

4.6 Greenhouse Gas Emissions

This section discusses the proposed Specific Plan's potential impacts related to emissions of greenhouse gases (GHG) and climate change. Specific Plan vehicle miles traveled (VMT) and trip distribution rates used in emissions estimates are based on the *Transportation Impact Analysis* prepared by Kittelson & Associates, Inc. dated September 2017. The traffic study is included as Appendix D to this EIR.

4.6.1 Setting

a. Climate Change and Greenhouse Gases

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO₂), methane (CH₄), nitrous oxides (N₂O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing associated with agricultural practices and landfills.

Man-made GHGs, many of which have greater heat-absorption potential than CO₂, include fluorinated gases and SF₆ (California Environmental Protection Agency [CalEPA] 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO₂) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO₂e), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane CH₄ has a GWP of 25, meaning its global warming effect is 25 times greater than carbon dioxide on a molecule per molecule basis (IPCC 2007).

b. Greenhouse Gas Emissions Inventory

Federal Emissions Inventory

Total U.S. GHG emissions were 6,586.7 million metric tons (MMT or gigatonne) CO₂e in 2015 (U.S. EPA 2017). Total U.S. emissions have increased by 3.5 percent since 1990; emissions decreased by 2.3 percent from 2014 to 2015 (U.S. EPA 2017). The decrease from 2014 to 2015 was a result of multiple factors, including: (1) substitution from coal to natural gas consumption in the electric power sector; (2) warmer winter conditions in 2015 resulting in a decreased demand for heating fuel in the residential and commercial sectors; and (3) a slight decrease in electricity demand (U.S. EPA 2017). Since 1990, U.S. emissions have increased at an average annual rate of 0.2 percent. In 2015, the industrial and transportation end-use sectors accounted for 29 percent and 27 percent of CO₂e emissions (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16 percent and 17 percent of CO₂e emissions, respectively (U.S. EPA 2017).

California Emissions Inventory

Based on the California Air Resources Board (CARB) California Greenhouse Gas Inventory for 2000-2014, California produced 441.5 MMT CO₂e in 2014 (CARB 2016). The largest single source of GHG in California is transportation, contributing 37 percent of the state's total GHG emissions. Industrial sources are the second largest source of the state's GHG emissions, contributing 24 percent of the state's GHG emissions (CARB 2016). California emissions are due in part to its large size and large population compared to other states. However, the state's mild climate reduces California's per capita fuel use and GHG emissions as compared to other states. CARB has projected statewide unregulated GHG emissions for the year 2020 will be 509.4 MMT CO₂e (CARB 2016). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

c. Potential Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the period 1951–2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT as well as sea surface temperatures have increased. In addition to these findings, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC 2014).

Potential impacts of climate change in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CalEPA 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Air Quality

Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (California Energy Commission [CEC] 2009).

Water Supply

Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR] 2008; CCCC 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during the state's wet winters and releasing it slowly during the state's dry springs and summers. Based on historical data and modeling, DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR 2008).

Hydrology and Sea Level Rise

As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. According to *The Impacts of Sea-Level Rise on the California Coast*, prepared by the California Climate Change Center (CCCC) (CCCC 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO] 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO 2013). Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2013) predicts a mean sea-level rise of 11-38 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. In addition, increased CO₂ emissions can cause oceans to acidify due to the carbonic acid it forms. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture

California has a \$30 billion annual agricultural industry that produces half of the country's fruits and vegetables. Higher CO₂ levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render

plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC 2006).

Ecosystems and Wildlife

Climate change and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan 2006).

d. Regulatory Setting

The following regulations address both climate change and GHG emissions.

Federal Regulations

The U.S. Supreme Court in *Massachusetts et al. v. Environmental Protection Agency et al.* ([2007] 549 U.S. 05-1120) held that the U.S. EPA has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act. The U.S. EPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. In 2012, the U.S. EPA issued a Final Rule that establishes the GHG permitting thresholds that determine when Clean Air Act permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities.

In 2014, the U.S. Supreme Court in *Utility Air Regulatory Group v. EPA* (134 S. Ct. 2427 [2014]) held that U.S. EPA may not treat GHGs as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V permit. The Court also held that PSD permits that are otherwise required (based on emissions of other pollutants) may continue to require limitations on GHG emissions based on the application of Best Available Control Technology (BACT).

California Regulations

CARB is responsible for the coordination and oversight of State and local air pollution control programs in California. California has a numerous regulations aimed at reducing the state's GHG emissions. These initiatives are summarized below.

California Advanced Clean Cars Program

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires CARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I regulates model years from 2009 to

2016 and Pavley II, which is now referred to as “LEV (Low Emission Vehicle) III GHG” regulates model years from 2017 to 2025. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs, and would provide major reductions in GHG emissions. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (CARB 2011).

Assembly Bill 32

California’s major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the “California Global Warming Solutions Act of 2006,” signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020, and requires CARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires CARB to adopt regulations to require reporting and verification of statewide GHG emissions. Based on this guidance, CARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO₂e. The Scoping Plan was approved by CARB on December 11, 2008, and included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures included in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted since approval of the Scoping Plan.

In May 2014, CARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines CARB’s climate change priorities for the next five years and sets the groundwork to reach post-2020 statewide goals. The update highlights California’s progress toward meeting the “near-term” 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State’s longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (CARB 2014).

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in CEQA documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the *CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHG and climate change impacts.

Senate Bill 375

Senate Bill (SB) 375, signed in August 2008, enhances the state’s ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles for 2020 and 2035. In addition, SB 375 directs each of the state’s 18 major Metropolitan Planning Organizations (MPO) to prepare a “sustainable communities strategy” (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, CARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035.

ABAG and MTC were assigned targets of a 7 percent reduction in GHGs from transportation sources by 2020 and a 15 percent reduction by 2035. ABAG and MTC adopted a RTP/SCS, called Plan Bay

Area, which, when implemented, would meet the assigned targets by achieving a 10 percent per capita GHG emissions reduction in 2020 and a 16 percent reduction in 2035.

Senate Bill 32

On September 8, 2016, the governor signed Senate Bill (SB) 32 into law, extending AB 32 by requiring the State to further reduce GHGs to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). CARB is currently working to update the Scoping Plan to provide a framework for achieving the 2030 target. The updated Scoping Plan is expected to be completed and adopted by CARB in 2017 (CARB 2015).

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

Executive Order S-3-05

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc.

California Environmental Quality Act

Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the *CEQA Guidelines* for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted *CEQA Guidelines* provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. To date, a variety of air districts have adopted quantitative significance thresholds for GHGs.

In 2013, the Bay Area Air Quality Management District (BAAQMD) adopted a resolution that builds on state and regional climate protection efforts 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 BAAQMD's Clean Air Plan to initiate the process
- Developing a 10-point work program to guide the BAAQMD's climate protection activities in the near-term

The BAAQMD is currently developing the Regional Climate Protection Strategy, but has outlined the 10-point work program, which includes policy approaches, assistance to local governments, and technical programs that will help the region make progress toward the 2050 GHG emissions goal.

Local Regulations

In 2009, the City of San Leandro adopted the *Climate Action Plan: a Vision of a Sustainable San Leandro*. The Climate Action Plan (CAP) is based on a comprehensive community-wide inventory completed in 2008 by Local Governments for Sustainability (ICLEI). The CAP contains GHG reduction measures and actions measures structured around the following categories: energy use in buildings (commercial/industrial, and residential), transportation and land use, waste, and municipal operations.

The San Leandro 2035 General Plan Open Space, Parks, and Conservation Chapter contains a specific goal and related policies to reduce the effects of climate change. These include:

Goal OSC-7 Promote recycling, water conservation, green building, and other programs which reduce greenhouse gas emissions and create a more sustainable environment.

Policy OSC-7.6 Reducing Municipal Greenhouse Gas Emissions. Reduce greenhouse gas emissions associated with municipal operations, including those associated with energy use, City vehicles, City recycling, and composting operations, and utilities.

Policy OSC-7.7 Climate Action Plan. Maintain and periodically update a local Climate Action Plan. The Plan should be periodically updated to reflect the completion of tasks, emerging priorities, new technologies, new laws, and higher targets for emissions reduction.

Policy OSC-7.9 Reducing Greenhouse Gases Through Land Use and Transportation Choices. Locate and design new development in a manner which maximizes the ability to use transit, walk, or bicycle for most trips, reduce dependence on fossil fuel powered vehicles, and reduce vehicle miles traveled.

Policy OSC-7.10 Open space and Carbon Emissions. Enhance the quality of the urban environment, including streets, parks, and yards, in order to absorb carbon emissions and reduce greenhouse gas emissions.

4.6.2 Impact Analysis

a. Methodology and Significance Thresholds

Significance Thresholds for GHG Emissions

Based on Appendix G of the *CEQA Guidelines*, impacts related to GHG emissions from the proposed Specific Plan would be significant if it would:

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

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change. However, physical changes

caused by a project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (*CEQA Guidelines* Section 15064[h][1]). The May 2017 *BAAQMD CEQA Air Quality Guidelines* contain two thresholds for determining significance of GHGs. The two approaches are as follows:

1. Consistency with a qualified GHG reduction plan
2. Meets the efficiency plan threshold of 6.6 MT CO₂e per service population per year for general plans and that the project threshold of 4.6 MT CO₂e per service population per year threshold

As discussed under Section 4.1, *Air Quality*, the BAAQMD developed screening criteria to provide lead agencies and project applicants with a conservative indication of whether a proposed project could result in potentially significant GHG impacts. The BAAQMD *CEAQ Air Quality Guidelines* recommend that the 6.6 MT CO₂e per service population per year threshold for operational emissions be used only for general plans and that the project threshold of 4.6 MT CO₂e per service population per year threshold for operational emissions is used for Specific Plans. According to the BAAQMD *Air Quality Guidelines*, a qualified GHG reduction strategy is one that includes the following elements:

1. Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area.
2. Establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable.
3. Identify and analyze the GHG emissions resulting from specific actions or categories of actions anticipated within the geographic area.
4. Specify measures or a group of measures, including performance standards that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level.
5. Monitor the plan's progress.
6. Adopt the GHG Reduction Strategy in a public process following environmental review.

San Leandro's CAP is not a qualified GHG reduction strategy pursuant to BAAQMD's *CEQA Air Quality Guidelines*. The City is in the process of preparing a qualified GHG reduction strategy but it has not yet been adopted. Among other requirements, a qualified strategy must establish a level, based on substantial evidence, below which the contribution to GHG emissions from activities covered by the plan would not be cumulatively considerable. The City's CAP does not set such a threshold. In addition, the City's CAP extends to 2020, while the horizon year of the Specific Plan is 2035. Therefore, the first BAAQMD GHG significance threshold cannot be applied to the Specific Plan.

Given the recent legislative attention and judicial action regarding post-2020 goals and the scientific evidence that additional GHG reductions are needed through the year 2050, the Association of Environmental Professionals' (AEP) Climate Change Committee published a white paper in 2016

recommending that CEQA analyses for most land use development projects can continue to rely on current thresholds for the immediate future, but that long term projects should consider post 2020 emissions demonstrating substantial progress toward the reduction trajectory that meets the 2050 statewide target (AEP, *Beyond 2020: The Challenges of Greenhouse Gas Reduction Planning by Local Governments in California 2016*). AEP also recommends that the significance determination should be based on demonstrating substantial progress along a post 2020 trajectory. Thus for a conservative approach, a year 2035 GHG efficiency threshold could be calculated to represent the rate of emissions reduction necessary for the Specific Plan to achieve a fair share of statewide GHG reductions necessary to meet SB 32 targets. However, a project-level CEQA significance threshold utilized for projects with a horizon year beyond 2020 should be updated to address the adopted 2030 target in SB 32 once the Scoping Plan Update for 2030 is adopted (AEP 2016). The ARB Scoping Plan Update has not yet been adopted and the Board Hearing for the 2030 Draft Scoping Plan Update was originally scheduled for June 22, 2017 but has been postponed. Without adoption of the 2030 Scoping Plan Update it would be the responsibility of the Specific Plan to reduce emissions along the emissions reduction trajectory. This is an unrealistic scenario because the Scoping Plan is intended to integrate and build upon State efforts to reduce GHG emissions with policies that include the use of lower GHG fuels, efficiency regulations, and the Cap-and-Trade Program. These state reduction measures provide the majority of emissions reductions making it difficult for individual projects to solely achieve the necessary reductions.

Because the ARB Scoping Plan has not been adopted and is not publically available, GHG emissions were analyzed in light of the trajectory of state climate change legislation by calculating a 2035 efficiency threshold for the Specific Plan. The Specific Plan specific efficiency threshold represents the rate of emission reductions necessary for the Specific Plan to achieve a fair share of statewide GHG reductions necessary to meet SB 32 and EO S-3-05 targets. The target efficiency for the year 2035 was determined by calculating a linear interpolation of SB 32 and EO S-3-05 reduction goals using the City of San Leandro's emissions inventory as outlined in the City's CAP (Appendix B). The resulting 2035 efficiency threshold for the project is 2.32 MT CO₂e per service population. Emissions greater than 2.32 MT CO₂e per person per year may conflict with substantial progress toward GHG reduction targets, and the Specific Plan's cumulative contribution of emissions would be considered significant. This efficiency threshold is the level of project emissions per-Plan Area service population that would be necessary for the Specific Plan to achieve substantial progress toward the long-term reduction targets established by SB 32 and EO S-3-05. Further, as discussed above, as GHG emissions will ultimately be guided by future State legislative actions, operational emissions generated by the Specific Plan were also qualitatively evaluated based on the potential to demonstrate compliance with the long-term State reduction targets.

Methodology for Estimating GHG Emissions

The California Emissions Estimator Model (CalEEMod version 2016.3.1) was used to estimate GHG emissions associated with operation of the proposed Specific Plan. The analysis focuses on CO₂, CH₄, and N₂O because these make up 98.9 percent of all GHG emissions by volume (IPCC 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF₆, were also considered for the analysis. However, because the project is a TOD Specific Plan that would not include development of industrial uses, the quantity of fluorinated gases would not be significant since fluorinated gases are primarily associated with industrial processes. Emissions of all GHGs are converted into their equivalent weight in CO₂ (CO₂e). Minimal amounts of other main GHGs (such as chlorofluorocarbons [CFCs]) would be emitted; however, these other GHG emissions would not substantially add to the calculated CO₂e amounts.

Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) CEQA and Climate Change white paper (January 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (January 2009).

Construction Emissions

Construction emissions for the Specific Plan were not included in CalEEMod because there are no GHG construction emission thresholds included in BAAQMD's May 2017 *CEQA Air Quality Guidelines*. According to the *CEQA Air Quality Guidelines* only operational emissions estimates are calculated to determine GHG significance for plan-level impacts.

Operational Emissions

CalEEMod calculates operational emissions from energy use (electricity and natural gas use) based on the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) for non-residential land uses. Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating are calculated based on standard emission rates from the CARB, U.S. EPA, and district supplied emission factor values. Emissions from the diesel emergency generator are calculated based on standard emission factors from the CARB and U.S. EPA. Emissions from waste generation are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste. Waste disposal rates by land use and overall composition of municipal solid waste in California are primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle). Emissions from water and wastewater usage calculated in CalEEMod are based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern California (CAPCOA 2016).

Transportation Emissions

Emissions of CO₂ and CH₄ from transportation sources for the proposed Specific Plan were quantified using CalEEMod. Because CalEEMod does not calculate N₂O emissions from mobile sources, N₂O emissions were quantified using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see Appendix B for calculations). Emission rates for N₂O emissions were based on the vehicle mix output generated by CalEEMod and the emission factors contained in the California Climate Action Registry General Reporting Protocol. The estimate of total daily trips associated with the proposed Specific Plan is based on vehicle trip data provided in Section 4.4, *Transportation and Traffic*. The overall vehicle fleet mix used in the analysis is the default fleet mix provided in the CalEEMod software.

The Specific Plan is a TOD and includes many transit oriented planning policies to transform the transportation landscape and reduce reliance on personal automobiles. Transit related policies were added as mitigation measures in CalEEMod for the Specific Plan to replicate the reduction in mobile emissions from the TOD. Mitigation measures and assumptions added to CalEEMod include:

- Increased density of 227.6 dwelling units per acre for the 154 acre Plan Area
- Increased density of 283.2 jobs per acre for the 725 new jobs to be added by the Specific Plan
- Improved walkability design of 50 intersections in 154 acres

- Increased transit accessibility with an average distance of 0.25 miles to the nearest transit station
- An improved pedestrian network
- Traffic calming measures for 25 percent of streets and 25 percent of intersections
- Increased Bus Rapid Transit by 25 percent
- Expanded transit frequency by 25 percent
- Employee telecommuting for three percent of employees 1.5 days a week
- Employee vanpool/shuttle service for 25 percent of employees and a vanpool mode share of 10 percent of employees
- Ride sharing program for 25 percent of employees
- Implement a voluntary Trip Reduction Program where 25 percent of employees are eligible

b. Project Impacts and Mitigation Measures

Threshold: Would the Specific Plan generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
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IMPACT GHG-1 SPECIFIC PLAN OPERATIONAL EMISSIONS FROM BUILDOUT IN THE YEAR 2035 WOULD NOT EXCEED THE EFFICIENCY THRESHOLD OF 2.32 MT CO₂E PER PERSON PER YEAR. THEREFORE, THE PROPOSED SPECIFIC PLAN WOULD NOT GENERATE GHG EMISSIONS THAT WOULD DIRECTLY OR INDIRECTLY HAVE A SIGNIFICANT IMPACT ON THE ENVIRONMENT. IMPACTS WOULD BE LESS THAN SIGNIFICANT.

Estimated operational emissions from buildout of the proposed Specific Plan (through the year 2035) are shown in Table 10. Estimated GHG emissions in the year 2035 associated with the proposed Specific Plan would be approximately 18,082 MT CO₂e per year or 2.27 MT CO₂e per person per year. Therefore, the proposed Specific Plan would exceed the efficiency threshold of 2.32 MT CO₂e per person per year.

Table 10 Specific Plan Greenhouse Gas Emissions

Emission Source	Annual Emissions (Approximate) (MT CO ₂ e)
Stationary	
Area	32
Energy	5,307
Solid Waste	728
Water	575
Mobile (during operations)	
CO ₂ and CH ₄	10,878
N ₂ O	562
Total	18,082
Service Population	7,964 persons*
Total / Service Population	2.27 MT CO₂e / service population / year
Threshold	2.32 MT CO ₂ e / service population / year
Threshold Exceeded?	No

*See Section 4.11, *Population and Housing*, for estimated population and employment projects from the Specific Plan
 Sources: See Appendix B for efficiency metric calculations and for GHG emission factor assumptions

As shown in Table 10, GHG emissions associated with the Specific Plan would not exceed the efficiency threshold developed for the Specific Plan. Additionally, development within the Specific Plan Area would be able to achieve further emissions reductions with the following considerations:

- Future legislative actions and policies provided in ARB’s Scoping Plan would be responsible for guiding GHG reductions for new development in accordance with State goals.
- Development included in the Specific Plan Area would increase local transit access and would help reduce mobile sources of local GHG emissions within the Specific Plan Area through development of the Specific Plan as a TOD.
- Buildout of the Specific Plan Area would be consistent with the San Leandro CAP (see Table 12) and the regional RTP/SCS (see Table 9).

With the above conditions, development in the Specific Plan Area would further demonstrate compliance with the State’s GHG reduction targets.

As discussed above, SB 32 requires the ARB to develop technologically feasible and cost effective regulations to achieve the targeted 40 percent GHG emission reduction set in EO B-30-15. The ARB is currently working to update the Scoping Plan to provide a framework for achieving the 2030 target. The Scoping Plan Update is expected to be completed and adopted by the ARB in 2017. The Scoping Plan Update calls for emissions reductions at the State level that meet or exceed the Statewide GHG target, and notes that additional effort will be needed to maintain and continue GHG reductions to meet the mid- (2030) and long-term (2050) targets. Programs included in the Scoping Plan Update that would reduce emissions associated with local projects in the Specific Plan Area include:

- Cap and Trade regulation
- Short lived climate pollutants (SLCP) reduction strategy
- Mobile Sources Cleaner Fuel Technology (CFT) and Freight providing a transition to cleaner fuels
- Behind-the-meter solar PV
- Increased energy efficiency
- Increased Renewables Portfolio Standard (RPS)
- Low Carbon Fuel Standard increased stringency
- Increased demand response and flexible loads

The Scoping Plan Update also recognizes the need to reach beyond Statewide policy and engage local jurisdictions to develop plans to address local conditions and provide a “fair share” contribution towards the achievement of the State’s GHG reduction targets. To assist local planning efforts with developing strategies to meet these targets, the Scoping Plan Update includes annual community-wide goals of no more than six metric tons CO₂e per capita by 2030 and no more than two metric tons CO₂e per capita by 2050 (ARB 2017). As stated in the Scoping Plan Update, these goals are appropriate for plan level analyses (city, county, subregional, or regional level), but not for specific individual projects because they include all emissions sectors in the State.

As shown in Table 10, GHG emissions would not exceed the 2.32 MT CO₂e per person per year efficiency threshold and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

Threshold: Would the Specific Plan conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?
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IMPACT GHG-2 THE PROPOSED SPECIFIC PLAN WOULD BE GENERALLY CONSISTENT WITH SAN LEANDRO’S CLIMATE ACTION PLAN AND PLAN BAY AREA 2040. THEREFORE, THE SPECIFIC PLAN’S IMPACT RELATED TO CONSISTENCY WITH PLANS TO ADDRESS CLIMATE CHANGE WOULD BE LESS THAN SIGNIFICANT.

As discussed above, San Leandro adopted a CAP in 2009. The CAP is a not Qualified GHG Reduction Strategy that builds on local and statewide planning efforts because it does not consider cumulative conditions. However, San Leandro’s reduction target of 25 percent below 2005 emissions levels by 2020 exceeds the State-recommended 15 percent target and is intended to satisfy BAAQMD requirements for a Qualified GHG Reduction Strategy. The Specific Plan would be consistent with applicable goals listed in the CAP, as shown in Table 11. Additionally, the Specific Plan would be consistent with the targets in ABAG’s RTP/SCS Plan Bay Area 2040, as shown in Table 13. Therefore, impacts would be less than significant.

Table 11 Specific Plan Consistency with Applicable San Leandro Climate Action Plan Goals

EECAP GHG Reduction Strategies	Specific Plan Consistency
<p>Goal 3.3. Increase residential, commercial, and industrial renewable energy use.</p>	<p>Consistent. One of the desired outcomes of the Specific Plan is to create a sustainable urban environment including sustainable energy systems. Building performance standards in the Specific Plan Development Guidelines + Standards Chapter include solar-ready buildings to be constructed to provide adequate roof surface area for solar additions. The Infrastructure and Services chapter of the Specific Plan contains policies related to energy including Energy Policy 1 to support the development and application of renewable energy technologies such as active, passive, and photovoltaic solar energy; fuel cells; and other sustainable sources and Energy Policy 9 to encourage partnerships with PG&E for the procurement of electrical service from renewable, sustainable, and green sources.</p>
<p>Goal 3.4. Promote green building practices in both the new construction and remodel market.</p>	<p>Consistent. The Infrastructure and Services chapter of the Specific Plan contains policies related to energy including Energy Policy 6 to ensure the California Green Building Code requirements and the continued use of green building checklists during the permitting of major residential and non-residential construction. Building performance standards and guidelines in the Specific Plan Development Guidelines + Standards Chapter include CalGreen development, LEED for Neighborhood Development, solar ready buildings, indoor water reuse, stormwater harvesting, and stormwater treatment.</p>
<p>Goal 4.1. Encourage development which promotes walkable communities.</p>	<p>Consistent. The proposed Specific Plan vision and desired outcome includes creating a walkable community by making streets friendlier to pedestrians. Area-wide Mobility Policy 4 encourages facilities in the Specific Plan Area to promote walking and the Specific Plan includes pedestrian network standards in the Development Guidelines + Standards Chapter. In addition, the Specific Plan is a TOD, which by design implements land use organization that promote walkability.</p>
<p>Goal 4.3. Promote and accommodate alternative, environmentally friendly methods of transportation, such as walking and bicycling.</p>	<p>Consistent. As a TOD plan, the Specific Plan promotes environmentally friendly methods of transportation. See Section 4.13, <i>Transportation and Traffic</i>, for more details regarding traffic. In addition, the Specific Plan would promote connectivity with improved bicycle and pedestrian amenities included in the Area-wide Mobility section.</p>
<p>Goal 4.4. Enhance and expand car sharing and ridesharing programs.</p>	<p>Consistent. Although the Specific Plan does not include specific ride and car sharing programs it includes other measures to reduce vehicle use such as sharing of public and private parking spaces, providing more parking spaces for carshare programs, encouraging a walkable and bike friendly community, and providing easier access to public transportation as part of the desired outcomes of the Specific Plan.</p>
<p>Goal 4.5. Encourage the use of fuel efficient vehicles, low carbon fuels and more efficient traffic operations.</p>	<p>Consistent. Public parking guidelines in the Specific Plan Development Guidelines + Standards Chapter include providing more parking spaces for carshare programs and for electric vehicles, including charging stations.</p>
<p>Goal 4.6. Increase and enhance urban green space.</p>	<p>Consistent. One of the desired outcomes of the Specific Plan is to increase the amount of parks, green space, plazas, and other public spaces. This would be implemented through Land Use Policy 11 to provide a variety of public parks open spaces to meet the needs of the community. The Specific Plan includes Public Open Space standards and guidelines to ensure that development under the Specific Plan meets the needs of the community.</p>
<p>Goals 5.1 and 5.2. Increase recycling and composting in the residential and commercial sectors.</p>	<p>Consistent. All new development under the Specific Plan would be required to follow CalGreen waste diversion standards.</p>

Table 12 Specific Plan Consistency with Plan Bay Area 2040

Plan Bay Area Goals and Targets	Specific Plan Consistency
Goal 1 Climate Protection	
<p>Target. Reduce per-capita CO2 emissions from cars and light-duty trucks by 15 percent.</p>	<p>Consistent. The Specific Plan is a TOD plan, a regional approach that has the potential to help transform regional land use and transportation landscape towards a more sustainable, multimodal, and low carbon design. As a TOD plan the Specific Plan would reduce the number of vehicles on roadways in the Plan Area by placing land uses closer to transit and incorporating additional opportunities for active transportation.</p>
Goal 2 Adequate Housing	
<p>Target. House 100 percent of the region’s projected growth by income level without displacing current low-income residents and with no increase in in-commuters over the Plan baseline year.</p>	<p>Consistent. One of the desired outcomes of the Specific Plan is to encourage both market rate and affordable housing, and to protect existing residents from involuntary displacement. The Land Use and Housing Chapter of the Specific Plan includes a suite of policies to support affordable housing, particularly Land Use and Housing Policy 1, Mix of Housing Types to encourage a range of housing types and sizes, and Policy 8, Preserve Existing Affordable Housing.</p>
Goal 3 Health and Safe Communities	
<p>Target. Reduce adverse health impacts associated with air quality, road safety, and physical inactivity by 10%.</p>	<p>Consistent. One of the desired outcomes of the Specific Plan is to support both market rate and affordable housing, and to protect existing residents from involuntary displacement. The Land Use and Housing Chapter of the Specific Plan includes a suite of policies to support affordable housing, particularly Land Use and Housing Policy 1, Mix of Housing Types to encourage a range of housing types and sizes, and Policy 8, Preserve Existing Affordable Housing.</p>
Goal 4 Open Space and Agricultural Preservation	
<p>Target. Direct all non-agricultural development within the urban footprint (existing urban development and UGBs).</p>	<p>Not Applicable There is no agriculture in the Plan Area.</p>
Goal 5 Equitable Access	
<p>Target. Decrease the share of affordable housing in PDAs, TPAs, or high-opportunity areas by 15%.</p> <p>Target. Decrease the share of low-income residents’ household income consumed by transportation and housing by 10%</p> <p>Target. Do not increase the share of low- and moderate-income renter households in PDAs, TPAs, or high-opportunity areas that are at risk of displacement.</p>	<p>Consistent. One of the desired outcomes of the Specific Plan is to support both market rate and affordable housing, and to protect existing residents from involuntary displacement. The Land Use and Housing Chapter of the Specific Plan includes a suite of policies to support affordable housing, particularly Land Use and Housing Policy 1, Mix of Housing Types to encourage a range of housing types and sizes. The desired outcomes of the Specific Plan include more walkable environments, BART and bus station improvements, and better mobility and connectivity. These improvements would reduce transportation costs.</p>

Plan Bay Area Goals and Targets	Specific Plan Consistency
Goal 6 Economic Vitality	
<p>Target. Increase by 38% the number of jobs in predominantly middle-wage industries.</p> <p>Target. Reduce per-capita delay on the Regional Freight Network by 20%.</p> <p>Target. Increase by 20% the share of jobs available within 30 minutes by auto or within 45 minutes by transit in congested conditions.</p>	<p>Consistent. As discussed in Section 4.11. <i>Population and Housing</i>, additional office and retail space in the Plan Area would increase the number of employees in the City by 725 at full buildout of the Specific Plan. The additional of 2,540 residential units would provide residences for new employees in the Plan Area near their jobs.</p>
Goal 7 Transportation System Effectiveness	
<p>Target. Increase non-auto mode share by 10%.</p> <p>Target. Reduce per-rider transit delay due to aged infrastructure by 100%.</p> <p>Target. Reduce vehicle operating and maintenance costs due to pavement conditions by 100%.</p>	<p>Consistent. The Specific Plan is a TOD plan; therefore, it is designed to reduce automobile use and bring development closer to non-auto transportation. The desired outcomes of the Specific Plan include a more walkable environment, BART and bus station improvement, and better mobility and connectivity. The Mobility Chapter policies in the Specific Plan that would increase non-auto transportation and reduce transit delay are listed below:</p> <ul style="list-style-type: none"> ▪ Policy 2 Complete Streets: provide a network of complete streets to prioritize safety and access for drivers, transit users, pedestrians, and bicyclists ▪ Policy 3 Multiple Transportation Options: Reduce reliance on the automobile for trips to and from the Plan Area through connections for pedestrians, bicyclists, and transit users. ▪ Policy 4: Active Transportation Options. Require facilities in the Plan Area that will promote active transportation options. <p>Street Network Standards in the Specific Plan that would reduce transit delay, and pavement conditions are listed below:</p> <ul style="list-style-type: none"> ▪ Policy 1 Required New Connections: New connections established as part of any future development or significant rehabilitation in the Plan Area. ▪ Policy 2 New Connections: Required new connections shall be publically accessible 24 hours a day and have public access easements for the entire right of way from back of walk to back of walk. ▪ Policy 3 Existing Arterial and Collector Streets: Improvements to these streets and prioritization of multimodal circulation.

Source: AMBAG 2017

Mitigation Measures

No mitigation measures are required.

c. Cumulative Impacts

GHG emissions and climate change are by definition cumulative impacts, as they affect the accumulation of GHGs in the atmosphere. As indicated above in Impact GHG-1 and Impact GHG-2 emissions associated with the Specific Plan would be less than significant. Therefore, the Specific Plan’s cumulative impacts are also less than significant.