildings. These mandates will be implemented by future actions of the California Public Utilities Commission and California Energy Commission.

Senate Bill 32 and Assembly Bill 197 (2016)

SB 32 requires the ARB to ensure that statewide GHG emissions are reduced to at least 40 percent below 1990 levels by 2030. The companion bill, AB 197, creates requirements to form a Joint Legislative Committee on Climate Change Policies, requires the ARB to prioritize direct emission

reductions and consider social costs when adopting regulations to reduce GHG emissions beyond the 2020 statewide limit, requires ARB to prepare reports on sources of GHGs and other pollutants, establishes six-year terms for voting members of ARB, and adds two legislators as non-voting members of ARB.

Pursuant to SB 32, ARB updated the prior AB 32 Scoping Plan to address implementation of GHG reduction strategies to meet the 2030 reduction target. The final plan was approved in December 2017. The 2017 plan continues the discussion from the original scoping plan and 2014 update of identifying scientifically-backed policies within six of the state's economic sectors to reduce GHGs. The updated Scoping Plan includes various elements, including doubling energy efficiency savings, increasing the low carbon fuel standard from 10 to 18 percent, adding 4.2 million zero-emission vehicles on the road, implementing the Sustainable Freight Strategy, implementing a post-2020 Cap-and-Trade Program, creating walkable communities with expanded mass transit and other alternatives to traveling by car, and developing an Integrated Natural and Working Lands Action Plan to protect land-based carbon sinks.

Local Regulations

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) has local jurisdiction over air quality in the SFBAAB, including projects in the City of Livermore. BAAQMD has adopted advisory emission thresholds to assist CEQA lead agencies in determining the level of significance of a project's GHG emissions, including long range plans (e.g., general plans, specific plans), which are outlined in its California Environmental Quality Act: Air Quality Guidelines (CEQA Guidelines). The CEQA Guidelines also outline methods for quantifying GHG emissions, as well as potential mitigation measures.

City of Livermore Climate Action Plan

The City of Livermore adopted a CAP in 2012 to support the State's implementation of AB 32. Consistent with the State's objectives outlined in AB 32, the CAP set out specific policies and actions to be undertaken by the City to reduce GHG emissions under the control of the City to a level 15 percent less than 2008 conditions. The City's CAP includes existing State and proposed local measures that would result in GHG emission reductions within the community. The reduction measures are grouped into eight broad emission sectors, and include programs that improve building energy efficiency beyond statewide mandates, increase transit and alternatives to vehicular travel, increase use of renewable energy, reduce water conveyance and waste, and other measures. Table 3.4-5 summarizes the GHG reduction measures included in the City's CAP.

It should be noted that because the City's CAP was prepared to comply with the 2020 GHG reduction goal established by AB 32, the CAP would not be applicable to be used to quantitatively evaluate the GHG emissions of the proposed Plan beyond 2020, since the Plan has interim and full buildout years in the post-2020 period. However, the proposed Plan can still be analyzed qualitatively against the CAP reduction measures to evaluate whether implementation of the proposed Plan would be in line with the CAP's goals and policies to reduce and minimize GHG emissions.

Table 3.4-5. City of Livermore CAP Reduction Measures

Measure Number	*Measure Description*
Building Energy	
Energy-1	Energy Efficiency Voluntary Programs to Promote Retrofits for Existing Residential Buildings
Energy 2	Energy Efficiency Voluntary Programs for Existing Commercial Development
Energy-3	Exceed Title 24 Requirements for New Buildings
Energy-4	Streetlights
Renewable Energy	
Energy-5	Voluntary Residential and Non-Residential Rooftop Solar
Energy-6	Voluntary Solar Over Parking Areas Program
Land Use and Transportation	
On Road-1	Idling Restrictions
On Road-2	Transit Oriented Development
On Road-3	Transit Enhancements
On Road-4	Traffic Signal Synchronization
On Road-5	Bicycles and Pedestrian Improvements
On Road-6	Car Sharing Programs
Water Conveyance	
Water-1	Reduce Per Capita Urban Water Use 20% below 2005 per Capita Levels
Wastewater Treatment	
Wastewater-1	Aeration Diffuser
Solid Waste Generation	
Waste-1	Waste Diversion
Urban Forestry and Conservation	
Urban Forestry-1	Urban Shade Trees
Municipal Programs	
Municipal-1	Municipal Energy-Efficiency Actions

Source: City of Livermore 2012 Climate Action Plan.

Impact Analysis

SIGNIFICANCE CRITERIA

Energy

Based on Appendix F of the CEQA Guidelines, environmental considerations related to energy may include those listed below:

- The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project, including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed.
- The effects of the project on local and regional energy supplies and on requirements for additional capacity.
- The effects of the project on peak- and base-period demands for electricity and other forms of energy.
- The degree to which the project complies with existing energy standards.
- The effects of the project on energy resources.
- The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

The CEQA Guidelines recommend that the analysis of energy impacts focus on whether the project would result in the wasteful, inefficient, or unnecessary consumption of energy. Efficient projects that incorporate conservation measures to avoid wasteful energy usage facilitate long-term energy planning and avoid the need for unplanned or additional energy capacity. Accordingly, based on the criteria outlined in Appendix F of the CEQA Guidelines, the proposed Plan's potential impacts related to energy can be assessed based on whether it would lead to a wasteful, inefficient, and unnecessary usage of direct or indirect energy.

As discussed in the Regulatory Setting section, energy legislation, policies, and standards adopted by the federal, State, and local governments were enacted and promulgated for the purpose of reducing energy consumption and improving efficiency (i.e., reducing wasteful and inefficient use of energy). Therefore, for the purposes of this analysis, inconsistency with legislation, policies, or standards designed to avoid wasteful and inefficient energy usage is used as the basis for evaluating whether the proposed Plan would result in a significant impact related to energy resources and conservation.

Greenhouse Gases and Climate Change

Climate change is a global problem and GHGs are global pollutants, unlike criteria air pollutants (such as ozone precursors), which are primarily pollutants of regional and local concern. Given their long atmospheric lifetimes (refer to Table 3.4-2), GHGs emitted by countless sources worldwide accumulate in the atmosphere. No single emitter of GHGs is large enough to trigger global climate change on its own. Rather, climate change is the result of the individual contributions of countless past, present, and future sources. Therefore, GHG impacts are inherently cumulative.

In accordance with Appendix G of the CEQA Guidelines, implementation of the proposed Plan would have a potentially significant adverse impact if it would:

Criterion 1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. For the purposes of this analysis, a "significant impact" from GHG emissions would occur if emissions exceed thresholds described below.

Criterion 2: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. For the purposes of this analysis, applicable plans include the AB 32 Scoping Plan for 2020, the City's CAP, and the 2017 Scoping Plan for 2030 (for SB 32 implementation) (consistency with the goals in EO B-30-15, EO S-3-05, and SB 375 and Plan Bay Area 2040 is also evaluated).

Threshold Approach

A number of lead agencies throughout the state have drafted and/or adopted various threshold approaches and guidelines for analyzing 2020 operational GHG emissions in CEQA documents consistent with AB 32 reduction requirements. These different thresholds include compliance with a qualified GHG reduction strategy (i.e., a CAP), performance-based reductions,[4] numeric bright-line thresholds, and efficiency-based thresholds. The recent California Supreme Court's Newhall Ranch decision confirmed that there are multiple potential pathways for evaluating GHG emissions consistent with CEQA, depending on the circumstances of a given project.[5] While the decision did not foreclose other methodologies that may be used by lead agencies, it affirmed that "thresholds only define the level at which an environmental effect 'normally' is considered significant; they do not relieve the lead agency of its duty to determine the significance of an impact independently." Additionally, the decision also identified the need to analyze both near-term and post-2020 emissions, as applicable, stating that an "EIR taking a goal-consistency approach to CEQA significance may in the near future need to consider the project's effects on meeting longer term emissions reduction targets."

As the proposed Plan is located within the SFBAAB, which is under jurisdiction of BAAQMD, GHG emissions are evaluated using guidance and thresholds outlined in BAAQMD's CEQA Guidelines (Bay Area Air Quality Management District, 2017). However, it should be noted that these thresholds currently only account for consistency with GHG reduction targets for 2020 established in AB 32, while the future buildout year for the proposed Plan is in 2040. As such, GHG emissions will be evaluated by modifying the existing BAAQMD GHG threshold for 2020 (per AB 32) to the 2040 period, taking into account the GHG reduction targets in SB 32 for 2030 and EO S-3-05 for 2050, as discussed below. Additionally, as part of this analysis and similar to the traffic impact analysis for the proposed Plan, which analyzed traffic conditions under an "interim" buildout year in 2025, the existing BAAQMD GHG threshold for AB32 was also modified to the

[4] Performance-based reductions include the "percent below Business as Usual" threshold approach, which has been used widely in the past. This approach was the subject of the Newhall Ranch case and presently is subject to uncertainty until the issues raised in the Supreme Court ruling are resolved.

[5] *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal.4th 204, known as the Newhall Ranch decision

2025 period to evaluate the proposed Plan's emissions in 2025. The development of these threshold criteria to assess the proposed Plan's GHG emissions in 2025 and 2040 are discussed below.

Threshold Criteria

BAAQMD's CEQA Guidelines do not identify a GHG emission threshold for the evaluation of plan- or project-level impacts from construction-related emissions. Instead, BAAQMD recommends that GHG emissions from construction be quantified and disclosed, and that a determination regarding the significance of these GHG emissions be made with respect to whether a project is consistent with the AB 32 GHG emission reduction goals. BAAQMD further recommends incorporation of BMPs to reduce GHG emissions during construction, as feasible and applicable.

With respect to operational GHG emissions, BAAQMD's guidelines establish two potential analysis criteria for plan-level projects (e.g., general plans, community plans, specific plans, regional plans, congestion management plans, etc.) relative to 2020:

- Compliance with a Qualified GHG Reduction Strategy, with a goal consistent with AB 32;[6] or
- Compliance with a GHG efficiency threshold of either 6.6 metric tons (MT) CO_2e per service population (SP) (employees + population) for general plans, or a GHG efficiency threshold of 4.6 MT CO_2e per SP for all other plans (e.g., specific plan, congestion management plans, etc.).

BAAQMD thresholds are based on the AB 32 GHG reduction goals and a "gap analysis" that attributes an appropriate share of GHG emissions reductions to new land use development projects in BAAQMD's jurisdiction. The efficiency threshold (4.6 MT of CO2e per service population) was calculated by dividing the AB 32 GHG reduction target for land use development emissions in California by the estimated 2020 population and employment level. Thus, BAAQMD thresholds are tied directly to AB 32 and statewide emissions reduction goals for 2020 (Bay Area Air Quality Management District, 2017). However, given that the proposed Plan's interim and future buildout years would occur beyond 2020, threshold criteria that are tied to the State's post-2020 reduction goals should be used to evaluate the proposed Plan's GHG emissions. As discussed previously, long-term goals for 2030 have been statutorily established in SB 32 and long-term goals for 2050 have been articulated in EO S-3-05.[7] SB 32 extends the 2020 statewide target and requires a 40 percent reduction below 1990 levels by 2030. The 2030 Scoping Plan includes per capita reduction targets consistent with SB 32, which are 6 metric tons CO2e per capita by 2030 and 2 metric tons CO2e per capita by 2050 (California Air Resource Board, 2017b). Although not legislatively adopted, EO S-3-05 outlines a long-range target of 80 percent below 1990 emissions levels by 2050.

[6] As the City of Livermore's CAP was prepared for the City's 2020 GHG reduction goal, it would not be applicable to the proposed Plan, which has a 2040 buildout year.

[7] Executive orders are binding only on State agencies.

The Association of Environmental Professionals (AEP) Climate Change Committee recommended in a 2016 white paper that CEQA analyses for multiple-phase projects with post-2020 development, such as the proposed Plan, not only "consider consistency with the 2020/AB 32 based framework, but also analyze the consequences of post-2020 GHG emissions in terms of their impacts on the reduction trajectory from 2020 toward 2050." AEP further recommends that the "significance determination…should be based on consistency with "substantial progress" along a post-2020 trajectory." The 2016 AEP white paper is advisory only and is not binding guidance or an adopted set of CEQA thresholds. However, the CEQA Guidelines do authorize a lead agency to consider thresholds of significance recommended by experts such as members of the AEP Climate Change Committee, which consists of leaders of climate action planning practices from consulting firms and agencies that have lead many of the local GHG reduction planning efforts across California.

While BAAQMD's current efficiency threshold only accounts for consistency with AB 32's established GHG reduction targets for 2020, efficiency-based thresholds can also be derived to assess a project's consistency with the State's post-2020 reduction targets. Efficiency-based thresholds consist of identifying a GHG efficiency level needed for new development that would support statewide reduction planning for future milestones. Projects that attain the efficiency target, with or without mitigation, would result in less-than-significant GHG emissions. While the Newhall Ranch decision did not specifically recommend the efficiency-based approach, the ruling did note that numerical threshold approaches may be appropriate for determining significance of GHG emissions and to emphasize the consideration of GHG efficiency. Efficiency-based thresholds are typically calculated by dividing emissions associated with residential and commercial uses (also termed the land use sector in the AB 32 Scoping Plan) within the state by the sum of jobs and residents within the same geography. The sum of jobs and residents is called the service population, and a project's service population is defined as the people that work and live within the project site. This methodology has been primarily targeted to residential, commercial, and mixed-use projects with GHG emissions resulting from a mixture of building energy, transportation, solid waste, and other emissions similar in proportion to that of the overall land use sector and that occur in a roughly linear relationship to the number of employees and/or residential population. Because typical efficiency-based thresholds are based on the land use sector (residential and commercial uses) and only account for land use-related emissions and residential population and employment, they are applicable to use for land use developments/plans such as the proposed Plan.

For the purpose of this analysis, GHG efficiency thresholds based on the emissions reduction targets under AB 32, SB 32, and EO S-3-05 that are applicable to the geographical area under the jurisdiction of the BAAQMD, which includes all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, and portions of Solano and Sonoma counties, are first established. To establish these metrics, the 1990 GHG emissions for BAAQMD's geographical jurisdiction were obtained from BAAQMD's 2011 GHG emissions inventory (BAAQMD, 2011) and used to calculate the mass emission targets based on the percent reduction targets for future statewide milestone years (i.e., 1990 emission levels by 2020; 40 percent below 1990 emission levels by 2030; and 80 percent below 1990 emission by 2050). Population and employment data obtained from ABAG's Projections 2013[8] (ABAG, 2013) for milestone years 2020, 2030, and 2050 are then

[8] Projections 2013 is the most recent in ABAG's series of statistical compendia on demographic, economic, and land use changes in the San Francisco Bay Area.

used to calculate the efficiency metrics for those years, where the milestone mass emissions are divided by the corresponding milestone service population values. For projects that have buildout years that fall outside of milestone years 2020, 2030, and 2050, GHG efficiency thresholds can be estimated for those years by interpolating the mass emission targets between the appropriate milestone years and using service population obtained for those years from ABAG. As such, for the proposed Plan, the mass emission target for 2025 is calculated by interpolating a 20 percent reduction below 1990 emission levels between milestone years 2020 and 2030, while the mass emission target for 2040 is calculated by interpolating a 60 percent reduction below 1990 emission levels between milestone years 2030 and 2050. Using service population values for 2025 and 2040 obtained from ABAG, applicable GHG efficiency thresholds are then established to evaluate future GHG emission impacts from the proposed Plan. The GHG efficiency thresholds calculated for milestone years 2020, 2030, and 2050 for BAAQMD's jurisdictional area along with the corresponding efficiency thresholds for the proposed Plan's interim 2025 and future 2040 buildout years are shown in Table 3.4-6.

In summary, because both the interim and future buildout years for the proposed Plan occur beyond 2020, and consistent with the general scientific understanding that there will be a need for deeper reductions in GHG emissions in the post-2020 period, this EIR evaluates the proposed Plan's operational GHG emissions using the metrics listed below:

2025 – 3.7 MT CO_2e per service population.

- Proposed Plan operational emissions at interim buildout year 2025 are compared to a "substantial progress" efficiency indicator of 3.7 MT CO2e per service population that is based on the 2030 reduction target established by SB 32. Emissions in excess of this "substantial progress" efficiency indicator could conflict with the trajectory of long-term GHG reduction goals.

2040 – 1.7 MT CO_2e per service population.

- Proposed Plan operational emissions at future buildout year 2040 are compared to a "substantial progress" efficiency indicator of 1.7 MT CO2e per service population that based on the 2050 reduction target articulated in EO S-3-05. Emissions in excess of this "substantial progress" efficiency indicator could conflict with the trajectory of long-term GHG reduction goals.

Through the use of these efficiency thresholds, the analysis of substantial progress through 2040 on a trajectory toward 2050 reduction targets is used in this EIR to disclose consistency of the proposed Plan with the long-term reductions called for in EO-S-3-05. Furthermore, although the proposed Plan's buildout would occur in the post-2020 period, consistency of the proposed Plan with the 2020/AB 32 based framework is addressed by analyzing the proposed Plan's consistency with the City's 2012 CAP.

Table 3.4-6. Operational GHG Thresholds/Substantial Progress Efficiency Metrics for BAAQMD

Year	*Land Use Sector GHG Emissions (Metric Tons CO_2e)*[a]	*Total Service Population*[b]	*Threshold/Metric (MT CO_2e per service population)*[c]	*Threshold Basis*
2020	48,400,000	10,073,327	4.8	GHG emissions reduced to 1990 levels by 2020 per AB 32
2025	38,720,000	10,442,686	3.7	GHG emissions reduced to 20 percent below 1990 levels (interpolated between 2020 and 2030)
2030	29,040,000	10,827,438	2.7	GHG emissions reduced to 40 percent below 1990 levels per SB 32
2040	19,260,000	11,745,220	1.7	GHG emissions reduced to 60 percent below 1990 levels (interpolated between 2030 and 2050)
2050	9,680,000	12,663,002	0.8	GHG emissions reduced to 80 percent below 1990 levels per Executive Order S-3-05

Note:

The emissions from BAAQMD's 2011 GHG emissions inventory for 1990 is used to represent the GHG emissions in 2020, as the emission reduction target under AB 32 requires GHG emissions to be reduced to 1990 levels by 2020. The GHG emissions for all subsequent years in this table are calculated from the 1990 emission level value and factoring in the Statewide milestone reduction targets. The total service population for each year analyzed in the table is calculated by summing the residential and employment population data obtained from ABAG's Projection 2013. The GHG efficiency threshold is calculated by dividing the total GHG emissions by the total service population.

Source: Bay Area Air Quality Management District 2011; Association of Bay Area Governments 2013.

METHODOLOGY AND ASSUMPTIONS

Energy Consumption

The energy analysis for the proposed Plan evaluates the following sources of energy consumption associated with existing conditions and implementation of the proposed Plan:

- Short-term construction – gasoline and diesel consumed by vehicles and off-road construction equipment associated with new land uses in the Planning Area.
- Operational building energy – electricity and natural gas consumed by the existing and new land uses in the Planning Area.
- Operational on-road vehicles – gasoline consumed by the existing and future service populations.

With an anticipated buildout year of 2040, construction of new land use developments allowable under the proposed Plan would occur intermittently in the Planning Area throughout the course of the buildout period. As the timing and intensity of future development projects is not known at this time, the energy consumption resulting from construction activities associated with buildout of the Planning Area cannot be accurately quantified at this time. Thus, the evaluation of potential construction-related impacts related to energy consumption from implementation of the proposed Plan is conducted qualitatively in this EIR.

Energy use associated with fuel consumption during operations (vehicle trips) by existing uses and future land uses under the proposed Plan was calculated by converting GHG emissions predicted by the GHG analysis using the rate of CO2 emissions emitted per gallon of combusted gasoline (8.78 kilograms/gallon) and diesel (10.21 kilograms/gallon) (Climate Registry, 2017). The estimated fuel consumption was converted to BTUs, assuming an energy intensity of 122,364 BTUs per gallon of gasoline and 138,490 per gallon of diesel (United States Department of Energy, 2014).

Operational electricity and natural gas consumption for the existing uses and future land uses under the proposed Plan was drawn from the modeling performed to support the GHG analysis. CalEEMod outputs for natural gas consumption are provided in BTU; outputs for electricity consumption, which are provided in kWh, were converted to BTU assuming an energy intensity of 3,414 BTU per kWh (United States Department of Energy, 2014).

The proposed Plan's incremental (net) increase in energy consumption is determined by comparing the future with proposed Plan conditions against existing conditions. To determine whether the proposed Plan would result in wasteful and inefficient energy usage, a per capita energy consumption value is determined for the proposed Plan by dividing its net increase in energy use by its service population. This value is then compared to the per capita energy consumption under existing (2013) conditions to ascertain whether energy use would increase or decrease under the proposed Plan.

Greenhouse Gas Emissions

GHG emissions associated with the proposed Plan would result from operation of future land uses that would be developed in the Planning Area and from traffic volumes generated by these new

developments. These emissions would not occur at once but over the course of the proposed Plan's buildout period. Construction activities would also generate GHG emissions within the Planning Area and on roadways resulting from construction-related traffic.

For this analysis, impacts of the proposed Plan on GHG emissions and energy resources from construction were assessed qualitatively, while impacts from operations were assessed quantitatively using standard and accepted software tools, techniques, and emission factors. The primary assumptions and key methods used to quantify emissions and estimate potential impacts are described below. Model inputs and calculation files are provided in Appendix B: Air Quality and Greenhouse Gas Data.

This analysis provides a program-level overview of construction and operational emissions that could occur with buildout of the proposed Plan. Subsequent project-level environmental review, including quantification of construction GHG emissions, would be conducted during the processing of individual applications for future projects associated with the proposed Plan.

Construction GHG Emissions

Land uses that could be developed under the proposed Plan would generate construction-related GHG emissions from mobile and stationary construction equipment exhaust and employee and haul truck vehicle exhaust. With an anticipated buildout year of 2040, development of the various land uses associated with the proposed Plan would occur over an extended period of time and would depend on factors such as local economic conditions, market demand, and other financing considerations. However, the specific size, location, and construction techniques and scheduling that would be utilized for each individual development project occurring within the Planning Area from implementation of the proposed Plan is not currently known. Without specific project-level details it is not possible to develop a refined construction inventory,[9] and the determination of construction emission impacts associated with GHGs for each individual development project, or a combination of these projects, would require the City to speculate regarding such potential future project-level environmental impacts. Thus, in the absence of the necessary construction information required to provide an informative and meaningful analysis, the evaluation of potential construction-related impacts resulting from implementation of the proposed Plan is conducted qualitatively in this EIR and assessed against applicable BAAQMD criteria.

Operational GHG Emissions

Operation of the land uses introduced by the proposed Plan would generate long-term emissions of CO2, CH4, and N2O. Five types of GHG sources are expected during operation of the land uses associated with the proposed Plan: area, energy, mobile, waste, and water. Area sources include landscaping activities and consumer products (e.g., personal care products). Energy sources include electricity consumption and natural gas combustion for lighting and heating requirements. Mobile sources are vehicle trips that are generated by the service population associated with the proposed Plan. The waste category refers to CH4 from the decomposition of waste generated from the new

[9] Project-level information includes details such as the size and scale of the project to be constructed, construction schedule, equipment fleet, construction worker crew estimates, and demolition and grading quantities.

land use developments in the Planning Area. Finally, the water source includes electricity consumption for the supply, treatment, and distribution of water for the new land uses.

Operational emissions of GHGs under the proposed Plan were quantified using the California Emissions Estimator Model (CalEEMod), version 2016.3.2. Mobile-source emissions of GHGs were modeled based on the daily vehicle trips and VMT data provided by Kittelson & Associates, the proposed Plan's traffic engineers. Daily VMT data for existing (2013) conditions along with both interim buildout (2025) and future buildout (2040) year conditions with the proposed Plan were provided. VMT data for the proposed Plan account for trip reductions achieved by proposed policies that increase proximity to transit and mixed-use design.

Area, energy, water, and waste emissions were modeled according to the size and type of land uses proposed. Emissions were quantified for existing (2013) conditions along with both interim (2025) and future (2040) buildout conditions with and without the proposed Plan based on current and anticipated land uses. CalEEMod defaults were assumed, with the exception of wood burning stoves and fireplaces, which were assumed to be prohibited for all new development under the proposed Plan per BAAQMD Regulation 6, Rule 3. Additionally, the City's 2013 solid waste diversion rate of 77 percent was accounted for under the existing (2013) conditions, while the most recent City solid waste diversion rate of 75 percent in 2015 was used in both the 2025 and 2040 buildout conditions, although it is expected that the actual diversion rates in 2025 and 2040 in the City would exceed 75 percent due to increasingly stringent State standards. The proposed Plan's operational emissions estimates also assume implementation of applicable State regulations designed to reduce GHG emissions, primarily passenger vehicle emission standards (Pavley) and the RPS. Please refer to Appendix B for the land use assumptions and CalEEMod output files.

The proposed Plan's incremental (net) increase in GHG emissions is determined by comparing the future with proposed Plan conditions against existing conditions. To determine whether the proposed Plan would result in significant GHG emissions, a per service population value is determined for the proposed Plan by dividing its net increase in GHG emissions compared to existing conditions by the change in service population compared to existing conditions. The resultant metric is then compared to the GHG efficiency metrics described above for 2025 and 2040.

IMPACTS

Impact 3.4-1 Implementation of the proposed Plan would not lead to wasteful, inefficient, or unnecessary consumption of energy. (*Less than significant*)

As noted above, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. As noted in Appendix F of the CEQA Guidelines, the means of achieving the goal of conserving energy include the following:

1. Decreasing overall per capita energy consumption.
2. Decreasing reliance on fossil fuels such as coal, natural gas, and oil.
3. Increasing reliance on renewable energy sources.

Construction associated with future developments under the proposed Plan would consume gasoline and diesel fuel through operation of heavy-duty, off-road construction equipment and on-road vehicles. The amount of fuel consumed by these activities would vary substantially depending on the level of activity, length of the construction period, specific construction operations, types of equipment, and number of personnel. Because the proposed Plan does not propose any specific development projects, the precise level and intensity of construction activities that would occur in the Planning Area is currently unknown.

For the purposes of this analysis, it is assumed that the types of land uses envisioned under the proposed Plan, which includes residential (all multi-family), office, business park, neighborhood commercial, and general commercial uses, would involve construction activities typical of most land use developments within the Planning Area and in the SFBAAB. None of the proposed land uses are expected to require an extraordinary amount of energy consumption during construction, as may occur with large, industrial facilities, like new power plants or dams, because no such land uses are proposed or permitted by the proposed Plan. Additionally, because construction emissions are considered to be relatively short-term emissions that would cease once construction of a project is complete, they would represent a relatively short demand on local and regional fuel supplies that would be easily accommodated. The proposed Plan policies designed to reduce air quality impacts during construction would also often achieve complementary reductions in construction-related energy use. Therefore, construction activities associated with the proposed Plan would not result in a wasteful, inefficient, and unnecessary usage of direct or indirect energy.

Once operational, future development under the proposed Plan would generate vehicle trips, which would consume gasoline and diesel. Developments would also result in the consumption of electricity and natural gas for power, heating, and cooking. Operational energy consumption (expressed in terms of million BTU or MMBTU) under existing (2013) and future with proposed Plan buildout (2040) conditions is summarized in Table 3.4-7. The future with proposed Plan buildout condition in 2040 includes fuel savings achieved by proposed Plan policies that increase proximity to transit (i.e., future BART Station at Isabel Avenue) and mixed-use design in the Planning Area, which in turn reduces the overall VMT. Table 3.4-8 shows the estimated energy consumption per capita under the existing (2013) and future with the proposed Plan (2040) conditions.

As shown in Table 3.4-7, implementation of the proposed Plan would result in a net energy consumption increase of 926,681 million BTUs at buildout in 2040. This energy use increase corresponds to the net new development introduced by the proposed Plan into the Planning Area, which consists of a total of 4,095 multi-family residential dwelling units consisting of a variety housing types such as townhomes, duplexes, complexes/building clusters of three or more units, courtyard apartments, and multi-story condominium buildings, and 2,104,200 square feet of non-residential development at buildout in 2040. As shown in Table 3.4-8, although net new energy consumption would occur under the proposed Plan, a decrease in the per capita energy consumption would occur under the proposed Plan when compared against existing (2013) conditions. Whereas the per capita energy consumption is currently 124 million BTUs per year under existing (2013) conditions, the per capita energy consumption associated with the net new development introduced by the proposed Plan at buildout in 2040 would be 47 million BTUs per year, which is approximately 62 percent lower when compared to existing conditions.

Table 3.4-7. Estimated Operational Energy Consumption for the Proposed Plan

Analysis Condition/Source	*Million BTU/Year*
Existing (2013)	
Electricity	193,628
Natural Gas	107,230
Mobile (gasoline and diesel)	1,793,189
Total	**2,094,047**
2040 With Proposed Plan	
Electricity	657,910
Natural Gas	251,340
Mobile (gasoline and diesel)	2,111,479
Total	**3,020,729**
Net Increase with Proposed Plan	926,682

Source: ICF, 2018.

Table 3.4-8. Estimated Energy Consumption Efficiency for Existing and Proposed Plan Conditions

	Existing (2013)	*2040 With Proposed Plan*	*Net Proposed Plan*
Energy consumption (million BTUs)	2,094,047	3,020,728	926,681
Service population[a]	16,864	36,694	19,830
Million BTUs per capita	124	82	47
Percent change from Existing	--	*-34%*	*-62%*

Note:

a. The service population values for the Existing (2013), 2040 No Proposed Plan, and 2040 With Proposed Plan conditions were obtained from data provided by the traffic engineer for the proposed Plan.

Source: ICF, 2018.

It should be noted that the per capita energy consumption estimated for the proposed Plan is considered to be a conservative estimate because the mobile source energy results presented in Table 3.4-7 only account for trip benefits achieved by mixed-used design and transit-oriented development in proximity to the future BART Station. It is possible that implementation of other land use and transportation measures in the proposed Plan would further reduce energy consumption from mobile sources. However, these reductions are not quantified or factored into the impact analysis. For instance, Policies P-TRA-19 and P-TRA-24 require the employment of Transportation Demand Management (TDM) strategies and programs that could promote increased use of alternative modes of transportation other than passenger vehicles. Additionally, because operational energy use for the proposed Plan was estimated using CalEEMod and default assumptions for the potential future land use types, this estimate likely overestimates actual energy consumption associated with development under the proposed Plan because it does not account

for other energy savings that would be achieved through implementation of the environmentally-sensitive design guidelines and standards promoted under the proposed Plan, such as the incorporation of green building techniques. Energy reductions resulting from implementation of these design guidelines and standards cannot be accurately quantified in CalEEMod without a detailed energy forecast by land use type. As such, the actual energy consumption by the future land uses under the proposed Plan would likely be lower than what is presented in this analysis.

Overall, by decreasing demand for energy- and fuel-related energy resources on a per capita basis, operation of future land uses associated with the proposed Plan would not result in a wasteful, inefficient, and unnecessary usage of direct or indirect energy. Therefore, this impact is considered less than significant.

Proposed Plan Goals and Policies that Reduce the Impact

Land Use Chapter

P-LU-3: Establish a neighborhood-serving retail center anchored by a grocery store. This center shall:

- Be visible and accessible from the BART station and Main Street;
- Not preclude a potential future shared surface parking facility; and
- Incorporate a major public space such as a plaza or park.

P-LU-9: The location of the Ground Floor Retail/Flex Space Overlay on the BART property north of I-580 is diagrammatic only on Figure 2-1. As the Plan is implemented, the Overlay shall apply to all building frontages along the Isabel Path between the north end of the BART pedestrian bridge and Isabel Avenue.

P-LU-44: Help connect businesses to the BART station through existing and emerging transportation technologies.

Traffic and Transportation Chapter

P-TRA-1: Create a walkable street grid within a half-mile radius of the BART station (Neighborhood core area).

- Block sizes within this area should range from 300-400 feet, with a maximum length of 600 feet. Where block lengths exceed 400 feet, mid-block crossings shall be installed.

P-TRA-3: Connect existing uses, new development, the Main Street, BART station, bus stops, parks, natural areas, Las Positas College, and other key destinations with sidewalks, pedestrian and bicycle trails, and bicycle facilities.

P-TRA-4: Create a continuous trail loop within the Isabel Neighborhood and links to the regional trail network outside of the Planning Area.

- Partner with LARPD, East Bay Regional Parks District, and Alameda County to identify funding opportunities.

P-TRA-6: Provide pedestrian bridges and undercrossings to enhance the connectivity of the trail network and provide direct access to the BART station.

- Orient pedestrian bridges to be as short, direct, and publicly visible as possible.

P-TRA-7: Provide multiple safe bicycle and pedestrian crossings of I-580 within the Isabel neighborhood.

- Prioritize the construction of the I-580 crossing along Collier Canyon Creek.
- Encourage BART station pedestrian bridges to be available for non-BART patron use when the station is open.

P-TRA-9: Implement on-street improvements such as new crosswalks and bike lanes to enhance the safety and convenience of walking and biking in the outer portions of the Planning Area and to provide interim connections along the proposed trail loop before major off-street improvements are in place.

P-TRA-10: Provide bike parking areas at trailheads and major destinations and bicycle-signals at major intersections.

P-TRA-13: Require development to meet the on-site bicycle parking requirements listed in Table 3-4. Development applications shall show bicycle parking on site plans, including spaces to be provided within garages of individual dwelling units. Bicycle stalls shall meet the following requirements:

- Stalls shall be capable of supporting a bicycle in an upright or hanging position and enable a user to lock his bicycle to such a device.
- The areas containing stalls shall be surfaced with hardscape or paving.
- When located within a parking area, stalls shall be protected by curbs, fences, planter areas, bumpers, or similar barriers for the mutual protection of bikes, automobiles and pedestrians, unless deemed by the City to be unnecessary.
- Where required, "secured, covered" bicycle parking may include garages, lockers, storage rooms, or fenced areas with restricted access.
- Publicly accessible bicycle parking may include uncovered racks.

P-TRA-14: Encourage BART station infrastructure to be integrated into the Neighborhood's circulation and land use networks.

P-TRA-16: Support direct, comfortable, shaded, safe, visible, and well-lit walking paths between the BART platform and surrounding development.

P-TRA-17: Support the research, piloting, and deployment of emerging technologies and new services such as real-time parking availability signage, real-time bus arrival updates, and rideshare matching.

P-TRA-19: Employ a range of Transportation Demand Management (TDM) strategies to help make alternative modes of transportation as convenient, affordable, and safe as solo driving. Strategies include sponsored transit passes, parking cash-out programs,

sponsored rideshare programs, bicycle commuter tax reimbursement, and bikeshare programs.

P-TRA-21: Establish partnerships with transit operators, developers, technology providers, corporate shuttles, Transportation Network Companies, bike share operators, and other entities.

P-TRA-22: With the exception of business park users outside of the Core, require property owners, residents, and tenants, to form a Transportation Management Association (TMA) for the Isabel Neighborhood. Required actions shall be determined by the TMA and may include but are not limited to the following:

- Monitor and manage the vehicular and bicycle parking supply for all retail uses north of I-580, rather than on a project or site basis.
- Work with LAVTA and BART to alter or add bus routes and/or provide free shuttle service between the BART station and major destinations such as Las Positas College.
- Establish neighborhood-wide car-sharing and/or bike sharing programs.
- Implement programs for streetscape maintenance and beautification projects along Main Street, Pedestrian Streets, and Bike Streets.
- Implement informational campaigns using brochures, boards/kiosks, or other communication outlets.
- Provide technical support to businesses and homeowner associations in the implementation of TDM measures.
- Implement a wayfinding signage program for motorists, bicyclists and pedestrians prior to construction of Phase I.

P-TRA-23: Require Office and Business Park projects exceeding 15,000 square feet within a half-mile of the BART station to implement the following site design measures:

- Integration of passenger loading zones near the main building entrance on large sites;
- Access to electrical vehicle charging stations for 10 percent of residential parking spaces and two percent of commercial or industrial parking spaces;
- On-site showers and lockers for employees; and
- Preferential parking for carpools, vanpools, and low emission vehicles.

P-TRA-24: Following station opening, require businesses within a half-mile of the BART station to implement at least two of the following TDM programs (to be implemented through the initial Site Plan Design Review process for new development or through the Zoning Clearance process after construction):

- Parking cash-out for employees that do not drive to work.
- Transit passes (such as the Clipper Card) for employees.

- Car-sharing or bike-sharing program.
- Carpool and vanpool ride-matching services.
- Guaranteed ride home for transit users and car/vanpoolers.
- Flexible work schedules, shortened work weeks, or options to telecommute.

Parks, Public Facilities, and Infrastructure Chapter

P-PF-22 Work with the School District, LARPD, Livermore Amador Valley Transit Authority (LAVTA), property owners, and developers to create and/or improve safe walking/biking routes to the public schools serving the Isabel Neighborhood

P-PF-23 Incorporate school access into the Neighborhood's Transportation Demand Management program (described in Chapter 3). Strategies to consider include school busing, carpooling programs, Walk/Bike to School Days, a Walking School Bus program, and bicycle trains.

Urban Design Chapter

DS-9: A pedestrian- and bicycle-only pathway shall be provided between the north end of the BART pedestrian bridge and the corner of Gateway Avenue and Main Street, crossing Isabel Avenue and passing through the Retail Center block.

DS-10: The Isabel Path shall be designed to be as direct, flat, and visually unobstructed as possible to maximize accessibility and reduce the walking distance to and from the BART Station.

DS-11: The City shall coordinate with BART and the property owner/developer of the Retail Center block to determine the appropriate method for crossing Isabel Avenue along the Isabel Path. Considerations may include: grading, pedestrian safety, directness, utility relocation.

DS-13: The following pedestrian amenities shall be provided along the Isabel Path:

- Seating such as benches and terraced steps;
- Public art;
- Lighting;
- Drinking fountains;
- Trash/recycling receptacles; and
- Additional/specialty landscaping.

DS-27: Site plans shall establish well-defined, accessible, direct, and well-lit pedestrian links between buildings, sidewalks, parking areas, trails, and any on-site or nearby public spaces such as bus stops and the BART station.

DS-28: Where possible, large-scale developments shall be broken up by pedestrian paths that connect to the street grid.

DS-58: Windows shall be operable to the extent possible, to allow natural ventilation and potentially eliminate the need for mechanical ventilation. If mechanical systems are

necessary, energy-efficient and low emission heating, ventilation and air conditioning (HVAC) systems shall be used.

Environmental Resources and Conservation Chapter

P-ENV-11: Require new large commercial projects to prepare a loading plan aimed to minimize truck idling and reduce diesel particulate emissions related to truck loading.

P-ENV-12: Require construction projects to implement the following measures recommended by the BAAQMD, as applicable:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day;
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered;
- All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited;
- All vehicle speeds on unpaved roads shall be limited to 15 mph;
- All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used;
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points;
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator; and
- A publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Mitigation Measures

None required.

Impact 3.4-2 Implementation of the proposed Plan would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. (*Less than Significant with Mitigation*)

Construction

Construction activities associated with future individual development projects under the proposed Plan would result in the temporary generation of GHG emissions. BAAQMD has not established a quantitative threshold for assessing construction-related GHG emissions. Rather, the air district recommends evaluating whether construction activities would conflict with statewide emission reduction goals and implement feasible BMPs.

As discussed in Section 3.3: Air Quality, development projects within the Planning Area under the proposed Plan would be required to use renewable diesel for all off-road diesel-powered equipment, pursuant to Mitigation Measure AQ-1. Implementation of this measure would reduce lifecycle GHG emissions (i.e., those produced by the extraction, refining, processing, and combustion of diesel) by 67 percent, relative to traditional diesel (DieselHPR n.d.). Additionally, Policy P-LU-60 of the proposed Plan would require construction projects in the Planning Area to implement BMPs that include limiting equipment idling times to five minutes; limiting vehicle speeds to 15 mph or less; and performing proper equipment maintenance and tuning in accordance with manufacturer specifications. Additionally, Policy P-ENV-15 from the proposed Plan would help further reduce construction-related emissions of GHGs from future development in the Planning Area by requiring implementation of BAAQMD's recommended BMPs related to GHG emissions by all development projects associated with the proposed Plan. With implementation of proposed Plan policies, as well as Mitigation Measure AQ-1, new development projects under the proposed Plan would reduce their respective construction emissions consistent with BAAQMD guidance and statewide emission reduction goals. Accordingly, this impact is less than significant with the incorporation of mitigation.

Operation

The operation of the land uses introduced by the proposed Plan would generate direct and indirect GHG emissions. Sources of direct emissions would include mobile vehicle trips, natural gas combustion, and landscaping activities. Indirect emissions would be generated by electricity consumption, waste and wastewater generation, and water use. The proposed Plan's GHG emissions are evaluated under two time horizons to account for the interim buildout year in 2025 and the future buildout year in 2040. The proposed Plan's net GHG emissions during these two buildout years are determined by taking the difference in operational emissions between the "future with proposed Plan" conditions (i.e., 2025 and 2040) and existing emissions. The proposed Plan's net GHG emissions in 2025 and 2040 are then divided by the change in service population values for the Planning Area compared to existing conditions and compared against the GHG efficiency thresholds of 3.7 and 1.7 MT CO2e per service population, respectively (refer to Table 3.4-6).

Table 3.4-9 presents the estimated operational emissions under the proposed Plan's buildout conditions and under existing (2013) conditions. As discussed above, operational emissions associated with the proposed Plan account for emissions benefits achieved through proximity to public transit (i.e., future BART Station at Isabel Avenue) and mixed-use design in the Planning

Area, both of which would contribute to reductions in the overall VMT associated with Plan operation.

As shown in Table 3.4-9, although the new development that would be introduced by the proposed Plan into the Planning Area would result in net increases in GHG emissions, the proposed Plan's net emissions per service population in both 2025 and 2040 would be lower than the per service population emissions associated with existing (2013) conditions. This is attributed to the transit-oriented development and mixed-use design in the Planning Area resulting from full buildout of the proposed Plan. Thus, implementation of the proposed Plan would aid current efforts to curtail GHG emissions statewide to meet future milestone reduction targets.

As discussed previously, because both interim and full buildout of the proposed Plan would occur post-2020, it is appropriate to evaluate the proposed Plan against metrics that take into account the long-term reductions needed to meet the statewide milestone reduction targets to abate the more consequential aspects of climate change. As shown in Table 3.4-9, the proposed Plan's net operational GHG emissions in 2025 would not exceed the "substantial progress" efficiency metric of 3.7 MT CO2e per service population. Thus, development under the proposed Plan in 2025 would be consistent with the statewide GHG emissions reduction trajectory for 2030 under SB 32. However, the proposed Plan's net operational GHG emissions in 2040 would exceed the "substantial progress" efficiency metric of 1.7 MT CO2e per service population that was derived based on the 2050 reduction target articulated in EO S-3-05. As such, operational GHG emissions from full buildout of the proposed Plan in 2040 could conflict with the GHG emissions reduction trajectory for 2050 under EO S-3-05. Because the long-term climate change policy and regulatory changes to meet the 2050 emissions reduction target are unknown at this time, the extent to which the proposed Plan's emissions and resulting impacts would be mitigated through implementation of statewide (and nationwide) changes is not known, and any calculation of post-2030 emissions cannot take into account future State or federal actions that may be taken to achieve long-term reductions.

As discussed below in the analysis of consistency with the goals of SB 32 and S-03-05, the achievement of long-term GHG reduction targets will require substantial change in terms of how energy is produced and consumed, as well as other substantial economy-wide changes, many of which can only be implemented by the State and federal government. As such, placing the entire burden of meeting long-term reduction targets on local government or new development would be disproportionate and likely ineffective. Nevertheless, given that the proposed Plan's emission levels would exceed the applicable "substantial progress" metric for 2040, the proposed Plan would result in a potentially significant impact on GHG emissions.

Table 3.4-9. Estimated Unmitigated Proposed Plan Operational GHG Emissions[a]

Condition/Source	*CO_2*	*CH_4*	*N_2O*	*CO_2e*
Existing (2013)				
Area Sources	63	<1	<1	63
Energy Sources	16,707	<1	<1	16,806
Mobile Sources	128,667	9	0	128,888
Waste Generation	326	19	0	808
Water Consumption	1,414	31	<1	2,400
Total Existing[b]	*147,177*	*60*	*1*	*148,965*
2025 With Proposed Plan				
Area Sources	139	<1	<1	140
Energy Sources	27,165	2	<1	27,314
Mobile Sources	119,870	4	0	119,973
Waste Generation	623	37	0	1,544
Water Consumption	2,089	63	2	4,115
Total 2025 With Proposed Plan[b]	*149,887*	*106*	*2*	*153,086*
2040 With Proposed Plan				
Area Sources	248	<1	<1	251
Energy Sources	31,507	2	<1	31,682
Mobile Sources	151,505	5	0	151,627
Waste Generation	877	52	0	2,173
Water Consumption	2,387	90	2	5,271
Total 2040 With Proposed Plan[b]	*186,524*	*149*	*3*	*191,003*
Existing (2013) Emissions				
Mass Emissions				148,965
Service Population[c]				16,864
Emissions per Service Population				***8.8***
Proposed Plan Emissions 2025				
Mass Emissions				153,086
Net Mass Emissions (Over Existing Conditions)				4,121
2025 Service Population[d]				24,192
Net Service Population (Over Existing Conditions)				7,328
Net Emissions per Net Service Population				***0.6***
Proposed Plan Emissions 2040				
Mass Emissions				191,003
Net Mass Emissions (Over Existing Conditions)				42,038
2040 Service Population[e]				36,694
Net Service Population (Over Existing Conditions)				19,830
Net Emissions per Net Service Population				***2.1***

Table 3.4-9. Estimated Unmitigated Proposed Plan Operational GHG Emissions[a]

Condition/Source	*CO_2*	*CH_4*	*N_2O*	*CO_2e*
2025 "Substantial Progress" Efficiency Metric (MT/Service Population)				3.7
2040 "Substantial Progress" Efficiency Metric (MT/Service Population)				1.7

Notes:

Exceedances of applicable thresholds are shown in underline

[a] Metric tons/year

[b] Values may not add due to rounding

[c] A service population of 16,864 persons based on data provided by the proposed Plan traffic engineer

[d] A service population of 24,192 persons in the Planning Area under "2025 with proposed Plan" conditions, based on data provided by the proposed Plan traffic engineer

[e] A service population of 36,694 persons in the Planning Area under "2040 with proposed Plan" conditions, based on data provided by the proposed Plan traffic engineer

Source: ICF, 2017.

To reduce the proposed Plan's operational GHG emissions in 2040, Mitigation Measure GHG-1 is recommended, which includes strategies derived directly from the proposed Plan's policies to promote traffic-calming measures as part of neighborhood enhancements, development of affordable housing, transit improvements, water conservation, and solid waste recycling and diversion. The proposed Plan's resulting net operational emissions in 2040 with implementation of Mitigation Measure GHG-1 are shown in Table 3.4-10. The proposed Plan's mitigated emissions presented include emissions benefits achieved by strategies 1 through 5 in Mitigation Measure GHG-1. Strategies 6 and 7 would achieve additional GHG savings, although reductions have not been explicitly quantified since they depend on program participation.

Table 3.4-10. Estimated Mitigated Proposed Plan Operational GHG Emissions[a]

Condition/Source	*CO_2*	*CH_4*	*N_2O*	*CO_2e*
2040 With Proposed Plan – Mitigated				
Area Sources	248	<1	<1	251
Energy Sources	31,507	2	<1	31,682
Mobile Sources	142,951	5	0	143,068
Waste Generation	526	31	0	1,304
Water Consumption	2,035	76	2	4,486
Total 2040 With Proposed Plan[b]	*177,267*	*114*	*2*	*180,790*
Proposed Plan Emissions 2040 - Mitigated				
Net Mass Emissions (Over Existing Conditions)[c]				31,825
Net Service Population (Over Existing Conditions)				19,830
Net Emissions per Net Service Population				***1.6***
2040 "Substantial Progress" Efficiency Metric (MT/Service Population)				*1.7*

Notes:

[a] Metric tons/year

[b] Values may not add due to rounding

Table 3.4-10. Estimated Mitigated Proposed Plan Operational GHG Emissions[a]

[c] As shown in Table 3.4-9, the total GHG emissions under existing conditions is 148,965 MT CO_2e per year. As the proposed Plan would result in GHG emissions of 180,790 MT CO_2e per year with mitigation, the net increase in emissions would be 31,825 MT CO_2e per year

Source: ICF, 2017.

As shown in Table 3.4-10, with implementation of the identified strategies in Mitigation Measure GHG-1, the proposed Plan's net operational GHG emissions in 2040 would be reduced to a level that would be less than the 2040 "substantial progress" efficiency metric. Therefore, the proposed Plan's operational GHG emissions in 2040 would be reduced to a less-than-significant level.

Proposed Plan Goals and Policies that Reduce the Impact

Refer to policies, design standards, and design guidelines identified under Impact 3.4-1 in addition to the following:

Land Use Chapter

P-LU-1: Establish a new Main Street through the center of the Planning Area that accommodates neighborhood-serving businesses and places for social gathering, and that helps create a sense of place for the Isabel Neighborhood.

P-LU-2: Require buildings on Main Street between Constitution Drive and Portola Avenue to provide active ground floor uses facing Main Street that are publicly accessible and that generate walk-in clientele.

P-LU-36: Pursue grant opportunities funds for transit-oriented development such as those using cap and trade.

Traffic and Transportation Chapter

P-TRA-8: Provide four-legged crosswalks at new signalized or stop-controlled intersections.

P-TRA-11: Incorporate traffic calming measures to slow vehicle speeds and increase the visibility of pedestrian crossings, particularly along Pedestrian Streets, Bicycle Streets, and Main Street.

P-TRA-15: Prioritize pedestrian safety when designing roadways serving the BART station.

P-TRA-18: Coordinate with BART to keep the station area safe, clean, and secure through:

- Regular maintenance and cleaning of the station and nearby public areas.
- Security measures, such as police officers security guards, and/or surveillance cameras in the station and other nearby public areas.

Parks, Public Facilities, and Infrastructure Chapter

P-PF-30: Require all new development to participate in all City, County, and State diversion programs and construction regulations in effect at the time of issuance of building permits.

P-PF-31: Work with residents, businesses, LARPD, and Livermore Sanitation (or current franchise hauler) to exceed the City's 75 percent waste diversion goal in the Isabel Neighborhood.

- Design new development to make recycling, composting, and organic material collection as convenient as possible for residents, employees, and visitors.
- Reduce the amount of solid waste that must be processed through implementation of recycling programs, composting, source reduction (such as packaging), purchasing policies, and manufacturing processes.
- Continue to implement educational and outreach programs on available diversion programs and best practices.
- Encourage businesses to participate in the Bay Area's Green Business Program.
- Support the expansion of organics capacity in Alameda County and statewide.

P-PF-36: Require new development to install water efficient appliances and fixtures such as low-flow faucets and toilets.

P-PF-37: Require new development to comply with State and City's mandatory water efficient landscape ordinance (WELO).

P-PF-38: Require new development within the Municipal Water service area to connect to the recycled water system and to use recycled water for landscape irrigation, where economically feasible.

P-PF-39: Allow the use of rainwater harvesting systems, consistent with regional permit requirements.

P-PF-40: Restaurants and others that discharge grease into the wastewater treatment system shall be required to reduce impacts through individual or collective pretreatment facilities.

P-PF-41: Design new streetscape and landscaped areas in the public right-of-way for stormwater management and the efficient use of water through:

- The installation of low-maintenance, drought-resistant plant palettes;
- Use of low-flow irrigation systems; and
- Use of bioswales and rain gardens in planting areas and curb extensions.

P-PF-42: Require new development to incorporate low impact landscape design, such as natural drainage systems and groundwater recharge features, consistent with stormwater permit requirements.

Urban Design Chapter

DS-8: Traffic-calming measures, such as zebra striping for crosswalks, speed tables, and bulb-outs shall be employed along the bus loop north of I-580.

DS-26: Buildings shall be oriented such that frontages and entrances are visible and accessible from the public right-of-way, on-site common areas, pedestrian pathways, parks, and/or plazas.

DS-81: A variety of site furnishings shall be considered and incorporated into site plans to promote a sense of comfortable outdoor living space for the pedestrian realm. Examples of such features include but are not limited to seating, freestanding planters, ornamental trash/recycling containers, cigarette ash receptacles, drinking fountains including pet basins, fountains or other water features, bollards, kiosks for information or artwork, sculptures, bicycle racks, and/or newspaper racks.

Environmental Resources and Conservation Chapter

P-ENV-15: Ensure that all applicants proposing new development projects within the Planning Area require their contractors, as a condition of contract, to reduce construction-related GHG emissions through implementation of the Bay Area Air Quality Management District's recommended best practices, including but not limited to the following measures (based on BAAQMD's 2017 CEQA Guidelines):

- Ensuring alternative fueled (e.g. biodiesel, electric) construction vehicles/equipment make up at least 15 percent of the fleet;
- Ensuring at least 10 percent of building materials are local building materials (sourced from within 100 miles of the Planning Area); and
- Recycling or reusing at least 50 percent of construction waste or demolition materials.

Mitigation Measures

MM-GHG-1: Operational GHG Emissions Reduction Measures. Implement the following GHG emissions reduction strategies to guide future development within the Planning Area:

1. Require that a minimum of 20 percent of housing allowed under the proposed Plan be affordable (below market-rate) housing.
2. Incorporate street and intersection traffic calming measures to a minimum of 25 percent of streets and intersections in the Planning Area. Street traffic calming features may include, but are not limited to, on-street parking, planter strips with street trees, chicanes, horizontal shifts (lane centerline that curves or shifts), bollards, rumble strips, and woonerfs, Intersection traffic calming measures may include, but are not limited to, marked crosswalks, count-down signal timers, curb extensions, channelization islands, speed tables, raised crosswalks, raised intersections, median islands, tight corner radii, and traffic circles or mini-circles.
3. Expand the existing local bus network in the Planning Area by a minimum of 25 percent by adding or modifying bus routes to increase accessibility to the BART station at Isabel Avenue.
4. Require all new development to install indoor water efficient appliances and fixtures to achieve a minimum of 15 percent reduction in water usage and require applicants for new development to submit landscape and irrigation plans capable of achieving a minimum of 10 percent reduction in outdoor

water usage. The percent reductions should be achieved over baseline water use conditions in the City at the time of development.

5. Require a minimum solid waste diversion rate of 85 percent to be achieved by 2040.
6. Require employers with more than 50 employees to provide a suite of travel demand reduction measures (TDM) capable of reducing single-vehicle trips by at least 20 percent compared to normal trip generation rates.

Impact 3.4-3 Implementation of the proposed Plan would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. (*Less than Significant with Mitigation*)

Two plans have been adopted for the purposes of reducing GHG emissions that are relevant to the proposed Plan: the AB 32 Scoping Plan and the City of Livermore CAP. Proposed Plan consistency with these two plans is reviewed below. In addition, the proposed Plan's consistency with the 2017 Scoping Plan (for SB 32 implementation), SB 32, EO S-03-05, SB 375 and Plan Bay Area, and other applicable State regulations is also reviewed.

As demonstrated in the following analysis, the proposed Plan would not conflict with the City of Livermore CAP, current AB 32 Scoping Plan, 2017 Scoping Plan, SB 375 and Plan Bay Area, or SB 32. While the proposed Plan's operational emissions in 2040 could potentially conflict with the GHG emissions reduction trajectory for 2050 articulated under EO S-3-05, implementation of Mitigation Measure GHG-1 would reduce the proposed Plan's GHG emissions in 2040 to a level that would be below its applicable efficiency metric and render these emissions to be consistent with the GHG emissions reduction trajectory for 2050. Thus, with mitigation, implementation of the proposed Plan would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, and this impact would be less than significant.

Consistency with the City of Livermore Climate Action Plan

As discussed above, the City of Livermore adopted a CAP in 2012 to reduce community and municipal GHG emissions (City of Livermore, 2012). The City's CAP is a roadmap that outlines a path for the City to achieve its 2020 GHG reduction goal of 15 percent below 2008 GHG emissions levels. The CAP features 17 GHG reduction measures within seven sectors of the County's community and municipal operations (energy, on-road transportation, water, wastewater, waste, urban forestry, and municipal energy efficiency). Because the CAP analysis was prepared for the City's 2020 GHG reduction goal, its use in quantitatively evaluating the significance of the GHG emissions of the proposed Plan is not appropriate. Buildout of the proposed Plan is anticipated in 2040, which is a 20-year later timeline than that of the CAP. Consequently, the CAP is used qualitatively for this analysis to determine if the proposed Plan would be consistent with the CAP measures.

The consistency of the proposed Plan with the measures in the City's CAP is analyzed in Table 3.4-11.

Table 3.4-11. Consistency of Proposed plan with CAP Measures

No.	*CAP Measure*	*Applicable?*	*Proposed Plan Implementation*	*Consistent?*
Building Energy Use Measures				
Energy-1	Existing Residential Energy Efficiency Voluntary Retrofits	No	This measure applies to existing development and would not be applicable to the construction of new development in the proposed Plan.	NA
Energy 2	Existing Commercial Energy Efficiency Voluntary Retrofits	No	This measure applies to existing development and would not be applicable to the construction of new development in the proposed Plan.	NA
Energy-3	Exceed Title 24 Requirements	No	This measure, which applies to the City's adopted energy efficiency standards, calls for the City to periodically update its standards to exceed the State's mandatory standards. New development in the proposed Plan would comply with the City's energy efficiency standards, but it is the City's responsibility to fulfill this measure by adopting standards that are more stringent than the state standards.	NA
Energy-4	Streetlights	Yes	The proposed Plan would add approximately 20,000 feet of new public streets, including street lights lining the streets. The new streetlights would be equipped with newer lighting fixture technology than the City's existing streetlights.	Yes
Energy-5	Voluntary Rooftop Solar	Yes	Design guideline DG-22 calls for the installation of solar panels to reduce energy demand.	Yes
Energy-6	Voluntary Solar Over Parking Areas	Yes	Design guideline DG-22 calls for the installation of solar panels to reduce energy demand.	Yes
Transportation and Land Use Measures				
On Road-1	Idling Restrictions	Yes	Policy P-ENV-11 requires that new large commercial projects prepare a loading plan aimed to minimize truck idling during and the associated diesel particulate emissions. Policy P-ENV-12 limits idling time to 5 minutes, per the California Code of Regulations airborne toxics control measure.	Yes

Table 3.4-11. Consistency of Proposed plan with CAP Measures

No.	*CAP Measure*	*Applicable?*	*Proposed Plan Implementation*	*Consistent?*
On Road-2	Transit Oriented Development	Yes	The primary purpose of the proposed Plan is to support regional goals of integrating transit and land use policies. The INP is the guidance document to developing the Isabel neighborhood around the planned BART station. Thus, the primary purpose of the proposed Plan is consistent with transit oriented development.	Yes
On Road-3	Transit Enhancement	Yes	The primary purpose of the proposed Plan is to support regional goals of integrating transit and land use policies. The planned BART station will bring a major transit enhancement to the Isabel neighborhood. Additionally, the planned BART station will result in enhanced service from other transit providers (i.e. LAVTA) serving the new station and neighborhood.	Yes
On Road-4	Traffic Signal Synchronization	No	This measure applies to existing traffic signals that may not be adequately synchronized to existing traffic conditions. The proposed Plan would add new traffic signals that would, by default, be programmed to current or predicted traffic conditions.	NA
On Road-5	Bicycles and Pedestrian Improvements	Yes	The proposed Plan would create new streets that are oriented specifically for pedestrian and bicyclists. Existing streets would be improved for pedestrians as well through new signalized intersections and crosswalks. The proposed Plan would also build a pedestrian and bicycle trail network that is separated from cars. Additionally, a number of polices that are part of the plan would improve pedestrian and bicycle circulation, including P-TRA-6 and P-TRA-7 (both require safe crossings and connections for bikes and pedestrians); P-TRA-8 (requires four-legged crosswalks at new signalized intersections); P-TRA-9 (requires on-street safety improvements for bicycles and pedestrians); P-TRA-10 (requires bike parking areas at trailheads and major destinations, and bike signals at major intersections); P-TRA-11 (requires traffic calming measures to slow vehicle speeds); P-TRA-13 (requires development	Yes

Table 3.4-11. Consistency of Proposed plan with CAP Measures

No.	*CAP Measure*	*Applicable?*	*Proposed Plan Implementation*	*Consistent?*
			to meet on-site bicycle parking requirements)	
On Road-6	Car Sharing Programs	Yes	Policy P-TRA-22 calls for a neighborhood-wide car-sharing program.	Yes
Water Conveyance Measures				
Water-1	Per Capita Urban Water Use Reduction	Yes	The proposed Plan includes a number of policies that are intended to reduce water use in new development. These policies include P-PF-36 (requires new development to install water efficient appliances and fixtures), P-PF-37 (requires new development to comply with State and city water efficient landscape ordinances), P-PF-38 (requires new development within the municipal water service area to use recycled water for landscape irrigation), and P-PF-39 (allows the use of rainwater harvesting systems)	Yes
Wastewater Treatment Measures				
Wastewater-1	Aeration Diffuser	No	This measure is applicable to the City's operational control of the Livermore water reclamation plant. While the proposed Plan would increase wastewater treatment demand at the plant, operational control is maintained by the City's water resources division.	N/A
Solid Waste Generation Measures				
Waste-1	Waste Diversion	Yes	Policy P-PF-30 requires that all new development participate in all City, County, and State diversion programs and construction regulations. Policy P-PF-31 calls for the exceedance of the City's 75 percent diversion goal by designing new development to maximize recycling and composting; implementing recycling programs, purchasing policies, and manufacturing processes to reduce solid waste; implementing educational programs for diversion efforts and best practices; and supporting organic waste processing capacity in the county and state.	Yes
Urban Forestry and Conservation				
Urban-1	Urban Shade	Yes	Design standard DS-4 calls for shade trees	Yes

Table 3.4-11. Consistency of Proposed plan with CAP Measures

No.	*CAP Measure*	*Applicable?*	*Proposed Plan Implementation*	*Consistent?*
	Trees		at retail uses.	
Municipal Energy-Efficiency Measures				
Municipal-1	Municipal Energy Efficiency Actions	No	This measure only applies to the City's municipal facilities.	N/A

Note:
N/A = not applicable

As shown in Table 3.4-11, the proposed Plan would be consistent with all applicable measures in the City's CAP. Six of the measures are not applicable to the proposed Plan, and thus consistency with these measures does not apply. The proposed Plan would be consistent with all relevant measures. For some measures, such as On-Road-2 (Transit Oriented Development), the proposed Plan would be a substantial indicator of CAP progress, because the primary purpose of the proposed Plan is to develop the Planning Area around the future BART station at Isabel Avenue.

Because the proposed Plan is consistent with all applicable CAP measures, it would not conflict with the City's CAP.

Consistency with Current AB 32 Scoping Plan

AB 32 codifies the State's GHG emissions reduction targets for 2020. Because buildout of the proposed Plan is anticipated in 2040, consistency with the current AB 32 Scoping Plan is discussed primarily for informational purposes. A discussion of the proposed Plan's consistency with guidance documents and regulations with timelines more consistent with the buildout year of 2040 is needed for a comprehensive evaluation of GHG impacts.

The ARB adopted the 2008 Scoping Plan and 2014 First Update as a framework for achieving the AB 32 targets. The 2008 Scoping Plan and 2014 First Update outline a series of technologically feasible and cost-effective measures to reduce statewide GHG emissions. Some reductions would need to come in the form of changes pertaining to vehicle emissions and mileage standards. Some would come from changes pertaining to sources of electricity and increased energy efficiency at existing facilities. The remainder would need to come from State and local plans, policies, or regulations that will lower carbon emissions, relative to business as usual conditions.

The proposed Plan includes numerous policies to minimize GHG emissions. For example, the proposed Plan contains policies to encourage increased water conservation, solid waste diversion, renewable energy production, bicycle and pedestrian trips, and carpooling. The proposed Plan, generally speaking, will develop a neighborhood around the planned BART station, which is inherently transit-oriented development. These policies are consistent with strategies identified in the 2008 Scoping Plan and 2014 First Update, as well as statewide goals to improve energy efficiency, reduce building energy consumption, and increase renewable energy generation. Accordingly, the proposed Plan would not conflict with the AB 32 Scoping Plan.

Consistency with 2017 Scoping Plan

In general, the proposed Plan is built around the concept of sustainability. This is manifested through increased density, mixed-use and transit-oriented development, and green-building principles, including an emphasis on energy efficiency, water conservation, and waste reduction. Although the measures included in the updated scoping plan are necessarily broad, the proposed Plan is generally consistent with the goals and desired outcomes of the updated Scoping Plan (i.e. increasing energy efficiency, water conservation, waste diversion, transportation sustainability, etc.). The consistency of the proposed Plan with the policies in the 2017 Climate Change Scoping Plan to achieve the 2030 GHG target is analyzed in Table 3.4-12.

Table 3.4-12. Consistency of Proposed plan with 2017 Scoping Plan Policies[a]

Policy	*Primary Objective*	*Proposed Plan Consistency Analysis*
SB 350	Reduce GHG emissions in the electricity sector through the implementation of the 50 percent RPS, doubling of energy savings, and other actions as appropriate to achieve GHG emissions reductions planning targets in the Integrated Resource Plan process.	This policy is a State program that requires no action at the local or project level. Nonetheless, development of new land uses under the proposed Plan would be consistent with the energy saving objective of this measure. The proposed Plan's Urban Design Chapter identifies some of the various environmentally-sensitive design guidelines and standards that would be used for new development in the Planning Area, which include maximizing natural cooling and passive solar heating through building placement and orientation, orienting building windows and balconies to maximize solar access, using vegetation to shade buildings to limit direct solar gain and glare, using plantings on building exteriors to insulate and cool interiors, and installing solar panels and/or solar hot water systems. These design guidelines and standards would reduce energy demands. In particular, design guideline DG-22 calls for the installation of solar panels to reduce energy demand and DG-26 calls for the incorporation of green roofs to manage stormwater runoff and reduce energy consumption through insulation.
Low Carbon Fuel Standard	Transition to cleaner/less-polluting fuels that have a lower carbon footprint.	This policy is a State program that requires no action at the local or project level. Nonetheless, implementation of the proposed Plan would support reducing the carbon footprint associated with vehicle travel. The proposed Plan's support for transit-oriented development around the proposed BART station and other transit nodes throughout Livermore, along with numerous policies that promote mixed-use development and the provision of a street network consisting of trails, bike lanes, pedestrian crossings, and other facilities that support a walkable street grid within proximity of the future BART station, would result in reduced vehicle trips. Additionally, to reduce dependency on vehicle travel and congestion on neighborhood, Policy P-TRA-21 requires the establishment of partnerships with transit operators, developers, technology providers, corporate

Table 3.4-12. Consistency of Proposed plan with 2017 Scoping Plan Policies[a]

Policy	*Primary Objective*	*Proposed Plan Consistency Analysis*
		shuttles, Transportation Network Companies, bike share operators, and other entities to enhance transit efficiency. Policy P-TRA-24 requires businesses within a half-mile of the BART station to implement at least two of the following TDM programs, one of which could be carpool and vanpool ride-matching services.
Mobile Source Strategy (Cleaner Technology and Fuels [CTF] Scenario)	Reduce GHGs and other pollutants from the transportation sector through transition to zero-emission and low-emission vehicles, cleaner transit systems and reduction of VMT.	This policy is a State program that requires no action at the local or project level. Nonetheless, as discussed above, the proposed Plan would support the reduction of VMT by supporting transit-oriented development around the future BART station and other transit nodes throughout Livermore, and by designating the majority of new development or redevelopment in the Planning Area to occur within the half-mile radius – or walking distance – of the future BART station. The BART station area will be well-served by buses, with routes to destinations throughout Livermore, including Las Positas College, Downtown, national labs, and the Altamont Corridor Express (ACE) stations. In addition to Policies P-TRA-21 and P-TRA-24 (discussed above), Policy P-TRA-22 calls for the formation of a Transportation Management Association (TMA) for the Isabel Neighborhood that would work with LAVTA and BART to alter or add bus routes and/or provide free shuttle service between the BART station and major destinations such as Las Positas College, which would further support the reduction in VMT.
SB 1383	Approve and Implement Short-Lived Climate Pollutant strategy to reduce highly potent GHGs.	This policy is a State program that requires no action at the local or project level, and is not applicable to the proposed Plan.
California Sustainable Freight Action Plan	Improve freight efficiency, transition to zero-emission technologies, and increase competitiveness of California's freight system.	This policy is a State program that requires no action at the local or project level, and is not applicable to the proposed Plan.
Post-2020 Cap-and-Trade Program	Reduce GHGs across largest GHG emissions sources.	This policy is a State program that requires no action at the local or project level, and is not applicable to the proposed Plan.

Table 3.4-12. Consistency of Proposed plan with 2017 Scoping Plan Policies[a]

Policy	*Primary Objective*	*Proposed Plan Consistency Analysis*

Note:

N/A = not applicable

[a] The Scoping Plan policies included in this table are those representing the State strategy for meeting the 2030 GHG target of SB 32

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

Consistency with SB 32 and Executive Order EO S-3-05

As discussed above, SB 32 adopted a GHG reduction target of 40 percent below 1990 levels by 2030, and EO S-3-05 established a long-term goal of reducing statewide GHG emissions to 80 percent below 1990 levels by 2050. Achieving these long-term GHG reduction policies will require systemic changes in how energy is produced and used.

The systemic changes that will be required to achieve the GHG reduction goals of SB 32 and EO S-3-05, if legislatively adopted, will require significant policy, technical, and economic solutions. Decarbonization of the transportation fuel supply will require electric and plug-in hybrid electric vehicles to make up the vast majority of light-duty vehicles. Some changes, such as the use of alternative fuels (e.g., biofuels) to replace petroleum for aviation, cannot be accomplished without action by the federal government. Further, achieving the 2050 GHG reduction goals will require California to dramatically increase the amount of electricity that is generated by renewable generation sources and, correspondingly, advance significantly the deployment of energy storage technology and smart-grid strategies, such as price-responsive demand and the smart charging of vehicles. This would entail a significant redesign of California's electricity system, which can only be accomplished through State action.

In evaluating the proposed Plan's emissions for consistency with SB 32 and EO S-3-05, it is important to note that many of these broad-scale shifts in how energy is produced and used are unknown at this time, and ultimately are outside of the scope of the proposed Plan. Consequently, the extent to which the proposed Plan's emissions and resulting impacts would be mitigated through implementation of such statewide (or nationwide) changes is not known. Furthermore, implementation of such additional policy and regulatory changes is in the jurisdiction of State-level agencies (e.g., ARB) and federal-level agencies, not the City or the proposed Plan. However, some of the measures recommended as part of SB 32 and EO S-3-05 (e.g., decarbonization, energy efficiency, reduced fossil-fuel-based VMT, etc.) can be facilitated to some extent through implementation of specific GHG reduction measures in large, plan-level developments such as the proposed Plan. Plan Policies P-ENV-15 and Mitigation Measure GHG-1, for instance, would require the proposed Plan to implement feasible GHG reduction measures within its control to put the project on the path toward the 2050 reduction goal of EO S-3-05.

As discussed under Impact 3.4-2, because the proposed Plan's GHG emissions in 2025 would not exceed the applicable "substantial progress" efficiency metric, development under the proposed Plan in 2025 would be consistent with the statewide GHG emissions reduction trajectory for 2030

under SB 32. In addition, implementation of Mitigation Measure GHG-1 would reduce the proposed Plan's GHG emissions in 2040 to a level below its applicable efficiency metric, which would render operational GHG emissions from full buildout of the proposed Plan to be consistent with the GHG emissions reduction trajectory for 2050 under EO S-3-05. Thus, the proposed Plan's emissions would be consistent with the goals in SB 32 and EO S-3-05 with implementation of mitigation, and this impact would be less than significant.

Consistency with SB 375 and Plan Bay Area

Climate protection and transportation system effectiveness are two of seven goals addressed in MTC's Plan Bay Area. Plan Bay Area provides a long-range framework to minimize transportation impacts on the environment, improve regional air quality, protect natural resources, and reduce GHG emissions. The plan supports smart growth principles, promotes infill development, and proactively links land use, air quality, and transportation needs in the region. Plan Bay Area is consistent with SB 375, which requires MTC to adopt an SCS that outlines policies to reduce per capita GHG emissions from automobiles and light trucks. The SCS policies include a mix of strategies that encourage compact growth patterns, mixed-use design, alternative transportation, transit, mobility and access, network expansion, and transportation investment.

Implementation of the SCS is intended to improve the efficiency of the transportation system and achieve a variety of housing types throughout the Bay Area that meet market demands in a balanced and sustainable manner. The proposed Plan is built around the concept of sustainability. Density would be increased in appropriate locations, mixed-use development would be promoted, and green-building and transit-oriented development would be encouraged, as would energy efficiency, water conservation, and waste reduction.

The proposed Plan would allow development of residential land uses to help meet forecasted growth within the Planning Area. Consistent with MTC goals, the proposed Plan would create a mixed-use, pedestrian/bicycle-friendly community. The land use design, transportation network efficiency improvements, and transit priority enhancements would help reduce vehicle trips and support alternative transportation. The proposed Plan policies would also encourage active transportation by providing safer pedestrian crossings, a connected bicycle network, and improved streetscapes. These policies would support alternative transportation within the Isabel Neighborhood, which could help reduce per capita GHG emissions from passenger vehicles consistent with Plan Bay Area. Thus, the proposed Plan would be consistent with the goals of SB 375 and Plan Bay Area, and this impact would be less than significant.

Consistency with Other State Regulations

As discussed above in the analysis of consistency with SB 32 and EO S-3-05, systemic changes will be required at the State level to achieve the statewide future GHG reduction goals. Regulations, such as future amendments to the low carbon fuel standard; the SB 350-mandated 50 percent RPS and potential legislation to achieve 100 percent RPS by 2045 (SB 100); and future updates to the State's Title 24 standards, will be necessary to attain the magnitude of reductions required for the State's goals. The proposed Plan would be required to comply with these regulations in new construction (in the case of updated Title 24 standards), or would be directly affected by the outcomes (proposed Plan vehicle trips and energy consumption would be less carbon intensive due to statewide compliance with future low carbon fuel standard amendments and increasingly stringent RPSs).

Thus, for the foreseeable future, the proposed Plan would not conflict with any other State-level regulations pertaining to GHGs in the post-2020 era, and this impact would be less than significant.

Proposed Plan Goals and Policies that Reduce the Impact

Refer to policies, design standards, and design guidelines identified under Impact 3.4-2.

Mitigation Measures

Mitigation Measure GHG-1: Operational GHG Emissions Reduction Measures. Refer to Impact 3.4-2.

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