5.7 GREENHOUSE GAS EMISSIONS

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential for implementation of the Southeast Area Specific Plan (SEASP or Project) to cumulatively contribute to greenhouse gas (GHG) emissions impacts. Because no single project is large enough to result in a measurable increase in global concentrations of GHG emissions, climate change impacts of a project are considered on a cumulative basis. This evaluation is based on the methodology recommended by the South Coast Air Quality Management District (SCAQMD). Transportation-sector impacts are based on trip generation and vehicle miles traveled provided by Fehr & Peers (see Appendix J) and water and wastewater demand rates provided by Fuscoe Engineering (see Appendix H). Emissions modeling for the Project is included in Appendix C of this DEIR.

5.7.1 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 within 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] 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, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed

[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, because it is considered 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 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.

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 transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.

- **Nitrous oxide (N_2O)** is emitted during agricultural and industrial activities as well as during the combustion of fossil fuels and solid waste.

- **Fluorinated gases** are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent GHGs, they are sometimes referred to as high global-warming-potential (GWP) gases.

- *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, stratosphere), 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. (IPCC 2001; EPA 2014)

GHGs are dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. Some GHGs have a stronger greenhouse effect than others. These are referred to as high GWP gases. The GWP of GHG emissions are shown in Table 5.7-1, *GHG Emissions and their Relative Global Warming Potential Compared to CO_2*. 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.[3]

Table 5.7-1 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Second Assessment Report Atmospheric Lifetime (Years)	Fourth Assessment Report Atmospheric Lifetime (Years)	Second Assessment Report Global Warming Potential Relative to CO_2[1]	Fourth Assessment Report Global Warming Potential Relative to CO_2[1]
Carbon Dioxide (CO_2)	50 to 200	50 to 200	1	1
Methane[2] (CH_4)	12 (±3)	12	21	25
Nitrous Oxide (N_2O)	120	114	310	298
Hydrofluorocarbons:				
HFC-23	264	270	11,700	14,800
HFC-32	5.6	4.9	650	675
HFC-125	32.6	29	2,800	3,500
HFC-134a	14.6	14	1,300	1,430
HFC-143a	48.3	52	3,800	4,470
HFC-152a	1.5	1.4	140	124
HFC-227ea	36.5	34.2	2,900	3,220
HFC-236fa	209	240	6,300	9,810

[3] 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 5.7-1 GHG Emissions and Their Relative Global Warming Potential Compared to CO_2

GHGs	Second Assessment Report Atmospheric Lifetime (Years)	Fourth Assessment Report Atmospheric Lifetime (Years)	Second Assessment Report Global Warming Potential Relative to CO_2[1]	Fourth Assessment Report Global Warming Potential Relative to CO_2[1]
HFC-4310mee	17.1	15.9	1,300	1,030
Perfluoromethane: CF_4	50,000	50,000	6,500	7,390
Perfluoroethane: C_2F_6	10,000	10,000	9,200	12,200
Perfluorobutane: C_4F_{10}	2,600	NA	7,000	8,860
Perfluoro-2-methylpentane: C_6F_{14}	3,200	NA	7,400	9,300
Sulfur Hexafluoride (SF_6)	3,200	NA	23,900	22,800

Source: IPCC 1995; IPCC 2007.

Note: 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 SCAQMD to maintain consistency in GHG emissions modeling. In addition, the 2008 Scoping Plan was based on the GWP values in the Second Assessment Report.

[1] Based on 100-year time horizon of the GWP of the air pollutant relative to CO_2.

[2] 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.

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 emissions in the United States, surpassed only by Texas (CEC 2005). However, California also has over 12 million more people than Texas. 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)(CEC 2006a).

The California Air Resources Board's (CARB) last update to the statewide GHG emissions inventory was in 2012 for year 2009 emissions and used the Second Assessment Report GWPs.[4] In 2009, California produced 457 million metric tons (MMT) of CO_2e GHG emissions. California's transportation sector is the single largest generator of GHG emissions, producing 37.9 percent of the state's total emissions. Electricity consumption is the second largest source, producing 22.7 percent. Industrial activities are California's third largest source of GHG emissions at 17.8 percent. (CARB 2011).

In 2015, the statewide GHG emissions inventory was updated for 2000 to 2013 emissions using the GWPs in IPCC's Fourth Assessment Report (AR4). Based on these GWPs, California produced 459 $MMTCO_2e$ GHG emissions in 2013. California's transportation sector remains the single largest generator of GHG emissions, producing 36.8 percent of the state's total emissions. Electricity consumption made up 19.7 percent, and industrial activities produced 20.2 percent. Other major sectors of GHG emissions include commercial and residential, recycling and waste, high global warming potential GHGs, and agriculture (CARB 2015a).

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 the quantity of climate change pollutants in the Earth's atmosphere that is attributable to human activities. The amount of CO_2 in the atmosphere has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million per year since 1960, mainly due to combustion of fossil fuels and deforestation (IPCC 2007). These recent changes in the quantity and concentration of climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants (CAT 2006). 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 (IPCC 2007).

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are also hard to predict. Projections of climate change depend heavily upon future human activity. Therefore, climate models are based on different emission scenarios that account for historic trends in emissions and on

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

observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty. For example, there are varying degrees of certainty on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas.
- Warmer and more frequent hot days and nights over most land areas.
- An increase in frequency of warm spells/heat waves over most land areas.
- An increase in frequency of heavy precipitation events (or proportion of total rainfall from heavy falls) over most areas.
- Areas affected by drought increases.
- Intense tropical cyclone activity increases.
- Increased incidence of extreme high sea level (excluding tsunamis).

Potential Climate Change Impacts for California

Observed changes over the last several decades across the western United States reveal clear signals of climate change. Statewide average temperatures increased by about 1.7°F from 1895 to 2011, and warming has been greatest in the Sierra Nevada. By 2050, California is projected to warm by approximately 2.7°F above 2000 averages, a threefold increase in the rate of warming over the last century. By 2100, average temperatures could increase by 4.1–8.6°F, depending on emissions levels (California Climate Change Center 2012).

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) a 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 (CAT 2006). According to the California Climate Action Team—a committee of state agency secretaries and the heads of agencies, boards, and departments, led by the Secretary of the California Environmental Protection Agency—even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes (see Table 5.7-1), 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 5.7-2, *Summary of GHG Emissions Risks to*

California, and include public health impacts, water resources impacts, agriculture impacts, coastal sea level impacts, forest and biological resources impacts, and energy impacts.

Specific climate change impacts that could affect the Project include:

Water Resources Impacts. By late-century, all projections show drying, and half of the projections suggest 30-year average precipitation will decline by more than 10 percent below the historical average. This drying trend is caused by an apparent decline in the frequency of rain and snowfall. Even in projections with relatively small or no declines in precipitation, central and southern parts of the state can be expected to be drier from the warming effects alone—the spring snowpack will melt sooner, and the moisture contained in soils will evaporate during long dry summer months (California Climate Change Center 2012).

Wildfire Risks. Earlier snowmelt, higher temperatures and longer dry periods over a longer fire season will directly increase wildfire risk. Indirectly, wildfire risk will also be influenced by potential climate-related changes in vegetation and ignition potential from lightning. Human activities will continue to be the biggest factor in ignition risk. The number of large fires statewide are estimated to increase from 58 percent to 128 percent above historical levels by 2085. Under the same emissions scenario, estimated burned area will increase by 57 percent to 169 percent, depending on location (California Climate Change Center 2012).

Table 5.7-2 Summary of GHG Emissions Risks to California

Impact Category	Potential Risk
Public Health Impacts	Heat waves will be more frequent, hotter, and longer Fewer extremely cold nights Poor air quality made worse Higher temperatures increase ground-level ozone levels
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
Sea Level Rise and Storm Surge Impacts	Accelerated sea level rise Increasing coastal floods Shrinking beaches 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: CEC 2006b; CEC 2009; California Climate Change Center 2012; California Natural Resource Agency 2014.

Health Impacts. Many of the gravest threats to public health in California stem from the increase of extreme conditions, principally more frequent, more intense, and longer heat waves. Particular concern centers on the increasing tendency for multiple hot days in succession, and heat waves occurring simultaneously in several regions throughout the state. Public health could also be affected

by climate change impacts on air quality, food production, the amount and quality of water supplies, energy pricing and availability, and the spread of infectious diseases. Higher temperatures also increase ground-level ozone levels. Furthermore, wildfires can increase particulate air pollution in the major air basins of California (California Climate Change Center 2012).

Increased Energy Demand. Increases in average temperature and higher frequency of extreme heat events combined with new residential development across the state will drive up the demand for cooling in the increasingly hot and longer summer season and decrease demand for heating in the cooler season. Warmer, drier summers also increase system losses at natural gas plants (reduced efficiency in the electricity generation process at higher temperatures) and hydropower plants (lower reservoir levels). Transmission of electricity will also be affected by climate change. Transmission lines lose 7 percent to 8 percent of transmitting capacity in high temperatures while needing to transport greater loads. This means that more electricity needs to be produced to make up for the loss in capacity and the growing demand (California Climate Change Center 2012).

5.7.1.1 REGULATORY BACKGROUND

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

Federal Laws

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

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's GHG emissions inventory because they constitute the majority of GHG emissions, and per SCAQMD guidance are the GHG emissions that should be evaluated as part of a project's 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 $MTCO_2e$ or more per year to submit an annual report.

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

The current Corporate Average Fuel Economy 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 deemed 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 Clean Air Act, 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 Laws

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

Executive Order S-03-05

Executive Order S-03-05, 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

Executive Order B-30-15

Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions within the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the state and requires state agencies to implement measures to meet the interim 2030 goal as well as the long-term goal for 2050 in Executive Order S-03-05. It also requires the Natural Resources Agency to conduct triennial updates of the California adaption strategy, Safeguarding California, in order to ensure climate change is accounted for in state planning and investment decisions.

Assembly Bill 32, the Global Warming Solutions Act (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 $MMTCO_2e$ in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 $MMTCO_2e$ (471 million tons) for the state. The 2020 target requires a total emissions reduction of 169 $MMTCO_2e$, 28.5 percent from the projected emissions of the business-as-usual (BAU) scenario for the year 2020 (i.e., 28.5 percent of 596 $MMTCO_2e$) (CARB 2008).[5]

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 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).

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

- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets (several sustainable communities strategies have been adopted).

- Adopting and implementing measures pursuant to state laws and policies, including California's clean car standards (amendments to the Pavley Standards adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (adopted 2009).

- Creating target fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation (in progress).

Table 5.7-3, *Scoping Plan GHG Reduction Measures and Reductions toward 2020 Target*, shows the proposed reductions from regulations and programs outlined in the 2008 Scoping Plan. In recognition of the critical role that local governments play in the successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of baseline 2005-2008 levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target.[6] 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 traveled (VMT) (CARB 2008).

Table 5.7-3 Scoping Plan GHG Reduction Measures and Reductions toward 2020 Target

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO2e	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[1]	5	3%
Vehicle Efficiency Measures	4.5	3%

[6] 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 5.7-3 Scoping Plan GHG Reduction Measures and Reductions toward 2020 Target

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO2e	Percentage of Statewide 2020 Target
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[2]	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

Source: CARB 2008.

Notes: The percentages in the right-hand column add up to more than 100 percent because the emissions reduction goal is 169 $MMTCO_2e$ and the Scoping Plan identifies 174 $MTCO_2e$ of emissions reductions strategies. Based on the Second Assessment Report GWPs.

$MMTCO_2e$: million metric tons of CO_2e

[1] Reductions represent an estimate of what may be achieved from local land use changes. It is not the SB 375 regional target.

[2] According to the Measure Documentation Supplement to the Scoping Plan, local government actions

Table 5.7-3 Scoping Plan GHG Reduction Measures and Reductions toward 2020 Target

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO2e	Percentage of Statewide 2020 Target
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.		

First Update to the Scoping Plan

CARB recently completed a five-year update to the 2008 Scoping Plan, as required by AB 32. The First Update to the Scoping Plan was adopted at the May 22, 2014, board hearing. The update defines CARB's climate change priorities for the next five 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 5.7-1). IPCC's Fourth and Fifth Assessment Reports identified more recent GWP values based on the latest available science. CARB recalculated the 1990 GHG emission levels with the updated GWPs in the Fourth Assessment Report, and the 427 $MMTCO_2e$ 1990 emissions level and 2020 GHG emissions limit, established in response to AB 32, is slightly higher at 431 $MMTCO_2e$ (CARB 2014). CARB projected that statewide BAU emissions in 2020 would be approximately 509 million $MTCO_2e$.[7] Therefore, to achieve the AB 32 target of 431 million $MTCO_2e$ (i.e., 1990 emissions levels) by 2020, the state would need to reduce emissions by 78 million $MTCO_2e$ compared to BAU conditions, a reduction of 15.3 percent from BAU in 2020 (CARB 2014). [8]

The update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the original 2008 Scoping Plan. As identified in the Update to the Scoping Plan, California is on track to meeting the goals of AB 32. However, the update 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

[7] The BAU forecast includes GHG reductions from Pavley and the 33% Renewable Portfolio Standard.

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

for the state to adopt a midterm 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 (CARB 2014).

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 (CARB 2014).

Second Update to the Scoping Plan

The new Executive Order B-30-15 requires CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. According to CARB, the Scoping Plan will be updated by late 2016 to address the new 2030 interim target to achieve a 40 percent reduction below 1990 levels by 2030 (CARB 2015b).

Senate Bill 375

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

Pursuant to the recommendations of the Regional Transportation Advisory Committee, CARB adopted per capita reduction targets for each of the MPOs rather than a total magnitude reduction target. SCAG's targets are an 8 percent per capita reduction from 2005 GHG emission levels by 2020 and a 13 percent per capita reduction from 2005 GHG emission levels by 2035 (CARB 2010). SB 375 requires CARB to periodically update the targets, no later than every eight years. CARB plans to propose updated targets for consideration in 2016, with the intent to make them effective in 2018. Sustainable communities strategies (SCSs) adopted in 2018 would be subject to the updated targets (CARB 2015c).

The 2020 targets are smaller than the 2035 targets because a significant portion of the built environment in 2020 has been defined by decisions that have already been made. In general, the

2020 scenarios reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are anticipated to come from improving the efficiency of the region's transportation network. The targets would result in 3 $MMTCO_2e$ of reductions by 2020 and 15 $MMTCO_2e$ of reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met (CARB 2010).

CARB is currently in the process of updating the next round of targets and methodology to comply with the requirement for updates every eight years. Considerations for the next round of targets include whether to change the nature or magnitude of the emissions reduction targets for each of the MPOs, and whether the target-setting methodology should account for advances in technologies that reduce emissions. Such changes in methodology would permit cities to account for emissions reductions from advances in cleaner fuels and vehicles and not only from land use and transportation planning strategies.

SCAG's 2016 RTP/SCS

SB 375 requires the MPOs to prepare a sustainable communities strategy in their regional transportation plan. For the SCAG region, the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was adopted in April 2016 (SCAG 2016). The SCS outlines a development pattern 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). The SCS is meant to provide growth strategies that will achieve the regional GHG emissions reduction targets. However, the SCS does not require that local general plans, specific plans, or zoning be consistent with the SCS. Instead, it provides incentives to governments and developers for consistency. Through implementation of the strategies in the RTP/SCS, SCAG anticipates lowering GHG emissions below 2005 levels by 8 percent by 2020, 18 percent by 2035, and 22 percent by 2040. Land use strategies to achieve the region's targets include planning for new growth around high quality transit areas and "livable corridors," and creating neighborhood mobility areas to integrate land use and transportation and plan for more active lifestyles (SCAG 2016).

Assembly Bill 1493

California vehicle GHG emission standards were enacted under AB 1493 (Pavley I). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light-duty auto to medium-duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. California implements the Pavley 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 Corporate Average Fuel Economy standards under *Federal Laws*, above). In January 2012, CARB approved the Advanced Clean Cars

program (formerly known as Pavley II) for model years 2017 through 2025. The program combines the control of smog, soot, and global warming gases and requirements for greater numbers of zero-emission vehicles into a single package of standards. Under California's Advanced Clean Car program, by 2025, new automobiles will emit 34 percent fewer global warming gases and 75 percent fewer smog-forming emissions.

Executive Order S-01-07

On January 18, 2007, the state set a new low carbon fuel standard (LCFS) for transportation fuels sold 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.

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. 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. This standard was adopted by the legislature in 2011 (SBX1-2). Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects, because electricity production from renewable sources is generally considered carbon neutral.

Senate Bill 350

Senate Bill 350 (de Leon), was signed into law September 2015 and establishes tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures.

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.

California Building Code: Building and Energy Efficiency Standards

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 2013 (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 the 2013 Building and Energy Efficiency Standards are 25 percent (residential) to 30 percent (nonresidential) more energy efficient than the 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features.

Most recently, the CEC adopted the 2016 Building and Energy Efficiency Standards. The 2016 Standards will continue to improve upon the current 2013 Standards for new construction of, and additions and alterations to, residential and nonresidential buildings. These standards will go into effect on January 1, 2017. Under the 2016 Standards, residential buildings are 28 percent more energy efficient than the 2013 Standards, and nonresidential buildings are 5 percent more energy efficient than the 2013 Standards (CEC 2015a).

The 2016 standards will not achieve zero net energy. However, they do get very close to the state's goal and make important steps toward changing residential building practices in California. The 2019 standards will take the final step to achieve zero net energy for newly constructed residential buildings throughout California (CEC 2015b).

California Building Code: CALGreen

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (24 CCR, Part 11, known as "CALGreen") was adopted as part of the California Building Standards Code. CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and

internal air contaminants.[9] The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011, and were last updated in 2013.

2006 Appliance Efficiency Regulations

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

Solid Waste Regulations

California's Integrated Waste Management Act of 1989 (AB 939, Public Resources Code 40050 et seq.) set a requirement for cities and counties throughout the state to divert 50 percent of all solid waste from landfills by January 1, 2000, through source reduction, recycling, and composting. In 2008, the requirements were modified to reflect a per capita requirement rather than tonnage. To help achieve this, the act requires that each city and county prepare and submit a source reduction and recycling element. AB 939 also established the goal for all California counties to provide at least 15 years of ongoing landfill capacity.

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

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

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

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

Water Efficiency Regulations

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

The Water Conservation in Landscaping Act of 2006 (AB 1881) requires local agencies to adopt the updated DWR model ordinance or equivalent. AB 1881 also requires the CEC to consult with the DWR to adopt, by regulation, performance standards and labeling requirements for landscape irrigation equipment, including irrigation controllers, moisture sensors, emission devices, and valves to reduce the wasteful, uneconomic, inefficient, or unnecessary consumption of energy or water.

Local Policies and Plans

City of Long Beach Sustainable City Action Plan

The City of Long Beach adopted the Sustainable City Action Plan in February 2010. The Sustainable City Action Plan is meant to guide the City's future operational and policy decisions, and it sets out the following environmental and sustainability goals:

- 100 percent of major city facilities are LEED certified (or equivalent) by 2020.
- At least 5 million square feet of privately developed LEED certified (or equivalent) green buildings by 2020.
- Double the number of LEED accredited professionals (or equivalent) in the City and community by 2012.
- 100 percent of City-owned vacant lots are utilized with interim green uses by 2012.
- Create at least 6 new community gardens by 2012.
- Plant at least 10,000 new trees in Long Beach by 2020.
- 100 percent of suitable alley and parking lot projects use permeable pavement by 2020.
- 50 percent of Long Beach residents work in Long Beach by 2020.

- At least 60,000 residents in the downtown by 2020.
- By 2020, at least 30 percent of Long Beach residents use alternative transportation to get to work.
- Reduce greenhouse gas emissions from City facilities and operations by 15 percent by 2020.
- Reduce electricity use in City operations by 25 percent by 2020.
- Reduce natural gas use in City operations by 15 percent by 2020.
- Facilitate the development of at least 2 megawatts of solar energy on city facilities by 2020.
- Reduce community electricity use by 15 percent by 2020.
- Reduce community natural gas use by 10 percent by 2020.
- Facilitate the development of at least 8 megawatts of solar energy within the community (private rooftops) by 2020.
- Identify and develop at least 2,000 green collar jobs in Long Beach by 2012.
- Enroll 100 green businesses in the Long Beach Green Business Certification Program by 2012.
- Target half of the business grants/loans for green business development by 2012.
- Increase City green spending to 100 percent by 2020.
- Annual increase in participation in citywide green events.
- Increase the average fuel efficiency of the gasoline-powered City fleet to 35 mpg by 2020.
- 100 percent of the City fleet is alternative fuel and/or low emission by 2020.
- Reduce vehicle emissions by 30 percent by 2020.
- Increase public transit ridership by 25 percent by 2016.
- Increase city employee average vehicle ridership to 1.5 by 2012.
- 100 percent of taxicab fleets are alternative fuel and/or low emissions by 2016.

- Increase bike ridership from 1 percent to 10 percent by 2016.
- Create a system of at least 200 miles of interconnected bike routes (Class 1-3) by 2020.
- Reduce future port-related emissions by 47 percent reduction in DPM, 45 percent reduction in NO_x, and 52 percent reduction in SO_x from OGV, CHE, and HDV source categories by 2011.
- Create 8 acres of open space per 1,000 residents by 2020.
- Create 100 miles of green linkages by 2020.
- Establish one or more Natural Centers along the Los Angeles River by 2016.
- Establish a native landscape demonstration in every park 1 acre or larger by 2020.
- Establish a community garden in every park 5 acres or larger by 2020.
- 1,200 front yards converted to native or edible landscape by 2016.
- Train 500 Habitat Stewards by 2016.
- Annual increase of youth who are trained as Long Beach Bioneers.
- Annual reduction in average pounds of solid waste generated per person per day.
- Increase the number of students participating in Traveling Recycling Education Center to 2,000 per year by 2016.
- Attract and retain to total of 20 RMDZ manufacturing companies by 2020.
- Reduce per capita use of potable water, exceeding the State mandate to achieve a demand reduction of 20 percent in per capita water use by the year 2020.
- Facilitate the installation of rain catchment systems at 5 City facilities by 2012.
- Facilitate the development of 50 green roofs community-wide by 2016.

5.7.1.2 EXISTING CONDITIONS

Existing Emissions

Table 5.7-4, *Existing Southeast Area Specific Plan GHG Emissions Inventory*, identifies the existing community GHG emissions inventory for the Specific Plan area. GHG emissions generated within

the Southeast Area were estimated using the California Emissions Estimator Model (CalEEmod), version 2013.2.2.

Table 5.7-4 Existing Southeast Area Specific Plan GHG Emissions Inventory

Sector	GHG Emissions $MTCO_2e$/Year	Percent of Emissions
Community Emissions		
Area	424	0%
Energy[1]	21,078	17%
On-Road Transportation[2]	95,785	77%
Water/Wastewater[3]	5,313	4%
Solid Waste Disposal	2,420	2%
Total	125,021	100
Service Population (SP)	10,041	NA
$MTCO_2e$/SP	12.5	
Stationary Emissions		
AES Alamitos[4]	841,013	—
Haynes Generating Station[4]	1,117,885	—

Source: CalEEMod 2013.2.2. Based on IPCC's SAR GWPs. Excludes emissions from pleasure craft.
[1] Existing residential and nonresidential building energy use modeled using historical energy demand rates in CalEEMod.
[2] Transportation emissions are based on trip generation and VMT provided by Fehr & Peers.
[3] Water use is based on the water demand rates provided by Fuscoe Engineering.
[4] Based on IPCC's AR4 GWPs (EPA 2016).

5.7.2 Thresholds of Significance

The City notes that the purpose of this EIR is to identify the significant effects of the proposed Project on the environment, not the significant effects of the environment on the proposed Project. (*California Building Industry Association v. Bay Area Air Quality Management District* (2015) 62 Cal.4th 369 (Case No. S213478)). CEQA does not require an EIR to analyze the environmental effects of attracting development and people to an area. According to Appendix G of the CEQA Guidelines, the Project would have a significant effect on the environment with respect to GHG emissions if it would:

GHG-1 Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

GHG-2 Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

SCAQMD GHG Significance Thresholds

SCAQMD has adopted a significance threshold of 10,000 $MTCO_2e$ per year for permitted (stationary) sources of GHG emissions for which SCAQMD is the designated lead agency. To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting held in September 2010 (Meeting No. 15), the SCAQMD Working Group identified a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency:

- **Tier 1.** If a project is exempt from CEQA, project-level and cumulative GHG emissions are less than significant.

- **Tier 2.** If the project complies with a GHG emissions reduction plan or mitigation program that avoids or substantially reduces GHG emissions in the project's geographic area (i.e., city or county), project-level and cumulative GHG emissions are less than significant.

For projects that are not exempt or where no qualifying GHG reduction plans are directly applicable, SCAQMD requires an assessment of GHG emissions. SCAQMD has identified a "bright-line" screening-level threshold of 3,000 $MTCO_2e$ annually for all land use types or the following land-use-specific thresholds: 1,400 $MTCO_2e$ for commercial projects, 3,500 $MTCO_2e$ for residential projects, or 3,000 $MTCO_2e$ for projects. This bright-line threshold is based on a review of the Governor's Office of Planning and Research database of CEQA projects. Based on their review of 711 CEQA projects, 90 percent of CEQA projects would exceed the bright-line thresholds identified above. Therefore, projects that do not exceed the bright-line threshold would have a nominal, and therefore less than cumulatively considerable, impact on GHG emissions:

- **Tier 3.** If GHG emissions are less than the screening-level threshold, project-level and cumulative GHG emissions are less than significant.

- **Tier 4.** If emissions exceed the screening threshold, a more detailed review of the project's GHG emissions is warranted.

The SCAQMD Working Group has identified an efficiency target for projects that exceed the bright-line threshold: a 2020 efficiency target of 4.8 $MTCO_2e$ per year per service population ($MTCO_2e$/year/SP) for project-level analyses and 6.6 $MTCO_2e$/year/SP for plan-level analyses (e.g., general plans). Service population is defined as the sum of the residential and employment

population of a project. The per capita efficiency targets are based on the AB 32 GHG reduction target and 2020 GHG emissions inventory prepared for CARB's 2008 Scoping Plan.[10]

Project emissions are compared to the SCAQMD's project-level efficiency threshold because individual projects may use the Specific Plan EIR for CEQA streamlining, and the SCAQMD plan-level thresholds are more appropriately utilized for general plan–level analyses. However, the proposed Project buildout goes beyond year 2020, and for the purposes of this EIR is estimated to be built out by 2035. Since the SCAQMD efficiency targets identified by the Working Group are based on the GHG reduction goals of AB 32 for year 2020, SCAQMD's efficiency targets have been adjusted based on the long-term GHG reduction targets of Executive Order B-30-15, which set a goal of 40 percent below 1990 levels by 2030, and Executive Order S-03-05, which set a goal of 80 percent below 1990 levels by 2050, as shown in Table 5.7-5, *Forecasting the Post-2020 GHG Reduction Targets*.

Table 5.7-5 Forecasting the Post-2020 GHG Reduction Targets

1990 Emissions Sector[1]	GHG Emissions $MTCO_2e$/Year	Tailoring the CARB Land Use Inventory
Electricity	96,100,000	Removed Industrial energy use
Transportation	137,990,000	Includes the on-road transportation sector emissions only
Landfills	6,260,000	Landfill extracted from the Industrial sector
Wastewater	3,170,000	Wastewater treatment extracted from the Industrial sector
Commercial	13,860,000	Removed National Security emissions
Residential	29,660,000	Includes all emissions from this sector
1990 Land Use Sector Total	287,040,000	—
2035 Land Use Sector GHG Target[2]	147,765,000	Trend-line: 50 Percent Reduction from 1990 Levels by 2035.
2035 Population and Employment Forecasts	Demographics	Notes
Population[3]	45,747,645	Based the California Department of Finance forecasts

[10] SCAQMD took the 2020 statewide GHG reduction target for land use only GHG emissions sectors and divided it by the 2020 statewide employment for the land use sectors to derive a per capita GHG efficiency metric that coincides with the GHG reduction targets of AB 32 for year 2020.

Table 5.7-5 Forecasting the Post-2020 GHG Reduction Targets

Employment[4]	20,062,090	Based on Caltrans socio-economic forecasts
Service Population	65,809,735	—
2035 Efficiency Target	2.2 $MTCO_2e$/SP{	—

Sources:
[1] CARB. 2007.
[2] Based on the 2030 target of 40 percent below 1990 levels by 2030 under Executive Order B-30-15 and the target of 80 percent below 1990 levels by 2050 under Executive Order S-03-05.
[3] CDOF 2014.
[4] California Department of Transportation, Long-Term Socio-Economic Forecasts by County, http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic.html.

Based on these long-term targets, Project emissions are compared to the SCAQMD's project-level efficiency threshold of 2.2 $MTCO_2e$/year/SP for year 2035.

If the Project exceeds this per capita efficiency target, GHG emissions would be considered potentially significant in the absence of mitigation measures. It should be noted that at this time, there is no statewide GHG reduction plan for post-2020 targets to achieve either the Executive Order S-03-05 or the new Executive Order B-30-15 long-term GHG goals; therefore, use of the long-term target for the significance criteria is conservative.

5.7.3 Environmental Impacts

Methodology

This GHG emissions evaluation was prepared in accordance with the requirements of CEQA to determine if significant GHG emissions impacts are likely to occur in conjunction with future development that would be accommodated by the Project. SCAQMD has published guidelines that are intended to provide local governments with guidance for analyzing and mitigating environmental impacts and which were used in this analysis. Modeling of GHG and criteria air pollutants was conducted using CalEEMod, version 2013.2.2. Life cycle (consumption-based) emissions are also not included in this analysis because not enough information is available for the proposed Project, and therefore life cycle GHG emissions would be speculative.[11] Transportation-sector impacts are

[11] Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. The California Resources Agency, in adopting the CEQA Guidelines Amendments on GHG emissions, found that life-cycle analyses were not warranted for

based on trip generation and vehicle miles traveled (VMT) provided by Fehr & Peers (see Appendix J) and water and wastewater demand rates provided by Fuscoe Engineering (see Appendix H). Emissions modeling for the Project is included in Appendix C of this DEIR.

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

Impact 5.7-1 Buildout of the Southeast Area Specific Plan would generate a substantial increase in GHG emissions compared to existing conditions and would have a significant impact on the environment. [GHG-1]

Impact Analysis: Development under the Project would contribute to global climate change through direct and indirect emissions of GHG from land uses within SEASP. Buildout of the Project is not linked to a specific development time frame. For the purpose of this EIR, buildout is assumed over a 20-year project horizon. GHG emissions from construction activities are amortized into the operational phase GHG emissions inventory to account for one-time emissions from construction in accordance with SCAQMD methodology. VMT reductions from transportation demand management (TDM) measures incorporated into the Project design that improve the pedestrian and bicycle network were estimated by Fehr & Peers. The community GHG emissions inventory for SEASP at buildout compared to existing conditions is in Table 5.7-6, *Southeast Area Specific Plan GHG Emissions Inventory*.

As shown in Table 5.7-6, the net increase in GHG emissions of 30,357 $MTCO_2e$ annually from Project-related operational activities would exceed SCAQMD's draft bright-line screening threshold of 3,000 $MTCO_2e$ for all land use types. The increase in overall land use intensity and associated population and employment growth within the SEASP boundaries is the primary factor for the increase in overall GHG emissions. Under SEASP, increase in land use development would result in a 92 percent increase in the total service population. Although SEASP would result in a substantial increase in GHG emissions, it would also result in a 38 percent decrease in GHG emissions per person. As shown in Table 5.7-6, the GHG emissions per capita rate would decrease from 12.5 $MTCO_2e$/year/SP to 7.7 $MTCO_2e$/year/SP.

project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources and the possibility of double-counting emissions (see Final Statement of Reasons for Regulatory Action, December 2009). Because the amount of materials consumed during the operation or construction of the proposed project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted (OPR 2008).

Table 5.7-6 Southeast Area Specific Plan GHG Emissions Inventory

Sector	GHG Emissions $MTCO_2e$/Year			
	Existing	Specific Plan Buildout	Percent	Change from Existing
Area	424	1,832	1%	1,407
Energy[1]	21,078	34,680	22%	13,602
On-Road Transportation[2]	95,785	103,527	67%	7,742
Solid Waste Disposal	5,313	10,085	6%	4,771
Water/Wastewater[3]	2,420	4,493	3%	2,073
Amortized Construction[4]	NA	762	<1%	762
Total without TDM Measures	125,021	155,378	100%	30,357
Reductions from TDM Measures[5]	—	-7,318	—	NA
Total with TDM Measures	—	148,060	—	23,039
Service Population (SP)[6]	10,041	19,249	—	9,208
$MTCO_2e$/SP	12.5	7.7	—	-4.4
2035 Per Capita Threshold[7]	—	2.2	—	—
Exceed Threshold?	—	Yes	—	—

Source: CalEEMod 2013.2.2. Based on IPCC's SAR GWPs. Excludes emissions from pleasure craft.
Notes: Totals may not add to 100 percent due to rounding. TDM: Transportation Demand Management (TDM); $MTCO_2e$: Metric Tons of Carbon Dioxide-Equivalent. Excludes stationary (permitted) sources of emissions including energy generation at the AES Alamitos and Haynes Generating Station.

1 Existing residential and nonresidential building energy use modeled using historical energy demand rates in CalEEMod. New buildings would achieve the 2016 Building and Energy Efficiency Standards.

2 Transportation emissions are based on trip generation and VMT provided by Fehr & Peers.

3 Water use is based on the water demand rates provided by Fuscoe Engineering.

4 Short-term (one time) total construction emissions during the 20-year buildout are amortized over a 30-year project lifetime in accordance with SCAQMD guidance and incorporated into the operational emissions analysis.

5 VMT reductions from TDM measures provided by Fehr & Peers; accounts for VMT reductions from an increase in pedestrian and bicycle activity associated with the Project design features that account for improvements to the pedestrian and bicycle network.

6 Existing based on a service population of 6,486 people and 3,555 employees. SEASP buildout based on a service population of 15,134 people and 4,115 employees.

7 Based on the SCAQMD 2020 per capita target of 4.8 $MTCO_2e$ per service population and extrapolating it for the long term GHG reduction goals of Executive Order S-03-05 for 2050 and Executive Order B-30-15 for 2030.

The improvement in per capita efficiency would be attributable to the overall land use plan and development standards of SEASP. SEASP would result in conversion of the land uses from septic to tertiary-treated waste. Placement of land uses that complement each other in addition to improvements in access to alternative transportation options contribute to reducing per capita VMT. Aside from the policies and strategies to reduce per capita VMT, new buildings under SEASP would be more energy efficient than existing buildings throughout the SEASP area. Likewise, plumbing fixtures and landscaping installed as part of SEASP would result in a decrease in water use on a per capita basis. These aspects of SEASP would contribute to the overall reduction of per capita GHG emissions.

However, although implementation of SEASP would result in a decrease in GHG emissions per capita, it would not meet the SCAQMD Year 2035 target efficiency metric of 2.2 $MTCO_2e$/year/SP based on the long-term GHG reduction goals of Executive Order S-03-05 and Executive Order B-30-15. Additional state and local actions are necessary to achieve the post-2020 GHG reduction goals for the state. CARB has released the 2014 Scoping Plan Update to identify a path for the date to achieve additional GHG reductions. The new Executive Order B-30-15 requires CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. However, at this time, no additional GHG reductions programs have been outlined that get the state to the post-2020 targets identified in Executive Order S-03-05, which are an 80 percent reduction in 1990 emissions by 2050, or the Executive Order B-30-15, which are a 40 percent reduction in 1990 emissions by 2035. As identified by the California Council on Science and Technology, the state cannot meet the 2050 goal without major advances in technology (CCST 2012). Therefore, SEASP's cumulative contribution to the long-term GHG emissions in the state would be considered potentially significant.

Impact 5.7-2 SEASP would be consistent with plans adopted to reduce GHG emissions. [GHG-2]

Impact Analysis: The following state, regional, and local plans have been adopted and may be applicable for development in SEASP.

CARB Scoping Plan

The CARB Scoping Plan is applicable to state agencies but is not directly applicable to cities/counties and individual projects. Nonetheless, the Scoping Plan has been the primary tool that is used to develop performance-based and efficiency-based CEQA criteria and GHG reduction targets for climate action planning efforts. On the state level, state agencies have adopted GHG reduction programs, and the legislature has passed additional legislation to achieve the GHG reduction targets. Statewide strategies to reduce GHG emissions include the LCFS and changes in the corporate average fuel economy standards (e.g., Pavley I and California Advanced Clean Cars program). Future projects in SEASP would be required to adhere to the programs and regulations

identified by the Scoping Plan and implemented by state, regional, and local agencies to achieve the statewide GHG reduction goals of AB 32. However, the Scoping Plan itself is not directly applicable to the proposed Project. The City of Long Beach adopted a Sustainable City Action Plan in 2010 that identifies local strategies to reduce GHG emissions. The Project would not conflict with the statewide programs adopted to achieve the statewide GHG reduction targets outlined in the Scoping Plan.

SCAG's 2016 RTP/SCS

SCAG adopted the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) in April 2016 pursuant to the requirements of SB 375. SCAG's RTP/SCS identifies that land use strategies that focus on new housing and job growth in areas served by high quality transit and other opportunity areas would be consistent with a land use development pattern that supports and complements the proposed transportation network. The overarching strategy in the 2016 RTP/SCS is to provide for a plan that allows the southern California region to grow in more compact communities in existing urban areas; provide neighborhoods with efficient and plentiful public transit, abundant and safe opportunities to walk, bike and pursue other forms of active transportation; and preserve more of the region's remaining natural lands (SCAG 2016). The 2016 RTP/SCS contains transportation projects to help more efficiently distribute population, housing, and employment growth, as well as a forecast development that is generally consistent with regional-level general plan data. The projected regional development pattern, when integrated with the proposed regional transportation network identified in the RTP/SCS, would reduce per capita vehicular travel–related GHG emissions and achieve the GHG reduction per capita targets for the SCAG region. The RTP/SCS does not require that local general plans, specific plans, or zoning be consistent with the RTP/SCS, but provides incentives for consistency for governments and developers. The 2016 RTP/SCS SCAG anticipates lowering GHG emissions below 2005 levels by 8 percent by 2020, 18 percent by 2035, and 22 percent by 2040 (SCAG 2016). Key strategies in the SCAG's RPT/SCS are identified in Table 5.10-3, *Consistency with SCAG's 2016-2040 RTP/SCS Goals,* in Section 5.10, *Land Use and Planning*. Table 5.5-7, *SCAG 2016 RTP/SCS Transportation-Land Use Consistency*, evaluates the Project in comparison to the three primary transportation-land use strategies in the RTP/SCS.

Table 5.7-7 SCAG 2016 RTP/SCS Transportation-Land Use Consistency

SCAG Transportation-Land Use Strategies	Implementing Policies/Strategies	Consistency
Focusing new growth around High Quality Transit Areas (HQTA). The 2016 RTP/SCS overall land use pattern reinforces the trend of focusing new housing and employment in the region's HQTAs. The 2016 RTP/SCS assumes that 46 percent of new housing and 55 percent of new employment locations developed between 2012 and 2040 will be located within HQTAs, which comprise only three percent of the total land area in the SCAG region (SCAG 2016).	Additional local policies that ensure that development in HQTAs achieve the intended reductions in VMT and GHG emissions include: ▪ Affordable housing requirements ▪ Reduced parking requirements ▪ Adaptive reuse of existing structures ▪ Density bonuses tied to family housing units such as three- and four bedroom units ▪ development standards that include local serving retail ▪ Increased Complete Streets investments around HQTAs.	Consistent: The Pacific Coast Highway corridor in SEASP is identified as HQTA. The proposed Project would increase residential land and nonresidential land use intensities within this HQTA. SEASP would make the Pacific Coast Highway corridor more user friendly for all modes of travel, especially pedestrians and bikes. SEASP envisions the Pacific Coast Highway as a main street through the SEASP area with design elements to separate bikes from cars and pedestrians from bikes. SEASP also encourages shared, bundled, or pooled parking; off-site parking; or valet parking plans with approval from the City's Site Plan Review Committee. Projects are eligible for a parking reduction by incorporating TDM measures. SEASP also requires formation of a Transportation Management Association, whose duties include coordination of pricing for parking.
Plan for growth around Livable Corridors. SCAG's livable corridors strategy seeks to revitalize commercial strips through integrated transportation and land use	Additional livable corridors strategies include: ▪ Transit improvements, including dedicated lane Bus Rapid Transit (BRT) or semidedicated BRT-light. The remaining corridors have the	Consistent: Livable corridors are predominantly a subset of the HQTAs; however, 154 miles are not designated as HQTAs in SCAG's RTP/SCS. These

Table 5.7-7 SCAG 2016 RTP/SCS Transportation-Land Use Consistency

SCAG Transportation-Land Use Strategies	Implementing Policies/Strategies	Consistency
planning that results in increased economic activity and improved mobility options.	potential to support other features that improve bus performance (enhanced bus shelters, real-time travel information, off-bus ticketing, all door boarding, and longer distances between stops to improve speed and reliability). ▪ Active transportation improvements: Livable corridors include increased investments in complete streets to make these corridors and the intersecting arterials safe for biking and walking. ▪ Land use policies: Livable corridor strategies include the development of retail centers at key nodes along the corridors, increasing neighborhood-oriented retail at more intersections and zoning that allows for the replacement of underperforming auto-oriented strip retail between nodes with higher density residential and employment.	additional miles were identified in Sustainability Planning Grant projects, which SCAG proposes for active transportation improvement. As identified above, SEASP would make the Pacific Coast Highway corridor more user friendly for all modes of travel, especially pedestrians and bikes. The two districts (Community Core and Marina) would encourage a greater mix of uses along this livable corridor. Guiding principles of SEASP include: Expand multimodal transportation options through enhanced pedestrian and bicycle connectivity and increase public connectivity to open space, including the marina, other waterways, the wetlands, and parks.
Provide more options for short trips in Neighborhood Mobility Areas and Complete Communities: Neighborhood mobility areas have a high intersection density, low to moderate traffic speeds and robust residential retail connections. These areas are suburban in nature, but can support slightly higher density in targeted locations. The land use strategies include shifting retail	▪ Neighborhood mobility area land use strategies include pursuing local policies that encourage replacing motor vehicle use with neighborhood electric vehicle (NEV) use. NEVs are a federally designated class of passenger vehicle rated for use on roads with posted speed limits of 35 miles per hour or less. Steps needed to support NEV use include providing state and regional incentives for purchases, local planning for	Consistent: The designations would provide a greater mix of uses in the Project area. SEASP would provide a mix of uses in the vicinity of 2nd and Pacific Coast Highway to capture more internal trips to the area. The shorter block lengths near 2nd Street and Pacific Coast Highway would promote walking and biking in the area. Additionally,

Table 5.7-7 SCAG 2016 RTP/SCS Transportation-Land Use Consistency

SCAG Transportation-Land Use Strategies	Implementing Policies/Strategies	Consistency
growth from large centralized retail strip malls to smaller distributed centers throughout a neighborhood mobility area.	charging stations, designating a local network of low speed roadways, and adopting local regulations that allow smaller NEV parking stalls ▪ Complete communities strategies include creation of districts through a concentration of activities with housing, employment, and a mix of retail and services in close proximity to each other. Focusing a mix of land uses in strategic growth areas creates complete communities where most daily needs can be met within a short distance of home, providing residents with the opportunity to patronize their local area and run daily errands by walking or cycling rather than traveling by automobile.	SEASP would provide additional connectivity for bikes and pedestrians, such as bike paths and better pedestrian facilities between key destinations, so that people do not have to get in their cars to make short trips.

Source: SCAG 2016.

SEASP would be consistent with SCAG's regional goals of providing infill housing, improving the jobs-housing balance, and integrating land uses near major transportation corridors. Building upon the recommendations of the RTP/SCS, SEASP incorporates two mixed use districts—Mixed-Use Community Core and the Mixed-Use Marina—that would encourage a greater mix of uses. Guiding principles of SEASP include: expand multi-modal transportation options through enhanced pedestrian and bicycle connectivity and increase public connectivity to open space, including the marina, other waterways, the wetlands, and parks. To achieve the SEASP vision for better and safer bicycle and pedestrian facilities, envisioning Pacific Coast Highway with a "main street" feel within the area, and identify ways to make the SEASP area a destination with limited cut-through traffic, the SEASP Mobility Plan proposes:

- A mix of uses in the vicinity of 2nd and Pacific Coast Highway to capture more internal trips to the area (minimize the number of vehicular trips that require use of dedicated roadways).

- Shorter block lengths near the 2nd Street and Pacific Coast Highway intersection to promote walking and biking in the study area.
- Additional connectivity for bikes and pedestrians that connect people to their destinations, such as bike paths and better pedestrian facilities between key destinations.
- Parallel pedestrian and bicycle linkages where they can be implemented without adversely impacting wetlands resources.
- Improved biking and walking environments so that people do not have to get into their cars to make short trips.
- Additional long-term mobility options such as the implementation of a privately financed shuttle circulator that could provide access to key destinations between the SEASP area, Cal State Long Beach, the Veteran's Hospital, Belmont Shore and Naples, and possibly the Convention Center.

As identified in Section 5.16, *Transportation and Traffic*, implementation of SEASP would result in a decrease in VMT per service population from 45.3 VMT/SP to 36.6 VMT/SP, which is consistent with regional goals to reduce passenger VMT. Therefore, the proposed Project would not interfere with SCAG's ability to implement the regional strategies outlined in the 2016-2040 RTP/SCS. No impact would occur and no mitigation measures are required.

City of Long Beach Sustainable City Action Plan

The City of Long Beach adopted the Sustainable City Action Plan in 2010. The City's Sustainability Action Plan is not directly applicable to projects. However, a consistency analysis of SEASP with the applicable goals in the Sustainable City Action plan is provided in Table 5.7-8 in order to demonstrate how the Specific Plan aligns with other City plans. As shown in this table, SEASP would not conflict with the City's Sustainable City Action Plan.

Table 5.7-8 Consistency with City of Long Beach's Sustainable City Action Plan

Applicable Goals	Project Compliance
Create at least six new community gardens by 2012.	Consistent: Greenroofs, or eco-roofs, are permitted in the Specific Plan area to reduce stormwater runoff, lower energy consumption, and provide spaces for community gardens. All new development would be required to provide a minimum open space of 20 percent of the project area. Additionally, new development within the SEASP area is required to contribute an in-lieu fee equivalent toward the City's public open space requirement, which would be

Table 5.7-8 Consistency with City of Long Beach's Sustainable City Action Plan

Applicable Goals	Project Compliance
	applied to the creation and maintenance of parks in the City.
Plant at least 10,000 new trees in Long Beach by 2020.	Consistent: The SEASP would add more trees to the SEASP area as a part of the streetscape amenities identified in the Specific Plan. New streets are required to include street trees and pedestrian amenities in the Mixed-Use Community Core. Parkways are encouraged to be planted with shade trees.
50 percent of Long Beach residents work in Long Beach by 2020.	Consistent: The SEASP supports development. As identified in Section 5.10, *Population and Housing*, the proposed Project would make the City slightly more housing-rich, which would be consistent with the City's goal to provide additional housing opportunities in Long Beach.
By 2020, at least 30 percent of Long Beach residents use alternative transportation to get to work.	Consistent: SEASP would provide a mix of uses in the vicinity of 2nd and Pacific Coast Highway to capture more internal trips to the area. The shorter block lengths near 2nd Street and Pacific Coast Highway would promote walking and biking in the area. Additionally, SEASP would provide additional connectivity for bikes and pedestrians, such as bike paths and better pedestrian facilities between key destinations, so that people do not have to get in their cars to make short trips. SEASP also encourages shared, bundled, or pooled parking; off-site parking; or valet parking plans with approval from the City's Site Plan Review Committee. Projects are eligible for a parking reduction by incorporating TDM measures. SEASP also requires formation of a Transportation Management Association, whose duties include coordination of pricing for parking.

Table 5.7-8 Consistency with City of Long Beach's Sustainable City Action Plan

Applicable Goals	Project Compliance
Reduce community electricity use by 15 percent by 2020.	Consistent: The City adopted a Green Building Policy for city buildings and is working to create a Green Building Policy for private development in the city. All new development under the SEASP would comply with the current Building and Energy Efficiency Standards, which are increasing more energy efficient. The California Energy Commission (CEC) projects that by 2020 new residential building will be required to be zero net energy, and by 2030 new nonresidential buildings will be required to be zero net energy. SEASP encourages that buildings be oriented for energy efficiency to capture day lighting, minimize heat gain, and take advantage of prevailing breezes for natural ventilation. The SEASP encourages open spaces to be appropriately landscaped and provide adequate shade devices or shade trees to reduce heat island effects. Shade devices may include umbrellas, awnings, trellises, and canopies that are integrated into the building or over open spaces.
Reduce community natural gas use by 10 percent by 2020.	Consistent: See above; all new development under the SEASP would comply with the current Building and Energy Efficiency Standards and the SEASP Design Standards and Guidelines.
Increase public transit ridership by 25 percent by 2016.	Consistent: The SEASP does not propose any changes to the existing transit routes provided by LA Metro, Long Beach Transit, or the Orange County Transportation Authority. The SEASP encourages improvements to existing transit stops in the area, upgraded concurrently with investment in the area. This would include improving bus stop areas to include benches, transit information, and shelters for transit users.
Increase bike ridership from 1 percent to 10 percent by 2016.	Consistent: SEASP would make the Pacific Coast Highway corridor more user friendly for all modes of travel, especially pedestrians and bikes. SEASP envisions the Pacific Coast Highway as a main street through the SEASP area with design elements to separate bikes from cars and pedestrians from bikes.

Table 5.7-8 Consistency with City of Long Beach's Sustainable City Action Plan

Applicable Goals	Project Compliance
	Bicycle circulation is provided on streets with designated bike lanes, separated bikeways (cycle tracks), and off-street pathways as identified in the Bicycle Network.
Create a system of at least 200 miles of interconnected bike routes (Classes 1 to 3) by 2020.	Consistent: The Bicycle Network identified in the Specific Plan identifies proposed bicycle connections. Bicycle circulation is provided on streets with designated bike lanes, separated bikeways (cycle tracks), and off-street pathways. A new Class I facility on the north side of the Los Cerritos Channel that would connect Pacific Coast Highway to Loynes Drive if it does not impact sensitive wetlands in the area. A Class I connection is also proposed that would link this route to the existing San Gabriel Bike Trail. New Class II bikeways are proposed along the Shopkeeper Road extension to Pacific Coast Highway, Studebaker Road, and along Marina Drive. Two cycle tracks (Class IV)—one along Pacific Coast Highway and the other along Studebaker Road—are proposed for the SEASP area.
Create 8 acres of open space per 1,000 residents by 2020.	Consistent: The Project area currently has approximately 66 acres of parks and recreation and is adjacent to another 340 acres of parkland and recreational uses. All new development would be required to provide a minimum open space of 20 percent of the project area. Additionally, green roofs are permitted atop buildings that face the wetlands if specified plants and animals that would be attracted to the green roof are compatible.
Establish a native landscape demonstration in every park 1 acre or larger by 2020.	Consistent: Projects within SEASP are required to adhere to the landscaping standards in Chapter 21.42, Landscaping Standards, of the zoning code. Projects within SEASP are also required to be drought tolerant and feature native wetland plants to create a seamless transition between the natural wetlands and development.

Table 5.7-8 Consistency with City of Long Beach's Sustainable City Action Plan

Applicable Goals	Project Compliance
Reduce per capita use of potable water, exceeding the State mandate to achieve a demand reduction of 20 percent in per capita water use by the year 2020.	Consistent: All new developments under the SEASP would include water efficiency improvements required under CALGreen and the City's Water Efficient Landscape Ordinance. Landscaping is required to be drought tolerant. The Long Beach Water Department obtains recycled water from the Sanitation Districts of Los Angeles County's Water Reclamation Plant within the SEASP boundary; two recycled water connections currently serve Marina Vista Park and Will Rogers Mini Park. At this time, the recycled water supply is 100 percent allocated to existing demand.

Source: City of Long Beach, 2010, Sustainable City Action Plan. February.

5.7.4 Cumulative Impacts

Climate change is a global phenomenon that is cumulative by nature, the result of combined worldwide contributions of GHGs to the atmosphere over many years. Therefore, significant direct impacts associated with the proposed Project, as discussed above, also serve as the proposed Project's cumulative impact.

The recommended mitigation measures would ensure that GHG emissions from buildout of the proposed Project would be minimized. However, additional federal, state, and local measures would be necessary to reduce GHG emissions under the proposed Project to meet the long-term GHG reduction goals under Executive Order S-03-05 and Executive Order B-30-15. Based on SCAQMD's 2020 efficiency target, this would equate to 2.2 $MTCO_2e$/SP at the Project buildout year. The buildout GHG emissions inventory for the proposed Project would generate 7.7 $MTCO_2e$/SP and would exceed the efficiency target of 2.2 $MTCO_2e$/SP. At this time, there is no plan past 2020 that achieves the long-term GHG reduction goals; however, CARB is currently updating the Scoping Plan to identify state strategies to achieve the new 2030 target established under Executive Order B-30-15. Since no additional statewide measures are currently available, cumulative GHG emissions impacts would remain significant and unavoidable.

5.7.5 Existing Regulations

State

- 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)
- Greenhouse Gas Emission Reduction Target for 2030 (Executive Order B-30-15)
- Clean Car Standards – Pavley (AB 1493)
- Renewable Portfolio Standards (SB 1078)
- Statewide Retail Provider Emissions Performance Standards (SB 1368)
- Clean Energy and Pollution Reduction Act of 2015 (SB 350)
- California Integrated Waste Management Act of 1989 (AB 939)
- California Mandatory Commercial Recycling Law (AB 341)
- California Advanced Clean Cars – LEV III (Title 13 CCR)
- Heavy-Duty Vehicle Greenhouse Gas Emissions Reduction Measure (Title 17 CCR)
- Low Carbon Fuel Standard (Title 17 CCR)
- California Water Conservation in Landscaping Act of 2006 (AB 1881)
- California Water Conservation Act of 2009 (SBX7-7)
- Airborne Toxics Control Measure to Limit School Bus Idling and Idling at Schools (13 CCR 2480)
- Airborne Toxic Control Measure to Limit Diesel-Fuel Commercial Vehicle Idling (13 CCR 2485)
- In-Use Off-Road Diesel Idling Restriction (13 CCR 2449)
- Building Energy Efficiency Standards (Title 24, Part 6)
- California Green Building Code (Title 24, Part 11)
- Appliance Energy Efficiency Standards (Title 20)

5.7.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements, the following impact would be less than significant: 5.7-2.

Without mitigation, the following impacts would be **potentially significant**:

- **Impact 5.7-1** Buildout of the Southeast Area Specific Plan would generate a substantial increase in GHG emissions compared to existing conditions and would have a significant impact on the environment.

5.7.7 Mitigation Measures

Project Design Features (PDF)

The following Project Design Features (PDF) would reduce emissions associated with the proposed Project:

Transportation and Motor Vehicles

PDF-1 **Reduction of Peak Hour Trips, Transportation Management Association (TMA):** The City shall establish a TMA with authority to implement strategies pertaining to trip reduction through transportation demand management (TDM). Responsibilities of the TMA shall include, but are not limited to:

- Operation of all shared parking subject to the TMA program.
- Real-time information and other wayfinding mechanisms.
- Coordinating and offering programs to provide biking, walking, and other trip reduction strategies.
- Data collection.

The TMA shall actively engage existing and future parking lot and garage owners to lease, sell, or make spaces publically accessible in order to be added to the district's pool of shared parking.

PDF-2 **Reduction of Peak Hour Trips, Transportation Demand Management (TDM) Plan:** Projects within SEASP that generate 50 or more peak hour trips are required to:

- Join the TMA and ensure that tenants are TMA members for the first 25 years from the date of final inspection or certificate of occupancy.

- Submit a Transportation Demand Management (TDM) plan to the Director of Development Services, or his/her designee.

PDF-3 **Reduced Parking Requirements:** Projects in SEASP are eligible for a parking reduction by incorporating Transportation Demand Management (TDM) strategies, pending Site Plan Review approval. TDM strategies applicable to reduced parking requirements, subject to the discretion of the City's Site Plan Review Committee include, but are not limited to:

- Car sharing
- Carpool/vanpool
- Unbundled parking (parking spaces are rented or sold separately, rather than automatically included with the rent or purchase price of a residential or commercial unit)
- Joint use (shared parking)
- Transit, bicycle, and pedestrian system improvements
- Trip reduction incentives to employees, such as free transit passes

A "park once" policy shall be promoted for SEASP. Rather than driving from one use to another, visitors are highly encouraged to park once and walk to one or more destinations within the Project area. Similarly, residents and employees are encouraged to walk from residences or workplaces to SEASP destinations.

All parking reduction requirements shall be approved at the discretion of the Site Plan Review Committee, which will determine the appropriate level of parking demand reduction generated by these strategies on a project-specific basis.

PDF-4 **Pedestrian Network:** Many streets in the SEASP area currently do not have sidewalks or only have sidewalks on one side of the street. Figure 6-1 in the Specific Plan shows the network of proposed sidewalk connections. Pedestrian connections shall be developed in coordination and pursuant to the standard of Chapter 7, Design Standards and Guidelines, of the Specific Plan. The addition of sidewalks and/or boardwalk are proposed along Pacific Coast Highway, Channel Drive, Studebaker Road, 2nd Street, Marina Drive, and streets internal to development that will occur in the Specific Plan area. In addition to providing more sidewalks, the Specific Plan recommends "breaking-up" the long block lengths in the SEASP area into shorter blocks to provide more connectivity and make it easier for pedestrians to comfortably navigate an area. Midblock crossings are proposed across Pacific

Coast Highway adjacent to areas designated as Community Core. Lastly, to limit exposure and increase safety for pedestrians crossing the street, curb extensions are also envisioned at crossings, possibly along Marina Drive or Studebaker Road as a transition into the mixed-use areas.

PDF-5 **Bicycle Network:** Figure 6-2 in the Specific Plan identifies proposed bicycle connections. Bicycle circulation is provided on streets with designated bike lanes, separated bikeways (cycle tracks), and off-street pathways. These facilities are classified in four bicycle facility classifications:

- *Class I Bikeway (Multiuse Path).* Provides a separated corridor that is not served by streets and highways and is away from the influence of parallel streets. Class I bikeways are for nonvehicle use only with opportunities for direct access and recreational benefits, right-of-way for the exclusive use of bicycles and pedestrians, and minimized cross-flow conflicts. SEASP includes a new Class I facility on the north side of the Los Cerritos Channel that would connect Pacific Coast Highway to Loynes Drive if it does not impact sensitive wetlands in the area. A connection is also proposed that would link this route to the existing San Gabriel Bike Trail.

- *Class II Bikeway (Bike Lanes).* Provides a delineated right-of-way assigned to bicyclists to enable more predictable movements, accommodating bicyclists through on-street corridors. New Class II bikeways are proposed along the Shopkeeper Road extension to Pacific Coast Highway, Studebaker Road, and Marina Drive.

- *Class III Bikeway (Bike Route).* A shared facility (by bikes and vehicles) that provides either continuity with other bicycle facilities or designates preferred routes through high demand on-street corridors. The existing Class III facility along 2nd Street between Pacific Coast Highway and Studebaker Road is envisioned to be improved as a Class II facility through implementation of this Specific Plan.

- *Class IV Separated Bikeways (Cycle Track).* Provides delineated right-of-way assigned to bicyclists with physical separation from vehicles. This separation can include parked vehicles, bollards, curbs, or any other physical device that provides separation. The most significant change to the bike and roadway network proposed for the SEASP area is the inclusion of two cycle tracks—one along Pacific Coast Highway and the other along Studebaker Road.

PDF-6 **Traffic Light Synchronization:** Traffic signal timing at intersections along the Pacific Coast Highway are controlled by Caltrans and the City of Long Beach. To better coordinate progression of traffic signals in the area, the SEASP identifies the following options:

- Enter into a cooperative agreement with Caltrans to maintain the signals.
- Have Caltrans relinquish sections of their facility to the City, so that the City can update the equipment and maintain the signals.
- Work with Caltrans on a comprehensive signal timing program that is implemented to coordinate and maintain the timings, including hardware to ensure that the signal clocks do not drift from one another.

Energy and Water Use

PDF-7 **Building Placement and Orientation/Heat Gain:** SEASP encourages buildings that are oriented for energy efficiency to capture day lighting, minimize heat gain, and take advantage of prevailing breezes for natural ventilation. The SEASP encourages open spaces that are appropriately landscaped and provide adequate shade devices or shade trees to reduce heat island effects. Shade devices include, but are not limited to, umbrellas, awnings, trellises, and canopies that are integrated into the building or over open spaces. Greenroofs, or eco-roofs, are permitted in the Specific Plan area to reduce stormwater runoff, lower energy consumption, and provide spaces for community gardens. SEASP also encourages parking lots that provide sufficient tree coverage to mitigate the heat island effect. Parking structures should also be shaded and/or include photovoltaic arrays on the top deck to reduce heat island effect.

PDF-8 **Energy Efficient Lighting.** SEASP requires use of low-contrast lighting, low-voltage fixtures, and energy-efficient bulbs, such as compact fluorescent and light emitting diode (LED) bulbs, for all outdoor lighting. Additionally, SEASP encourages the use of solar-powered light fixtures. For architectural lighting, use of automatic timers is encouraged to conserve energy at night. Furthermore, the SEASP includes bird-safe measures that would result in energy co-benefits, including requirements for automated on/off systems and motion detectors for interior lighting. The SEASP also encourages building owners to participate in "Lights Out for Birds" programs or similar initiatives by turning off lighting at night.

PDF-9 **Drought-Tolerant Landscaping:** Landscaping shall be drought tolerant and feature native wetland plants to create a more seamless transition between the natural

wetlands and development. Landscaping for projects (including right-of-way medians) within SEASP shall be consistent with the provisions of Chapter 21.42, Landscape Standards, in the Zoning Code. Landscaping shall be consistent with Title 21 Standards as well. For Mixed-Use Community Core and Mixed-Use Marina, the provisions of Chapter 21.42.040, Landscaping Standards, for R-3, R-4 and Nonresidential Districts shall apply.

Mitigation Measures

Impact 5.7-1

Mitigation Measures AQ-4 through AQ-6 from Section 5.3, *Air Quality*, apply here and would reduce GHG emissions of the proposed Project.

Stationary Source

AQ-4 Prior to issuance of a building permit for new development projects within the Southeast Area Specific Plan, the property owner/developer shall show on the building plans that all major appliances (dishwashers, refrigerators, clothes washers, and dryers) to be provided/installed are Energy Star appliances. Installation of Energy Star appliances shall be verified by the City of Long Beach prior to issuance of a certificate of occupancy.

Transportation and Motor Vehicles

AQ-5 Prior to issuance of building permits for residential development projects within the Southeast Area Specific Plan, the property owner/developer shall indicate on the building plans that the following features have been incorporated into the design of the building(s). Proper installation of these features shall be verified by the City of Long Beach prior to issuance of a certificate of occupancy.

- For multifamily dwellings, electric vehicle charging shall be provided as specified in Section A4.106.8.2 (Residential Voluntary Measures) of the CALGreen Code and the Long Beach Municipal Code.
- Bicycle parking shall be provided as specified in Section A4.106.9 (Residential Voluntary Measures) of the CALGreen Code.

AQ-6 Prior to issuance of building permits for nonresidential development projects within the Southeast Area Specific Plan, the property owner/developer shall indicate on the building plans that the following features have been incorporated into the design of the building(s). Proper installation of these features shall be verified by the City of Long Beach prior to issuance of a certificate of occupancy.

- For buildings with more than ten tenant-occupants, changing/shower facilities shall be provided as specified in Section A5.106.4.3 (Nonresidential Voluntary Measures) of the CALGreen Code.
- Preferential parking for low-emitting, fuel-efficient, and carpool/van vehicles shall be provided as specified in Section A5.106.5.1 (Nonresidential Voluntary Measures) of the CALGreen Code.
- Facilities shall be installed to support future electric vehicle charging at each nonresidential building with 30 or more parking spaces. Installation shall be consistent with Section A5.106.5.3 (Nonresidential Voluntary Measures) of the CALGreen Code and the Long Beach Municipal Code.

5.7.8 Level of Significance After Mitigation

Impact 5.7-1

PDF-1 through PDF-9 would reduce GHG emissions associated with the Project. Mitigation Measures AQ-4 through AQ-6 would encourage and accommodate use of alternative-fueled vehicles and nonmotorized transportation and ensure that GHG emissions from the buildout of the proposed Project would be minimized. However, additional federal, state, and local measures would be necessary to reduce GHG emissions under the proposed Project to meet the long-term GHG reduction goals under Executive Order S-03-05 and Executive Order B-30-15. Based on SCAQMD's 2020 efficiency target, this would equate to 2.2 $MTCO_2e$/SP at the Project buildout year. The buildout GHG emissions inventory for the proposed Project would generate 7.7 $MTCO_2e$/SP and would exceed the efficiency target of 2.2 $MTCO_2e$/SP. The new Executive Order B-30-15 requires CARB to prepare another update to the Scoping Plan to address the 2030 target for the state. At this time, there is no plan past 2020 that achieves the long-term GHG reduction goal established under Executive Order S-03-05 or the new Executive Order B-30-15. As identified by the California Council on Science and Technology, the state cannot meet the 2050 goal without major advancements in technology (CCST 2012). Since no additional statewide measures are currently available, Impact 5.7-1 would remain ***significant and unavoidable***.

5.7.9 References

California Air Pollution Control Officers Association (CAPCOA). 2013. California Emissions Estimator Model (CalEEMod). Version 2013.2.2. Prepared by: ENVIRON International Corporation and the California Air Districts.

California Air Resources Board (CARB). 2007, November. California Greenhouse Gas Inventory (millions of metric tons of CO_2-equivalent): Summary by Economic Sector.

———. 2008, October. Climate Change Proposed Scoping Plan: A Framework for Change.

———. 2010, August. Staff Report Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant to Senate Bill 375.

———. 2011, December. California Greenhouse Gas Inventory for 2000–2009: By Category as Defined by the Scoping Plan.

———. 2014, May 15. First Update to the Climate Change Scoping Plan: Building on the Framework, Pursuant to AB 32, The California Global Warming Solutions Act of 2006. http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm.

———. 2015a, April 24. California Greenhouse Gas Inventory for 2000–2013: By Category as Defined by the Scoping Plan, April 24.

———. 2015b, October 1. State of California Climate Change Scoping Plan: 2030 Target Workshop. http://www.arb.ca.gov/cc/scopingplan/meetings/meetings.htm.

———. 2015c, September 15. ARB Process and Schedule for SB 375 Target Update. http://www.arb.ca.gov/cc/sb375/sb375.htm.

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

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

California Council on Science and Technology (CCST). 2012, September. California's Energy Future: Portraits of Energy Systems for Meeting Greenhouse Gas Reduction Targets. http://www.ccst.us/publications/2012/2012ghg.pdf.

California Department of Finance (CDOF). 2014, December. Report P-1 (County): State and County Total Population Projections, 2010–2060 (5 -year increments). http://www.dof.ca.gov/research/demographic/reports/projections/P-1/.

California Department of Water Resources (DWR). 2010, February. Final 20x2020 Water Conservation Plan.

California Energy Commission (CEC). 2005, June. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2002 Update. Prepared by Gerry Bemis and Jennifer Allen. Staff Paper CEC-600-2005-025.

———. 2006a, December. Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004. Report CEC-600-2006-013-SF.

———. 2006b. Our Changing Climate: Assessing the Risks to California. 2006 Biennial Report, California Climate Change Center. CEC-500-2006-077.

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

———. 2015a. 2016 Building Energy Efficiency Standards, Adoption Hearing Presentation. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/ June 10.

———. 2015b. 2016 Building Energy and Efficiency Standards Frequently Asked Questions. http://www.energy.ca.gov/title24/2016standards/rulemaking/documents/2016_Building_Energy_Efficiency_Standards_FAQ.pdf.

California Natural Resources Agency. 2009, December. Final Statement of Reasons for Regulatory Action: Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to Senate Bill 97.

———. 2014, July. Safeguarding California: Reducing Climate Risk, An Update to the 2009 California Climate Adaptation Strategy.

Intergovernmental Panel on Climate Change (IPCC). 2001. *Third Assessment Report: Climate Change 2001*. New York: Cambridge University Press.

———. 2007. *Fourth Assessment Report: Climate Change 2007*. New York: Cambridge University Press.

South Coast Air Quality Management District (SCAQMD). 2010, September 28. Agenda for Meeting 15. Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group. http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2.

Southern California Association of Governments (SCAG). 2016, April 7. Final 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS): A Plan for Mobility, Accessibility, Sustainability, and a High Quality of Life. http://scagrtpscs.net/Pages/FINAL2016RTPSCS.aspx.

US Environmental Protection Agency (USEPA). 2015. Greenhouse Gas Emissions. http://www.epa.gov/climatechange/ghgemissions/gases.html.

———. 2016. Facility Level Information on Greenhouse Gases Tool (FLIGHT), year 2014. Accessed April 21, 2016. https://ghgdata.epa.gov/ghgp/main.do.

———. 2009, December. EPA: Greenhouse Gases Threaten Public Health and the Environment: Science overwhelmingly shows greenhouse gas concentrations at unprecedented levels due to human activity. https://yosemite.epa.gov/opa/admpress.nsf/7ebdf4d0b217978b852573590040443a/08d11a451131bca585257685005bf252!OpenDocument.