

5. Environmental Analysis

5.5 GREENHOUSE GAS EMISSIONS

This section of the Draft Environmental Impact Report (DEIR) evaluates the potential for the implementation of the Proposed Project to cumulatively contribute to greenhouse gas (GHG) emissions. 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 section evaluates consistency of the Proposed Project with the strategies outlined in the California Air Resources Board's (CARB) Scoping Plan in accordance with the GHG reduction goals of Assembly Bill 32 (AB 32) and strategies proposed by the Southern California Association of Governments (SCAG) to reduce vehicle miles traveled (VMT) in the region, in accordance with Senate Bill 375 (SB 375). The analysis in this section is based on implementation of the Proposed Project and trip generation and vehicle miles traveled (VMT) provided by Fehr & Peers (see Appendix H of this DEIR), as modeled using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2. The GHG emissions modeling for construction and operational phases are included in Appendix C of this DEIR.

5.5.1 Environmental Setting

5.5.1.1 GREENHOUSE GASES AND CLIMATE CHANGE

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 (CO₂), methane (CH₄), and ozone (O₃)—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 (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons, perfluorocarbons, and chlorofluorocarbons (IPCC 2001).^{1,2} The major GHGs are briefly described below.

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

¹ Water vapor (H₂O) 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 2014a). However, state and national GHG inventories do not include black carbon yet due to ongoing work resolving the precise global warming potential of black carbon. Guidance for CEQA documents does not yet include black carbon.

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

- **Methane (CH₄)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal landfills and water treatment facilities.
- **Nitrous oxide (N₂O)** 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 [CF₄] and perfluoroethane [C₂F₆]) 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 (SF₆)** is a colorless gas soluble in alcohol and ether, and slightly soluble in water. SF₆ 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 5.5-1. The GWP is used to convert GHGs to CO₂-equivalence (CO₂e) to show the relative potential that different GHGs have to retain infrared radiation in the atmosphere and contribute

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

to the greenhouse effect. For example, under IPCC's Second Assessment Report GWP values for CH₄, a project that generates 10 metric tons (MT) of CH₄ would be equivalent to 210 MT of CO₂.³

Table 5.5-1 GHG Emissions and Their Relative Global Warming Potential Compared to CO₂

GHGs	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	1	1
Methane ² (CH ₄)	12 (±3)	21	25
Nitrous Oxide (N ₂ O)	120	310	298
Hydrofluorocarbons:			
HFC-23	264	11,700	14,800
HFC-32	5.6	650	675
HFC-125	32.6	2,800	3,500
HFC-134a	14.6	1,300	1,430
HFC-143a	48.3	3,800	4,470
HFC-152a	1.5	140	124
HFC-227ea	36.5	2,900	3,220
HFC-236fa	209	6,300	9,810
HFC-4310mee	17.1	1,300	1,030
Perfluoromethane: CF ₄	50,000	6,500	7,390
Perfluoroethane: C ₂ F ₆	10,000	9,200	12,200
Perfluorobutane: C ₄ F ₁₀	2,600	7,000	8,860
Perfluoro-2-methylpentane: C ₆ F ₁₄	3,200	7,400	9,300
Sulfur Hexafluoride (SF ₆)	3,200	23,900	22,800

Source: IPCC 2001; IPCC 2007.

Notes: The IPCC has published updated global warming potential (GWP) values in its Fifth Assessment Report (2013) that reflect new information on atmospheric lifetimes of GHGs and an improved calculation of the radiative forcing of CO₂ (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 CO₂.

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 CO₂ is not included.

California's GHG 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 CO₂ emissions from fossil fuel consumption per unit of Gross State Product (total economic output of goods and services)(CEC 2006a).

³ CO₂-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.

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

The California Air Resources Board's (CARB) last update to the statewide GHG emissions inventory that used the Second Assessment Report GWPs was in 2012 for year 2009 emissions.⁴ In 2009, California produced 457 million metric tons (MMT) of CO₂e 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 2013, the statewide GHG emissions inventory was updated for 2000 to 2012 emissions using the GWPs in IPCC's Fourth Assessment Report. Based on these GWPs, California produced 459 MMTCO₂e GHG emissions in 2012. California's transportation sector remains the single largest generator of GHG emissions, producing 36.5 percent of the state's total emissions. Electricity consumption made up 20.7 percent, and industrial activities produced 19.4 percent. Other major sectors of GHG emissions include commercial and residential, recycling and waste, high global warming potential GHGs, agriculture, and forestry (CARB 2014b).

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 CO₂ in the Earth's atmosphere has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million (ppm) per year since 1960, mainly due to 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).

Projections of climate change depend heavily upon future human activity. Therefore, climate models are based on different emission scenarios that account for historic trends in emissions and on observations of the climate record that assess the human influence of the trend and projections for extreme weather events. Climate-change scenarios are affected by varying degrees of uncertainty. For example, there are varying degrees of certainty on the magnitude of the trends for:

- Warmer and fewer cold days and nights over most land areas;
- Warmer and more frequent hot days and nights over most land areas;
- An increase in frequency of warm spells/heat waves over most land areas;

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).

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

- 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).

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

Potential Climate Change Impacts for California

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are also hard to predict. In California and western North America, observations of the climate have shown: 1) a trend toward warmer winter and spring temperatures; 2) a smaller fraction of precipitation falling as snow; 3) a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones; 4) 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 5.5-1, *GHG Emissions and Their Relative Global Warming Potential Compared to CO₂*), 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 5.5-2 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 health impacts from a deterioration in air quality, water resources impacts from a reduction in water supply, and increased energy demand.

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

Table 5.5-2 Summary of GHG Emissions Risks to California

Impact Category	Potential Risk
Public Health Impacts	Poor air quality made worse More severe heat
Water Resources Impacts	Decreasing Sierra Nevada snow pack Challenges in securing adequate water supply Potential reduction in hydropower Loss of winter recreation
Agricultural Impacts	Increasing temperature Increasing threats from pests and pathogens Expanded ranges of agricultural weeds Declining productivity Irregular blooms and harvests
Coastal Sea Level Impacts	Accelerated sea level rise Increasing coastal floods 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

5.5.1.2 REGULATORY BACKGROUND

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

Federal Laws

The U.S. 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. EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act (CAA) definition of air pollutants. The findings did not in and of themselves impose any emission reduction requirements, but allowed 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).

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

EPA's endangerment finding covers emissions of six key GHGs—CO₂, CH₄, N₂O, hydrofluorocarbons, perfluorocarbons, and SF₆—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, 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 MT or more of CO₂ per year are required to submit an annual report.

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

The current Corporate Average Fuel Economy (CAFE) standards (for model years 2011 to 2016) incorporate stricter fuel economy requirements promulgated by the federal government and California into one uniform standard. Additionally, automakers are required to cut GHG emissions in new vehicles by roughly 25 percent by 2016 (resulting in a fleet average of 35.5 miles per gallon [mpg] by 2016). Rulemaking to adopt these new standards was completed in 2010. California agreed to allow automakers who show compliance with the national program to also be 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 CAA, 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, 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-3-05, signed June 1, 2005, set the following GHG reduction targets for the state:

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

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

Executive Order B-30-15

Executive Order B-30-15, signed April 29, 2015, sets a goal of reducing GHG emissions within the state to 40 percent of 1990 levels by year 2030. Executive Order B-30-15 also directs CARB to update the Scoping Plan to quantify the 2030 GHG reduction goal for the State and requires state agencies to implement measures to meet the interim 2030 goal of Executive Order B-30-15 as well as the long-term goal for 2050 in Executive Order S-03-5. It also requires the Natural Resources Agency to conduct triennial updates the California adaptation 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-3-05.

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 CO₂e 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 MMTCO₂e in 2020. In December 2007, CARB approved a 2020 emissions limit of 427 MMTCO₂e (471 million tons) for the state. The 2020 target requires a total emissions reduction of 169 MMTCO₂e, 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 MMTCO₂e) (CARB 2008).⁵

Since release of the 2008 Scoping Plan, CARB has updated the statewide GHG emissions inventory to reflect GHG emissions in light of the economic downturn and of measures not previously considered in the 2008 Scoping Plan baseline inventory. The updated forecast predicts emissions to be 545 MMTCO₂e by 2020. The revised BAU 2020 forecast shows that the state would have to reduce GHG emissions by 21.7 percent from BAU. The new inventory also identifies that if the updated 2020 forecast includes the reductions assumed from implementation of Pavley (26 MMTCO₂e of reductions) and the 33 per cent RPS (12 MMTCO₂e of reductions) the forecast would be 507 MMTCO₂e in 2020, and then an estimated 80 MMTCO₂e of additional reductions are necessary to achieve the statewide emissions reduction of AB 32 by 2020, or a 15.7 percent of the projected emissions compared to BAU in year 2020 (i.e., 15.7 percent of 507 MMTCO₂e) (CARB 2012b).

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.

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

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).
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets (several Sustainable Communities Strategies have been adopted).
- Adopting and implementing measures pursuant to state laws and policies, including California's clean car standards (amendments to the Pavley Standards adopted 2009; Advanced Clean Car standard adopted 2012), goods movement measures, and the Low Carbon Fuel Standard (LCFS) (adopted 2009).
- Creating target fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation (in progress).

Table 5.5-3 shows the proposed reductions from regulations and programs outlined in the 2008 Scoping Plan. Although local government operations were not accounted for in achieving the 2020 emissions reduction, CARB estimates that land use changes implemented by local governments that integrate jobs, housing, and services result in a reduction of 5 MMTCO₂e, which is approximately 3 percent of the 2020 GHG emissions reduction goal. 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 today's 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 VMT (CARB 2008).

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.

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

Table 5.5-3 Scoping Plan GHG Reduction Measures and Reductions toward 2020 Target

Recommended Reduction Measures	Reductions Counted toward 2020 Target of 169 MMT CO ₂ e	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%
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 MMTCO₂e and the Scoping Plan identifies 174 MTCO₂e of emissions reductions strategies.

MMTCO₂e = million metric tons of CO₂e

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 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 CO₂e (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.

2014 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 to the Scoping Plan defines CARB's climate change priorities for the next five years and lays the groundwork to reach post-2020

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

goals in Executive Orders S-3-05 and B-16-2012. The update includes the latest scientific findings related to climate change and its impacts, including short-lived climate pollutants. The GHG target identified in the 2008 Scoping Plan is based on IPCC's GWPs identified in the Second and Third Assessment Reports (see Table 5.8-1, *Consistency with SCAG's 2012-2035 RTP/SCS Goals*, in Section 5.8, *Land Use and Planning*). 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 2014a).

The update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the original 2008 Scoping Plan. As identified in the Update to the Scoping Plan, California is on track to meeting the goals of AB 32. However, the Update to the Scoping Plan also addresses the state's longer-term GHG goals within a post-2020 element. The post-2020 element provides a high level view of a long-term strategy for meeting the 2050 GHG goals, including a recommendation for the state to adopt a mid-term target. According to the Update to the Scoping Plan, local government reduction targets should chart a reduction trajectory that is consistent with, or exceeds, the trajectory created by statewide goals (CARB 2014a).

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 2014a).

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. It is anticipated the Scoping Plan will be updated within the next five years to address the new 2030 interim target to achieve a 40 percent reduction below 1990 levels by 2030.

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). 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 2010a).

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

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 2010a).

CARB is currently in the process of updating the next round of targets and methodology to comply with the requirement that targets are updated 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. Additionally, CARB is also considering whether the target setting methodology should account for advances in technology that reduces emissions. The latter change 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 2012-2035 RTP/SCS

SB 375 requires the MPOs to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plan. For the SCAG region, the 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was adopted in April 2012 (SCAG 2012). 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, but provides incentives for consistency for governments and developers.

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

5. Environmental Analysis GREENHOUSE GAS 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-1-07 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. In 2011, the state legislature adopted this higher standard in 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.

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

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, 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 (non-residential) more

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

energy efficient than the 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features that reduce energy consumption in homes and businesses.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11, Title 24, known as "CALGreen") was adopted as part of the California Building Standards Code (Title 24, CCR). CALGreen established planning and design standards for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants.⁷ The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011 and were updated most recently in 2013.

2006 Appliance Efficiency Regulations

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

Local Regulations

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% 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% 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% of suitable alley and parking lot projects use permeable pavement by 2020.

⁷ The green building standards became mandatory in the 2010 edition of the code.

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

- 50% 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% of Long Beach residents use alternative transportation to get to work.
- Reduce greenhouse gas emissions from City facilities and operations by 15% by 2020.
- Reduce electricity use in City operations by 25% by 2020.
- Reduce natural gas use in City operations by 15% by 2020.
- Facilitate the development of at least 2 Megawatts of solar energy on city facilities by 2020.
- Reduce community electricity use by 15% by 2020.
- Reduce community natural gas use by 10% 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% 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% of the City fleet is alternative fuel and/or low emission by 2020.
- Reduce vehicle emissions by 30% by 2020.
- Increase public transit ridership by 25% by 2016.
- Increase city employee average vehicle ridership to 1.5 by 2012.
- 100% of taxi cab fleets are alternative fuel and/or low emissions by 2016.

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

- Increase bike ridership from 1% to 10% 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% reduction in DPM, 45% reduction in NO_x, and 52% reduction in SO_x from OGV, CHE & 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 L.A. 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% 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 communitywide by 2016.

5.5.1.3 EXISTING SETTING

The Project Site is currently developed and consists of a mix of residential, commercial, medical, institutional, and open space and recreation uses. These land uses currently generate GHG emissions from mobile sources, natural gas and electricity use, water use and wastewater generation, solid waste, and area sources. Table 5.5-4 shows the GHG inventory from the existing land uses within the Project Site.

5. Environmental Analysis
GREENHOUSE GAS EMISSIONS

Table 5.5-4 Existing GHG Emissions Inventory

Source	GHG Emissions MTCO ₂ e/Year	
	Existing	Percent of Total
Area ¹	178	<1%
Energy	25,552	19%
Transportation ²	96,701	74%
Waste	7,124	5%
Water	1,715	1%
Total All Sectors	131,271	100%

Source: CalEEMod Version 2013.2.2.

¹ Comprised of emissions from architectural coatings, household consumer products, and landscaping equipment.

² Based on 2015 vehicle emission rates.

5.5.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on the environment if the project would:

- GHG-1 Generate greenhouse gas 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 greenhouse gases.

South Coast Air Quality Management District

SCAQMD has adopted a significance threshold of 10,000 MTCO₂e 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 has convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting (Meeting No. 15) in September 2010, SCAQMD 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 MTCO₂e annually for all land use types or the following land-use-specific thresholds: 1,400 MTCO₂e for commercial projects, 3,500 MTCO₂e for residential projects, or 3,000 MTCO₂e for mixed-

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

use 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.

SCAQMD has identified an efficiency target for projects that exceed the screening threshold. The current recommended approach is per capita efficiency targets. SCAQMD proposes 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 projects (e.g., program-level projects such as general plans). Service population is defined as the sum of the residential and employment populations provided by 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.⁸

For the purpose of this project, SCAQMD's project-level efficiency threshold is used because the plan-level thresholds are more applicable at a General Plan level. However, because the Proposed Project goes beyond year 2020 and buildout year 2035 emissions are compared to the efficiency threshold of 2.4 MTCO_{2e}/year/SP, which is interpolated from the long-term GHG reduction target for 2030 under Executive Order B-30-15 (i.e., 40 percent below 1990 levels) and 2050 under Executive Order S-03-05 (i.e., 80 percent below 1990 levels). If projects exceed 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; and therefore, use of the long-term target for the significance criteria is conservative.

5.5.3 Environmental Impacts

Methodology

The analysis in this section is based on buildout of the Proposed Project as modeled using the CalEEMod, Version 2013.2.2. for the following sectors:

- **Transportation:** GHG emissions are based on the trip generation and VMT data provided by Fehr & Peers (see Appendix H of this DEIR).

⁸ 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.

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

- **Solid Waste Disposal:** Indirect emissions from waste generation are based on waste generation rates of CalRecycle.
- **Water/Wastewater:** GHG emissions from electricity used to supply water, treat water, distribute water, and then treated wastewater are based on the Infrastructure Technical Report prepared by Fuscoe Engineering, Inc. (see Appendix E of this DEIR).
- **Area Sources:** GHG emissions are from use of fireplaces and landscaping equipment used for property maintenance. The specific emissions from individual permitted facilities are not included. For purposes of this analysis, it is assumed that all residential units contain only natural gas fireplaces.
- **Energy:** GHG emissions from use of electricity and natural gas by residential and non-residential land uses. For purposes of this analysis, existing uses are assumed to meet the 2005 Building Energy Efficiency Standards and therefore the historic energy rates in CalEEMod are applied for these uses. New buildings are assumed to comply with the 2013 Building and Energy Efficiency Standards, which are 25 and 30 percent more energy efficient for residential and nonresidential buildings, respectively, than the 2008 standards. This analysis assumes new buildings of all land use types exceed the 2008 standards by 25 percent.
- **Construction:** GHG emissions are from construction-related vehicle and equipment use and are based on CalEEMod defaults for the construction equipment mix and worker, vendor, and haul trips. Emissions are amortized over a 30-year period and are included as part of the overall inventory.

Life cycle emissions are not included in this analysis because not enough information is available for the Proposed Project, and therefore life cycle GHG emissions would be speculative.⁹ GHG modeling 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 5.5-1: Development of the proposed land uses within the Project Site would result in a substantial increase of GHG emissions that would exceed the South Coast Air Quality Management District's proposed efficiency target of 4.8 MTCO₂e. [Threshold GHG-1]

Impact Analysis: A project does not generate enough GHG emissions on its own to influence global climate change; therefore, the GHG chapter measures a project's contribution to the cumulative

⁹ 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 lifecycle analyses was not warranted for project-specific CEQA analysis in most situations, for a variety of reasons, including lack of control over some sources, and the possibility of double-counting emissions (see Final Statement of Reasons for Regulatory Action, December 2009). Because the amount of materials consumed during the operation or construction of the Proposed Project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. A life-cycle analysis is not warranted (OPR 2008).

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

environmental impact. The potential GHG emissions impacts resulting from the Proposed Project within each of the areas of the Project Site are addressed below.

Midtown Specific Plan Area

The development potential contemplated by the Midtown Specific Plan would contribute to global climate change through direct emissions of GHG from onsite area sources and vehicle trips generated by future development, and indirectly through offsite energy production required for onsite activities, water use, and waste disposal. Annual GHG emissions were calculated for construction and operation of future development that would be accommodated by the Midtown Specific Plan. Construction emissions were amortized into the operational phase in accordance with SCAQMD’s proposed methodology. The total and net increases in GHG emissions associated with the Midtown Specific Plan are shown in Table 5.5-5.

Table 5.5-5 Annual Operational Phase GHG Emissions

Source	GHG Emissions MTCO ₂ e/Year: 2035			
	Existing	Proposed Project ¹	Net Change from Existing	Percent Change
Area ²	178	792	615	346%
Energy	25,552	32,083	6,531	26%
Transportation	81,263	93,148	11,885	15%
Waste	7,124	10,317	3,193	45%
Water	1,715	2,624	909	53%
Amortized Construction ³	N/A	1,017	1,017	N/A
Total All Sectors	115,832	139,981	24,149	21%
Bright Line Screening Threshold	—	—	3,000 MTCO ₂ e	—
Exceeds Bright Line Screening Threshold	—	—	Yes	—
Project Efficiency Analysis				
Service Population (SP) ⁴	18,994	25,934	6,940	37%
Project Efficiency (MTCO ₂ e/SP)	6.10	5.50	-0.70	-11%
SCAQMD Efficiency Metric 2035 Target (MTCO ₂ e/SP)	NA	2.4	NA	NA
Exceeds Efficiency Metric	NA	Yes	NA	NA

Source: CalEEMod Version 2013.2.2. Based on 2035 transportation emission rates.

¹ For purposes of this GHG analysis, buildings on proposed land uses are assumed to comply with the 2013 Building and Energy Efficiency Standards, which are 25 and 30 percent more energy efficient for residential and nonresidential buildings, respectively, than the 2008 standards. This analysis assumes new buildings of all land use types exceed the 2008 standards by 25 percent. Includes water efficiency improvements required under CALGreen.

² Comprised of emissions from architectural coatings, household consumer products, and landscaping equipment.

³ Construction emissions are amortized over a 30-year project lifetime.

⁴ Service population based on:

Existing – 6,133 residents and 12,861 employees within the Project Site boundaries.

Future – 10,286 residents and 15,648 employees within the Project Site boundaries.

As shown in Table 5.5-5, the net increase in GHG emissions of 24,149 MTCO₂e annually from project-related operational activities would exceed SCAQMD’s draft bright-line screening threshold of 3,000 MTCO₂e for all land use types. The increase in overall land uses within the Midtown Specific Plan boundary is the primary factor for the increase in overall GHG emissions. Under the Midtown Specific Plan, increase in

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

land use development would result in a 37 percent increase in the total service population. Although the Midtown Specific Plan would result in a substantial increase in GHG emissions in the City of Long Beach, it would also result in an 11 percent decrease in GHG emissions per person. As shown in Table 5.5-5, the GHG emissions per capita rate would decrease from 6.1 MTCO_{2e}/year/SP to 5.5 MTCO_{2e}/year/SP.

The improvement in per capita efficiency would be attributable to the overall land use plan and development standards of the Midtown Specific Plan to reduce VMT. The Midtown Specific Plan would place mixed-use residential land uses near the existing Metro Blue Line stations, bus routes, and I-405. The Midtown Specific Plan would also seek improvements to and provide more bike and pedestrian pathways throughout the Midtown Specific Plan area and create better overall connectivity in the public transportation and active transit system. Also, the Midtown Specific Plan includes the closure of seven roadway segments that intersect with Long Beach Boulevard in order to create parklets (small street parks; see Figure 5.12-1, *Parks and Recreational Facilities Serving the Project Site*), which would encourage pedestrian and bicycle mobility and improve pedestrian and bicycle safety throughout the Project Site and its surroundings. 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 the Midtown Specific Plan would be more energy efficient than existing buildings throughout the Midtown Specific Plan area. These aspects of the Midtown Specific Plan would contribute to the overall reduction of per capita GHG emissions.

However, although implementation of the Midtown Specific Plan would result in a slight decrease in GHG emissions per capita, it would not meet the SCAQMD Year 2035 Target efficiency metric of 2.4 MTCO_{2e}/year/SP based on the long-term GHG reduction goals of Executive Order S-3-05 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-3-05, 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, the Midtown Specific Plan's cumulative contribution to the long-term GHG emissions in the state would be considered significant and potentially significant.

Area Outside the Midtown Specific Plan

Under the Proposed Project, the area that is outside the Midtown Specific Plan, which covers two residential blocks around Officer Black Park (approximately 4 acres) west of Pasadena Avenue between 21st Street and 20th Street (see Figure 3-5, *Current and Proposed Zoning Designations*), would be extracted from PD 29 and retain its underlying conventional zoning designations, which include Single-Family Residential, standard lot (R-1-N); Three-Family Residential (R-3-S); and Park (P). With the exception of the zoning designation revisions that would be undertaken, no physical change (e.g., additional development intensity, redevelopment) is expected to occur within this area and all existing uses (which include residential uses, a

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

church, and Officer Black Park) are expected to remain. Therefore, no GHG emissions impacts are anticipated to occur.

Impact 5.5-2: The Proposed Project would not conflict with plans adopted for the purpose of reducing GHG emissions. [Threshold GHG-2]

Impact Analysis: Applicable plans adopted for the purpose of reducing GHG emissions include CARB's Scoping Plan and SCAG's 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). A consistency analysis of the Proposed Project with these plans is presented below for each of the areas that make up the Project Site.

Midtown Specific Plan Area

CARB Scoping Plan

In accordance with AB 32, CARB developed the 2008 Scoping Plan to outline the state's strategy to achieve 1990 level emissions by year 2020. To estimate the reductions necessary, CARB projected statewide 2020 BAU GHG emissions (i.e., GHG emissions in the absence of statewide emission reduction measures). CARB identified that the state as a whole would be required to reduce GHG emissions by 28.5 percent from year 2020 BAU to achieve the targets of AB 32 (CARB 2008). Since release of the 2008 Scoping Plan, CARB has updated the 2020 GHG BAU forecast to reflect GHG emissions in light of the economic downturn and measures not previously considered in the 2008 Scoping Plan baseline inventory. The revised BAU 2020 forecast shows that the state would have to reduce GHG emissions by 21.6 percent from BAU without Pavley and the 33 percent RPS, or 15.7 percent from the adjusted baseline (i.e., with Pavley and 33 percent RPS) (CARB 2012b).

Since adoption of the 2008 Scoping Plan, state agencies have adopted programs identified in the plan, and the legislature has passed additional legislation to achieve the GHG reduction targets. Statewide strategies to reduce GHG emissions include the LCFS, California Appliance Energy Efficiency regulations, California Building Standards (i.e., CALGreen and the 2013 Building and Energy Efficiency Standards), 33 percent RPS, and changes in the corporate average fuel economy standards (e.g., Pavley I and California Advanced Clean Cars [Pavley II]). The Midtown Specific Plan's GHG emissions shown in Table 5.5-5, *Annual Operational Phase GHG Emissions*, include reductions associated with statewide strategies that have been adopted since AB 32.

As identified above, the Midtown Specific Plan would substantially improve the efficiency of the Midtown Specific Plan area (11 percent reduction in GHG emissions per service population) even though the number of people who live or work within the area would increase by 37 percent. The new buildings under the Midtown Specific Plan would be significantly more energy efficient than the current buildings throughout the Midtown Specific Plan area, many of which were constructed prior to modern building and energy efficiency standards. Likewise, plumbing fixtures and landscaping installed as part of the Midtown Specific Plan would result in a decrease in water use on a per capita basis. Although overall vehicle trips would be higher with the Midtown Specific Plan over existing conditions, the Midtown Specific Plan calls for the development of residential and nonresidential land uses within proximity to each other in addition to public transportation options, which would likely reduce per capita VMT. Therefore, the Midtown Specific Plan would not conflict

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

with statewide programs adopted for the purpose of reducing GHG emissions and impacts are not anticipated to be significant.

SCAG's 2012-2035 Regional Transportation Plan/Sustainable Communities Strategy

SCAG's 2012-2035 RTP/SCS was adopted April 4, 2012. It identifies multimodal transportation investments, including bus rapid transit, light rail transit, heavy rail transit, commuter rail, high-speed rail, active transportation strategies (e.g., bike ways and sidewalks), transportation demand management strategies, transportation systems management, highway improvements (interchange improvements, high-occupancy vehicle lanes, high-occupancy toll lanes), arterial improvements, goods movement strategies, aviation and airport ground access improvements, and operations and maintenance to the existing multimodal transportation system. SCAG's RTP/SCS identifies that land use strategies that focus new housing and job growth in areas served by high quality transit areas and other opportunity areas would be consistent with a land use development pattern that supports and complements the proposed transportation network, which emphasizes system preservation, active transportation, and transportation demand management measures (SCAG 2012). The 2012-2035 RTP/SCS incorporates local land use projections and circulation networks from the cities' and counties' general plans. The projected regional development pattern, including location of land uses and residential densities in local general plans, when integrated with the proposed regional transportation network identified in the 2012-2035 RTP/SCS, would reduce per capita vehicular travel-related GHG emissions and achieve the GHG reduction per capita targets for the SCAG region.

A consistency analysis of the Midtown Specific Plan with SCAG's 2012-2035 RTP/SCS is identified in Table 5.8-1, *Consistency with SCAG's 2012-2035 RTP/SCS Goals*, in Section 5.8, *Land Use and Planning*. As demonstrated in this table, the Midtown Specific Plan would implement land use strategies that would promote the increased use of alternative forms of transportation and a reduction in VMT. The close proximity of existing and future housing units within the Project Site and its surroundings to existing commercial and employment-generating uses, as well as future commercial and employment generating uses that would be accommodated under the Midtown Specific Plan, would reduce vehicle miles traveled by offering alternate modes of travel. Also, the Metro Blue Line's Willow Station would be a multi-modal transit hub along the Long Beach Boulevard corridor.

Furthermore, the Midtown Specific Plan includes policies and actions to increase bike and pedestrian pathways and to create better connected alternative transportation and active transit systems. As identified in Table 5.8-1, these features of the Midtown Specific Plan would be consistent with the overall intent of the SCS to reduce VMT. Therefore, the Midtown Specific Plan would not conflict with the 2012-2035 RTP/SCS.

City of Long Beach Sustainable City Action Plan

The City of Long Beach adopted the Sustainable City Action Plan in 2010. A consistency analysis of the Midtown Specific Plan with the applicable goals in the Sustainable City Action plan is provided in Table 5.5-6. As shown in this table, the Midtown Specific Plan would not conflict with the City's Sustainable City Action Plan.

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

Table 5.5-6 Consistency with City of Long Beach's Sustainable City Action Plan

Applicable Goals	Project Compliance
Create at least 6 new community gardens by 2012	Consistent: All new development within the Midtown Specific Plan area is required to contribute an in-lieu fee equivalent toward the City's public open space requirement, which would be applied to the creation and maintenance of parklets and/or public parks within the Midtown Specific Plan boundary.
Plant at least 10,000 new trees in Long Beach by 2020	Consistent: The Midtown Specific Plan would add more trees to the Midtown Specific Plan area as a part of the streetscape improvements.
50% of Long Beach residents work in Long Beach by 2020	Consistent: The Midtown Specific Plan supports compact, transit-oriented, and mixed-use developments.
By 2020, at least 30% of Long Beach residents use alternative transportation to get to work	Consistent: The Midtown Specific Plan would be an early leader in multi-modal transportation practices, where a person can safely and easily travel by walking, riding a bike, catching a bus, taking a train, or driving a car. The Midtown Specific Plan would seek improvements to and provide more bike and pedestrian pathways and create better overall connectivity in the public transportation and active transit system.
Reduce community electricity use by 15% by 2020	Consistent: All new development under the Midtown Specific Plan would comply with the 2013 Building and Energy Efficiency Standards.
Reduce community natural gas use by 10% by 2020	Consistent: All new development under the Midtown Specific Plan would comply with the 2013 Building and Energy Efficiency Standards.
Increase public transit ridership by 25% by 2016	Consistent: The Midtown Specific Plan puts an emphasis on integrating autos, public transit, bicycles, and pedestrians into a complete street. For example, the Midtown Specific Plan includes three Transit Node Districts that have been created to support the existing Metro stations and foster transit-oriented development around them. Willow, Pacific Coast Highway, and Anaheim stations would serve as transit hubs for multi-modal access in the Midtown Specific Plan area. In addition, transit improvements to the corridor would include the installation of bicycle racks and lockers, helping to add options for riders to complete their "last mile".
Increase bike ridership from 1% to 10% by 2016	Consistent: The Midtown Specific Plan would improve bike facilities and create new bike lanes that are physically separated from pedestrian and vehicular traffic, which would create safer environments for bicyclists. Also, the Midtown Specific Plan includes streetscape improvements such as the addition of canopy trees, which would provide shade along the bike lanes.
Create a system of at least 200 miles of interconnected bike routes (Class 1-3) by 2020	Consistent: The Midtown Specific Plan would integrate class IV bikeways and bike boxes along Long Beach Boulevard.
Create 8 acres of open space per 1,000 residents by 2020	Consistent: The Midtown Specific Plan would create 11 new parklets (small street parks; see Figure 5.12-1, <i>Parks and Recreational Facilities Serving the Project Site</i>) within the Midtown Specific Plan area.
Establish a native landscape demonstration in every park 1 acre or larger by 2020	Consistent: Projects within the Midtown Specific Plan area are highly encouraged to use native and low-water-use plants consistent with the landscaping palettes recommended by the Long Beach Water Department.

5. Environmental Analysis
GREENHOUSE GAS EMISSIONS

Table 5.5-6 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% in per capita water use by the year 2020	Consistent: All new developments under the Midtown Specific Plan would include water efficiency improvements required under CALGreen. Also, projects within the Midtown Specific Plan area would use irrigation systems that incorporate water-conserving methods and water-efficient technologies, such as drip emitters, evapotranspiration controllers, and moisture sensors. In addition, new development projects would explore opportunities to reuse rain water and/or gray water for irrigation.
Source: City of Long Beach, 2010, Sustainable City Action Plan. February.	

Area Outside the Midtown Specific Plan

As noted above, with the exception of the zoning designation revisions that would be undertaken in this area of the Project Site under the Proposed Project, no physical change (e.g., additional development intensity, redevelopment) is expected to occur within this area and all existing uses are expected to remain. Therefore, no impacts with plans adopted for the purpose of reducing GHG emissions are anticipated to occur.

5.5.4 Cumulative Impacts

Climate change is a global phenomenon that is cumulative by nature, as it is 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 statewide measures would be necessary to reduce GHG emissions under the Proposed Project to meet the long-term GHG reduction goals under Executive Order S-3-05, which identified a goal to reduce GHG emissions to 80 percent of 1990 levels by 2050. Based on SCAQMD's 2020 efficiency target, this would equate to 1.0 MTCO_{2e}/SP by 2050. The buildout GHG emissions inventory for the Proposed Project would generate 5.5 MTCO_{2e}/SP and would exceed the efficiency target of 2.4 MTCO_{2e}/SP. At this time, there is no plan past 2020 that achieves the long-term GHG reduction goal established under Executive Order S-3-05 for 2050 or the new Executive Order B-30-15 for 2030. As identified by the California Council on Science and Technology, the State cannot meet the 2050 goal without major advances in technology (CCST 2012). Since no additional statewide measures are currently available, cumulative GHG emissions impacts would remain significant and unavoidable.

5.5.5 Existing Regulations

State

- AB 32: California Global Warming Solutions Act

5. Environmental Analysis

GREENHOUSE GAS EMISSIONS

- Executive Order S-3-05: Greenhouse Gas Emission Reduction Targets
- Pavley Fuel Efficiency Standards (AB 1493)
- Title 24 California Code of Regulations, Part 6 (Building and Energy Efficiency Standards)
- Title 24 California Code of Regulations, Part 11 (California Green Building Code)
- Title 20 California Code of Regulations (Appliance Energy Efficiency Standards)
- Title 17 California Code of Regulations (Low Carbon Fuel Standard)
- California Water Conservation in Landscaping Act of 2006 (AB 1881)
- Statewide Retail Provider Emissions Performance Standards (SB 1368)
- Renewable Portfolio Standards (SB 1078)

5.5.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements, the following impact would be less than significant: 5.5-2.

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

- Impact 5.5-1 Buildout of the Proposed Project would result in a substantial increase in GHG emissions compared to existing conditions and would not meet the South Coast Air Quality Management District's Year 2035 Target efficiency metric of 2.4 MTCO_{2e}/year/SP or the long-term GHG reduction goal under Executive Order S-3-05.

5.5.7 Mitigation Measures

Impact 5.5-1

Mitigation Measures AQ-4 through AQ-6 from Section 5.2, *Air Quality*, which are reproduced below, apply here and would also reduce GHG emissions of the Proposed Project.

Stationary Source

- AQ-4 Prior to issuance of a building permit for new development projects within the Midtown Specific Plan area, 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 Building and Safety Bureau 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 Midtown Specific Plan area, the property owner/developer shall indicate on the building plans that the following features have been incorporated into the design of the building(s).

5. Environmental Analysis GREENHOUSE GAS EMISSIONS

Proper installation of these features shall be verified by the City of Long Beach Building and Safety Bureau 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.
- 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 non-residential development projects within the Midtown Specific Plan area, 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 Building and Safety Bureau 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 non-residential building with 30 or more parking spaces. Installation shall be consistent with Section A5.106.5.3 (Nonresidential Voluntary Measures) of the CALGreen Code.

5.5.8 Level of Significance After Mitigation

Impact 5.5-1

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 statewide measures would be necessary to reduce GHG emissions under the Proposed Project to meet the long-term GHG reduction goals under Executive Order S-3-05, which identified a goal to reduce GHG emissions to 80 percent below 1990 levels by 2050, and Executive Order B-30-15, which identified a goal to reduce GHG emissions to 40 percent below 1990 levels by 2030. 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-3-05 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 5.5-1 would remain significant and unavoidable.

5. Environmental Analysis

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5. Environmental Analysis GREENHOUSE GAS EMISSIONS

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