4.6 GREENHOUSE GAS EMISSIONS

This chapter evaluates the potential for land use changes associated with adopting and implementing the Serramonte Shopping Center Expansion Project (Project) to cumulatively contribute to greenhouse gas (GHG) emissions impacts. 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. This chapter is based on the methodology recommended by the Bay Area Air Quality Management District (BAAQMD) for project-level review, based on preliminary information available. Transportation sector emissions are based on trip generation provided by Kittelson & Associates, Inc. GHG emissions modeling is included in Appendix C, *Air Quality and Greenhouse Gas Modeling*, of this Draft EIR.

4.6.1 ENVIRONMENTAL SETTING

Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHGs, to the atmosphere. The primary source of these GHGs is fossil fuel use. 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 (IPCC 2001).[1,2,3] The major GHGs are briefly described below.

- **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. It can also enter as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH_4)** is emitted during the production and transportation of coal, natural gas, and oil. Methane emissions also result from livestock, other agricultural practices, and from the decay of organic waste in landfills and water treatment facilities.

[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, but part of the feedback loop rather than a primary cause of change.

[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. 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 (CARB, 2014). However, State and national GHG inventories do not yet 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.

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

- **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.
- **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 (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 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]

GHGs are dependent on the lifetime or persistence of the gas molecule in the atmosphere. Some GHGs have stronger greenhouse effects than others. These 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 GWP values for CH_4, a project that generates 10 metric tons (MT) of CH_4 would be equivalent to 210 MT of CO_2.[6]

[4] United States Environmental Protection Agency (USEPA), 2012. Greenhouse Gas Emissions, http://www.epa.gov/climatechange/ghgemissions/gases.html.

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

[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.

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

GHGs	Atmospheric Lifetime (Years)	Second Assessment Report Global Warming Potential Relative to CO_2[a]	Fourth Assessment Report Global Warming Potential Relative to CO_2[b]
Carbon Dioxide (CO_2)	50 to 200	1	1
Methane (CH_4)[c]	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 global warming potential (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 of energy from sunlight received by the earth and radiated back into space). However, GWP values identified in the Second Assessment Report are still used by BAAQMD to maintain consistency in GHG emissions modeling. In addition, the 2008 Scoping Plan was based on the GWP values in the Second Assessment Report.
a. Based on 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 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; and Intergovernmental Panel on Climate Change, 2007, Fourth Assessment Report: Climate Change 2001, New York: Cambridge University Press.

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 (CARB) last update to the statewide GHG emissions inventory that used the Second Assessment Report GWPs was conducted in 2012 for year 2009 emissions.[9] 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, producing 22.7 percent. Industrial activities are California's third largest source of GHG emissions at 17.8 percent.[10,11]

In 2013, the statewide GHG emissions inventory was updated for 2000 to 2012 emissions using the GWPs in IPCC's Fourth Assessment Report. Based on these GWPs, California produced 459 MMT CO_2e GHG emissions in 2012. California's transportation sector remains the single largest generator of GHG emissions, producing 36.5 percent of the State's total emissions. Electricity consumption made up 20.7 percent, and industrial activities produced 19.4 percent. Other major sectors of GHG emissions include commercial and residential, recycling and waste, high global warming potential GHGs, agriculture, and forestry.[12]

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 (ppm) per year since 1960, mainly due to

[7] California Energy Commission (CEC), 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(CEC), 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 (CARB), 2011. *California Greenhouse Gas Inventory for 2000–2009: By Category as Defined by the Scoping Plan,* December.

[12] California Air Resources Board (CARB), 2014. California Greenhouse Gas Inventory for 2000–2012: By Category as Defined by the Scoping Plan, March 24.

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]

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 as well as observations on 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, climate trends include varying degrees of certainty on the magnitude of the direction 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;
- intense tropical cyclone activity increases; and
- increased incidence of extreme high sea level (excludes tsunamis).

IPCC's "2007 IPCC Fourth Assessment Report" projects that the global mean temperature increase from 1990 to 2100 under different climate-change scenarios will range from 1.4 to 5.8 degrees Celsius (°C) (2.5 to 10.4 degrees Fahrenheit (°F)). In the past, gradual changes in the earth's temperature changed the distribution of species, availability of water, etc. However, human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic time frame, but within a human lifetime.[16]

Potential Climate Change Impacts for California

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. 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) shift in the timing of snowmelt of 5 to 30 days earlier in the spring, 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

[13] Intergovernmental Panel on Climate Change (IPCC), 2007. 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.

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

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

State agency secretaries and the heads of agency, 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 (see Table 4.6-1), 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 resource impacts, and energy impacts. Specific climate change impacts that could affect Daly City include health impacts from deterioration of air quality, water resources impacts from a reduction in water supply, increased energy demand, and sea level rise (see also Chapter 4.8, *Hydrology and Water Quality*, for flood impacts).

4.6.1.1 REGULATORY FRAMEWORK

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

Federal Regulations

The United States Environmental Protection Agency (EPA) announced on December 7, 2009 that GHG emissions threaten the public health and welfare of the American people and GHG emissions from on-road vehicles contribute to the threat. The EPA's endangerment findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings did not in and of 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.[18]

The 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 are applicable to the Project because they constitute the majority of GHG emissions from the on-site land uses, and per BAAQMD guidance are the GHG emissions that should be evaluated as part of a GHG emissions inventory.

US Mandatory Report Rule for GHGs (2009)

In response to the endangerment finding, the EPA issued the Mandatory Reporting of GHG Rule that requires substantial emitters of GHG emissions (large stationary sources, etc.) to report GHG emissions data. Facilities that emit 25,000 metric tons (MT) or more of CO_2 per year are required to submit an annual report.

[18] United States Environmental Protection Agency (USEPA), 2009. *Greenhouse Gases Threaten Public Health and the Environment.* Science overwhelmingly shows GHG concentrations at unprecedented levels due to human activity, December, http://yosemite.epa.gov/opa/admpress.nsf/0/08D11A451131BCA585257685005BF252. In 2007, the Supreme Court ruled that GHGs are pollutants under the Clean Air Act in Massachusetts v. EPA, 549 U.S. 497 (2007).

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, 2009, The Future Is Now: An Update on Climate Change Science, Impacts, and Response Options for California, CEC-500-2008-0077.

Update to Corporate Average Fuel Economy Standards (2010/2012)

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 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 automakers who show compliance with the national program to also be considered to be in compliance with State requirements. The federal government issued new standards in 2012 for model years 2017–2025, which will require a fleet average of 54.5 mpg in 2025.

EPA Regulation of Stationary Sources Under the Clean Air Act (Ongoing)

Pursuant to its authority under the CAA, the 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 EPA will be directed to also develop regulations for existing stationary sources.

State Regulations

Current State of California guidance and goals for reductions in GHG emissions are generally embodied in Executive Order S-03-05, 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:

- 2000 levels by 2010
- 1990 levels by 2020
- 80 percent below 1990 levels by 2050

Assembly Bill 32, the Global Warming Solutions Act (2006)

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-03-05.

CARB 2008 Scoping Plan

The final Scoping Plan was adopted by CARB on December 11, 2008. AB 32 directed CARB to adopt discrete early action measures to reduce GHG emissions and outline additional reduction measures to meet the 2020 target. In order to effectively implement the emissions cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor GHG emissions levels for large stationary sources that generate more than 25,000 MT of CO_2e per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012.

The 2008 Scoping Plan identified that GHG emissions in California are anticipated to be approximately 596 MMT CO_2e in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 MMT CO_2e (471 million tons) for the State. The 2020 target requires a total emissions reduction of 169 MMT CO_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 MMT CO_2e).[19,20]

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

[20] 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

Since release of the 2008 Scoping Plan, CARB has updated the Statewide GHG emissions inventory to reflect GHG emissions in light of the economic downturn and of measures not previously considered in the 2008 Scoping Plan baseline inventory. The updated forecast predicts emissions to be 545 MMT CO_2e by 2020. The revised BAU 2020 forecast shows that the State would have to reduce GHG emissions by 21.7 percent from BAU. The new inventory also identifies that if the updated 2020 forecast includes the reductions assumed from implementation of Pavley (26 MMT CO_2e of reductions) and the 33 percent RPS (12 MMT CO_2e of reductions) the forecast would be 507 MMT CO_2e in 2020, and then an estimated 80 MMT CO_2e of additional reductions are necessary to achieve the statewide emissions reduction of AB 32 by 2020, or 15.7 percent of the projected emissions compared to BAU in year 2020 (i.e., 15.7 percent of 507 MMT CO_2e).[21]

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

- Expanding and strengthening existing energy efficiency programs as well as building and appliance efficiency standards (adopted and cycle updates in progress);
- Achieving a mix of 33 percent for energy generation 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);
- 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 (LCFS) (adopted 2009).
- Creating target fees, including a public goods charge on water use, fees on high global warming potential 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. Although local government operations were not accounted for in achieving the 2020 emissions reduction, CARB estimates that land use changes implemented by local governments that integrate jobs, housing, and services result in a reduction of 5 MMT CO_2e, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local governments play in the successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of 2014 levels by 2020 to ensure that municipal and community-wide emissions match the State's reduction target.[22]

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.

[21] California Air Resources Board (CARB),2012. *Status of Scoping Plan Recommended Measures,* http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf.

[22] 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.

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%*
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 MMT CO_2e and the Scoping Plan identifies 174 MMT CO_2e of emissions reductions strategies. MMT CO_2e: 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.

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 Vehicle Miles Travelled (VMT).[23]

2014 Update to the Scoping Plan

CARB recently completed a 5-year update to the 2008 Scoping Plan, as required by AB 32. The final Update to the Scoping Plan was released in May 2014, and CARB adopted it at the May 22, 2014 board hearing. The Update to the Scoping Plan defines CARB's climate change priorities for the next 5 years and lays the groundwork to reach post-2020 goals in Executive Orders S-03-05 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 and Third Assessment Reports (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 MMT CO_2e 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, is slightly higher, at 431 MMT CO_2e.[24]

The update highlights California's progress in 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.[25]

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 from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit.[26]

Senate Bill 375

In 2008, Senate Bill 375 (SB 375), the Sustainable Communities and Climate Protection Act, was adopted to connect the GHG emissions reduction targets established in the 2008 Scoping Plan for the transportation sector to local land use decisions that affect travel behavior. Its intention is to reduce GHG emissions from light-duty trucks and automobiles (excluding 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

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

[24] California Air Resources Board (CARB), 2014. *Proposed First Update to the Climate Change Scoping Plan: Building on the Framework,* http://www.arb.ca.gov/cc/scopingplan/2013_update/draft_proposed_first_update.pdf, May 15, 2014.

[25] California Air Resources Board (CARB), 2014. *Proposed First Update to the Climate Change Scoping Plan: Building on the Framework,* http://www.arb.ca.gov/cc/scopingplan/2013_update/draft_proposed_first_update.pdf, May 15, 2014.

[26] California Air Resources Board (CARB), 2014. *Proposed First Update to the Climate Change Scoping Plan: Building on the Framework,* http://www.arb.ca.gov/cc/scopingplan/2013_update/draft_proposed_first_update.pdf, May 15, 2014.

establish GHG emissions reduction targets for each of the 18 metropolitan planning organizations (MPOs). The Metropolitan Transportation Commission (MTC) is the MPO for the nine-county San Francisco Bay Area region. MTC'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.[27]

Plan Bay Area: Strategy for a Sustainable Region

Plan Bay Area is the Bay Area's Regional Transportation Plan (RTP)/Sustainable Community Strategy (SCS). The Plan Bay Area was adopted jointly by ABAG and MTC July 18, 2013.[28] The SCS lays out a development scenario for the region, which when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement) beyond the per capita reduction targets identified by CARB. According to Plan Bay Area, the Plan meets a 16 percent per capita reduction of GHG emissions by 2035 and a 10 percent per capita reduction by 2020 from 2005 conditions.

As part of the implementing framework for Plan Bay Area, local governments have identified Priority Development Areas (PDAs) to focus growth. PDAs are transit-oriented, infill development opportunity areas within existing communities. Overall, well over two-thirds of all regional growth in the Bay Area by 2040 is allocated within PDAs. PDAs 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.[29] The Project site is not within a PDA.[30]

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavely I). Pavely 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 in 2016. California implements the Pavely I standards through a waiver granted to California by the EPA. In 2012, the EPA issued a Final Rulemaking that sets even more stringent fuel economy and GHG emissions standards for model year 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 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.[31]

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

[28] It should be noted that the Bay Area Citizens filed a lawsuit on MTC's and ABAG's adoption of *Plan Bay Area*.

[29] Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), 2013. *Plan Bay Area: Strategy for a Sustainable Region,* July 18.

[30] Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG), 2013. *Plan Bay Area,* http://geocommons.com/maps/141979.

[31] 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

Executive Order S-01-07

On January 18, 2007, the State set a new low carbon fuel standard (LCFS) for transportation fuels sold within the State. Executive Order S-01-07 sets a declining standard for GHG emissions measured in carbon dioxide equivalent gram 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 these 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 identified that CARB, the California Energy Commission (CEC), the Public Utilities Commission, and other relevant agencies worked 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 from the transportation sector 80 percent below 1990 levels.

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) and 107 (Simitian). 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. CARB has now approved an even higher goal of 33 percent by 2020. In 2011, the State legislature adopted this higher standard in SBX1-2. Executive Order S-14-08 was signed in November 2008, which expands the State's Renewable Energy Standard to 33 percent renewable power by 2020. 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

Energy conservation standards for new residential and non-residential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the CEC) in June 1977 and most recently revised in 2008 (Title 24, Part 6, of the California Code of Regulations [CCR]). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On May 31, 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

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.

the 2013 Building and Energy Efficiency Standards are 25 percent (residential) to 30 percent (non-residential) more energy efficient than the 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11, Title 24, known as "CALGreen") was adopted as part of the California Building Standards Code (Title 24, CCR). 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 internal air contaminants.[32] The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011, and have since been updated in 2013 and became effective January 1, 2014.

2006 Appliance Efficiency Regulations

The 2006 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 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 all other states, and they reduce GHG emissions by reducing energy demand.

Local Regulations

Daly City's Green Vision

Daly City's Green Vision, A Climate Action Plan (CAP) for 2011-2020 and Beyond, was adopted in December 2010.[33] Daly City's Green Vision guides the City towards a sustainable future that reduces GHG emissions from current levels, while promoting economic prosperity for present and future generation. The Green Vision identifies ten goals and seeks to achieve these goals through cost-effective strategies by the year 2020. The GHG reduction goals include adopting a general plan with measurable policies for sustainable development, reducing energy use in buildings, reducing transportation emissions, reducing solid waste disposal, and GHG emissions reductions from municipal operations. Daly City recently completed an update to their General Plan which incorporated these goals in March 2013.

Daly City Ordinances

The following ordinances consistent with the goals of Daly City's Green Vision were adopted by the City Council in order to protect the environment and health of the community:[34]

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

[33] City of Daly City, 2010. Daly City's Green Vision, *Climate Action Plan (CAP) for 2011-2020 and Beyond*. http://www.dalycity.org/Assets/Departments/City+Manager/Daly+City+Green+Vision+(Final).pdf.

[34] City of Daly City, 2013, Daly City's Green Vision Ordinances, City Council, http://www.dalycity.org/City_Hall/Departments/city_manager/Daly_City_s_Green_Vision/Ordinances.htm.

- *Green Building Standards Code (Municipal Code 15.22):* The purpose of the ordinance is do adopt and incorporate the California Green Building Standards Code, 2013 edition, for the protection of the public health and safety of its inhabitants.
- *Reusable Bags, Adopted 2013 (Municipal Code 8.68):* The purpose of the ordinance is to protect the local environment by reducing waste, conserving resources, and protecting the bay and ocean from plastic bag litter. As of January 1, 2015, the minimum charge of 10 cents per reusable bag will increase to 25 cents per bag. The ordinance applies to all retail stores in the City and all retailers may keep all revenue earned from bag sales.
- *Prohibition on Use of Polystyrene-Based Disposable Food Service Ware by Food Vendors, Adopted 2012 (Municipal Code 8.64):* The ordinance will help protect the health and safety of the residents, wildlife and habitat in Daly City, while reducing the amount of waste sent to the landfill. The ordinance prohibiting food vendors, including restaurants, delis, cafes, markets, fast-food establishments, vendors at fairs, and food trucks, from dispensing prepared food in polystyrene containers labeled as No. 6.
- *Recycling and Diversion of Construction and Demolition, Adopted 2006 (Municipal Code 15.64):* This ordinance requires that construction and demolition projects recycle or reuse 60 percent of the waste generated from the project. This ordinance is consistent with the requirements for construction and demolition debris diversion in CALGreen. Many of the construction materials, such as concrete, asphalt, asphalt singles, gypsum wallboard, wood and metals, can be reused or recycled, thus prolonging our supply of natural resources and potentially saving money in the process.

Daly City General Plan

The following applicable General Plan policies were created to reduce the potential impact of GHG emissions:[35]

- Policy HE-23: Gradually increase energy and water efficiency standards for all new and existing housing while minimizing the costs of such standards.
- Policy HE-24: Mandate the inclusion of green building techniques into most new construction.
- Policy HE-28: Promote alternative sources of energy in all homes.

4.6.1.2 EXISTING CONDITIONS

Existing Serramonte Shopping Center Emissions

The Project contains the existing Serramonte Shopping Center in the center of the approximately 80-acre site, as well as free-standing restaurant, commercial, and retail buildings on the perimeter. GHG emissions generated by existing land uses in the Serramonte Shopping Center were modeled with CalEEMod 2013.2.2, based on trip generation provided by Kittelson & Associates. GHG emissions are shown in Table 4.6-4.

[35] City of Daly City, 2013. *Daly City 2030 General Plan, Greenhouse Gases and Energy,* March 13.

TABLE 4.6-4 GHG EMISSIONS GENERATED BY EXISTING LAND USES WITHIN THE SERRAMONTE SHOPPING CENTER

	GHG Emissions ($MTCO_2e$/Year)	
Category	Existing 2014	Percent of Total
Area	<1	<1
Energy	3,500	11
On-Road Mobile Sources	28,203	88
Waste	474	1
Water/Wastewater	32	<1
Total	**32,209**	**100%**

Note: Emissions may not total to 100 percent due to rounding.
Source: CalEEMod 2013.2.2. Based on year 2014 emission rates.

4.6.2 STANDARDS OF SIGNIFICANCE

According to Appendix G of the CEQA Guidelines, the Project would result in a significant GHG emissions impact if it would:

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

4.6.2.1 BAAQMD PROJECT-LEVEL SIGNIFICANCE CRITERIA

The BAAQMD CEQA Air Quality Guidelines were prepared to assist in the evaluation of air quality 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 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. In June 2010, the BAAQMD's Board of Directors adopted CEQA thresholds of significance and an update of the CEQA Guidelines. In May 2011, the updated BAAQMD CEQA Air Quality Guidelines were amended to include a risk and hazards threshold for new receptors and modified procedures for assessing impacts related to risk and hazard impacts.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds of significance in the BAAQMD CEQA Air Quality Guidelines. The court did not determine whether the thresholds of significance were valid on their merits, but found that the adoption of the thresholds was a project under CEQA. The court issued a writ of mandate ordering the BAAQMD to set aside the thresholds and cease dissemination of them until the BAAQMD complied with CEQA.

Following the court's order, the BAAQMD released revised CEQA Air Quality Guidelines in May 2012 that included guidance on calculating air pollution emissions, obtaining information regarding the health impacts of air pollutants, and identifying potential mitigation measures, and which set aside the significance thresholds. The BAAQMD recognizes that lead agencies may rely on the previously recommended Thresholds of Significance contained in its CEQA Guidelines adopted in 1999. The Alameda County Superior Court, in ordering BAAQMD to set aside the thresholds, did not address the merits of the science or evidence supporting the thresholds. The City finds, therefore, that despite the Superior Court's ruling, and in light of the subsequent case history discussed below, the science and reasoning contained in the BAAQMD 2011 CEQA Air Quality Guidelines provide the latest state-of-the-art guidance available. For that reason, substantial evidence supports continued use of the BAAQMD 2011 CEQA Air Quality Guidelines.

On August 13, 2013, the First District Court of Appeal reversed the trial court judgment and upheld the BAAQMD's CEQA Guidelines. In addition to the City's independent determination that use of the BAAQMD's CEQA Guidelines is supported by substantial evidence, they have been found to be valid guidelines for use in the CEQA environmental review process. On November 26, 2013, the California Supreme Court granted review on the issue of whether CEQA requires analysis of how existing environmental conditions affect a project (*California Building Industry Association v Bay Area Air Quality Management District*, Case No. A135335 and A136212).

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 Daly City is using the BAAQMD's 2011 thresholds to evaluate project impacts in order to protectively evaluate the potential effects of the project on GHG emissions.

Greenhouse Gas Emissions

In the absence of an applicable qualified GHG reduction strategy, BAAQMD has identified screening criteria and significance criteria for development projects that would be applicable to the Project. If a project exceeds the Guidelines' GHG screening-level sizes, the project would be required to conduct a full GHG analysis using the following BAAQMD's significance criteria:

- 1,100 MT of CO2e per year; or
- 4.6 MT of CO2e per service population (SP).

Land use development projects include residential, commercial, industrial, and public land use facilities. Direct sources of emissions may include on-site combustion of energy, such as natural gas used for heating and cooking, emissions from industrial processes (not applicable for most land use development projects), and fuel combustion from mobile sources. Indirect emissions are emissions produced off-site from energy production, water conveyance due to a project's energy use and water consumption, and non-biogenic emissions from waste disposal. Biogenic CO_2 emissions are not included in the quantification of a project's GHG emissions, 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. Although GHG emissions from waste generation are included in the GHG inventory for the Project, the efficiency threshold of 4.6 $MTCO_2e$ per service population identified above do not include the waste sector and therefore are not considered in the evaluation.

BAAQMD does not have thresholds of significance for construction-related GHG emissions, but requires quantification and disclosure of construction-related GHG emissions.

4.6.3 IMPACT DISCUSSION

Methodology

GHG emissions from construction and operation of the Project were calculated using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2. Transportation emissions are based on trip generation provided by Kittelson & Associates. Construction emissions are based on the construction schedule provided by the City.

This section discusses the GHG emissions impacts of the Project. This discussion is organized by and responds to each of the potential impacts identified in the thresholds of significance.

GHG-1	**Implementation of the Project could directly or indirectly generate GHG emissions that may have a significant impact on the environment.**

A project does not generate enough GHG emissions on its own to influence global climate change; therefore, the GHG chapter measures a project's contribution to the cumulative environmental impact. Development under the Project would contribute to global climate change through direct and indirect emissions of GHG from transportation sources, energy (natural gas and purchased energy), water use and wastewater generation, and solid waste generation. Construction emissions (total and amortized over a 30-year duration). The total and net increases in GHG emissions associated with the Project are shown in Table 4.6-5.

BAAQMD does not have thresholds of significance for construction-related GHG emissions. GHG emissions from construction activities are one-time, short-term emissions and therefore, would not significantly contribute to long-term cumulative GHG emissions impacts of the Project. One-time, short -term emissions are converted to average annual emissions by amortizing them over the service life of a building. For buildings in general, it is reasonable to look at a 30-year timeframe as this is a typical interval before a new building requires the first major renovation.[36] As shown in Table 4.6-5, when amortized over an average 30-year project lifetime, average annual construction emissions from the Project would represent a nominal source of GHG emissions and would not exceed BAAQMD's *de minimus* bright line threshold of 1,100 $MTCO_2e$. Construction emissions are less than significant.

As shown in Table 4.6-5, the net increase GHG emissions generated by the operational phase of the Project would exceed BAAQMD's bright-line significance criteria of 1,100 $MTCO_2e$. Therefore, GHG emissions impacts are evaluated based BAAQMD's performance criteria, which measures project efficiency.

[36] International Energy Agency (IEA), 2008. Energy Efficiency Requirements in Building Codes, Energy Efficiency Policies for New Buildings.

As identified in Table 4.6-5, the Project would generate 14.8 $MTCO_2e/SP/yr$ and would exceed the BAAQMD performance criteria of 4.6 $MTCO_2e/SP$. The primary source of the increase in GHG emissions on-site is vehicle trips generated by employees and patrons of the Serramonte Shopping Center. BAAQMD's performance criteria do not take into account the number of shopping center customers, only employees, in its calculation of $MTCO_2e/SP/yr$. It should be noted that the GHG emission per SP (defined as employees only) would decrease compared to the current mall because the mall would capture additional trips as a result of offering additional services on-site. Despite the reduction in emissions per SP compared to the current shopping center operations, GHG emissions associated with the proposed Project would exceed BAAQMD performance criteria. Consequently, GHG emissions impacts of the Project are *significant*.

TABLE 4.6-5 SERRAMONTE SHOPPING CENTER EXPANSION GHG EMISSIONS FORECAST

	GHG Emissions ($MTCO_2e$/Year)			
Category	Existing 2014	Project Buildout 2022	Percent of Total	Change From Existing
Construction Emissions				
Total Construction Emissions	NA	1,896	NA	1,896
30-Year Amortized Construction	NA	63	NA	63
Operational Emissions				
Area	0	0	0	0
Energy	3,500	5,164	13	1,665
On-Road Mobile Sources	28,203	33,209	84	5,006
Waste	474	1,124	3	650
Water/Wastewater	32	52	0	20
Total	**32,209**	**39,550**	**100%**	**7,340**
Total without Waste[a]	31,735	38,425	—	6,691
Service Population (SP)[b]	1,606	2,591	—	985
$MTCO_2e/SP$	19.8	14.8	—	—
BAAQMD Efficiency Threshold	—	4.6 $MTCO_2e/SP$	—	—
Exceeds BAAQMD Target?	—	**Yes**	—	—

Note: Emissions may not total to 100 percent due to rounding. New buildings would be constructed to the 2013 Building & Energy Efficiency Standards (effective July 1, 2014).
a. BAAQMD did not include solid waste emissions when developing the per capita significance thresholds. Therefore, total GHG emissions with and without the Waste Generation sector are included. If these emissions are included in the analysis for the Project, Project per capita emissions would be 15.3 $MTCO_2e/SP/yr$.
b. Service population (SP) is based on 1,606 employees (existing) and 2,591 employees (Project).
Source: CalEEMod 2013.2.

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

Mitigation Measure GHG-1: Implementation of Mitigation Measures AIR-1A through AIR-1C.

Significance After Mitigation: Significant and unavoidable. Mitigation Measures AIR-1A would require applicants for new development projects within Serramonte Shopping Center to designate spaces for electric vehicle charging in in the commercial, hotel, and medical office developments in order to encourage motorists to take zero- or near-zero emission vehicles or alternative modes of transportation. Mitigation Measure AIR-1B would require employers to establish employee trip commute reduction program to promote alternative modes of transportation to the Project Site and reduce GHG emissions from mobile sources. Mitigation Measures AIR-1C would reduce building energy use. Table 4.6-6 identifies the net increase in GHG emissions associated with the mitigated Project.

The majority of GHG emissions are generated from vehicle trips traveling to and from the Serramonte Shopping Center. While the employee trip commute reduction program and bicycle parking would provide incentives to discourage single-occupant vehicle trips to the site, there are no additional measures available to mitigate the increase in GHG emissions generated by vehicles traveling to the project site. Consequently, GHG emissions would continue to exceed the BAAQMD significance thresholds and GHG-1 would remain *significant and unavoidable*.

GHG-2	**Implementation of the Project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.**

The following plans have been adopted and are applicable for the Project:

CARB's Scoping Plan

In accordance with AB 32, CARB developed the 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.[37] The revised BAU 2020 forecast shows that the state would have to reduce GHG emissions by 21.6 percent from BAU without implementation of the Pavley GHG emission standards for passenger vehicles and the 33 percent renewable portfolio standard (RPS) for electricity, or 15.7 percent from the adjusted baseline (i.e., with Pavley and 33 percent RPS).[38]

Statewide strategies to reduce GHG emissions include the LCFS; California Appliance Energy Efficiency regulations; California Building Standards (i.e., CALGreen and the 2008 Building and Energy Efficiency Standards); California

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

[38] California Air Resources Board (CARB), 2012. *Status of Scoping Plan Recommended Measures,* http://www.arb.ca.gov/cc/scopingplan/status_of_scoping_plan_measures.pdf.

TABLE 4.6-6 MITIGATED SERRAMONTE SHOPPING CENTER EXPANSION GHG EMISSIONS FORECAST

Category	GHG Emissions ($MTCO_2e$/Year) Existing 2014	Project Buildout 2022	Percent of Total	Change from Existing
Construction Emissions				
Total Construction Emissions	NA	1,896	NA	1,896
30-Year Amortized Construction	NA	63	NA	63
Operational Emissions				
Area	0	0	0	0
Energy	3,500	5,047	14	1,548
On-Road Mobile Sources	28,203	31,092	83	2,889
Waste	474	1,124	3	650
Water/Wastewater	32	52	0	20
Total	**32,209**	**37,316**	**100%**	**5,107**
Total without Waste[a]	31,735	36,192	—	4,457
Service Population (SP)[b]	1,606	2,591	—	985
$MTCO_2e$/SP	19.8	14.0	—	—
BAAQMD Efficiency Threshold	—	4.6 $MTCO_2e$/SP	—	—
Exceeds BAAQMD Target?	—	**Yes**	—	—

Note: Emissions may not total to 100 percent due to rounding. Voluntary trip reduction program implemented to reduce Project mobile sources emissions. New buildings would be constructed to exceed the 2013 Building & Energy Efficiency Standards (effective July 1, 2014) by 15 percent.
a. BAAQMD did not include solid waste emissions when developing the per capita significance thresholds. Therefore, total GHG emissions with and without the Waste Generation sector are included. If these emissions are included in the analysis for the Project, Project per capita emissions would be 14.4 $MTCO_2e$/SP/yr.
b. Service population (SP) is based on 1,606 employees (existing) and 2,591 employees (Project).
Source: CalEEMod 2013.2.

Renewable Energy Portfolio standard (33 percent RPS); changes in the corporate average fuel economy standards (i.e., Pavley I and Pavley II); and other measures that would ensure the State is on target to achieve the GHG emissions reduction goals of AB 32. Statewide GHG emissions reduction measures that are being implemented over the next 6 years would reduce the Project's GHG emissions.

New non-residential construction for the Project would be subject to the current building and energy efficiency standards. The new buildings would be constructed in conformance with CALGreen, which requires high-efficiency water fixtures for indoor plumbing and water efficient irrigation systems. Therefore, impacts would be *less-than-significant*.

MTC's Plan Bay Area

To achieve ABAG's/MTC's sustainable vision for the Bay Area, the Plan Bay Area land use concept plan for the region concentrates the majority of new population and employment growth in the region in PDAs. PDAs are transit-oriented, infill development opportunity areas within existing communities. Overall, well over two-thirds of all regional growth by 2040 is allocated within PDAs. PDAs are expected to accommodate 80 percent (or over 525,570 units) of new housing and 66 percent (or 744,230) of new jobs.

The Project site is not within a PDA identified in Plan Bay Area. However, the Project is an infill development project that would improve the existing facilities within the Shopping Center and increase non-residential land uses intensity at the Project site. Consequently, the Project is consistent with the overall goals of Plan Bay Area, which include concentrating new development in locations where there is existing infrastructure. Therefore, the Project would not conflict with land use concept plan in Plan Bay Area.

Daly City Green Vision

Daly City's Green Vision outlines goals for the City to reduce community and municipal GHG emissions. The measures identified in the City's Green Vision represent the City's actions to achieve the GHG reduction targets of AB 32 and the goals of Executive Order S-03-05. The Project would comply with the Green Building Standards (Municipal Code 15.22), Reusable Bags (municipal code 8.68), and Prohibition on Use of Polystyrene-based Disposable Food Service Ware (Municipal Code 8.64), and would not interfere with the City's ability to implement the goals in the Green Vision. As identified above, new buildings on-site would be constructed to achieve the latest California Building and Energy Efficiency Standards and CALGreen resulting in higher energy efficiency buildings than currently on-site. Therefore, the Project would not conflict with the goals of the Green Vision.

Conclusion

Implementation of the Project policies as well as compliance with applicable State standards listed and described above would ensure consistency with State and regional GHG reduction planning efforts. The Proposed Project would not hinder implementation of the goals of the City's Green Vision; therefore, this impact would be *less than 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-03-05)
- Clean Car Standards – Pavely (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)
- Statewide Retail Provider Emissions Performance Standards (SB 1368).
- 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)

Significance Before Mitigation: Less than significant.

4.6.4 CUMULATIVE IMPACT DISCUSSION

GHG-3	**Implementation of the Project, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to GHG emissions.**

As described above, GHG emissions related to the 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 the Project as a contributor to cumulative impacts. As identified in Impact GHG-1, Table 4.6-5 shows that the Project would exceed BAAQMD's efficiency metric. Consequently, GHG emissions impacts of the Project are cumulative considerable, and therefore *significant*.

IMPACT GHG-3: Implementation of the Project, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative impacts with respect to GHG emissions.

Mitigation Measures GHG-3: Implementation of Mitigation Measures AIR-1A through AIR-1C would reduce cumulative air quality impacts.

Significance After Mitigation: Significant and unavoidable. Mitigation Measures AIR-1A would require applicants for new development projects within Serramonte Shopping Center to designate spaces for electric vehicle charging in in the commercial, hotel, and medical office developments in order to encourage motorists to take zero- or near-zero emission vehicles or alternative modes of transportation. Mitigation Measure AIR-1B would require employers to establish employee trip commute reduction program to promote alternative modes of transportation to the Project Site and reduce GHG emissions from mobile sources. Mitigation Measures AIR-1C would reduce building energy use.

Although GHG emissions of the mitigated Project are reduced with implementation of Mitigation Measures AIR-1A through AIR-1C, as depicted in Table 4.6-6, the majority of emissions are generated from vehicle trips traveling to and from the Serramonte Shopping Center. While the employee trip commute reduction program and bicycle parking

would provide incentives to discourage single-occupant vehicle trips to the site, there are no additional measures available to mitigate the increase in GHG emissions generated by vehicles traveling to the project site. Consequently, GHG emissions would continue to exceed the BAAQMD significance thresholds and GHG-1 would remain *significant and unavoidable*.