4.6 GREENHOUSE GAS EMISSIONS

This chapter describes the regulatory framework and existing conditions related to greenhouse gas (GHG) emissions, and the potential for impacts from the adoption and implementation of the proposed project. Because no single project is large enough individually to result in a measurable increase in global concentrations of GHG emissions, global warming impacts of a project are considered on a cumulative basis. The General Plan addresses GHG emissions in the existing Open Space/Conservation, Noise and Safety Element as well the proposed project's Circulation and Land Use Elements. Air Quality, GHG, and sustainability policies and programs in the proposed project and the previously adopted Elements are designed to minimize GHG emissions to the extent feasible. Additionally, the proposed project includes an update to the City's Zoning Ordinance for the Bayfront Area, resulting in three new zoning districts that would promote the creation of an employment district with travel patterns that are oriented toward pedestrian, transit, and bicycle use in an effort to reduce single-occupant vehicle trips; and thereby, reduce GHG emissions.

This chapter is based on the methodology recommended by the Bay Area Air Quality Management District (BAAQMD). The proposed project is evaluated using BAAQMD's plan-level review criteria. GHG emissions are based on vehicle miles traveled (VMT) provided by TJKM for the on-road transportation emissions section and energy use provided by the Pacific Gas & Electric (PG&E) company. The GHG emissions modeling is included in Appendix E, Air Quality and Greenhouse Gas Data, of this Draft EIR.

4.6.1 ENVIRONMENTAL SETTING

4.6.1.1 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

GHG emissions are various gases that are released into the atmosphere, largely as a by-product of burning fossil fuels, such as oil, natural gas, and coal, or as methane during the production and transport of fossil fuels. Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping GHG to the atmosphere. The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHGs—water vapor, carbon dioxide (CO_2), methane (CH_4), and ozone (O_3)—that are the likely cause of an increase in global average temperatures observed in the 20th and 21st centuries. Other GHGs identified by the IPCC that contribute to global warming to a lesser extent are nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons.[1,2,3] The major GHGs are briefly described below.

[1] Water vapor (H_2O) is the strongest GHG and the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant or a primary cause of change, but part of the feedback loop.

[2] Black carbon contributes to climate change both directly, by absorbing sunlight, and indirectly, by depositing on snow (making it melt faster) and by interacting with clouds and affecting cloud formation. Black carbon is the most strongly light-absorbing component of particulate matter (PM) emitted from burning fuels such as coal, diesel, and biomass. Reducing black carbon emissions globally can have immediate economic, climate, and public health benefits. According to the California Air Resources Board, California has been an international leader in reducing emissions of black carbon, with close to 95 percent control expected by 2020 due to existing programs that target reducing PM from diesel engines and burning activities. However, state and national GHG inventories do not include black carbon due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon

GREENHOUSE GAS EMISSIONS

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (i.e., sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH_4)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, and from the decay of organic waste in landfills and water treatment facilities.
- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during the combustion of fossil fuels and solid waste.
- **Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global-warming-potential (GWP) gases. Fluorinated gases include the following:
  - **Chlorofluorocarbons (CFCs)** are GHGs covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (i.e., troposphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down the ozone layer. These gases are therefore being replaced by other compounds that are GHGs covered under the Kyoto Protocol.
  - **Perfluorocarbons (PFCs)** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF_4] and perfluoroethane [C_2F_6]) were introduced as alternatives, along with HFCs, to ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high GWP.
  - **Sulfur Hexafluoride (SF_6)** is a colorless gas that is soluble in alcohol and ether and slightly soluble in water. SF_6 is a strong GHG used primarily in electrical transmission and distribution systems as an insulator.
  - **Hydrochlorofluorocarbons (HCFCs)** contain hydrogen, fluorine, chlorine, and carbon atoms. Although they are ozone-depleting substances, they are less potent than CFCs. They have been introduced as temporary replacements for CFCs.
  - **Hydrofluorocarbons (HFCs)** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances to serve many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are strong GHGs.[4,5]

[3] Intergovernmental Panel on Climate Change, Third Assessment Report: Climate Change 2001, New York: Cambridge University Press.

[4] United States Environmental Protection Agency, Greenhouse Gas Emissions, 2012, http://www.epa.gov/climatechange/ghgemissions/gases.html, accessed on September 24, 2014.

[5] Intergovernmental Panel on Climate Change, Third Assessment Report: Climate Change 2001, New York: Cambridge University Press.

The GWPs of GHGs are dependent on the lifetime or persistence of the gas molecule in the atmosphere. Some GHGs have a stronger greenhouse effect than others. As noted above, they are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 4.6-1. The GWP is used to convert GHGs to CO_2-equivalence (CO_2e) to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. For example, under IPCC's Second Assessment Report, the GWP value for CH_4 is 21; a project that generates 10 metric tons (MT) of CH_4 would be equivalent to 210 MT of CO_2.[6]

California's Greenhouse Gas Sources and Relative Contribution

California is the tenth largest GHG emitter in the world and the second largest emitter of GHG in the United States, surpassed only by Texas; however, California also has over 12 million more people than the state of Texas.[7] Because of more stringent air emission regulations, in 2001 California ranked fourth lowest in carbon emissions per capita and fifth lowest among states in CO_2 emissions from fossil fuel consumption per unit of Gross State Product (total economic output of goods and services).[8]

The California Air Resources Board's (CARB) last update to the statewide GHG emissions inventory was in 2012 for year 2009 emissions and used the Second Assessment Report GWPs.[9] In 2009, California produced 457 $MMTCO_2e$ GHG emissions. California's transportation sector is the single largest generator of GHG emissions, producing 37.9 percent of the state's total emissions. Electricity consumption is the second largest source, comprising 22.7 percent. Industrial activities are California's third largest source of GHG emissions, comprising 17.8 percent of the state's total emissions. Other major sectors of GHG emissions include commercial and residential energy use, recycling and waste, high global warming potential GHGs, agriculture, and forestry.[10,11]

In 2015, the statewide GHG emissions inventory was updated for 2000 to 2013 emissions using the GWPs in IPCC's Fourth Assessment Report. Based on these GWPs, California produced 459 $MMTCO_2e$ GHG emissions in 2013. California's transportation sector remains the single largest generator of GHG emissions, producing 36.8 percent of the state's total emissions. Electricity consumption made up 19.7 percent, and industrial activities produced 20.2 percent. Other major sectors of GHG emissions

[6] CO_2-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

[7] California Energy Commission, 2005, Climate Change Emissions Estimates from Bemis, Gerry and Jennifer Allen, Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2002 Update, California Energy Commission Staff Paper CEC-600-2005-025, Sacramento, California, June.

[8] California Energy Commission, 2006, Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004, Report CEC-600-2006-013-SF, December.

[9] Methodology for determining the statewide GHG inventory is not the same as the methodology used to determine statewide GHG emissions under Assembly Bill 32 (AB 32) (2006).

[10] CO_2-equivalence is used to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The global warming potential of a GHG is also dependent on the lifetime, or persistence, of the gas molecule in the atmosphere.

[11] California Air Resources Board, 2012, California Greenhouse Gas Inventory for 2000–2009: By Category as Defined by the Scoping Plan, April.

include commercial and residential, recycling and waste, high global warming potential GHGs, and agriculture.[12]

TABLE 4.6-1 GHG EMISSIONS AND THEIR RELATIVE GLOBAL WARMING POTENTIAL COMPARED TO CO_2

Greenhouse Gases	Atmospheric Lifetime (Years)	Second Assessment Report (SAR) Global Warming Potential Relative to CO_2 [a]	Fourth Assessment Report (AR4) Global Warming Potential Relative to CO_2 [b]
Carbon Dioxide (CO_2)	50 to 200	1	1
Methane[2] (CH_4)	12 (±3)	21	25
Nitrous Oxide (N_2O)	120	310	298
Hydrofluorocarbons:			
HFC-23	264	11,700	14,800
HFC-32	5.6	650	675
HFC-125	32.6	2,800	3,500
HFC-134a	14.6	1,300	1,430
HFC-143a	48.3	3,800	4,470
HFC-152a	1.5	140	124
HFC-227ea	36.5	2,900	3,220
HFC-236fa	209	6,300	9,810
HFC-4310mee	17.1	1,300	1,030
Perfluoromethane: CF_4	50,000	6,500	7,390
Perfluoroethane: C_2F_6	10,000	9,200	12,200
Perfluorobutane: C_4F_{10}	2,600	7,000	8,860
Perfluoro-2-methylpentane: C_6F_{14}	3,200	7,400	9,300
Sulfur Hexafluoride (SF_6)	3,200	23,900	22,800

Notes: The IPCC has published updated GWP values in its Fifth Assessment Report (2013) that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO_2 (radiative forcing is the difference between energy from sunlight received by the earth and radiated back into space). However, GWP values identified in the Second Assessment Report are still used to maintain consistency in GHG emissions modeling and thresholds used in BAAQMD's CEQA Guidelines. In addition, the 2008 Scoping Plan was based on the GWP values in the Second Assessment Report.

a. Based on a 100-Year Time Horizon of the GWP of the air pollutant relative to CO_2. Intergovernmental Panel on Climate Change. 2001. Third Assessment Report: Climate Change 2001. New York: Cambridge University Press.

a. Based on a 100-Year Time Horizon of the GWP of the air pollutant relative to CO_2. Intergovernmental Panel on Climate Change. 2007. Fourth Assessment Report: Climate Change 2001. New York: Cambridge University Press.

c. The methane GWP includes direct effects and indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO_2 is not included.

Sources: Intergovernmental Panel on Climate Change, 2001, Third Assessment Report: Climate Change 2001, New York: Cambridge University Press; Intergovernmental Panel on Climate Change, 2007, Fourth Assessment Report: Climate Change 2001, New York: Cambridge University Press.

[12] California Air Resources Board (CARB), 2015. California Greenhouse Gas Inventory for 2000–2013: By Category as Defined by the Scoping Plan, April 24.

Human Influence on Climate Change

For approximately 1,000 years before the Industrial Revolution, the amount of GHGs in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate and climate change pollutants that is attributable to human activities. The amount of CO_2 has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million per year since 1960, mainly due to combustion of fossil fuels and deforestation.[13] These recent changes in climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is rising at a rate that cannot be explained by natural causes alone.[14] Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants.[15]

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are also hard to predict. Projections of climate change depend heavily upon future human activity. Therefore, climate models are based on different emission scenarios that account for historic trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty. For example, there are varying degrees of certainty on the magnitude of the trends for:

- warmer and fewer cold days and nights over most land areas;
- warmer and more frequent hot days and nights over most land areas;
- an increase in frequency of warm spells/heat waves over most land areas;
- an increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas;
- areas affected by drought increases;
- an increase in intense tropical cyclone activity;
- increased incidence of extreme high sea level (excludes tsunamis).

Potential Climate Change Impacts for California

Observed changes over the last several decades across the western United States reveal clear signals of climate change. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and warming has been greatest in the Sierra Nevada. By 2050, California is projected to warm by

[13] Intergovernmental Panel on Climate Change, Fourth Assessment Report: Climate Change 2007, New York: Cambridge University Press.

[14] At the end of the last ice age, the concentration of CO_2 increased by around 100 ppm (parts per million) over about 8,000 years, or approximately 1.25 ppm per century. Since the start of the industrial revolution, the rate of increase has accelerated markedly. The rate of CO_2 accumulation currently stands at around 150 ppm/century—more than 200 times faster than the background rate for the past 15,000 years.

[15] California Climate Action Team, 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature, March.

approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1–8.6°F, depending on emissions levels.[16]

In California and western North America, observations of the climate have shown: 1) a trend toward warmer winter and spring temperatures, 2) a smaller fraction of precipitation falling as snow, 3) a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones, 4) an advanced snowmelt of 5 to 30 days earlier in the springs, and 5) a similar shift (5 to 30 days earlier) in the timing of spring flower blooms.[17] According to the California Climate Action Team—a committee of state agency secretaries and the heads of agencies, boards, and departments, led by the Secretary of the California Environmental Protection Agency—even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes, and the inertia of the Earth's climate system could produce as much as 0.6°C (1.1°F) of additional warming. Consequently, some impacts from climate change are now considered unavoidable. Global climate change risks to California are shown in Table 4.6-2 and include public health impacts, water resources impacts, agricultural impacts, coastal sea level impacts, forest and biological resources impacts, and energy impacts.

Specific climate change impacts that could affect the proposed project include:

Water Resources Impacts. By late-century, all projections show drying, and half of the projections suggest 30-year average precipitation will decline by more than 10 percent below the historical average. This drying trend is caused by an apparent decline in the frequency of rain and snowfall. Even in projections with relatively small or no declines in precipitation, central and southern parts of the state can be expected to be drier from the warming effects alone—the spring snowpack will melt sooner, and the moisture contained in soils will evaporate during long dry summer months.[18]

Wildfire Risks. Earlier snowmelt, higher temperatures and longer dry periods over a longer fire season will directly increase wildfire risk. Indirectly, wildfire risk will also be influenced by potential climate-related changes in vegetation and ignition potential from lightning. Human activities will continue to be the biggest factor in ignition risk. The number of large fires statewide are estimated to increase from 58 percent to 128 percent above historical levels by 2085. Under the same emissions scenario, estimated burned area will increase by 57 percent to 169 percent, depending on location.[19]

[16] California Climate Change Center. 2012, July. Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California.

[17] California Climate Action Team, 2006, Climate Action Team Report to Governor Schwarzenegger and the Legislature, March.

[18] California Climate Change Center. 2012, July. Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California.

[19] California Climate Change Center. 2012, July. Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California.

TABLE 4.6-2 SUMMARY OF GHG EMISSIONS RISKS TO CALIFORNIA

Impact Category	Potential Risk
Public Health Impacts	Poor air quality made worse More severe heat
Water Resources Impacts	Decreasing Sierra Nevada snow pack Challenges in securing adequate water supply Potential reduction in hydropower Loss of winter recreation
Agricultural Impacts	Increasing temperature Increasing threats from pests and pathogens Expanded ranges of agricultural weeds Declining productivity Irregular blooms and harvests
Coastal Sea Level Impacts	Accelerated sea level rise Increasing coastal floods Worsened impacts on infrastructure
Forest and Biological Resource Impacts	Increased risk and severity of wildfires Lengthening of the wildfire season Movement of forest areas Conversion of forest to grassland Declining forest productivity Increasing threats from pest and pathogens Shifting vegetation and species distribution Altered timing of migration and mating habits Loss of sensitive or slow-moving species
Energy Demand Impacts	Potential reduction in hydropower Increased energy demand

Sources: California Energy Commission, 2006, Our Changing Climate: Assessing the Risks to California, 2006 Biennial Report, California Climate Change Center, CEC-500-2006-077; California Energy Commission, 2008, The Future Is Now: An Update on Climate Change Science, Impacts, and Response Options for California, CEC-500-2008-0077.

Health Impacts. Many of the gravest threats to public health in California stem from the increase of extreme conditions, principally more frequent, more intense, and longer heat waves. Particular concern centers on the increasing tendency for multiple hot days in succession, and heat waves occurring simultaneously in several regions throughout the state. Public health could also be affected by climate change impacts on air quality, food production, the amount and quality of water supplies, energy pricing and availability, and the spread of infectious diseases. Higher temperatures also increase ground-level ozone levels. Furthermore, wildfires can increase particulate air pollution in the major air basins of California.[20]

Increase Energy Demand. Increases in average temperature and higher frequency of extreme heat events combined with new residential development across the state will drive up the demand for cooling in the increasingly hot and longer summer season and decrease demand for heating in the cooler season.

[20] California Climate Change Center. 2012, July. Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California.

Warmer, drier summers also increase system losses at natural gas plants (reduced efficiency in the electricity generation process at higher temperatures) and hydropower plants (lower reservoir levels). Transmission of electricity will also be affected by climate change. Transmission lines lose 7 percent to 8 percent of transmitting capacity in high temperatures while needing to transport greater loads. This means that more electricity needs to be produced to make up for the loss in capacity and the growing demand.[21]

4.6.1.2 REGULATORY FRAMEWORK

This section describes the federal, state, and local regulations applicable to GHG emissions.

Federal Regulations

The United States Environmental Protection Agency (US EPA) announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people and that GHG emissions from on-road vehicles contribute to that threat. The US EPA's final findings respond to the 2007 US Supreme Court ruling that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings did not themselves impose any emission reduction requirements, but allowed the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.[22]

The US EPA's endangerment finding covers emissions of six key GHGs—CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world. The first three constitute the majority of GHG emissions from land uses in the city and, per Bay Area Air Quality Management District (BAAQMD) guidance, are the GHG emissions that should be evaluated as part of a community GHG emissions inventory.

United States Mandatory Report Rule for GHGs

In response to the endangerment finding, the US EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (e.g., large stationary sources) to report GHG emissions data. Facilities that emit 25,000 $MTCO_2e$ per year are required to submit an annual report.

Update to Corporate Average Fuel Economy Standards

The current Corporate Average Fuel Economy (CAFE) standards (for model years 2011 to 2016) incorporate stricter fuel economy requirements promulgated by the federal government and California into one uniform standard. Additionally, automakers are required to cut GHG emissions in new vehicles by

[21] California Climate Change Center. 2012, July. Our Changing Climate 2012: Vulnerability & Adaptation to the Increasing Risks from Climate Change in California.

[22] United States Environmental Protection Agency, 2009, EPA: Greenhouse Gases Threaten Public Health and the Environment, Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity, December, http://yosemite.epa.gov/opa/admpress.nsf/0/08D11A451131BCA585257685005BF252.

roughly 25 percent by 2016 (resulting in a fleet average of 35.5 miles per gallon [mpg] by 2016). Rulemaking to adopt these new standards was completed in 2010. California agreed to allow auto makers who show compliance with the national program to be considered in compliance with state requirements. The federal government issued new standards in 2012 for model years 2017 to 2025, which will require a fleet average of 54.5 mpg in 2025.

US EPA Regulation of Stationary Sources under the Clean Air Act

Pursuant to its authority under the Clean Air Act, the US EPA has been developing regulations for new stationary sources such as power plants, refineries, and other large sources of emissions. Pursuant to the President's 2013 Climate Action Plan, the US EPA will be directed to develop regulations for existing stationary sources.

State Laws

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-03-05, Executive Order B-30-15, Assembly Bill 32 (AB 32), and Senate Bill 375 (SB 375).

Executive Order S-03-05

Executive Order S-3-05, signed June 1, 2005, set the following GHG reduction targets for the state:

- Reduce statewide GHG emissions to 2000 levels by 2010.
- Reduce statewide GHG emissions to 1990 levels by 2020.
- Reduce statewide GHG emissions to 80 percent below 1990 levels by 2050.

Executive Order B-30-15

Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions within the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires state agencies to implement measures to meet the interim 2030 goal of Executive Order B-30-15 as well as the long-term goal for 2050 in Executive Order S-03-5. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in state planning and investment decisions.

Assembly Bill 32, the Global Warming Solutions Act

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in AB 32, the Global Warming Solutions Act. AB 32 was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-3-05.

GREENHOUSE GAS EMISSIONS

CARB Scoping Plan

AB 32 mandated CARB develop a plan, updated every five years, to describe the approach the State will take to reduce GHGs in order to meet the 2020 reduction goals. The *Scoping Plan* was adopted by CARB in 2008 with the first update approved in 2014.[23]

The 2008 Scoping Plan identified that GHG emissions in California are anticipated to be approximately 596 million metric tons (MMT) of CO_2e in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 $MMTCO_2e$ (471 million tons) for the state. The 2020 target requires a total emissions reduction of 169 $MMTCO_2e$, 28.5 percent from the projected emissions of the business-as-usual (BAU) scenario for the year 2020 (i.e., 28.5 percent of 596 $MMTCO_2e$).[24] [25]

Key elements of CARB's GHG reduction plan that may be applicable to the proposed project include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards (adopted and cycle updates in progress).
- Achieving a mix of the state's energy generation in which 33 percent is from renewable sources (anticipated by 2020).
- A California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system for large stationary sources (adopted 2011). The cap-and-trade program was expanded in 2013 to include the electricity sector, and then again in 2015 to include fuels (including natural gas and gasoline).
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets (several Sustainable Communities Strategies have been adopted).
- Adopting and implementing measures pursuant to state laws and policies, including California's clean car standards (amendments to the Pavley Standards adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (adopted 2009).
- Creating target fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation (in progress).

Table 4.6-3 shows the anticipated reductions from regulations and programs outlined in the 2008 Scoping Plan. In recognition of the critical role local governments play in the successful implementation of AB 32, the 2008 Scoping Plan cited a GHG reduction goal for local governments that is 15 percent of current

[23] The first update can be viewed here: http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm, accessed on December 4, 2015.

[24] California Air Resources Board, 2008, Climate Change Scoping Plan: a Framework for Change. CARB defines BAU in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical from 2002 through 2004.

[25] California Air Resources Board (CARB). 2008, October. Climate Change Proposed Scoping Plan: A Framework for Change.

levels (2005-2008) by 2020 to ensure that municipal and community-wide emissions match the state's reduction target.[26] Measures that local governments take to support shifts in land use patterns are anticipated to emphasize compact, low-impact growth over development in greenfields, resulting in fewer VMT.[27]

TABLE 4.6-3 SCOPING PLAN GHG REDUCTION MEASURES AND REDUCTIONS TOWARD 2020 TARGET

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO_2e	Percentage of Statewide 2020 Target
Cap and Trade Program and Associated Measures		
California Light-Duty Vehicle GHG Standards	31.7	19%
Energy Efficiency	26.3	16%
Renewable Portfolio Standard (33 percent by 2020)	21.3	13%
Low Carbon Fuel Standard	15	9%
Regional Transportation-Related GHG Targets[a]	5	3%
Vehicle Efficiency Measures	4.5	3%
Goods Movement	3.7	2%
Million Solar Roofs	2.1	1%
Medium/Heavy Duty Vehicles	1.4	1%
High Speed Rail	1.0	1%
Industrial Measures	0.3	0%
Additional Reduction Necessary to Achieve Cap	34.4	20%
Total Cap and Trade Program Reductions	*146.7*	*87%*
Uncapped Sources/Sectors Measures		
High Global Warming Potential Gas Measures	20.2	12%
Sustainable Forests	5	3%
Industrial Measures (for sources not covered under cap and trade program)	1.1	1%
Recycling and Waste (landfill methane capture)	1	1%
Total Uncapped Sources/Sectors Reductions	*27.3*	*16%*
Total Reductions Counted toward 2020 Target	*174*	*100%*

[26] The Scoping Plan references a goal for local governments to reduce community GHG emissions by 15 percent from current (interpreted as 2008) levels by 2020, but it does not rely on local GHG reduction targets established by local governments to meet the State's GHG reduction target of AB 32.

[27] California Air Resources Board, Climate Change Scoping Plan: A Framework for Change, 2008.

TABLE 4.6-3 SCOPING PLAN GHG REDUCTION MEASURES AND REDUCTIONS TOWARD 2020 TARGET

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO_2e	Percentage of Statewide 2020 Target
Other Recommended Measures – Not Counted toward 2020 Target		
State Government Operations	1.0 to 2.0	1%
Local Government Operations[b]	To Be Determined	NA
Green Buildings	26	15%
Recycling and Waste	9	5%
Water Sector Measures	4.8	3%
Methane Capture at Large Dairies	1	1%
Total Other Recommended Measures – Not Counted toward 2020 Target	*42.8*	*NA*

Notes: The percentages in the right-hand column add up to more than 100 percent because the emissions reduction goal is 169 $MMTCO_2e$ and the Scoping Plan identifies 174 $MTCO_2e$ of emissions reductions strategies. Based on the SAR GWPs.
MMTCO2e = million metric tons of CO_2e
a. Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target.
b. According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 million metric tons of CO_2e (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 target.
Source: California Air Resources Board, 2008, Climate Change Scoping Plan: A Framework for Change.

First Update to the Scoping Plan

CARB adopted the First Update to the Scoping Plan at the May 22, 2014, board hearing. The Update to the Scoping Plan defines CARB's climate change priorities for the next five years and lays the groundwork to reach post-2020 goals in Executive Orders S-3-05 and B-16-2012. The update includes the latest scientific findings related to climate change and its impacts, including short-lived climate pollutants. The GHG target identified in the 2008 Scoping Plan is based on IPCC's GWPs identified in the Second Assessment Report (see Table 4.6-1). IPCC's Fourth and Fifth Assessment Reports identified more recent GWP values based on the latest available science. CARB recalculated the 1990 GHG emission levels with the updated GWPs in the Fourth Assessment Report, and the 427 $MMTCO_2e$ 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, is slightly higher, at 431 $MMTCO_2e$.[28]

In the First Update to the Scoping Plan (also referred to as the 2014 Scoping Plan), CARB projects that statewide BAU emissions in 2020 would be approximately 509 $MMTCO_2e$.[29] Therefore, to achieve the AB 32 target of 431 $MMTCO_2e$ (i.e., 1990 emissions levels) by 2020, the state would need to reduce emissions by 78 $MMTCO_2e$ compared to BAU conditions, a reduction of 15.3 percent from BAU in 2020. The data from the First Update to the Scoping Plan regarding GHG emissions and reductions needed to achieve the 1990 emissions target are shown in Table 4.6-4.

[28] California Air Resources Board (CARB), 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006, May 15.*

[29] The BAU forecast includes GHG reductions from Pavley and the 33% Renewable Portfolio Standard (RPS).

TABLE 4.6-4 STATE BAU FORECAST IN THE FIRST UPDATE TO THE SCOPING PLAN

Category	2020 $MMTCO_2e$ – Fourth Assessment Report GWPs
AB 32 Baseline 2020 Forecast Emissions (2020 BAU) with Pavley I and the Renewable Electricity Standard (RPS)	539
AB 32 Baseline 2020 Forecast Emissions (2020 BAU)[a]	509
Expected Reductions from Sector-Based Measures	
Energy	25
Transportation	23
High-GWPs	5
Waste	2
Cap-and-Trade Reductions[b]	23
2020 Limit	431
Percent Reduction from BAU with Pavley I and RPS	20.0%
Percent Reduction from BAU without Pavley and RPS	15.3%

a. The total projected emissions in the 2020 BAU scenario accounts for reductions anticipated from Pavley I and the Renewable Electricity Standard (30 million $MTCO_2e$ total).
b. The cap-and-trade reductions depend on the emissions forecast.
Sources: CARB 2014, First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006, May 15.

The update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the original 2008 Scoping Plan. As identified in the Update to the Scoping Plan, California is on track to meeting the goals of AB 32. However, the Update to the Scoping Plan also addresses the state's longer-term GHG goals within a post-2020 element. The post-2020 element provides a high level view of a long-term strategy for meeting the 2050 GHG goals, including a recommendation for the state to adopt a mid-term target. According to the Update to the Scoping Plan, local government reduction targets should chart a reduction trajectory that is consistent with, or exceeds, the trajectory created by statewide goals.[30]

According to the Update to the Scoping Plan, reducing emissions to 80 percent below 1990 levels will require a fundamental shift to efficient, clean energy in every sector of the economy. Progressing toward California's 2050 climate targets will require significant acceleration of GHG reduction rates. Emissions

[30] California Air Resources Board (CARB), 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006, May 15.*

from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit.[31]

Second Update to the Scoping Plan

The new Executive Order B-30-15 requires CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. During the October 1, 2015 CARB workshop, CARB announced that the next update to the Scoping Plan to address the new 2030 interim target to achieve a 40 percent reduction below 1990 levels by 2030 would be adopted by late 2016.

Senate Bill 375

In 2008, Senate Bill 375 (SB 375), the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reductions targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intent is to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations to local land use planning to reduce VMT and vehicle trips. Specifically, SB 375 required CARB to establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs).

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent during the same time. California implements the Pavley I standards through a waiver granted to California by the US EPA. In 2012, the US EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model years 2017 through 2025 light-duty vehicles (see also the discussion on the update to the CAFE standards under "Federal Laws," above). In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for a greater number of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.[32]

[31] California Air Resources Board (CARB), 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006, May 15.*

[32] See also the discussion on the update to the CAFE standards under Federal Laws, above. In January 2012, CARB approved the Advanced Clean Cars program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the state set a new low carbon fuel standard (LCFS) for transportation fuels sold in the state. Executive Order S-1-07 sets a declining standard for GHG emissions, measured in CO_2e grams per unit of fuel energy sold in California. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020. The standard applies to refiners, blenders, producers, and importers of transportation fuels, and would use market-based mechanisms to allow providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods.

Executive Order B-16-2012

On March 23, 2012, the state directed CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies to work with the Plug-in Electric Vehicle Collaborative and the California Fuel Cell Partnership to establish benchmarks to accommodate zero-emissions vehicles in major metropolitan areas, including infrastructure to support them (e.g., electric vehicle charging stations). The executive order also directs the number of zero-emission vehicles in California's state vehicle fleet to increase through the normal course of fleet replacement so that at least 10 percent of fleet purchases of light-duty vehicles are zero-emission by 2015 and at least 25 percent by 2020. The executive order also establishes a target for the transportation sector of reducing GHG emissions to 80 percent below 1990 levels by 2050.

Senate Bills 1078 and 107, and Executive Order S-14-08

A major component of California's Renewable Energy Program is the renewable portfolio standard (RPS) established under Senate Bills 1078 (Sher)[33] and 107 (Simitian)[34]. Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. Executive Order S-14-08 was signed in November 2008 and expands the state's Renewable Energy Standard to 33 percent renewable power by 2020. This Executive Order was adopted by the legislature in 2011 under SBX1-2. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

California Building Code: Building and Energy Efficiency Standards

Energy conservation standards for new residential and nonresidential buildings were originally adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 (California Code of Regulations [CCR], Title 24, Part 6). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated about every three years to allow for

[33] Official California Legislative Information, http://www.leginfo.ca.gov/pub/01-02/bill/sen/sb_1051-1100/sb_1078_bill_20020912_chaptered.html, accessed on September 24, 2014.

[34] Official California Legislative Information , http://www.leginfo.ca.gov/pub/05-06/bill/sen/sb_0101-0150/sb_107_bill_20060926_chaptered.html, accessed on September 24, 2014.

consideration of new energy efficiency technologies and methods. In 2012, the CEC adopted the 2013 Building and Energy Efficiency Standards, which went into effect on July 1, 2014. Buildings that are constructed in accordance with the 2013 Building and Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the 2008 standards as a result of changes in requirements for windows, insulation, lighting, ventilation systems, and other features.

Most recently, the CEC adopted the 2016 Building and Energy Efficiency Standards. The 2016 standards will continue to improve upon the current 2013 standards for new construction of, and additions and alterations to, residential and nonresidential buildings. These standards will go into effect on January 1, 2017. Under the 2016 standards, residential buildings are 28 percent more energy efficient than the 2013 standards, and non-residential buildings are 5 percent more energy efficient.[35]

The 2016 standards will not achieve zero net energy (ZNE). However, they do get very close to the state's goal and make important steps toward changing residential building practices in California. The 2019 standards will take the final step to achieve ZNE for newly constructed residential buildings throughout California.[36]

California Building Code: CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and indoor air contaminants.[37] The mandatory provisions of CALGreen became effective January 1, 2011, and were updated most recently in 2013. The building efficiency standards are enforced through the local building permit process.

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (20 CCR, Section 1601–1608) were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non-federally regulated appliances. Though these regulations are now often viewed as "business as usual," they exceed the standards imposed by any other state, and they reduce GHG emissions by reducing energy demand.

Solid Waste Regulations

California's Integrated Waste Management Act of 1989 (AB 939, Public Resources Code 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from

[35] California Energy Commission (CEC). 2015. 2016 Building Energy Efficiency Standards, Adoption Hearing Presentation. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/, accessed on September 23, 2015.

[36] California Energy Commission (CEC). 2015. 2016 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf, accessed on September 23, 2015.

[37] The green building standards became mandatory in the 2010 edition of the code.

landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each City and County prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

AB 341 (Chapter 476, Statutes of 2011) increased the statewide goal for waste diversion to 75 percent by 2020 and requires recycling of waste from commercial and multifamily residential land uses.

The California Solid Waste Reuse and Recycling Access Act (AB 1327, California Public Resources Code Sections 42900 et seq.) requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board to develop a model ordinance for adoption by any local agency requiring adequate areas for collection and loading of recyclable materials as part of development projects. Local agencies are required to adopt the model or an ordinance of their own.

Section 5.408 of the 2013 California Green Building Standards Code also requires that at least 50 percent of the nonhazardous construction and demolition waste from nonresidential construction operations be recycled and/or salvaged for reuse.

In October of 2014, Governor Brown signed AB 1826[38] requiring businesses to recycle their organic waste on and after April 1, 2016, depending on the amount of waste they generate per week. This law also requires that on and after January 1, 2016, local jurisdictions across the state implement an organic waste recycling program to divert organic waste generated by businesses, including multifamily residential dwellings that consist of five or more units. Organic waste means food waste, green waste, landscape and pruning waste, nonhazardous wood waste, and food-soiled paper waste that is mixed in with food waste.

Water Efficiency Regulations

The 20x2020 Water Conservation Plan was issued by the Department of Water Resources (DWR) in 2010 pursuant to Senate Bill 7, which was adopted during the 7th Extraordinary Session of 2009–2010 and therefore dubbed "SBX7-7." SBX7-7 mandated urban water conservation and authorized the DWR to prepare a plan implementing urban water conservation requirements (20x2020 Water Conservation Plan). In addition, it required agricultural water providers to prepare agricultural water management plans, measure water deliveries to customers, and implement other efficiency measures. SBX7-7 requires urban water providers to adopt a water conservation target of 20 percent reduction in urban per capita water use by 2020 compared to 2005 baseline use.

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or equivalent. AB 1881 also requires the CEC to consult with the DWR, to adopt, by regulation, performance standards and labeling requirements for landscape irrigation

[38] Calrecycle, 2016. Mandatory Commercial Organics Recycling, http://www.calrecycle.ca.gov/recycle/commercial/organics/, accessed on February 4, 2016.

equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Regional Regulations

Bay Area Air Quality Management District

BAAQMD is the agency responsible for ensuring that the National and California ambient air quality standards are attained and maintained in the San Francisco Bay Area Air Basin. Building on state and other regional climate protection efforts, BAAQMD has adopted a resolution to reduce GHG emissions by:

- Setting a goal for the Bay Area region to reduce GHG emissions by 2050 to 80 percent below 1990 levels.
- Developing a Regional Climate Protection Strategy to make progress towards the 2050 goal, using the Air District's Clean Air Plan to initiate the process.
- Developing a 10-point work program to guide the Air District's climate protection activities in the near term.[39]

BAAQMD is working on a Regional Climate Protection Strategy for achieving the 2050 goal for GHG emission reductions that complements existing planning efforts at the state, regional, and local levels, and uses the Air District's 2015 Draft Clean Air Plan to initiate the process. Based on BAAQMD's 10-Point Climate Action Work Program, the Regional Climate Protection Strategy will include an updated GHG emissions inventory and forecast and GHG reduction goals and interim targets for the Bay Area.[40]

Plan Bay Area

The Association of Bay Area Governments (ABAG), Metropolitan Transportation Commission (MTC), Bay Area Air Quality Management District (BAAQMD), and San Francisco Bay Conservation and Development Commission (BCDC) share joint responsibility for creating, updating, and overseeing *Plan Bay Area*, the Sustainable Communities Strategy (SCS) for the nine-county Bay Area region pursuant to SB 375. Under SB 375, *Plan Bay Area*'s targets are a 7 percent per capita reduction in GHG emissions from 2005 by 2020, and 15 percent per capita reduction from 2005 levels by 2035.[41] SB 375 requires CARB to periodically update the targets, no later than every 8 years. CARB plans to propose updated targets for consideration

[39] Bay Area Air Quality Management District (BAAQMD), 2013. Resolution No. 2013-11: Resolution Adopting a Greenhouse House Gas Reduction Goal and Commitment to Develop a Regional Climate Protection Strategy. http://www.baaqmd.gov/~/media/files/planning-and-research/climate-protection-program/climateresolution.pdf?la=en, accessed September 23, 2015.

[40] Bay Area Air Quality Management District (BAAQMD), 2014. 10-Point Climate Action Work Program. http://www.baaqmd.gov/ ~/media/files/planning-and-research/climate-protection-program/10-point-work-program-pdf.pdf?la=en, accessed on September 23, 2015.

[41] California Air Resources Board, 2010, Staff Report Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375, August.

in 2016, with the intent to make them effective in 2018. Sustainable communities strategies (SCSs) adopted in 2018 would be subject to the updated targets.[42]

Each of the agencies involved in the SCS has a different role in regional governance. ABAG primarily deals with regional land use, housing, environmental quality, and economic development, while MTC is tasked with regional transportation planning, coordinating, and financing. BAAQMD is responsible for regional air pollution regulation. BCDC's focus is to preserve, enhance, and ensure responsible use of San Francisco Bay.

These agencies jointly created *Plan Bay Area*,[43] adopted in July 2013 and now a regulating portion of the Bay Area's 25-year Regional Transportation Plan (RTP), which in part dictates funding for local transportation programs and improvements. By federal law, the RTP must be internally consistent. Therefore, the more than $200 billion dollars of transportation investment typically included in the RTP must align with and support the SCS land use pattern. State law also requires that the updated 8-year regional housing need allocation (RHNA) prepared by ABAG for municipal housing element updates is consistent with the SCS. The update to *Plan Bay Area*, *Plan Bay Area 2040*, is currently underway.

Plan Bay Area sets a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from cars and light trucks beyond the per capita reduction targets identified by CARB pursuant to SB 375.

As part of the implementation framework for *Plan Bay Area*, local governments may identify "Priority Development Areas" (PDAs) to focus growth. The PDAs are transit-oriented, infill development opportunity areas within existing communities. Over two-thirds of overall Bay Area growth through 2040 is allocated to the PDAs, which are expected to accommodate 80 percent (or over 525,570 units) of new housing and 66 percent (or 744,230) of new jobs in the region.[44] Additionally, the plan designates "Priority Conservation Areas" (PCAs), which are regionally significant open spaces for which there exists broad consensus for long-term protection, but which face nearer-term development pressures. Menlo Park currently has one PDA that surrounds El Camino Real and includes areas in and around Downtown Menlo Park. The area covered by the El Camino Real/Downtown Specific Plan falls within Menlo Park's PDA. The Menlo Park and East Palo Alto Baylands is also identified as a PCA, which covers Bedwell, Coeley Landing, Ravenswood Salt Pond.

The SCS does not directly govern land uses within Menlo Park and does not affect local decision-making authority. However, there are a number of benefits available to the City from being consistent with *Plan Bay Area*, including potential streamlining of CEQA review for certain transit priority, residential, and/or mixed-use projects, as well as high eligibility for transportation funding, provided that policies and land use patterns proposed in the General Plan align with SCS goals.

[42] California Air Resources Board, 2015, September 15. ARB Process and Schedule for SB 375 Target Update. http://www.arb.ca.gov/cc/sb375/sb375.htm.

[43] To read more about Plan Bay Area go to www.OneBayArea.Org.

[44] Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), 2013. *Final Plan Bay Area, Strategy for a Sustainable Region.*

Local Regulations

Menlo Park General Plan

The City of Menlo Park General Plan includes goals, policies, and programs relevant to the environmental factors potentially affected by the proposed project. Applicable goals, policies, and programs are identified and assessed for their effectiveness later in this chapter under Section 4.6.3, Impact Discussion.

Menlo Park Climate Action Plan

The City's Climate Action Plan (CAP) was first adopted in May 2009[45] and identifies local emissions reduction strategies designed to help meet AB 32 targets. The CAP recommends various community and municipal strategies for near-term and mid-term considerations. The emissions reduction strategies are generally focused on community actions, since more than 99 percent of the emissions are from community sources.

The City updates its community-wide GHG inventory and CAP annually. In 2011, the City completed the first update to the City's CAP Strategy, known as the 2011 CAP Assessment Report. As part of the 2013 update, the City Council adopted a target of reducing community-wide GHG emissions by 27 percent below 2005 levels by 2020.

In June 2014, the City Council approved an updated 5-year CAP Strategy, which accounted for the current staffing levels and budget resources available post-Great Recession. The 2014 Update identified that based on the current list of strategies implemented, Menlo Park could expect to achieve 46 percent of its GHG target, which would fall far short of the 27 percent below 2005 level by 2020 goal. Additional strategies were not added.[46]

The most recent status update to the City's CAP Strategy was conducted in October 2015. The 2015 Update includes updated emissions inventories through year 2013. The 2015 CAP Update and Status Report reiterates that based on the latest inventory and trend, the City is not likely to meet State AB 32 goals to reduce emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050, unless significant local policies and programs are implemented to achieve this statewide goal. Consequently, the 2015 Update recommends additional near-term strategies to achieve the City's goals. New policies and programs would require City Council approval prior to implementation.[47]

[45] City of Menlo Park, 2009. *Climate Action Plan.*
[46] City of Menlo Park, 2011. Climate Action Plan Assessment Report. July.
[47] City of Menlo Park, 2015. Climate Action Plan Update and Status Report. October

4.6.1.3 EXISTING CONDITIONS

Menlo Park Communitywide GHG Emissions

Table 4.6-5 shows community-wide GHG emissions in the City of Menlo Park and SOI. Menlo Park's baseline emissions inventory totaled 273,599 $MTCO_2e$ in 2015. As shown in this table, the energy sector is the largest contributor of GHG emissions in the City (58 percent), with on-road transportation emissions contributing the majority of the remainder (36 percent). The energy and transportation sectors account for approximately 93 percent of total emissions. Off-road sources provide 5 percent of the inventory. Solid waste disposal, potable water use, and wastewater treatment are small contributors by comparison, making up the remaining 2 percent of the inventory.

TABLE 4.6-5 CITY OF MENLO PARK BASELINE YEAR GHG EMISSIONS

Sector	2015 $MTCO_2e$	Percentage of Inventory
On-Road Transportation[a]	98,285	36%
Residential Energy Use[b]	55,354	20%
Nonresidential Energy Use[b]	100,846	37%
Municipal Energy Use[b]	1,581	1%
Solid Waste Disposal[c]	3,546	1%
Water Use/Wastewater Generation[d]	1,291	0%
Other – Off-road Equipment[e]	12,696	5%
Total Community Emissions	273,599	100%
Service Population[f]	63,800	—
$MTCO_2e$/SP	4.29	—
BAAQMD Permitted Sources[g]	49,401	—

Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC Second Assessment Report (SAR).
Sources:
a. Based on on-road VMT provided by TJKM and modeled using EMFAC2014-PL.
b. Based on electricity and natural gas use provided by PG&E.
c. Based on solid waste disposal in the City obtained from CalRecycle and modeled using CARB's Landfill Emissions Tool. Does not include lifecycle emissions, including solid waste diverted from landfills.
d. Based on water demand and indoor/outdoor water use identified in the Water Supply Evaluation. Fugitive GHG emissions from wastewater treatment use are based on the LGOP emissions factors.
e. GHG emissions from off-road equipment use is based on OFFROAD2007.
f. Based on the existing demographics in Menlo Park + SOI (32,900 population and 30,900 employees).
g. These emissions are not regulated by the City but provided for informational purposes. Includes GHG emissions from permitted sources in the City provided by BAAQMD for 2011, which is the latest data available on BAAQMD's website.

For CEQA purposes, the GHG emissions inventory for the proposed project is not a consumption-based emissions inventory but a combination of a geographic-based and consumption-based inventory based on emissions sources that are directly or indirectly affected by land use decisions in the city. As part of BAAQMD's *Climate Protection Program Pathway to 2050*, BAAQMD is compiling an update of emissions sources and emissions in the Bay Area, which is based on a consumption-based methodology. A

consumption based inventory supplements the geographic/production-based inventory by including upstream and downstream emissions from consumption of materials (i.e., a lifecycle analysis) and shifts emissions attributable from producers of the emissions to consumers of emissions. While the BAAQMD inventory will address lifecycle pre-consumer emissions embodied in the purchase of consumer goods, the proposed project and this EIR are not required to do so.

Stationary sources of GHG emissions are not under the direct control of the City of Menlo Park because they require a permit from BAAQMD. However, because this data is available from BAAQMD for the City of Menlo Park and provides a more complete snapshot of the sources of emissions within the City, Table 4.6-5 includes emissions from stationary source emissions as well. However, these emissions are not traditionally considered in local GHG emissions target setting for GHG emissions planning purposes because they are regulated separately by BAAQMD and CARB.

4.6.2 STANDARDS OF SIGNIFICANCE

The proposed project would result in a significant impact to greenhouse gas emissions if it would:

1. Generate greenhouse gas emissions, either directly or indirectly, that may a significant effect on the environment.
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

This section analyzes potential impacts to greenhouse gas emissions.

4.6.2.1 BAAQMD PLAN-LEVEL SIGNIFICANCE CRITERIA

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality and GHG emissions impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process, consistent with CEQA requirements, and include recommended thresholds of significance, mitigation measures, and background air quality information. They also include recommended assessment methodologies for air toxics, odors, and GHG emissions.

Chapter 4.2 of this Draft EIR, Air Quality, contains a detailed discussion of the adoption, subsequent legal challenges, and most recent court decisions regarding BAAQMD's CEQA Guidelines. As explained in that chapter, the City of Menlo Park has independently determined that use of BAAQMD's CEQA Guidelines is supported by substantial evidence, and those guidelines have been found by the courts to be valid guidelines for use in the CEQA environmental review process. In addition, CEQA grants local agencies broad discretion to develop their own thresholds of significance, or to rely on thresholds previously adopted or recommended by other public agencies or experts so long as they are supported by substantial evidence. Accordingly, the City is using the BAAQMD's 2011 thresholds to evaluate project impacts in order to evaluate the potential effects of the project on GHG emissions.

The BAAQMD CEQA Guidelines include thresholds for GHG impacts for general plan analyses that are consistent with the GHG reduction goals of AB 32. Therefore, the impact of a general plan is less than significant if it:[48]

1. Reduces emissions to 1990 GHG emission levels by 2020; or
2. Reduces emissions to 15 percent below 2008 or earlier emission levels by 2020; or
3. Meets the plan efficiency threshold of 6.6 $MTCO_2e$ per service population per year.

For the City of Menlo Park, a 1990 emissions inventory was not available, and therefore this potential significance criterion was not used. An existing emissions inventory was compiled, which could be used to evaluate the second criterion. Achieving a 15 percent reduction from existing emissions was not used as a significance criteria because the CEQA Guidelines do not establish a net zero threshold of significance.[49] While the second criterion identified by BAAQMD was not applied as the CEQA significance criteria, the overall change in GHG emissions from existing conditions has been evaluated in order to quantify GHG emissions impacts due to the project. BAAQMD's third criterion, which evaluates the efficiency of the plan, has been determined to be the applicable threshold for the proposed project. The proposed project includes existing and new land uses and, therefore, the statewide GHG targets are applicable on a citywide level. The proposed project horizon year (2040) is beyond year 2020. Therefore, the efficiency targets have been adjusted based on the long-term GHG reduction targets of Executive Order B-30-15, which set a goal of 40 percent below 1990 levels by 2030, and Executive Order S-03-05, which set a goal of 80 percent below 1990 levels by 2050, as shown in Table 4.6-6.

Consequently, for the reasons described above, total emissions are compared to the GHG efficiency targets described below.

- The City's 2020 GHG estimated efficiency target would be 6.6 $MTCO_2e$ per service population per year, to align with BAAQMD's efficiency target, identified in their CEQA Guidelines, that is consistent with AB 32.
- The City's 2040 GHG estimated efficiency target would be 2.5 $MTCO_2e$ per service population per year, to align with the mid-term GHG reduction goal of Executive Order B-30-15 and Executive Order S-03-05.[50]
- The City's 2050 GHG estimated efficiency target would be 1.2 $MTCO_2e$ per service population per year, to align with the long-term GHG reduction goals of Executive Order S-03-05. Since the 2050 horizon extends beyond the 2040 horizon year of the proposed project, this efficiency metric is only

[48] BAAQMD's CEQA Guidelines also allow cities to tier from plans adopted to mitigate the effects of GHG emissions on a city/town level, consistent with AB 32 goals. However, the proposed project is an update to the General Plan Land Use and Circulation Element, which has a horizon year beyond the analysis in the CAP.

[49] As explained by the California Natural Resources Agency's "Final Statement of Reasons for Regulatory Action, Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to Senate Bill 97" (2009), the CEQA Guidelines do not establish a zero emissions threshold of significance because there is no one-molecule rule in CEQA.

[50] The proposed project horizon year is 2035; therefore, the BAAQMD efficiency target has been extrapolated to 2035 based on the GHG reduction goal of Executive Order B-30-15, which is to reduce GHG emissions 40 percent below 1990 levels by 2030, and Executive Order S-03-05, which is to reduce GHG emissions 80 percent below 1990 levels by 2050.

considered for consistency with the statewide GHG reduction targets, which are addressed in the CARB Scoping Plan (see Impact GHG-2). Under this criterion, efficiency is used as a way to gauge whether the City is on a trajectory to achieve the even longer-term targets under the Executive Order S-03-05.

TABLE 4.6-6 FORECASTING THE POST-2020 GHG REDUCTION TARGETS

Category	GHG Emissions $MTCO_2e$/Year[a] (SAR GWPs)		Notes
2020 Statewide GHG Target	433,290,000		1990 levels by 2020
2030 Statewide GHG Target	259,970,000		40% below 1990 levels by 2030
2050 Statewide GHG Target	86,660,000		80% below 1990 levels by 2050
2035 Statewide GHG Target[b]	**216,640,000**		Trend-line between 2030 and 2050: 60 percent reduction from 1990 levels by 2040.
Population and Employment Forecasts	**2040**	**2050**	
Population[c]		49,779,362	Based on the California Department of Finance forecasts
Employment[d]		22,895,900	Based on California Department of Transportation
Service Population (SP)		**72,342,882**	—
Efficiency Target	**2.5 $MTCO_2e$/SP**	**1.2 $MTCO_2e$/SP**	—

Notes: SAR: Second Assessment Report; GWP: Global Warming Potentials; $MTCO_2e$: metric tons of carbon dioxide-equivalent
Sources:
a. CARB. 2007, November. California Greenhouse Gas Inventory (millions of metric tonnes of CO_2 equivalent) — Summary by Economic Sector.
b. Based on the 2030 target of 40 percent below 1990 levels by 2030 under Executive Order B-30-15 and the target of 80 percent below 1990 levels by 2050 under Executive Order S-03-05.
c. California Department of Finance. 2014, Report P-1 (County): State and County Total Population Projections, 2010-2060 (5 -year increments). http://www.dof.ca.gov/research/demographic/reports/projections/P-1/, accessed on May 10, 2016.
d. California Department of Transportation. Long-Term Socio-Economic Forecasts by County. http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic.html, accessed on May 10, 2016

4.6.3 IMPACT DISCUSSION

Methodology

Community-wide GHG emissions for the proposed project, which includes growth in the city and SOI, follows BAAQMD's *GHG Plan Level Guidance*[51] and ICLEI's *US Community Protocol for Accounting and*

[51] Bay Area Air Quality Management District (BAAQMD), 2012. GHG Plan Level Guidance, May. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/GHG%20Quantification%20Guidance%20May%202012.ashx?la=en.

Reporting of GHG Emissions.[52] For general plan level analyses, BAAQMD CEQA Guidelines recommend that GHG emissions from direct and indirect community-wide emission sources be quantified for the baseline year, the year 2020 (for consistency with AB 32), and the projected year of buildout. Direct sources of emissions include on-site combustion of energy such as natural gas used for heating and cooking, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced off-site from energy production and water conveyance due to a project's energy use and water consumption. Biogenic CO_2 emissions are not included in the quantification of a project's GHG emissions impacts because biogenic CO_2 is derived from living biomass (e.g., organic matter present in wood, paper, vegetable oils, animal fat, food, animal, and yard waste) as opposed to fossil fuels. Pursuant to guidance from the Governor's Office of Planning and Research and the California Air Pollution Control Officer's Association, lifecycle emissions are also not included in the quantification of a project's GHG emissions impacts for CEQA.[53] The analysis includes the following sectors:

- On-Road Transportation: On-road transportation emissions from passenger vehicles and trucks generated by land uses in the city and SOI are based on daily VMT data provided by TJKM for existing conditions and year 2040. This differs from the methodology used for in the City's Climate Action Plan (CAP), which is based on fuel consumed. For the purposes of CEQA, the transportation sector should be based on an origin-destination methodology and needs to be internally consistent with the transportation modeling conducted for the Transportation and Traffic analysis. Accounting of VMT is based on the recommendations of CARB's Regional Targets Advisory Committee (RTAC) created under Senate Bill 375 (SB 375).[54] GHG emissions associated with the VMT provided by TJKM were modeled using CARB's EMFAC2014-PL.[55] Consistent with CARB's methodology within the *Climate Change Scoping Plan Measure Documentation Supplement*, daily VMT was multiplied by 347 days per year to account for reduced traffic on weekends and holidays to determine annual emissions.[56] The emissions forecast include the GHG emissions reductions from federal and State regulations included in EMFAC2014 including, the Pavley I fuel efficiency standards, the California Advanced Clean Car

[52] ICLEI – Local Governments for Sustainability USA, 2012. US Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions. Version 1.0, October.

[53] Lifecycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. The California Resources Agency, in adopting the CEQA Guidelines Amendments on GHG emissions found that lifecycle analyses was not warranted for project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources, and the possibility of double-counting emissions (see Final Statement of Reasons for Regulatory Action, December 2009). Because the amount of materials consumed during the operation or construction of the proposed project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted.

[54] For accounting purposes, there are three types of trips: (1) Vehicle trips that originated and terminated within the City of Menlo Park (Internal-Internal, I-I). Using the accounting rules established by RTAC, 100% of the length of these trips, and their emissions, are attributed to the City of Menlo Park. (2) Vehicle trips that either originated or terminated (but not both) within the City of Menlo Park (Internal-External or External-Internal, I-X and X-I). Using the accounting rules established by RTAC, 50 percent of the trip length for these trips is attributed to Menlo Park. (3) Vehicle trips that neither originated nor terminated within the City of Menlo Park. These trips are commonly called pass-through trips (External-External, X-X). Using the accounting rules established by RTAC, these trips are not counted towards the City's VMT or emissions.

[55] California Air Resources Board (CARB), 2014. EMFAC2014-PL.

[56] California Air Resources Board (CARB), 2008. Climate Change Proposed Scoping Plan, a Framework for Change, October.

Standards, the LCFS, on-road diesel fleet rules, and the Smartway/Phase I Heavy Duty Vehicle Greenhouse Gas Regulation.

- Residential and Non-Residential Energy: Purchased electricity and natural gas use for residential and non-residential land uses in the City and SOI are based on data provided by PG&E. To account for fluctuation in annual energy use as a result of natural variations in climate between inventory years, BAAQMD recommends averaging energy use over several years.[57] Therefore, residential natural gas and electricity use are normalized based on three years of electricity and natural gas usage data (2013, 2013, and 2012) for the baseline inventory. Electricity use is then multiplied by the carbon intensity of PG&E's electricity. GHG emissions from natural gas use are based on emissions rates in CARB's Local Government Operations Protocol (LGOP), Version 1.1. For the Residential Sector, total electricity use and natural gas use in the baseline year are forecasted based on the percent increase in housing units from the baseline year. For the Non-residential Sector, total electricity use and natural gas use in the baseline year are forecasted based on the percent increase in employment from the baseline year for each of the proposed project development scenarios. This means that under the business-as-usual (BAU) conditions, the emissions forecasts for the Residential and Non-residential sectors do not include reductions in average annual building energy use (non-plug load) associated new buildings from the triennial updates to the Title 24 Building Code or energy efficiency improvements that reduce electricity use in existing buildings.
- Water/Wastewater: GHG emissions from this Sector include indirect GHG emissions from the embodied energy associated with water use and wastewater generation and fugitive GHG emissions from processing wastewater. Annual water demand and wastewater generation was based on the residential and nonresidential water demand rates in the Water Supply Evaluation. Electricity use from water use is estimated using energy rates identified by the CEC.[58] Then energy is multiplied by PG&E's carbon intensity of energy. Fugitive emissions from wastewater treatment in the city were calculated using the emission factor's in CARB's LGOP, Version 1.1.[59]
- Waste: GHG emissions from solid waste disposed of by residents and employees in the City and SOI is based on the waste-in-place (WIP) method. Consequently, unlike the City's CAP, for the community-wide emissions associated with "land uses" in the city the inventory does not include methane emissions from the closed Bedwell Bayfront Park landfill. The WIP method assumes that the degradable organic component (degradable organic carbon, DOC) in waste decays slowly throughout a few decades, during which CH_4 and biogenic CO_2 are formed. If conditions are constant, the rate of CH_4 production depends solely on the amount of carbon remaining in the waste. As a result, emissions of CH_4 from waste deposited in a disposal site are highest in the first few years after deposition, then gradually decline as the degradable carbon in the waste is consumed by the bacteria responsible for the decay. Significant CH_4 production typically begins one or two years after waste disposal in a landfill and continues for 10 to 60 years or longer. BAAQMD recommends averaging

[57] Bay Area Air Quality Management District (BAAQMD), 2012. *GHG Plan Level Guidance,* May. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/GHG%20Quantification%20Guidance%20May%202012.ashx?la=en.

[58] California Energy Commission (CEC), 2006. Refining Estimates of Water-Related Energy Use in California. CEC-500-2006-118. Prepared by Navigant Consulting, Inc., December. Based on the electricity use for Northern California.

[59] California Air Resources Board (CARB), 2010. Local Government Operations Protocol (LGOP), Version 1.1, May.

waste disposal over several years to account for fluctuations in average annual solid was disposal.[60] Waste generated in the City and SOI is averaged over a three-year period (2011-2013),[61] based on data obtained from CalRecycle, to provide an estimate of GHG emissions for existing conditions (baseline year).[62] GHG emissions from solid waste disposal in the baseline year were modeled using CARB's Landfill Emissions Tool Version 1_2013, which includes waste characterization data from CalRecycle.[63] Only fugitive sources of GHG emissions from landfill are included. Modeling assumes a 75 percent reduction in fugitive GHG emissions from the landfill's Landfill Gas Capture System. The Landfill gas capture efficiency is based on CARB's LGOP, Version 1.1.[64] Total GHG emissions from waste disposal in the baseline year are forecasted based on the percent increase in service population. The emissions forecast do not account for reductions from increasing waste diversion.

- Other – Off-Road Equipment: OFFROAD2007[65] was used to obtain a rough estimate of GHG emissions from landscaping equipment, light commercial equipment, and construction equipment in the city and SOI. OFFROAD2007 is a database of equipment use and associated emissions for each county compiled by CARB. Annual emissions were compiled using OFFROAD2007 for the County of San Mateo for year 2015. In order to determine the percentage of emissions attributable to Menlo Park, landscaping and light commercial equipment is estimated based on population, (Landscaping),[66] employment (Light Commercial Equipment),[67] and construction building permits (Construction)[68] for Menlo Park as a percentage of San Mateo County. Daily off-road construction emissions are multiplied by 347 days per year to account for reduced/limited construction activity on weekends and holidays. Annual average construction emissions are assumed to be similar to historic conditions. Total GHG emissions from landscaping equipment and commercial equipment in the baseline year are forecasted based on the percent increase in population and employment growth, respectively. The emissions forecast for the Other Sector included GHG reductions from the LCFS.

[60] Bay Area Air Quality Management District (BAAQMD), 2012. *GHG Plan Level Guidance,* May. http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/GHG%20Quantification%20Guidance%20May%202012.ashx?la=en.

[61] 2014 data is not available from CalRecycle.

[62] CalRecycle, 2015, Disposal Reporting System, Jurisdiction Reporting by Facility, Menlo Park. http://www.calrecycle.ca.gov/LGCentral/Reports/DRS/Destination/JurDspFa.aspx

[63] California Department of Resources Recycling and Recovery (CalRecycle), Disposal Reporting System, 2016. *2013-2010 Menlo Park Jurisdiction Disposal By Facility with Reported Alternative Daily Cover (ADC) and Alternative Intermediate Cover (AIC).* Accessed April, http://www.calrecycle.ca.gov/LGCentral/Reports/DRS/Destination/JurDspFa.aspx.

[64] California Air Resources Board (CARB), 2010. Local Government Operations Protocol (LGOP), Version 1.1, May.

[65] Although there is a new OFFROAD Model, the 2011 update did not categorize emissions at the county-level, only statewide in the new model update. Therefore, GHG emissions from this sector are a conservative estimate from off-road equipment.

[66] U.S. Census Bureau, 2010.

[67] U.S. Census Bureau. 2010. *Longitudinal Employer-Household Dynamics.* http://lehd.ces.census.gov/.

[68] U.S. Census Bureau, 2010. Building Permits, http://censtats.census.gov/bldg/bldgprmt.shtml.

GREENHOUSE GAS EMISSIONS

GHG-1 Implementation of the proposed project would directly or indirectly generate GHG emissions that may have a significant impact on the environment.

Future development under the proposed project would contribute to climate change through direct and indirect emissions of GHG from energy (natural gas and purchased electricity), on-road transportation sources, potable water use, wastewater generation, solid waste disposal, and off-road sources (e.g., equipment used for landscaping, commercial activities, and construction). The proposed Land Use (LU) and Circulation (CIRC) Elements, which would be adopted as part of the proposed project, and existing Section II, Open Space/Conservation (OSC) of the Open Space/Conservation, Noise and Safety Elements, contain general goals, policies, and a program that would require local planning and development decisions to consider impacts to GHG. The following General Plan goals, policies and a program would serve to minimize potential GHG from development projects to the maximum extent practicable:

- Goal LU-4: Promote the development and retention of business uses that provide goods or services needed by the community that generate benefits to the City, and avoid or minimize potential environmental and traffic impacts.
  - Policy LU-4.5: Business Uses and Environmental Impacts. Allow modifications to business operations and structures that promote revenue generating uses for which potential environmental impacts can be mitigated.
- Goal LU-6: Preserve open-space lands for recreation; protect natural resources and air and water quality; and protect and enhance scenic qualities.
  - Policy LU-6.9: Pedestrian and Bicycle Facilities. Provide well-designed pedestrian and bicycle facilities for safe and convenient multi-modal activity through the use of access easements along linear parks or paseos.
- Goal LU-7: Promote the implementation and maintenance of sustainable development, facilities and services to meet the needs of Menlo Park's residents, businesses, workers, and visitors.
  - Policy LU-7.1: Sustainability. Promote sustainable site planning, development, landscaping, and operational practices that conserve resources and minimize waste.
  - Policy LU-7.5: Reclaimed Water Use. Implement use of adequately treated "reclaimed" ("recycled/nonpotable water sources such as, graywater, blackwater, rainwater, stormwater, foundation drainage, etc.) water for outdoor and indoor uses, as feasible.
  - Policy LU-7.9: Green Building. Support sustainability and green building best practices through the orientation, design, and placement of buildings and facilities to optimize their energy efficiency.
    - Program LU-7.A: Green Building Operation and Maintenance. Employ green building and operation and maintenance best practices, including increased energy efficiency, use of renewable energy and reclaimed water, and install drought-tolerant landscaping for all projects.
    - Program LU-7.D: Performance Standards. Establish performance standards in the Zoning Ordinance that requires new development to employ environmentally friendly technology

and design to conserve energy and water, and minimize the generation of indoor and outdoor pollutants.

- Program LU-7.E: Greenhouse Gas Emissions. Develop a Greenhouse Gas (GHG) standard for development projects that would help reduce communitywide GHG emissions to meet City and Statewide reduction goals.

- Goal OSC-2: Provide Parks And Recreation Facilities. Develop and maintain a parks and recreation system to provide areas and facilities conveniently located, sustainable, properly designed and well-maintained to serve the recreation needs and promote healthy living of residents, workers and visitors to Menlo Park.
  - Policy OSC-2.7: Conservation of Resources at City Facilities. Reduce consumption of water, energy, landfilled waste, and fossil fuels in the construction, operations and maintenance of City owned and/or operated facilities.
- Goal OSC-4: Promote Sustainability And Climate Action Planning. Promote a sustainable energy supply and implement the City's Climate Action Plan to reduce greenhouse gas emissions and improve the sustainability of actions by City government, residents, and businesses in Menlo Park. This includes promoting land use patterns that reduce the number and length of motor vehicle trips, and encouraging recycling, reduction and reuse programs.
  - Policy OSC-4.1: Sustainable Approach to Land Use Planning to Reduce Resource Consumption. Encourage, to the extent feasible, (1) a balance and match between jobs and housing, (2) higher density residential and mixed-use development to be located adjacent to commercial centers and transit corridors, and (3) retail and office areas to be located within walking and biking distance of transit or existing and proposed residential developments.
  - Policy OSC-4.2: Sustainable Building. Promote and/or establish environmentally sustainable building practices or standards in new development that would conserve water and energy, prevent stormwater pollution, reduce landfilled waste, and reduce fossil fuel consumption from transportation and energy activities.
  - Policy OSC-4.3: Renewable Energy. Promote the installation of renewable energy technology, such as, on residences and businesses through education, social marketing methods, establishing standards and/or providing incentives.
  - Policy OSC-4.4: Vehicles Using Alternative Fuel. Explore the potential for installing infrastructure for vehicles that use alternative fuel, such as electric plug in recharging stations.
  - Policy OSC-4.5: Energy Standards in Residential and Commercial Construction. Encourage projects to achieve a high level of energy conservation exceeding standards set forth in the California Energy Code for Residential and Commercial development.
  - Policy OSC-4.6: Waste Reduction Target. Strive to meet the California State Integrated Waste Management Board per person target of waste generation per person per day through their source reduction, reuse, and recycling programs.

- Policy OSC-4.7: Waste Management Collaboration. Continue to support and participate in efforts such as the South Bayside Waste Management Authority, which provides waste reduction, recycling, and solid waste programs and solutions.
- Policy OSC-4.8: Waste Diversion. Develop and implement a zero waste policy, or implement standards, incentives, or other programs that would lead the community towards a zero waste goal.
- Policy OSC-4.9: Climate Action Planning. Undertake annual review and updates, as needed, to the City's Climate Action Plan (CAP).
- Policy OSC-4.10: Energy Upgrade California. Consider actively marketing and providing additional incentives for residents and businesses to participate in local, State, and/or Federal renewable or energy conservation programs.

- Goal OSC-5: Ensure Healthy Air Quality And Water Quality. Enhance and preserve air quality in accord with State and regional standards, and encourage the coordination of total water quality management including both supply and wastewater treatment.
  - Policy OSC-5.1: Air and Water Quality Standards. Continue to apply standards and policies established by the Bay Area Air Quality Management District (BAAQMD), San Mateo Countywide Water Pollution Prevention Program (SMCWPPP), and City of Menlo Park Climate Action Plan through the California Environmental Quality Act (CEQA) process and other means as applicable.
  - Policy OSC-5.2: Development in Industrial Areas. Evaluate development projects in industrial areas for impacts to air and water resources in relation to truck traffic, hazardous materials use and production-level manufacturing per the California Environmental Quality Act (CEQA) and require measures to mitigate potential impacts to less than significant levels.
  - Policy OSC-5.3: Water Conservation. Encourage water-conserving practices in businesses, homes and institutions.
- Goal CIRC-6: Provide a range of transportation choices for the Menlo Park community.
  - Policy CIRC-6.1: Transportation Demand Management. Coordinate Menlo Park's transportation demand management efforts with other agencies providing similar services within San Mateo and Santa Clara Counties.
  - Policy CIRC-6.2: Funding Leverage. Continue to leverage potential funding sources to supplement City and private monies to support transportation demand management activities of the City and local employers.
  - Policy CIRC-6.3: Shuttle Service. Encourage increased shuttle service between employment centers and the Downtown Menlo Park Caltrain station.
  - Policy CIRC-6.4: Employers and Schools. Encourage employers and schools to promote walking, bicycling, carpooling, shuttles, and transit use.

Additionally, the proposed project includes an update to the City's Zoning Ordinance for the Bayfront Area, resulting in three new zoning districts that would promote the creation of a live/work/play environment with travel patterns that are oriented toward pedestrian, transit, and bicycle use, including

identifying public paseos to improve connectivity on the Zoning map. As part of the Zoning Ordinance update, the project includes minimum short-term and long-term bicycle parking standards for Office and Research Development land uses. Furthermore, new construction and building additions of 10,000 square feet or more are required to develop a Transportation Demand Management (TDM) Plan to reduce trip generation by 20 percent below standard use rates. The TDM Plan may include participation in a Transportation Management Association, preferred parking for carpools/vanpools, public and/or private bike-share programs, subsidy for alternative transportation (e.g., carpool/vanpool, shuttles, and bus service including transit passes), alternative work schedules, car-share membership, emergency ride home, and other measures to reduce trip generation.

The proposed Zoning Ordinance update also includes Residential and Non-Residential Green Building Requirements. These green building requirements identify standards based on the size of new construction. New large projects are required to be built to achieve Leadership in Energy and Environmental Design (LEED) silver (10,000 to100,000 square feet) and gold (over 100,000 square feet). The Zoning Ordinance update also requires installation of electric vehicle (EV) chargers. New construction is also required to meet 100 percent of electricity and natural gas demand through either onside generation and/or purchase of renewable electricity or electricity credits (or combination) to offset energy use. The Zoning Ordinance update also includes requirements for use of recycled water for large projects. New buildings are required to be dual plumbed for the internal use of recycled water. New buildings 250,000 square feet or larger are required to use non-potable water (e.g., recycled, greywater) and prepare an Alternate Water Source Assessment that describes the alternative water source and proposed non-potable application. The Zoning Ordinance update also requires that applicants submit a zero-waste management plan to the City, which will cover how the applicant plans to minimize waste to landfill and incineration.

The community-wide GHG emissions inventory for the proposed General Plan scenarios compared to existing conditions is included in Table 4.6-7 for years 2020 and 2040. Emissions are estimated for the year 2020 in order to evaluate consistency with AB 32, which sets a statewide target for 2020. Emissions are estimated for the year 2040 since that is the horizon year of the proposed General Plan.

Magnitude of GHG Emissions

Table 4.6-7 shows emissions in 2020 and 2040. At the near term target year of 2020, the City's GHG emissions is projected to be less than existing conditions as a result of state and federal regulations. However, the proposed project would result in a substantial increase in GHG emissions from existing conditions by the proposed General Plan horizon year 2040. This is considered a *significant impact*.

GHG Emissions Compared to the AB 32 and Executive Order Efficiency Targets

BAAQMD has not adopted a 2040 per capita GHG threshold for operation-related GHG emissions. However, a 2040 goal can be interpolated from Executive Order B-30-15, which calls for a 40 percent reduction from 1990 levels by 2030, and from Executive Order S-03-05, which calls for an 80 percent reduction from 1990 levels by 2050. A 2040 efficiency target was derived for the proposed project based on these Interpolations. Table 4.6-7 show that the proposed project would achieve the BAAQMD

efficiency metric for year 2020 with state measures alone but would not achieve the efficiency target for year 2040 without additional state, federal, and local reductions.

TABLE 4.6-7 PROPOSED PROJECT GHG EMISSIONS FORECAST

Sector	2015 $MTCO_2e$	2020 [a] $MTCO_2e$	2040 $MTCO_2e$	Percent of Total 2040
On-Road Transportation[a]	98,285	97,567	87,881	26%
Residential Energy Use[b]	55,354	58,735	75,776	22%
Nonresidential Energy Use[b]	100,846	96,820	151,059	45%
Municipal Energy Use[b]	1,581	1,455	2,070	1%
Solid Waste Disposal[c]	3,546	4,047	5,758	2%
Water Use/Wastewater Generation[d]	1,291	1,083	1,541	0%
Other – Off-road Equipment[e]	12,696	11,768	13,389	4%
Total Community Emissions	273,599	271,476	337,473	100%
Percent Change from Existing	—	**-2,123**	**63,875**	23%
Service Population[f]	63,800	72,830	103,600	—
$MTCO_2e$/SP	4.3	3.7	3.3	—
Plan-Level Efficiency Target	—	6.6	2.5 (1.2)[g]	—
Achieves Plan-Level Efficiency Target	—	**Yes**	**No**	—

Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC Second Assessment Report (SAR).
Sources:
a. Based on on-road VMT provided by TJKM and modeled using EMFAC2014-PL.
b. Based on electricity and natural gas use provided by PG&E.
c. Based on solid waste disposal in the City obtained from CalRecycle and modeled using CARB's Landfill Emissions Tool.
d. Based on water demand and indoor/outdoor water use identified in the Water Supply Evaluation. Fugitive GHG emissions from wastewater treatment use are based on the LGOP emissions factors.
e. GHG emissions from off-road equipment use is based on OFFROAD2007.
f. Based on ABAG population and employment for Menlo Park + SOI in year 2020 (38,700 population and 34,130 employees) and at the Maximum 2040 Citywide Buildout (50,350 population and 53,250 employees).
g. The 2050 efficiency target is 1.2 $MTCO_2e$ based on the long-term target of Executive Order S-03-05. However, this target extends past the horizon year of the proposed project. This CEQA analysis considers both thresholds to provide a conservative finding of GHG emissions impacts.

While per capita emissions under the proposed project would be on a decline that is consistent with the interim GHG reductions for the state, additional state and federal actions are necessary to ensure that state and federally regulated sources (i.e., sources outside the City's jurisdictional control) achieve the deep cuts needed to meet the 2050 target. Emissions from 2020 to 2050 will have to decline several times faster than the current rate needed to reach the 2020 emissions limit.[69] According to the California Council on Science and Technology's (CCST) 2011 report, this includes switching from gasoline-powered

[69] California Air Resources Board (CARB), 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006, May 15.*

cars and trucks to plug-in hybrid, all electric vehicles, or alternative fuels (hydrogen-fuel and/or biofuels); switching from fuel to electricity to heat building space; de-carbonizing electricity[70] while maintaining a reliable electricity grid; and aggressive efficiency measures.[71] According to the CCST, emissions reductions of 80 percent can be achieved with feasible technology implementation plus research, development, and innovation. Approximately 60 percent of emissions reductions below 1990 levels can be achieved with current technology in use or in the demonstration phase. The remainder of the emission cuts to obtain the full 80 percent reduction below 1990 levels will require development and deployment of new technology.

Achieving this second cut will thus require a substantial commitment to technology development and innovation. Several subsequent studies have also highlighted the variables that drive future scenario studies and challenges to meeting the 2050 target.[72,73,74] Because no single technological approach will allow the state to accomplish its 2050 goal, obtaining an 80 percent reduction below 1990 levels will require a portfolio of solutions.[75]

Further, the overall goal in the state is to achieve an 80 percent reduction from 1990 levels by 2050. CARB's 2014 Update to the Scoping Plan identified that California continues to build its climate policy framework, and there is a need for local government climate action planning to adopt mid- and long-term reduction targets that are consistent with scientific assessments and the statewide goal of reducing emissions 80 percent below 1990 levels by 2050. CARB states that local government reduction targets should chart a reduction trajectory that is consistent with or exceeds the trajectory created by statewide goals as shown in Table 4.6-10, *Statewide Trajectory to Achieve Interim Goal under Executive Orders B-30-15 and S-03-05*. The proposed project would not achieve a plan-efficiency target of 1.2 $MTCO_2e$/SP at the General Plan Horizon.

Conclusion

The proposed project would result in a substantial increase in GHG emissions from existing conditions by the horizon year 2040 and would not achieve the 2040 efficiency target, which is based on a trajectory to

[70] In general, there are three ways to de-carbonize electricity: nuclear power, fossil fuel with carbon storage, and renewable energy.

[71] California Council on Science and Technology, 2011, California's Energy Future – The View to 2050. http://www.ccst.us/publications/2011/2011energy.pdf, May.

[72] Greenblatt JB, and Long J. 2012. California's Energy Future - Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Requirements, California Council on Science and Technology, September. http://ccst.us/publications/2012/2012ghg.pdf.

[73] Morrison, Geoff M., Sonia Yeh, Anthony R. Eggert, Christopher Yang, James H. Nelson, 3 Alphabetic: Jeffery B. Greenblatt, Raphael Isaac, Mark Z. Jacobson, Josiah Johnston, Daniel M. Kammen, Ana Mileva, Jack Moore, David Roland-Holst, Max Wei, John P. Weyant, James H. Williams, Ray Williams, Christina B. Zapata. Long-term Energy Planning In California: Insights and Future Modeling Needs. UC-Davis Institute of Transportation Studies. Research Report – UCD-ITS-RR-14-08. Available: http://www.its.ucdavis.edu/research/publications/publication-detail/?pub_id=2217.

[74] Energy+Environmental Economics (E3), 2015. Summary of the California State Agency's PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios http://www.energy.ca.gov/commission/fact_sheets/documents/E3_Project_Overview_20150130.pdf, January 26.

[75] California Council on Science and Technology, 2011, California's Energy Future: The View to 2050. http://www.ccst.us/publications/2011/2011energy.pdf, May.

the 2050 goal of an 80 percent reduction from 1990 levels. The policies identified in the General Plan as well as the transportation demand management (TDM) and other green building sustainability measures in the Zoning Ordinance update, as described previously, would reduce GHG emissions, to the extent feasible. However, additional state and federal actions are necessary to ensure that state and federally regulated sources (i.e., sources outside the City's jurisdictional control) take measures to ensure the deep cuts needed to achieve the 2050 target. Therefore, GHG impacts for consistency with the 2040 and more aggressive long-term targets of Executive Order S-03-15 are considered *significant*.

Applicable Regulations:

- California Global Warming Solutions Act (AB 32)
- Sustainable Communities and Climate Protection Act (SB 375)
- Greenhouse Gas Emission Reduction Targets (Executive Order S-3-05)
- Clean Car Standards – Pavley (AB 1493)
- Renewable Portfolio Standards (SB 1078)
- California Integrated Waste Management Act of 1989 (AB 939)
- California Mandatory Commercial Recycling Law (AB 341)
- California Advanced Clean Cars CARB/ Low-Emission Vehicle Program – LEV III (Title 13 CCR)
- Heavy-Duty Vehicle Greenhouse Gas Emissions Reduction Measure (Title 17 CCR)
- Low Carbon Fuel Standard (Title 17 CCR)
- California Water Conservation in Landscaping Act of 2006 (AB 1881)
- California Water Conservation Act of 2009 (SBX7-7)
- Airborne Toxics Control Measure to Limit School Bus Idling and Idling at Schools (13 CCR 2480)
- Airborne Toxic Control Measure to Limit Diesel-Fuel Commercial Vehicle Idling (13 CCR 2485)
- In-Use Off-Road Diesel Idling Restriction (13 CCR 2449)
- Building Energy Efficiency Standards (Title 24, Part 6)
- California Green Building Code (Title 24, Part 11)
- Appliance Energy Efficiency Standards (Title 20)
- City of Menlo Park Zoning Ordinance

Impact GHG-1: The proposed project would result in a substantial increase in GHG emissions from existing conditions by the proposed General Plan horizon year 2040 and would not achieve the 2040 efficiency target, which is based on a trajectory to the 2050 goal of an 80 percent reduction from 1990 levels pursuant to Executive Order S-03-05. Additional state and federal actions are necessary to ensure that state and federally regulated sources (i.e., sources outside the City's jurisdictional control) take similar aggressive measures to ensure the deep cuts needed to achieve the 2050 target.

Mitigation Measure GHG-1: Prior to January 1, 2020, the City of Menlo Park shall update the Climate Action Plan (CAP) to address the GHG reduction goals of Executive Order B-30-15 and Executive Order S-03-05 for GHG sectors that the City has direct or indirect jurisdictional control over. The City shall identify a GHG emissions reduction target for year 2030 and 2040 that is consistent with the GHG reduction goals identified in Executive Order B-30-15 and Executive Order S-03-05. The CAP shall be updated to include measures to ensure that the City is on a trajectory that aligns with the state's 2030 GHG emissions reduction target.

Significance With Mitigation: Significant and unavoidable. The City has a CAP to achieve the GHG reduction goals of AB 32 for year 2020. Mitigation Measure GHG-1 would ensure that the City updates the CAP to identify a post-2020 GHG reduction goal to align with the upcoming CARB Scoping Plan Update for statewide 2030 GHG emissions reductions target and identify a GHG reduction goal for the proposed project horizon year. At this time there are no post-2020 federal and state measures that would assist the City in achieving the efficiency target at the proposed project year. Therefore, Impact GHG-1 would remain significant and unavoidable.

GHG-2 Implementation of the proposed project could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The State's GHG emissions reductions objectives are embodied in AB 32, Executive Order B-30-15, Executive Order S-03-05, and SB 375. Applicable plans adopted for the purpose of reducing GHG emissions include the Scoping Plan, *Plan Bay Area*, and the Menlo Park Climate Action Plan (CAP).

CARB's Scoping Plan

In accordance with AB 32, CARB developed the *2008 Scoping Plan* to outline the State's strategy to achieve 1990 level emissions by year 2020. To estimate the reductions necessary, CARB projected statewide 2020 BAU GHG emissions (i.e., GHG emissions in the absence of statewide emission reduction measures). CARB identified that the State as a whole would be required to reduce GHG emissions by 28.5 percent from year 2020 BAU to achieve the targets of AB 32.[76] The GHG emissions forecast was updated as part of the First Update to the Scoping Plan. In the First Update to the Scoping Plan, CARB projected that statewide BAU emissions in 2020 would be approximately 509 million $MTCO_2e$.[77] Therefore, to achieve the AB 32 target of 431 million $MTCO_2e$ (i.e., 1990 emissions levels) by 2020, the State would need to reduce emissions by 78 million $MTCO_2e$ compared to BAU conditions, a reduction of 15.3 percent from BAU in 2020.[78,79]

Statewide strategies to reduce GHG emissions identified in the *2008 Scoping Plan* include the LCFS; California Appliance Energy Efficiency regulations; California Building Standards (i.e., CALGreen and the Building and Energy Efficiency Standards); California Renewable Portfolio Standard (RPS); changes in the corporate average fuel economy standards (e.g., Pavley I and Pavley II, which is now known as the California Advanced Clean Cars Program); and other measures that would ensure the State is on target to achieve the GHG emissions reduction goals of AB 32. The Statewide strategies in the Scoping Plan apply to State agencies only and are not directly applicable to individual projects or cities (i.e., the Scoping Plan

[76] California Air Resources Board (CARB). 2008. October. *Climate Change Proposed Scoping Plan, a Framework for Change.*

[77] The BAU forecast includes GHG reductions from Pavley and the 33% Renewable Portfolio Standard (RPS).

[78] California Air Resources Board (CARB), 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006, May 15.*

[79] If the GHG emissions reductions from Pavley I and the Renewable Electricity Standard are accounted for as part of the BAU scenario (30 million $MTCO_2e$ total), then the State would need to reduce emissions by 108 million $MTCO_2e$, which is a 20 percent reduction from BAU.

does not require the City to adopt policies, programs, or regulations to reduce GHG emissions). However, new regulations adopted by the state agencies outlined in the Scoping Plan result in GHG emissions reductions at the local level. As a result, local jurisdictions benefit from reductions in transportation emissions rates, increases in water efficiency in the building and landscape codes, and other statewide actions that would affect a local jurisdictions' emissions inventory from the top down. Without the strategies identified in the Scoping Plan, local jurisdictions would likely not be able to achieve local GHG reduction targets. Statewide GHG emissions reduction measures reduce emissions from existing and future development and would reduce the City's future GHG emissions.

In 2014, CARB adopted its *First Update to the Scoping Plan*. As identified in the update, as California continues to build its climate policy framework, there is a need for local government climate action planning to adopt mid-term and long-term reduction targets that are consistent with scientific assessments and the statewide goal of reducing emissions 80 percent below 1990 levels by 2050. CARB identifies that local government reduction targets should chart a reduction trajectory that is consistent with, or exceeds, the trajectory created by statewide goals. CARB is also in the process of updating the Scoping Plan to address the new interim GHG reduction target for 2030 under Executive Order B-30-15.

As identified in Table 4.6-7 shown above, additional GHG reductions would be necessary to achieve the post-2020 GHG reduction target. The City is currently updating the CAP that would create a roadmap for emissions reductions necessary to align the City with the GHG reduction goals.

As discussed under GHG-1 above, the proposed Land Use (LU) and Circulation (CIRC) Elements, which would be adopted as part of the proposed project, and existing Section II, Open Space/Conservation (OSC) of the Open Space/Conservation, Noise and Safety Elements, contain general goals, policies, and a program that would require local planning and development decisions to consider impacts to GHG. The General Plan goals, policies and a program that would serve to minimize potential GHG from development projects to the maximum extent practicable are listed above under GHG-1.

Additionally, the proposed project includes an update to the City's Zoning Ordinance for the Bayfront Area, resulting in three new zoning districts that would promote the creation of an a live/work/play environment with travel patterns that are oriented toward pedestrian, transit, and bicycle use, including identifying public paseos to improve connectivity on the Zoning map. The proposed Zoning Ordinance update also includes green and sustainable building regulations. As part of the Zoning Ordinance update, the project includes minimum short-term and long-term bicycle parking standards for Office and Research Development land uses. The Zoning Ordinance update also allows project applicants to meet minimum parking requirements through use of nearby, off-site facilities with the approval of the City's Transportation Manager. Furthermore, new construction and building additions of 10,000 square feet or more are required to develop a Transportation Demand Management (TDM) Plan to reduce trip generation by 20 percent below standard use rates. The TDM Plan may include participation in a Transportation Management Association, preferred parking for carpools/vanpools, public and/or private bike-share programs, subsidy for alternative transportation (e.g., carpool/vanpool, shuttles, and bus service including transit passes), alternative work schedules, car-share membership, emergency ride home, and other measures to reduce trip generation.

The proposed Zoning Ordinance update also includes Residential and Non-Residential Green Building Requirements. These green building requirements identify standards based on the size of new construction. New large projects are required to be built to achieve Leadership in Energy and Environmental Design (LEED) silver (over 10,000 square feet but less than 100,000 square feet) and gold (over 101,000 square feet). The Zoning Ordinance update also requires installation of electric vehicle (EV) chargers. New construction is also required to meeting 100 percent of electricity and natural gas demand through either onside generation and/or purchase of renewable electricity or electricity credits (or combination) to offset energy use. The Zoning Ordinance update also includes requirements for use of recycled water for large projects. New buildings are required to be dual plumbed for the internal use of recycled water. New buildings 250,000 square feet or larger are required to use non-potable water (e.g., recycled, greywater) and prepare an Alternate Water Source Assessment that describes the alternative water source and proposed non-potable application. The Zoning Ordinance update also requires that applicants submit a zero-waste management plan to the City, which will cover how the applicant plans to minimize waste to landfill and incineration.

Despite the policies in the existing Open Space/Conservation, Noise and Safety Element as well the proposed project's Circulation and Land Use Elements, additional state and federal actions are necessary to ensure that State and federally regulated sources (i.e., sources outside the City's jurisdictional control) take similar aggressive measures to ensure the deep cuts needed to achieve the long-term target. Emissions from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit.[80] According to the California Council on Science and Technology's (CCST) 2011 report, this includes switching from gasoline-powered cars and trucks to plug-in hybrids, all electric vehicles, or alternative fuels (hydrogen-fuel and/or biofuels); switching from fossil fuel to electricity to heat building space; de-carbonizing electricity[81] while maintaining a reliable electricity grid; and aggressive efficiency measures.[82] According to the CCST, emissions reductions of 80 percent can be achieved with feasible technology implementation plus research, development, and innovation. Approximately 60 percent of emissions reductions below 1990 levels can be achieved with current technology is use or in demonstration phase.

The remainder of the emission cuts to obtain the full 80 percent reduction below 1990 levels will require development and deployment of new or currently un-deployed technology. Achieving this second cut will thus require a substantial commitment to technology development and innovation. Several subsequent studies have also highlighted the variables that drive future scenario studies and challenges to meeting the 2050 target of 80 percent below 1990 levels. [83,84,85] Because no single technological approach will

[80] California Air Resources Board (CARB), 2014. *First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006,* May 15.

[81] In general, there are three ways to de-carbonize electricity: nuclear power, fossil fuel with carbon storage, and renewable energy.

[82] California Council on Science and Technology, 2011, California's Energy Future – The View to 2050. http://www.ccst.us/publications/2011/2011energy.pdf, May.

[83] Greenblatt J.B. and Long J., 2012. California's Energy Future – Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Requirements, California Council on Science and Technology, September, http://ccst.us/publications/2012/2012ghg.pdf.

[84] Morrison, Geoff M., Sonia Yeh, Anthony R. Eggert, Christopher Yang, James H. Nelson, 3 Alphabetic: Jeffery B. Greenblatt, Raphael Isaac, Mark Z. Jacobson, Josiah Johnston, Daniel M. Kammen, Ana Mileva, Jack Moore, David Roland-Holst, Max Wei,

allow the State to accomplish its 2050 goal, obtaining an 80 percent reduction below 1990 levels will require a portfolio of solutions.[86]

While the proposed project supports progress toward these long term-goals, it cannot yet be demonstrated that Menlo Park will achieve GHG emissions reductions that are consistent with a 40 percent reduction below 1990 levels by 2030 or an 80 percent reduction below 1990 levels by the year 2050 based on existing technologies and currently adopted policies and programs.

MTC's Plan Bay Area

Plan Bay Area is the Bay Area's SCS, adopted to reduce GHG emissions from land use and transportation, as required by SB 375. ABAG and MTC are currently in the process of preparing an update to the nine-county RTP/SCS, Plan Bay Area 2040, to reflect the updated priorities of the Bay Area. The housing, population, and employment forecasts prepared by ABAG will be integrated into the scenario modeling tools used to develop Plan Bay Area 2040 in order to build upon earlier efforts to develop an efficient transportation network and grow in a financially and environmentally responsible way. The update will identify long-term goals to reduce GHG emissions from cars and light-duty trucks, house the region's projected population, improve public health, maintain the region's transportation infrastructure, and preserve open space.[87]

As explained in Section 4.6.1.1, above, the *Plan Bay Area* land use concept plan for the region concentrates the majority of new population and employment growth in the region in locally-designated PDAs. PDAs are transit-oriented, infill development opportunity areas within existing communities. In Menlo Park, *Plan Bay Area* includes the El Camino Real Corridor PDA. [88] The El Camino Real Corridor and Downtown is envisioned as a vibrant, mixed-use area that would locate new housing near the downtown proximate to transit options[89]. The proposed project would continue to identify this area for mixed use, and includes policies that are in-line with the regional objectives for land use and transportation. Therefore, the proposed project would encourage development consistent with the goals and objectives for this PDA.

The proposed Land Use (LU) and Circulation (CIRC) element, which would be adopted as part of the proposed project, contain general goals, policies, and programs that would require local planning and

John P. Weyant, James H. Williams, Ray Williams, Christina B. Zapata. Long-term Energy Planning In California: Insights and Future Modeling Needs. UC-Davis Institute of Transportation Studies. Research Report – UCD-ITS-RR-14-08, http://www.its.ucdavis.edu/research/publications/publication-detail/?pub_id=2217.

[85] Energy+Environmental Economics (E3), 2015, Summary of the California State Agency's PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios, http://www.energy.ca.gov/commission/fact_sheets/documents/E3_Project_Overview_20150130.pdf, January 26.

[86] California Council on Science and Technology, 2011, California's Energy Future – The View to 2050, http://www.ccst.us/publications/2011/2011energy.pdf, May.

[87] Association of Bay Area Governments, and Metropolitan Transportation Commission, 2015, Plan Bay Area 2040, The Plan: The Context. http://planbayarea.org/the-plan/the-context.html

[88] Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), 2013. *Plan Bay Area,* http://gis.abag.ca.gov/website/PDAShowcase/

[89] Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), 2012. *Visions for Priority Development Areas, Jobs-Housing Connection Strategy.* May

development decisions to consider impacts to GHG. In addition, to those listed under GHG-1, the following goals, policies and programs would also serve to minimize potential GHG from development projects:

- Goal LU-1: Promote the orderly development of Menlo Park and its surrounding area.
  - Policy LU-1.1: Land Use Patterns. Cooperate with the appropriate agencies to help assure a coordinated land use pattern in Menlo Park and the surrounding area.
    - Program LU-1.B: Capital Improvement Program. Annually update the Capital Improvement Program to reflect City and community priorities for physical projects related to transportation, water supply, drainage, and other community-serving facilities and infrastructure.
- Goal LU-4: Promote the development and retention of business uses that provide goods or services needed by the community that generate benefits to the City, and avoid or minimize potential environmental and traffic impacts.
  - Policy LU-4.3 Mixed Use and Nonresidential Development. Limit parking, traffic, and other impacts of mixed-use and nonresidential development on adjacent uses, and promote high-quality architectural design and effective transportation options.
  - Policy LU-4.6 Employment Center Walkability. Promote localserving retail and personal service uses in employment centers and transit areas that support walkability and reduce auto trips, including along a pedestrian-friendly, retail-oriented street in Belle Haven.
- Goal CIRC-1: Provide and maintain a safe, efficient, attractive, user-friendly circulation system that promotes a healthy, safe, and active community and quality of life throughout Menlo Park.
  - Policy CIRC-1.7: Bicycle Safety. Support and improve bicyclist safety through roadway maintenance and design efforts
  - Policy CIRC-1.8: Pedestrian Safety. Maintain and create a connected network of safe sidewalks and walkways within the public right of way to ensure the appropriate facilities, traffic control, and street lighting are provided for pedestrian safety and convenience, including for sensitive populations.
  - Policy CIRC-1.9: Safe Routes to Schools. Support Safe Routes to School programs to enhance the safety of school children who walk and bike to school.
    - Program CIRC-1.A: Pedestrian and Bicyclist Safety. Consider pedestrian and bicyclist safety in the design of streets, intersections, and traffic control devices.
- Goal CIRC-2: Increase accessibility for and use of streets by pedestrians, bicyclists, and transit riders.
  - Policy CIRC-2.8: Pedestrian Access at Intersections. Support full pedestrian access across all legs of signalized intersections.
  - Policy CIRC-2.9: Bikeway System Expansion. Expand the citywide bikeway system through appropriate roadway design, maintenance, effective traffic law enforcement, and implementation of the City's Comprehensive Bicycle Development Plan, and the El Camino Real/Downtown Specific Plan.

- Policy CIRC-2.14: Impacts of New Development. Require new development to mitigate its impacts on the safety (e.g., collision rates) and efficiency (e.g., vehicle miles traveled (VMT) per capita) of the circulation system, by minimizing cut-through vehicle traffic on residential streets and speeding traffic; reducing the number of vehicle trips, providing bicycle, pedestrian, and transit connections, amenities and improvements in proportion with the scale of proposed projects; and facilitating appropriate or adequate response times and access for emergency vehicles.

- Goal CIRC-5: Support local and regional transit that is efficient, frequent, convenient, and safe.
  - Policy CIRC-5.1: Transit Service and Ridership. Promote improved public transit service and increased transit ridership, especially to employment centers, commercial destinations, schools, and public facilities.
  - Policy CIRC-5.2: Transit Proximity to Activity Centers. Promote the clustering of as many activities as possible within easy walking distance of transit stops, and locate any new transit stops as close as possible to housing, jobs, shopping areas, open space, and parks.
  - Policy CIRC-5.3: Rail Service. Promote increasing the capacity and frequency of commuter rail service, including Caltrain; protect rail rights-of-way for future transit service; and support efforts to reactivate the Dumbarton Corridor for transit, pedestrian, bicycle, and emergency vehicle use.
  - Policy CIRC-5.6: Bicycle Amenities and Transit. Encourage transit providers within San Mateo County to provide improved bicycle amenities to enhance convenience, including access to transit including bike share programs, secure storage at transit stations and on-board storage where feasible.
    - Program CIRC-5.A: Long-Term Transit Planning. Work with appropriate agencies to agree on long-term peninsula transit service that reflects Menlo Park's desires and is not disruptive to the city.

These strategies, which encourage use of alternative modes of transportation, would strengthen support for future development within Menlo Park's PDA, consistent with the objectives of *Plan Bay Area*. Therefore, the proposed project would be consistent with the land use concept plan for Menlo Park that is identified in *Plan Bay Area*.

Menlo Park Climate Action Plan

The City's Climate Action Plan (CAP) was adopted in May 2009[90] and identifies local emissions reduction strategies designed to help meet AB 32 targets. The CAP recommends various community and municipal strategies for near-term and mid-term considerations. The City periodically evaluates the CAP, including updating the baseline inventory and reviewing the implementation measures. The most recent status update to the City's CAP Strategy was conducted in October 2015. [91] The 2011, 2014, and 2015 updates to the CAP included additional recommendations to achieve the City's goals. However, no new policies and programs would require City Council approval prior to implementation; and to date, no additional CAP

[90] City of Menlo Park, 2009. *Climate Action Plan.*
[91] City of Menlo Park, 2015. Climate Action Plan Update and Status Report. October

strategies have been formally adopted. Table 4.6-8 includes an evaluation with the City of Menlo Park's near-term CAP strategies.

TABLE 4.6-8 MENLO PARK COMMUNITY NEAR-TERM CLIMATE CHANGE ACTION PLAN STRATEGIES

Strategy	Consistency Analysis
Residential Energy Audit Program	**Not Applicable.** This measure is not directly applicable to new development under the proposed project but would reduce emissions from existing land use. PG&E provides several tools to existing residential customers to evaluate energy usage and efficiency, including the free Home Energy Check. Home energy audits are also available. Under the City's Energy Audit Rebate program, the City of Menlo Park offers a $300 rebate for energy assessments, and if the recommended improvements are completed, the City rebates the full cost of the assessment.
Energy Efficiency and Renewable Energy Financing Program	**Not Applicable.** This measure is not directly applicable to new development under the proposed project but would reduce emissions from existing land uses. The City of Menlo Park participates in the Energy Upgrade California program, which provides up to $4,000 in rebates for energy-efficient heating and air conditioning, energy efficient windows, sealing and insulation, and solar or tankless water heaters. The existing Open Space and Conservation Element includes Policy OSC-4.10 to encourage residents and businesses within the City to participate in the Energy Upgrade California program.
Expand Community Shuttle Server	**Consistent.** The City of Menlo Park provides free shuttle service to and from the Caltrain Station, the Midday Shuttle, and the Shoppers Shuttle. The Circulation Element Update includes policies that support this CAP strategy. Policy CIRC-3.4 would encourage the City to increase shuttle service between employment centers and the Downtown Menlo Park Caltrain Station. Additionally, Policy CIRC-31 would encourage schools and employers in the City to also promote shuttle use.
Enhancements to Recycling Services	**Not Applicable.** This measure is not directly applicable to the proposed project, which includes the Land Use and Circulation Element Update as well as the Zoning Ordinance update. The City of Menlo Park is served by Recology. Recology offers free recycling to residential and commercial customers. Additionally, Recology offers free organics recycling to residential customers and to commercial customers at a 50 percent reduction off an equivalent size garbage container. The General Plan Open Space and Conservation Element includes existing policies to reduce solid waste disposal in landfills. Policy OSC-4.6 identifies that the City will strive to achieve the per capita waste targets through reduction, reuse, and recycling. Policy OSC-4.2 and Policy OSC-2.7 also encourages reduction in landfilled waste from sustainable building practices and at City facilities, respectively. Policy LU-7.1 directs the City to promote practices that minimize waste. The City also supports regional waste reduction efforts, such as the efforts of the South Bayside Waste Management Authority (Policy OSC-4.7). The City also set an ambition goal of zero waste under Policy OSC-4.8. The Zoning Ordinance update also requires that applicants submit a zero-waste management plan to the City, which will cover how the applicant plans to minimize waste to landfill and incineration.
Electric and Plug-In Hybrid Vehicle Recharging Station	**Consistent.** The Circulation Element update supports use of alternative vehicles and promotes expansion of the City's electric vehicle (EV) charging infrastructure. Policy OSC-4.4 identifies that the City will explore the potential for installing infrastructure for alternative fueled vehicles, including plug-in electric recharging stations. The proposed Zoning Ordinance update also includes residential and nonresidential Green Building Requirements, which require installation of EV charging stations for new development. The City of Menlo Park has secured funding for electric vehicle charging stations through grant funds provided by the California Energy Commission and the Bay Area Climate Collaborative. Employers in the City, including Facebook, have also installed electric vehicle charging stations.
Implement Bike Improvements	**Consistent.** The Land Use and Circulation Element update includes policies to support bicycle use and expand the City's bicycle infrastructure. Policy LU-1.10 promotes mixed-use development to allow for easy walking/biking. Policy LU-5.9 directs the City to provide

TABLE 4.6-8 MENLO PARK COMMUNITY NEAR-TERM CLIMATE CHANGE ACTION PLAN STRATEGIES

Strategy	Consistency Analysis
	pedestrian and bicycle facilities to allow for safe and convenient multi-modal activity. Policy CIRC-4.2 directs the City to expand the citywide bikeway system. The City supports multi-modal use of the City's transportation system (Policy CIRC-1.7, Policy CIRC-2.4, Policy CIRC-4.1, Policy CIRC-4.3, and Policy CIRC-4.4). The proposed Zoning Ordinance update also requires secured bicycle parking. As part of the Zoning Ordinance update, minimum short-term and long-term bicycle parking standards for Office and Research Development land uses.
Enhanced Collection Services	**Not Applicable.** This measure is not directly applicable to the proposed project, which includes the Land Use and Circulation Element Update. The City has since implemented enhanced collection services through its contract with Recology. As identified above, Recology offers free recycling to residential and commercial customers. Additionally, Recology offers an organics recycling program. Policy LU-7.1 directs the City to promote practices that minimize waste. The General Plan Open Space and Conservation Element includes existing policies to reduce solid waste disposal in landfills (Policy OSC-4.6, Policy OSC-4.2, Policy OSC-2.7. Consistent with this measure, the City also set an ambition goal of zero waste under Policy OSC-4.8. The Zoning Ordinance update also requires that applicants submit a zero-waste management plan to the City, which will cover how the applicant plans to minimize waste to landfill and incineration.
Incentives for Building Practices that Reduce Energy Consumption Beyond Current Codes	**Consistent.** The California Building and Energy Efficiency Standards are updated triennially. Under the 2016 standards, residential buildings are 28 percent more energy efficient than the 2013 standards, and non-residential buildings are 5 percent more energy efficient. During the last update, CEC identified that the 2019 standards for residential construction will achieve ZNE. Non-residential ZNE buildings are anticipated by the 2030 update. Consequently, new buildings in the City will be increasingly more energy efficient. The Land Use Update includes Policy LU-6.9, which support sustainability and green building practices in the City and result in reduce energy use through solar orientation, design, and placement. The General Plan Open Space and Conservation Element includes existing policies to reduce energy use, including participation in Energy Upgrade California (Policy OSC-4.10). The proposed Zoning Ordinance update also includes Residential and Non-Residential Green Building Requirements. These green building requirements identify standards based on the size of new construction. New large projects are required to be built to achieve Leadership in Energy and Environmental Design (LEED) silver (over 10,000 square feet but less than 100,000 square feet) and gold (over 101,000 square feet). The Zoning Ordinance update also requires installation of electric vehicle (EV) chargers. New construction is also required to meeting 100 percent of electricity and natural gas demand through either onside generation and/or purchase of renewable electricity or electricity credits (or combination) to offset energy use. New buildings are also required to be dual plumbed for the internal use of recycled water. New buildings 250,000 square feet or larger are required to use non-potable water (e.g., recycled, greywater) and prepare an Alternate Water Source Assessment that describes the alternative water source and proposed non-potable application.
City Car Sharing Program	**Not Applicable.** The Circulation Element update supports use of alternative vehicles (Policy OSC-4.4), transportation demand management (TDM) strategies (Policy CIRC-3.2), and emerging technological advancements in transportation (Policy CIRC-3.5). The Zoning Update also requires implementation of TDM measures for new development. The TDM Plan may include car-share membership. While, this measure is not directly applicable to new development, both existing and new residents and employees can take advantage of existing car sharing programs in the Bay Area. These service-based transportation options reduce vehicle trips and GHG emissions.
Limit Commercial Vehicle Idling	**Consistent.** CARB regulates nonessential idling under its Airborne Toxics Control Measures. Under the California Code of Public Resources, Chapter 10, Section 2485,

TABLE 4.6-8 MENLO PARK COMMUNITY NEAR-TERM CLIMATE CHANGE ACTION PLAN STRATEGIES

Strategy	Consistency Analysis
	commercial idling is limited to no more than 5 minutes at any location (school buses are allowed to idle for 10 minutes prior to passenger boarding or when passengers are boarding). Compliance with CARB's Airborne Toxic Control regulations would reduce idling in the City consistent with this CAP measure.
Transportation Demand Management Strategies	**Consistent.** The Circulation Element includes Policy CIRC-3.2 which would direct the City to coordinate local transportation demand management efforts in the City with agencies providing similar services in San Mateo and Santa Clara Counties. Policy CIRC-1.6 also direct the City to work with the Congestion Management Agency (C/CAG) to implement the CMP. The Zoning Ordinance update requires that construction and building additions of 10,000 square feet or more are required to develop a Transportation Demand Management (TDM) Plan to reduce trip generation by 20 percent below standard use rates. The TDM Plan may include participation in a Transportation Management Association (TMA), preferred parking for carpools/vanpools, public and/or private bike-share programs, subsidy for alternative transportation (e.g., carpool/vanpool, shuttles, and bus service including transit passes), alternative work schedules, car-share membership, emergency ride home, and other measures to reduce trip generation.
Residential Education on Trip Reduction	**Consistent.** The Circulation Element includes Policy CIRC-1.3 which requires new development to mitigate its impact of efficiency (e.g., VMT per capita) by implementing strategies that reduce trips and provide bicycle, pedestrian, and transit connections and facilities. The Land Use Element includes several policies that coordinate land use and transportation. Policy LU-4.7 allows local-serving retail and personal service uses in employment centers and transit areas that support walkability and can reduce auto trips. Policy LU-2.3 allow mixed-use projects with residential units if project design addresses potential compatibility issues such as traffic, parking, light spillover, dust, odors, and transport and use of potentially hazardous materials. Additionally, Policy LU-2.9 promotes residential uses in mixed-use arrangements and the clustering of compatible uses such as employment center, shopping areas, open space and parks, within easy walking and bicycling distance of each other and transit stops.
Transportation Management Associations	**Consistent.** The Circulation Element includes Policy CIRC-3.2 which would direct the City to coordinate local transportation demand management efforts in the City with agencies providing similar services in San Mateo and Santa Clara Counties. Policy CIRC-1.6 also direct the City to work with the Congestion Management Agency (C/CAG) to implement the CMP. The Zoning Ordinance update requires that construction and building additions of 10,000 square feet or more are required to develop a Transportation Demand Management (TDM) Plan to reduce trip generation by 20 percent below standard use rates. The TDM Plan may include participation in a Transportation Management Association (TMA), preferred parking for carpools/vanpools, public and/or private bike-share programs, subsidy for alternative transportation (e.g., carpool/vanpool, shuttles, and bus service including transit passes), alternative work schedules, car-share membership, emergency ride home, and other measures to reduce trip generation.
Zero Waste Plan and Target	**Not Applicable.** This measure is not directly applicable to the proposed project, which includes the Land Use and Circulation Element Update and Zoning Ordinance update. As identified above, Recology offers free recycling to residential and commercial customers. Additionally, Recology offers an organics recycling program. The General Plan Open Space and Conservation Element includes existing policies to reduce solid waste disposal in landfills (Policy OSC-4.6, Policy OSC-4.2, Policy OSC-2.7. Consistent with this measure, the City also set an ambition goal of zero waste under Policy OSC-4.8.The Zoning Ordinance update also requires that applicants submit a zero-waste management plan to the City, which will cover how the applicant plans to minimize waste to landfill and incineration.

GREENHOUSE GAS EMISSIONS

TABLE 4.6-8 MENLO PARK COMMUNITY NEAR-TERM CLIMATE CHANGE ACTION PLAN STRATEGIES

Strategy	Consistency Analysis
Requiring Recycling Service for Commercial Facilities	**Not Applicable.** This measure is not directly applicable to the proposed project, which includes the Land Use and Circulation Element Update and Zoning Ordinance update. However, AB 341, California's mandatory commercial recycling law, now requires that commercial businesses that generate more than four cubic yards of commercial waste per week or multi-family residential dwellings of five units or more shall have recycling service. As identified above, Recology offers free commercial recycling. Additionally, the existing General Plan includes policies that support waste diversion (Policy OSC-4.6, Policy OSC-4.2, OSC-2.7, and Policy OSC-4.8). The Zoning Ordinance update also requires that applicants submit a zero-waste management plan to the City, which will cover how the applicant plans to minimize waste to landfill and incineration.
Construction & Demolition Debris Ordinance Update	**Consistent.** At the time of the 2009 CAP, participation in the California Green Building Standards Code was voluntary. Compliance with CALGreen is now mandatory for both residential and nonresidential projects. Under the current CALGreen, construction and demolition debris must achieve a minimum of 50 percent diversion. City ordinances/codes are required to be consistent with CALGreen. Furthermore, Policy OSC-4.2 also encourages reduction in landfilled waste from sustainable building practices. Policy LU-7.1 directs the City to promote practices that minimize waste. New projects would be required to adhere to the current construction and demolition debris diversion requirements in CALGreen. The Zoning Ordinance update also requires that applicants submit a zero-waste management plan to the City, which will cover how the applicant plans to minimize waste to landfill and incineration.
Menlo Park Municipal Water District Conservation Programs	**Consistent.** The Land Use Element Policy LU-6.5 promotes use of reclaimed water use, such as recycled/non-potable water, gray-water, black-water, and stormwater. Additionally, the General Plan Open Space and Conservation Element includes existing policies to reduce water use in landfills. Policy OSC-2.7 identifies a goal to reduce water consumption at City facilities. Policy OSC-4.2 also promotes water conservation as part of the City's sustainable building practices. The Zoning Ordinance update also prohibits the use of single pass cooling systems and includes requirements for use of recycled water for large projects. New buildings are required to be dual plumbed for the internal use of recycled water. New buildings 250,000 square feet or larger are required to use non-potable water (e.g., recycled, greywater) and prepare an Alternate Water Source Assessment that describes the alternative water source and proposed non-potable application.
Landscape Ordinance Update	**Consistent.** In 2010, AB 1881 required that cities adopt a Water Efficient Landscape Ordinance (WELO) to reduce water use. The State's WELO has been updated pursuant to Executive Order B-29-15 to further reduce landscape water use to comply with the Governor's drought proclamation. New development would be required to adhere to the City's WELO to reduce outdoor water use. The Land Use Element Policy LU-6.5 promotes use of reclaimed water use, such as recycled/non-potable water, gray-water, black-water, and stormwater. Additionally, the General Plan Open Space and Conservation Element includes existing policies to reduce water use (Policy OSC-2.7 and Policy OSC-4.2)

Source: Menlo Park. 2009. Climate Change Action Plan.
Menlo Park, 2015. Energy Upgrade California. Accessed on January 26, 2016. http://www.menlopark.org/363/Energy-Upgrade-California.

Summary

As identified above, the proposed project would be consistent with the regional objectives of the *Plan Bay Area* and the City's CAP. The policies and programs in the proposed project would ensure substantial progress toward the long-term GHG reductions goals for 2050. However, CARB has not yet drafted a plan to achieve the statewide GHG emissions goals established in Executive Order S-03-05. In addition to the

local measures included in the proposed project, additional state and federal measures are necessary to achieve the more aggressive targets established for 2050 in Executive Order S-03-05. Therefore, GHG impacts are considered to be *significant*, requiring mitigation.

Impact GHG-2: While the proposed project supports progress toward the long term-goals identified in Executive Order B-30-15 and Executive Order S-03-05, it cannot yet be demonstrated that Menlo Park will achieve GHG emissions reductions that are consistent with a 40 percent reduction below 1990 levels by 2030 or an 80 percent reduction below 1990 levels by the year 2050 based on existing technologies and currently adopted policies and programs.

Mitigation Measure GHG-2: Implement Mitigation Measure GHG-1.

Significance With Mitigation: Significant and unavoidable. The City has a CAP to achieve the GHG reduction goals of AB 32 for year 2020. Mitigation Measure GHG-1 would ensure that the City updates the CAP to identify a post-2020 GHG reduction goal to align with the upcoming CARB Scoping Plan Update for statewide 2030 GHG emissions reductions target and identify a GHG reduction goal for the proposed project horizon year. At this time there are no post-2020 federal and state measures that would assist the City in achieving the efficiency target at the proposed project year. Therefore, Impact GHG-2 would remain significant and unavoidable.

4.6.4 CUMULATIVE IMPACTS

As described above, GHG emissions related to implementation of the proposed project are not confined to a particular air basin but are dispersed worldwide. Therefore, the analysis of impacts in Section 4.6.3, Impact Discussion, above, also addresses cumulative impacts. While the policies of the proposed General Plan ensure substantial progress toward the long term-goals of Executive Order S-03-05, GHG impacts for consistency with the more aggressive 2050 targets are conservatively considered to be cumulatively considerable and therefore potentially *significant*. This is the same impact identified above as GHG-1.

GREENHOUSE GAS EMISSIONS

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