

4.6 GREENHOUSE GAS EMISSIONS

This section of the EIR analyzes the potential environmental effects on climate change from implementation of the proposed plan. No comment letters addressing climate change were received in response to the Notice of Preparation (NOP) circulated for the proposed plan.

This section of the EIR explains how emissions of greenhouse gases (GHGs) from the plan buildout can (i) contribute to elevated levels of GHGs which naturally exist in Earth's atmosphere and, consequently, (ii) cause climate change with its adverse impacts on the environment such as higher temperatures, raised sea levels, and damage to flora and fauna. The plan buildout will produce GHG emissions likely to exceed the current baseline of 299,398 metric tons of CO₂e in the San Pedro CPA, and will produce such emissions through the construction and operation of the new residential, commercial and industrial uses described in the Plan. The Mitigation Measures identified in this section, even when coupled with the existing regulatory system for GHGs, will not reduce the impact of these emissions to a less-than-significant level.

Data for this section were obtained from the South Coast Air Quality Management District (SCAQMD) CEQA Air Quality Handbook, City of Los Angeles General Plan, San Pedro Community Plan Policies, Chapter 3 (Project Description) of this EIR, and traffic data provided by Iteris. Full reference-list entries for all cited materials are provided in Section 4.6.4 (References).

4.6.1 Environmental Setting

The San Pedro Community Plan contains approximately 3,674 acres in the southern portion of the City of Los Angeles. Los Angeles is located within the South Coast Air Basin (Basin), named so because its geographical formation is that of a basin, with the surrounding mountains trapping the air and its pollutants in the valleys or basins below. This 6,600-square-mile area includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside Counties. The regional climate within the Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. Climate change within the Basin is influenced by a wide range of emission sources, such as utility usage, heavy vehicular traffic, industry, and meteorology.

■ Climate Change Background

Parts of the Earth's atmosphere act as an insulating blanket of just the right thickness, trapping sufficient solar energy to keep the global average temperature in a suitable range. The "blanket" is a collection of atmospheric gases called "greenhouse gases" based on the idea that these gases trap heat like the glass walls of a greenhouse. These gases, mainly water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and chlorofluorocarbons (CFCs), all act as effective global insulators, reflecting visible light and infrared radiation back to earth. Human activities, such as producing electricity and driving internal combustion vehicles, have contributed to the elevated concentration of these gases in the atmosphere. This in turn is causing the earth's temperature to rise. A warmer earth may lead to changes

in rainfall patterns, smaller polar ice caps, a rise in sea level, and a wide range of impacts on plants, wildlife, and humans.

The relationships of water vapor and ozone as GHGs are poorly understood. It is unclear how much water vapor acts as a GHG. The uncertainty is due to the fact that water vapor can also produce cloud cover, which reflects sunlight away from Earth and can counteract its effect as a GHG. Also, water vapor tends to increase as the Earth warms, so it is not well understood whether the increase in water vapor is contributing to or rather a result of climate change. Ozone tends to break down in the presence of solar radiation but is not understood well enough for evaluation. For these reasons, methodologies approved by the Intergovernmental Panel on Climate Change (IPCC), U.S. Environmental Protection Agency (USEPA), and the California Air Resources Board (California ARB) focus on carbon dioxide, nitrous oxide, methane, and chlorofluorocarbons. The following provides a brief description of each of these GHGs.

Carbon Dioxide

The natural production and absorption of carbon dioxide occur through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees, and wood products, and as a result of other chemical reactions, such as those required to manufacture cement. Globally, the largest source of CO₂ emissions is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, and industrial facilities. A number of specialized industrial production processes and product uses, such as mineral or metal production, and the use of petroleum-based products, leads to CO₂ emissions.

CO₂ is removed from the atmosphere (or sequestered) when it is absorbed by plants as part of the biological carbon cycle. Natural sources of CO₂ occur within the carbon cycle where billions of tons of atmospheric CO₂ are removed by oceans and growing plants and are emitted back into the atmosphere through natural processes. When in balance, total CO₂ emissions and removals from the entire carbon cycle are roughly equal. Since the Industrial Revolution in the 1700s, human activities, including burning of oil, coal, and gas and deforestation, increased CO₂ concentrations in the atmosphere by 35 percent as of 2005.

Methane

Methane is emitted from a variety of both human-related and natural sources. CH₄ is emitted during the production and transport of coal, natural gas, and oil, from livestock and other agricultural practices, and from the decay of organic waste in municipal solid waste landfills. It is estimated that 60 percent of global CH₄ emissions are related to human activities. Natural sources of CH₄ include wetlands, gas hydrates,⁶³ permafrost, termites, oceans, freshwater bodies, non-wetland soils, and wildfires. CH₄ emission levels from a particular source can vary significantly from one country or region to another. These variances depend on many factors, such as climate, industrial and agricultural production characteristics, energy types and usage, and waste management practices. For example, temperature and moisture have a significant effect on the anaerobic digestion process, which is one of the key biological

⁶³ Gas hydrates are crystalline solids that consist of a gas molecule, usually methane, surrounded by a “cage” of water molecules. (U.S. Geological Survey. Gas [Methane] Hydrates—A New Frontier [1992], <http://marine.usgs.gov/fact-sheets/gas-hydrates/title.html> [accessed September 1992]).

processes resulting in CH₄ emissions from both human and natural sources. Also, the implementation of technologies to capture and utilize CH₄ from sources such as landfills, coalmines, and manure management systems affects the emission levels from these sources.

Nitrous Oxide

Concentrations of nitrous oxide also began to rise at the beginning of the Industrial Revolution reaching 314 parts per billion (ppb) by 1998. Microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen, produce nitrous oxide. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to the atmospheric load of N₂O.

Chlorofluorocarbons

Chlorofluorocarbons have no natural source, but were synthesized for uses as refrigerants, aerosol propellants, and cleaning solvents. Since their creation in 1928, the concentrations of CFCs in the atmosphere have been rising. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken, and levels of the major CFCs are now remaining static or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years. Since they are also a GHG, along with such other long-lived synthesized gases as CF₄ (carbontetrafluoride) and SF₆ (sulfurhexafluoride), they are of concern. Another set of synthesized compounds called HFCs (hydrofluorocarbons) are also considered GHGs, though they are less stable in the atmosphere and therefore have a shorter lifetime and less of an impact. CFCs, CF₄, SF₆, and HFCs have been banned and are no longer available. Therefore, these GHGs are not included further in this analysis.

■ Potential Effects of Global Climate Change

Climate change could have a number of adverse effects. Although these effects would have global consequences, in most cases they would not disproportionately affect any one site or activity. In other words, many of the effects of climate change are not site specific. Emission of greenhouse gases would contribute to the changes in the global climate, which would in turn, have a number of physical and environmental effects. A number of general effects are discussed below.

Sea Level Rise and Flooding

The California Climate Change Center predicts that sea level in California would rise between 0.36 to 2.3 feet (10.9 to 71.6 centimeters [cm]) above existing mean sea level (MSL) by 2099 as a result of climate change.⁶⁴ Measurements taken in the City of Alameda indicate that the current rate of sea level rise is about 0.29 foot per century. Therefore, projected climate change effects on sea level would increase the

⁶⁴ California Climate Change Center, *Projecting Future Sea Level*, a Report from the California Climate Change Center, CEC-500-2005-202-SF, prepared by D. Cayan, P. Bromirski, K. Hayhoe, M. Tyree, M. Dettinger, and R. Flick (March 2006), Table 3 (Projected global sea level rise [SLR] [cm] for the SRES A1fi, A2, and B1 greenhouse gas emission scenarios. SLR for A2 and B1 scenarios is estimated by combining output recent global climate change model simulations with MAGICC projections for the ice melt component. SLR estimates for A1fi estimated from MAGICC based on A2 temperature changes scaled according to those in A1fi), p. 19.

existing rate of sea level rise by 0.07 to 1.94 feet per century.⁶⁵ When combined with astronomical tides, even a 1-foot increase in MSL would result in the 100-year event high tide peak occurring at the 10-year event frequency.⁶⁶ In other words, the frequency of a current 100-year high tide (about 9.5 feet above current MSL) would occur 10 times more often if sea levels increase by 1 foot above current MSL. If sea level rise continues at existing rates, San Pedro will be impacted. The Pacific Institute has prepared maps to identify the areas that might be inundated if sea levels were to increase by 4.58 feet (1.4 meter)⁶⁷ (map included in Appendix E).

In the future, precipitation events are predicted to vary in terms of timing, intensity, and volume according to many climate change models. Extreme storm events may occur with greater frequency. Changes in rainfall and runoff could affect flows in surface water bodies, causing increased flooding and runoff to the storm drain system.

Water Supply

California Health and Safety Code Section 38501(a) recognizes that climate change “poses a serious threat to the economic well-being, public health, natural resources, and the environment of California,” and notes, “the potential adverse impacts of [climate change] include ... reduction in the quality and supply of water to the state from the Sierra snowpack.” As most of the state, including the City of Los Angeles, depends on surface water supplies originating in the Sierra Nevada, this water supply reduction is a concern.

Most of the scientific models addressing climate change show that the primary effect on California’s climate would be a reduced snow pack and a shift in stream-flow seasonality. A higher percentage of the winter precipitation in the mountains would likely fall as rain rather than as snow in some locations, reducing the overall snowpack. Further, as temperatures rise, snowmelt is expected to occur earlier in the year. As a result, peak runoff would likely come a month or so earlier. The end result of this would be that the state may not have sufficient surface storage to capture the early runoff, and so, absent construction of additional water storage projects, a portion of the current supplies would flow to the oceans and be unavailable for use in the state’s water delivery systems.

⁶⁵ California Climate Change Center, *Climate Warming and Water Supply Management in California: White Paper*, a Report from Climate Change Center, CEC-500-2005-195-SF, prepared by J. Medelin, J. Harou, M. Olivares, J. Lund, R. Howitt, S. Tanaka, M. Jenkins, K. Madani, and T. Zhu (March 2006), Chapter 2 (Potential Impacts of Climate Change on California’s Water Resources), Table 2-6 (Relative Sea Level Trends for Eight Tide Gauges Along the Coast of California with 50 Years or More of Record).

⁶⁶ California Climate Change Center, *Climate Warming and Water Supply Management in California: White Paper*, a Report from Climate Change Center, CEC-500-2005-195-SF, prepared by J. Medelin, J. Harou, M. Olivares, J. Lund, R. Howitt, S. Tanaka, M. Jenkins, K. Madani, and T. Zhu (March 2006), Chapter 2 (Potential Impacts of Climate Change on California’s Water Resources), Table 2-6 (Relative Sea Level Trends for Eight Tide Gauges Along the Coast of California with 50 Years or More of Record).

⁶⁷ California Climate Change Center, *The Impacts of Sea Level Rise on the California Coast*, CEC-500-2009-024-F, Prepared by Matthew Heberger, Heather Cooley, Pablo Herrera, Peter H. Gleick, and Eli Moore of the Pacific Institute (August 2009).

Water Quality

Climate change could have adverse effects on water quality, which would in turn affect the beneficial uses (habitat, water supply, etc.) of surface water bodies and groundwater. The changes in precipitation discussed above could result in increased sedimentation, higher concentration of pollutants, higher dissolved oxygen levels, increased temperatures, and an increase in the amount of runoff constituents reaching surface water bodies. Sea level rise, discussed above, could result in the encroachment of saline water into freshwater bodies.

Ecosystems and Biodiversity

Climate change is expected to have effects on diverse types of ecosystems, from alpine to deep-sea habitat. As temperatures and precipitation change, seasonal shifts in vegetation will occur, which could affect the distribution of associated flora and fauna species. As the range of species shifts, habitat fragmentation could occur, with acute impacts on the distribution of certain sensitive species. The IPCC states that “20 percent to 30 percent of species assessed may be at risk of extinction from climate change impacts within this century if global mean temperatures exceed 2 to 3°C (3.6 to 5.4°F) relative to pre-industrial levels.”⁶⁸ Shifts in existing biomes⁶⁹ could also make ecosystems vulnerable to invasive species encroachment. Wildfires, which are an important control mechanism in many ecosystems, may become more severe and more frequent, making it difficult for native plant species to repeatedly re-germinate. In general terms, climate change is expected to put a number of stressors on ecosystems, with potentially catastrophic effects on biodiversity.

Human Health Impacts

Climate change may increase the risk of vector-borne infectious diseases, particularly those found in tropical areas and spread by insects—malaria, dengue fever, yellow fever, and encephalitis.⁷⁰ While these health impacts would largely affect tropical areas in other parts of the world, effects would also be felt in California. Warming of the atmosphere would be expected to increase smog and particulate pollution, which could adversely affect individuals with heart and respiratory problems, such as asthma. Extreme heat events would also be expected to occur with more frequency, and could adversely affect the elderly, children, and the homeless. Finally, the water supply impacts and seasonal temperature variations expected as a result of climate change could affect the viability of existing agricultural operations, making the food supply more vulnerable.

■ Potential Effects of Human Activity on Climate Change

The burning of fossil fuels, such as coal and oil, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO₂ emissions (and thus substantial increases in

⁶⁸ Intergovernmental Panel on Climate Change, *Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. Parry, Martin L., Canziani, Osvaldo F., Palutikof, Jean P., van der Linden, Paul J., and Hanson, Clair E. (eds.) (Cambridge, United Kingdom: Cambridge University Press, 2007).

⁶⁹ A biome is a major ecological community classified by the predominant vegetation and hence animal inhabitants.

⁷⁰ U.S. Environmental Protection Agency, *Climate Change—Health and Environmental Effects* (2008), <http://www.epa.gov/climatechange/effects/health.html#climate> (accessed December 13, 2009).

atmospheric concentrations). In 1994, atmospheric CO₂ concentrations were found to have increased by nearly 30 percent above pre-industrial (c. 1860) concentrations.

The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential (GWP), and is expressed as a function of how much warming would be caused by the same mass of CO₂. Thus, GHG emissions are typically measured in terms of pounds or tons of CO₂ equivalents (CO₂e), and are often expressed in metric tons (MT CO₂e) or millions of metric tons of CO₂ equivalents (MMT CO₂e).

- **Global Emissions.** Worldwide emissions of GHGs in 2004 were nearly 30 billion tons of CO₂e per year (including both ongoing emissions from industrial and agricultural sources, but excluding emissions from land-use changes).⁷¹
- **U.S. Emissions.** In 2004, the United States emitted 7 billion tons of CO₂e. Of the four major sectors nationwide—residential, commercial, industrial, and transportation—transportation accounts for the highest percentage of GHG emissions (approximately 35 to 40 percent); these emissions are entirely generated from direct fossil fuel combustion. In 2008, the United States emitted 6.9 billion tons of CO₂e, with transportation accounting for the highest percentage of GHG emissions, approximately 32 percent.⁷²
- **State of California Emissions.** In 2004, California emitted approximately 483 million tons of CO₂e, or about 6 percent of the U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. By contrast, California has the fourth lowest per-capita GHG emission rates in the country, due to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the state’s GHG emissions rate of growth by more than half of what it would have been otherwise. Another factor that has reduced California’s fuel use and GHG emissions is its mild climate compared to that of many other states. In 2008, California’s GHG emissions were approximately 478 million metric tons CO₂e, generally attributed to the reduced travel and therefore transportation emissions.⁷³ The California Energy Commission found that transportation is the source of approximately 41 percent of the State’s GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent, and industrial sources at 20 percent. Agriculture and forestry is the source of approximately 8.3 percent, as is the source categorized as “other,” which includes residential and commercial activities.⁷⁴
- **San Pedro Emissions.** GHG emissions inventory for the existing San Pedro community estimates the energy used and waste produced within the San Pedro Community Plan area. Total existing emissions equal approximately 299,398 metric tons CO₂e. Residential emissions within the San Pedro CPA area represent approximately 38.7 percent of emissions while transportation, commercial, industrial, and solid waste represent 35.9, 18.5, 4.7 and 2.3 percent, respectively.

⁷¹ United Nations Framework Convention on Climate Change, Sum of Annex I and Non-Annex I Countries without Counting Land-Use, Land-Use Change and Forestry (LULUCF), Predefined Queries: GHG total without LULUCF (Annex I Parties) (Bonn, Germany, 2007), http://unfccc.int/ghg_emissions_data/predefined_queries/items/3814.php (accessed May 2, 2007).

⁷² U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2004 (2006).

⁷³ U.S. Environmental Protection Agency, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2008. EPA# 430-R-10-006 (April 2010).

⁷⁴ California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004—Final Staff Report, publication # CEC-600-2006-013-SF, Sacramento, CA (December 22, 2006; updated January 23, 2007).

Various aspects of constructing, operating, and the eventual demolition of industrial, commercial and residential uses will result in GHG emissions. Operational GHG emissions result from energy use associated with heating, lighting, and powering buildings (typically through natural gas and electricity consumption), pumping and processing water (which consumes electricity), as well as fuel used for transportation and decomposition of waste associated with building occupants. New development can also create GHG emissions in its construction and demolition phases in connection with the use of fuels in construction equipment, creation and decomposition of building materials, vegetation clearing, and other activities. However, it is noted that new development does not necessarily create entirely new GHG emissions. Occupants of new buildings are often relocating and shifting their operational-phase emissions from other locations.

4.6.2 Regulatory Framework

Global climate change is addressed through the efforts of various federal, state, regional, and local government agencies as well as national and international scientific and governmental conventions and programs. These agencies work jointly and individually to understand and regulate the effects of greenhouse gas emissions and resulting climate change through legislation, regulations, planning, policy-making, education, and a variety of programs. The significant agencies, conventions, and programs focused on global climate change are discussed below.

■ International and Federal

International Protocols

The United States participated in the United Nations Framework Convention on Climate Change (UNFCCC) (signed on March 21, 1994). The Kyoto Protocol was the first treaty made under the UNFCCC and was the first international agreement to regulate GHG emissions. It has been estimated that if the commitments outlined in the Kyoto Protocol were met, global GHG emissions could have been reduced by an estimated 5 percent from 1990 levels during the first commitment period of 2008–2012. The United States has not ratified the Protocol and is not bound by the Protocol's commitments.

Representatives from 170 countries met in Copenhagen in December 2009 to ratify an updated UNFCCC agreement (Copenhagen Accord). The Copenhagen Accord, a voluntary agreement between the United States, China, India, and Brazil, recognizes the need to keep global temperature rise to below 2°C and obligates signatories to establish measures to reduce greenhouse gas emissions and to prepare to provide help to poorer countries in adapting to Climate Change. The Copenhagen Accord is a non-binding agreement.

Representatives from 194 United Nations member states, including business leaders and non-government organizations, met in Cancun, Mexico in December 2010 to participate in the United Nations Climate Change Conference (COP-16). In all, approximately 25,000 participants met to work out the language and reduction targets of a new agreement. The result was the Cancun Agreements, a voluntary agreement similar to the Copenhagen Accord, but with broader UN member nation support. The Cancun Agreements set the stage for the next year's climate conference in Durban, South Africa,

where the unresolved issues—including the future of the Kyoto Protocol and a binding agreement—will once again be on the table. The key elements of the Cancun Agreements are as follows:

- Countries agree to keep temperature rise below 2°C above pre-industrial levels and developed countries are urged to make more aggressive emission cut pledges.
- A \$30 billion package (“fast-start financing”) for 2012 to aid nations taking immediate action to adapt to global warming.
- The creation of a “Global Climate Fund” that will provide financing of \$100 million annually for longer-term adaptation and mitigation measures in developing countries (although where this aid will come from is still unresolved). The World Bank was designated as its interim trustee.
- The creation of the forestry program, Reducing Emissions from Deforestation and Forest Degradation (REDD+), which provides compensation for the preservation of tropical forests in developing countries.
- Specific language and a formal system for monitoring and reporting emissions. This includes a process of “international consultations and analysis” for developing countries that is “non-intrusive, non-punitive, and respectful of national sovereignty”, incorporating analysis by technical experts and resulting in a summary report.

The UNFCCC met again in December 2011 in South Africa to continue deliberating on a treaty to replace the Kyoto Protocol, which ends in 2012.

U.S. Environmental Protection Agency

The USEPA is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce GHG intensity generated by the United States. These programs focus on energy efficiency, renewable energy, methane and other non-CO₂ gases, agricultural practices, and implementation of technologies to achieve GHG reductions.

The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October of 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufactures of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions, with the first annual reports due in March 2011.

On May 13, 2010, the USEPA issued a Final Rule that will take effect on January 2, 2011, setting a threshold of 75,000 MT CO₂e per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date.

On November 10, 2010, the USEPA published the “PSD and Title V Permitting Guidance for Greenhouse Gases.” USEPA’s new guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement new greenhouse gas reduction requirements while mitigating costs for industry. Most states will use USEPA’s new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other big pollution point sources.

On January 2, 2011, USEPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit

at least 75,000 MT CO₂e per year. Under Phase 1, no sources are required to obtain a Title V permits solely due to GHG emissions. Phase 2 of the Tailoring Rule goes into effect July 1, 2011. At that time new sources are subject to GHG Title V permitting if the source emits 100,000 MT CO₂e per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 MT CO₂e per year.

■ State

California Air Resources Board

The California ARB, a part of the California EPA (Cal/EPA), is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, California ARB conducts research, sets state ambient air quality standards (California Ambient Air Quality Standards), compiles emission inventories, develops suggested control measures, and provides oversight of local programs. California ARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. California ARB has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following GHG emission reduction targets:

- By 2010, California shall reduce GHG emissions to 2000 levels
- By 2020, California shall reduce GHG emissions to 1990 levels
- By 2050, California shall reduce GHG emissions to 80 percent below 1990 levels

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

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHGs in California. California ARB has determined the statewide levels of GHG emissions in 1990 to be 427 MMT CO₂e. California ARB has adopted the Climate Change Scoping Plan, which outlines the state's strategy to achieve the 2020 GHG limit set by AB 32. This Scoping Plan proposes a comprehensive set of actions designed to reduce overall greenhouse gas emissions in California, improve the environment, reduce dependence on oil, diversify energy sources, save energy, create new jobs, and enhance public health.

Part of California's strategy for achieving GHG reductions under AB 32 are the early action greenhouse gas reduction measures, which include the following: a low carbon fuel standard; reduction of emissions from non-professional servicing of motor vehicle air conditioning systems; and improved landfill methane capture.⁷⁵

⁷⁵ California Air Resources Board, Proposed Early Actions to Mitigate Climate Change in California (December 20, 2007), http://www.arb.ca.gov/cc/factsheets/support_ccoverview.pdf.

Senate Bill (SB) 97

SB 97, enacted in 2007, amends the CEQA statute to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. In March 2010, the California Office of Administrative Law codified into law CEQA amendments that provide regulatory guidance with respect to the analysis and mitigation of the potential effects of GHG emissions, as found in CEQA Guidelines Section 15183.5. To streamline analysis, CEQA provides for analysis through compliance with a previously adopted plan or mitigation program under special circumstances.

One of the goals of the SB 97 is to allow programmatic level review and mitigation of GHG emissions that allows for the streamlining of CEQA review for subsequent development projects.

Executive Order S-13-08

Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, provides clear direction for how the state should plan for future climate impacts. The first result is the 2009 California Adaptation Strategy (CAS) report which summarizes the best-known science on climate change impacts in the state to assess vulnerability and outlines possible solutions that can be implemented within and across state agencies to promote resiliency.

California Code of Regulations (CCR) Title 24

CCR Title 24, Part 6 (California's Energy Efficiency Standards for Residential and Nonresidential Buildings) (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to increase the baseline energy efficiency requirements. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions. The 2008 standards are the most recent version which went into effect in January 1, 2010.

CCR Title 24, Part 11 (California's Green Building Standard Code) (CALGreen) was adopted in 2010 and went into effect January 1, 2011. CALGreen is the first statewide mandatory green building code and significantly raises the minimum environmental standards for construction of new buildings in California. The Mandatory provisions in CALGreen will reduce the use of VOC emitting materials, strengthen water conservation, and require construction waste recycling.

■ Regional/Local

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) is the agency principally responsible for comprehensive air pollution control in the Los Angeles County area. In order to provide GHG emission guidance to the local jurisdictions within the South Coast Air Basin, the SCAQMD has organized a Working Group to develop GHG emission analysis guidance and thresholds.

SCAQMD released a draft guidance document regarding interim CEQA GHG significance thresholds in October 2008. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an

interim GHG significance threshold for projects where the SCAQMD is lead agency. SCAQMD proposed a tiered approach, whereby the level of detail and refinement needed to determine significance increases with a project's total GHG emissions. The tiered approach defines projects that are exempt under CEQA and projects that are within the jurisdiction of and subject to the policies of a GHG Reduction Plan as less than significant.

Air Quality Management Plan

The SCAQMD and the Southern California Association of Governments (SCAG) are the agencies responsible for preparing the Air Quality Management Plan (AQMP) for the Basin. Since 1979, a number of AQMPs have been prepared. The 1997 AQMP, updated in 1999 and replaced in 2003, was based on the 1994 AQMP, and ultimately the 1991 AQMP, and was designed to comply with state and federal requirements, reduce the high level of pollutant emissions in the Basin, and ensure clean air for the region through various control measures. To accomplish its task, the 1991 AQMP relied on a multilevel partnership of governmental agencies at the federal, state, regional, and local level. These agencies (i.e., the USEPA, the California ARB, local governments, SCAG, and SCAQMD) are the cornerstones that implement the AQMP programs.

The 2003 AQMP, adopted in August 2003, updated the attainment demonstration for the federal standards for ozone and PM₁₀; replaced the 1997 attainment demonstration for the federal CO standard and provided a basis for a maintenance plan for CO for the future; and updated the maintenance plan for the federal NO₂ standard that the Basin has met since 1992.

The most recent comprehensive plan is the 2007 AQMP adopted on July 13, 2007. The 2007 AQMP is designed to meet the state and Federal Clean Air Act planning requirements and focuses on ozone and PM_{2.5}. The 2007 AQMP incorporates significant new emissions inventories, ambient measurements, scientific data, control strategies, and air quality modeling.

City of Los Angeles—Green LA and Climate LA

The City of Los Angeles published a climate action plan in 2007 titled "GreenLA." In order to provide detailed information on action items discussed in GreenLA, the City published an implementation document titled "ClimateLA." ClimateLA presents the existing GHG inventory for the City, includes enforceable GHG reduction requirements, provides mechanisms to monitor and evaluate progress, and includes mechanisms that allow the plan to be revised in order to meet targets. By 2030, the plan aims to reduce GHG emissions by 35 percent from 1990 levels, which were estimated to be approximately 54.1 million metric tons.

Therefore, the City will need to lower annual GHG emissions to approximately 35.1 million metric tons per year by 2030. To achieve these reductions the City has developed strategies that focus on energy, water use, transportation, land use, waste, open space and greening, and economic factors. The Proposed Plan's consistency with these strategies is discussed in more detail below.

To reduce emissions from energy usage, ClimateLA proposes the following goals: increase the amount of renewable energy provided by the Los Angeles Department of Water and Power (LADWP); present a comprehensive set of green building policies to guide and support private sector development; reduce

energy consumed by City facilities and utilize solar heating where applicable; and help citizen to use less energy. With regard to waste, ClimateLA sets the goal of reducing or recycling 70 percent of trash by 2015. With regard to open space and greening, ClimateLA includes the following goals: create 35 new parks; revitalize the Los Angeles River to create open space opportunities; plant one million trees throughout the City; identify opportunities to “daylight” streams; identify promising locations for stormwater infiltration to recharge groundwater aquifers; and collaborate with schools to create more parks in neighborhoods.

City of Los Angeles General Plan

4 The General Plan includes a Framework Element, citywide Elements, and Community Plans, and gives policy direction to the planning regulatory and implementation programs. The following goals and policies in the Los Angeles General Plan elements pertain to Climate Change:

Table 4.6-1 General Plan Policies Relevant to Greenhouse Gas Emissions	
<i>No.</i>	<i>Goal</i>
AIR QUALITY ELEMENT	
Goal 2	Less reliance on single occupant vehicles with fewer commute and non-work trips.
Goal 3	Efficient management of transportation facilities and system infrastructure using cost effective system management and innovative demand-management techniques.
Goal 4	Minimal impact of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation, and air quality.
Goal 5	Energy efficiency through land use and transportation planning, the use of renewable resources and less polluting fuels, and the implementation of conservation measures including passive methods such as site orientation and tree planting.
CONSERVATION ELEMENT	
Endangered Species, Policy 1	Continue striving to meet the city's water, power and other needs while at the same time striving to be a good steward of natural resources and minimizing impacts on the environment.
Resource Management (Mineral Resources), Policy 2	Continue to encourage the reuse of sand and gravel products such as concrete, and of alternative materials use in order to reduce the demand for extraction of natural sand and gravel.
Resource Management (Fossil Fuels), Policy 1	Continue to encourage energy conservation and petroleum product reuse.
HOUSING ELEMENT	
Policy 1.1.4	Expand location options for residential development, particularly in designated Centers, Transit Oriented Districts, and along Mixed-Use Boulevards.
Policy 2.1.2	Establish Standards that Enhance Health Outcomes.
Policy 2.2.1	Provide incentives to encourage the integration of housing with other compatible land uses.
Policy 2.2.2	Develop design standards that promote sustainable development in public and private open space and street rights-of-way.
Policy 2.2.5	Educate the public to understand and support the benefits of mixed-use and mixed-income communities to accommodate projected growth.
Policy 2.2.5	To accommodate projected growth to 2014 in sustainable way, encourage housing in centers and near transit, in accordance with the General Plan framework Element, as reflected in Map E.S.1.

Table 4.6-1 General Plan Policies Relevant to Greenhouse Gas Emissions	
No.	Goal
Policy 2.3.1	Streamline entitlement, environmental, and permitting processes for sustainable buildings.
Policy 2.3.2	Promote and facilitate reduction of water consumption in new and existing housing.
Policy 2.3.3	Promote and facilitate reduction of energy consumption in new and existing housing.
Policy 2.3.4	Promote and facilitate reduction of waste in construction and building operations.
Policy 2.3.5	Promote outreach and education regarding sustainable buildings.
TRANSPORTATION ELEMENT	
Objective 1	Expand neighborhood transportation services and programs to enhance neighborhood accessibility.
Objective 2	Reduce the impacts of traffic growth, reduce congestion, and improve air quality by implementing a comprehensive program of multimodal strategies that encompass physical and operational improvements as well as demand management.
Objective 3	Support development in regional centers, community centers, major economic activity areas, and along mixed-use boulevards as designated in the Community Plans.
Objective 5	Provide for the efficient movement of goods and for adequate access to intermodal facilities.
Objective 10	Make the street system accessible, safe, and convenient for bicycle, pedestrian, and school child travel.
SOURCE: Los Angeles Department of City Planning, <i>General Plan of the City of Los Angeles</i> , Air Quality Element (adopted November 24, 1992); Los Angeles Department of City Planning, <i>General Plan of the City of Los Angeles</i> , Conservation Element (adopted September 26, 2001); Los Angeles Department of City Planning, <i>General Plan of the City of Los Angeles</i> , 2006–2014 Housing Element (adopted January 14, 2009); Los Angeles Department of City Planning, <i>General Plan of the City of Los Angeles</i> , Transportation Element (adopted September 8, 1999).	

San Pedro Specific Plan

The San Pedro Specific Plan was adopted in 1990. The San Pedro Specific Plan has no regulations or policies that specifically address climate change.

San Pedro Coastal Land Use Plan

The San Pedro Coastal Land Use Plan was adopted in 1991 to set forth objectives, policies, standards, and programs for land use and new development, Circulation and Public access, and Service Systems for the Community as a whole. The following policies are applicable to climate change:

Table 4.6-2 Relevant San Pedro Coastal Land Use Plan Policies	
No.	Policy
Commerce	
Policy 1	High-intensity commercial facilities, along with high-density residential uses, be located within the Community Center which is shown for Regional Commercial Land Use of the Plan map.
Policy 2	Residential use of the upper floors of commercial buildings be encouraged, especially within the Community Center.
Policy 6	A rapid transit station be developed to serve the Community, located convenient to both the community Center and Ports of Call areas as designated on the Plan map, and utilizing the railroad right-of-way adjacent to Harbor Boulevard.

Table 4.6-2 Relevant San Pedro Coastal Land Use Plan Policies

No.	Policy
Highway and Street System	
Policy 7	a. Where feasible, bikeways shall be provided and make use of off-street right-of-ways. Where bikeways must be in the useable roadway and the pavement is sufficiently wide, the creation of a lane for the exclusive use of bikeways, identified and designated by striping and signs, will be considered. c. Bike routes should be landscaped where feasible and where consistent with public safety. Landscaping may be used to emphasize the separation from motor vehicle traffic and/or from pedestrian traffic. Rest areas, including lockable bicycle parking, telephone and educational material shall be provided where feasible and appropriate.
Public Transportation Systems	
Policy 1	Regular bus service be provided on Major and Secondary Highways throughout the Community with special routing and emphasis given to the needs of those areas having greater transit dependency.
Policy 2	Park-and-Ride lots be conveniently located outside of the community center, on Major Highways between local and rapid transit routes, and include parking for both automobiles and bicycles.
Policy 3	Any rapid transit terminal serving San Pedro be located conveniently to both the Community Center and Ports of Call areas as designated on the Plan Map, utilizing the railroad right-of-way adjacent to Harbor Boulevard.
Policy 4	Park-and Ride, shuttle, or other non-automobile-oriented systems should be utilized for transit to the beach to reduce the impacts of congestion problems during peak beach days.
SOURCE: Los Angeles Department of City Planning, <i>San Pedro Coastal Land Use Plan</i> (June 1991).	

■ Proposed Plan Policies

California has introduced legislation that requires a greater local emphasis on greenhouse gas reductions and better integration of transportation and land use planning. The proposed plan proposes the following policies that address these important objectives. A detailed description of the policies is included in the San Pedro Community Plan in Appendix H.

Table 4.6-3 Proposed San Pedro Community Plan Policies

No.	Goal/Policy
Policy LU1.7 (also Policy LU5.10, Policy LU14.6, and Policy LU16.5)	Build Green. Developments should be sustainable, attractive and incorporate green building design, systems, and materials to the greatest extent feasible.
Policy LU3.2	Key locations. Incorporate housing in areas targeted for mixed use and in the Regional Center.
Policy LU5.2	Mix of uses. Encourage the vertical and horizontal integration of a complementary mix of commercial, service and other nonresidential uses that address the needs of families and other household types living in urban neighborhoods. Such uses may include daycare and school facilities, retail and services, and parks, plazas, and open spaces.
Policy LU5.8	Spaces for people. Integrate pedestrian amenities, traffic-calming features, plazas and public areas, attractive streetscapes and signage, lighting, shade trees, outdoor dining and open spaces to create destinations for area residents to shop and gather.
Policy LU5.9	Enhanced pedestrian street activity. Incorporate retail and service oriented commercial uses on the first floor street frontage of structures, including mixed use projects and parking structures.
Policy LU5.13	Improve design. Promote quality site, architectural and landscape design that incorporates walkable blocks, distinctive parks and open spaces, tree-lined streets, and varied architectural styles.

Table 4.6-3 Proposed San Pedro Community Plan Policies	
<i>No.</i>	<i>Goal/Policy</i>
Policy 5.18	Promote sustainability. Support efforts that promote healthy eating, strengthen regional agriculture and food security, and reduce the environmental and financial costs of long distance shipping. Encourage the cultivation and sale of locally sourced produce.
Policy 5.19	Co-location of services. Promote the joint location of health services and social services facilities in schools, community centers, senior centers and other public facilities, and locate near transit whenever feasible.
Policy LU6.1	Neighborhood services. Encourage the retention of existing and the development of new commercial uses that are primarily oriented to the residents of adjacent neighborhoods and promote the inclusion of community services (e.g., childcare and community meeting rooms).
Policy LU6.3	Promote neighborhood activity centers. Encourage the owners of existing commercial shopping centers that contain chain grocery or drug stores to include additional uses, such as restaurants, entertainment, childcare facilities, public meeting rooms, recreation, cultural facilities, and public open spaces, which enhance neighborhood activity.
Policy LU7.2	Mixed Use projects. Promote mixed use projects and higher density developments along transit priority streets, and in Community Commercial and Regional Commercial areas. Redevelop existing commercial centers into dynamic mixed-use centers.
Policy LU8.1	Vibrant Community Center. The Community Commercial center at Western Avenue and 25th when redeveloped, should be: <ul style="list-style-type: none"> ■ Designed to include a mixed use center to serve the surrounding community with services and retail opportunities ■ Developed with a mix of housing types for a range of incomes ■ Designed with buildings of varied heights to maximize existing and new public views to the ocean ■ Developed with parking below ground level if feasible; and ■ Integrated with public plazas and other public gathering spaces.
Policy LU9.1	Active Downtown. Develop 6th Street between Harbor Boulevard and Pacific Avenue into a pedestrian-only street, with sidewalk dining, pedestrian oriented commercial uses, improved streetscape and landscape amenities, public art spaces and water features.
Policy LU9.2	Coordinating public transportation. Strengthen the connection between downtown and the waterfront by providing for extension of the Red Car line through downtown and coordinating with the Port's Waterfront project.
Policy LU11.2	Urban vitality. Promote housing and employment uses in San Pedro's existing Regional Center as a means of enhancing retail viability, establishing pedestrian-oriented shopping districts, creating more attractive buildings and public spaces, supporting transit viability, and reducing vehicle trips
Policy LU11.3	Urban core. Foster development of the Regional Center into a compact but high intensity office and employment hub of downtown, with a strong government, financial, commercial, and visitor-serving orientation, while permitting residential development to provide vitality during non-work hours
Policy LU11.7	Develop a multi-modal center. Develop a multi-modal transportation center (Multi-modal transportation considers various modes such as walking, cycling, automobile, public transit, etc.) in or near Downtown.
Policy LU13.3	Green the Port. Support efforts to "Green the Ports," including measures that improve air and water quality, reduce vehicle emissions, and enhance coastal resources.
Policy LU14.5	Encourage sustainable industry. Incentivize development opportunities for businesses that are oriented towards green or clean technologies, and employ green building practices and processes.
Policy LU16.1	Encourage green industries. Plan for and facilitate the location of industries and businesses that develop or utilize clean and green technologies and capitalize on Los Angeles' competitive advantages; incentives should be available for such uses.
Policy LU16.3	Encourage sustainable industry. Industries that are environmentally sustainable businesses, and employ green or clean technologies, building practices, and processes and provide jobs for San Pedro's residents should be encouraged to locate in this district.

Table 4.6-3 Proposed San Pedro Community Plan Policies

No.	Goal/Policy
Policy M1.2	Mobility for Challenged Users. Support wherever feasible, transportation programs and services aimed at enhancing the mobility of senior citizens, disabled persons and the transit dependent population.
Policy M1.4	Private investment for off-site facilities/amenities. Encourage new developments to include bicycle and pedestrian amenities and include off-site transit and road improvements creating a circulation system that optimizes travel by all modes.
Policy M3.1	Pedestrian access. Encourage walking by orienting building entrances to face the streets and sidewalks when designing access to new developments and buildings.
Policy M3.2	Priority pedestrian routes. Selected streets within commercial, mixed-use and employment districts should have pedestrian priority establishing pedestrian needs as paramount to vehicular circulation needs and encouraging investment in pedestrian improvements and programs for these segments.
Policy M3.3	Pedestrian amenities. Maintain sidewalks, streets and right-of-way in good condition, free of obstructions, and with adequate lighting, trees and parkways. Streets must accommodate pedestrians comfortably through adequate sidewalks and parkway landscaping that provides a buffer from moving vehicles and shade from the hot sun, and street lighting that provides for safety during the night.
Policy M3.4	Minimize pedestrian conflicts. Minimize conflicts between buses, cars, and pedestrians by designing and constructing sidewalks and crosswalks that make pedestrians feel safe, and by creating well-marked crossings at intersections and mid-block locations.
Policy M3.5	Safe school routes. Encourage the development and improvement of safe routes to schools throughout the community via walking, bicycles or transit
Policy M3.6	Easements and public right-of-way. Encourage the safe utilization of easements and/or right-of-way along flood control channel, public utilities, railroad right-of-way and streets wherever feasible for pedestrians and/or bicyclists
Policy M4.1	Priority bikeways. Support the Citywide bikeway network to establish bicycle circulation as paramount to vehicular circulation needs on selected streets and to encourage investment in bicycle improvements and programs on these identified streets.
Policy M4.2	Bikeway connections. Provide bicycle access for open space areas, commercial corridors, downtown/regional center, neighborhood districts and community centers to allow easy connection between residential neighborhoods and employment centers, as well as other destinations.
Policy M4.3	Bicycle Amenities. Incorporate bicycle amenities, such as parking, lockers, changing rooms and showers, in public facilities, parks, commercial development, employment and transit centers and park and ride facilities.
Policy M4.4	Regional coordination. Coordinate with adjacent jurisdictions and communities to require that local bicycle routes and trails be linked with those of neighboring areas.
Policy M5.1	Transit connections to key areas. Increase public transit access to neighborhood districts, community centers and mixed use districts.
Policy M5.2	Development at transit nodes. Facilitate development and public improvements at multimodal transit nodes, or intersections that Metro identifies as major transfer nodes to promote convenient access between new development and the transit system.
Policy M5.3	Regional transit connections. Support efforts to establish high speed rail, commuter rail, heavy rail, light rail, or rapid transit bus ways serving the Plan area.
Policy M5.4	Private transit. Encourage large major developments to provide on-demand shuttle services to Metro stations and major activity centers or destinations in and around San Pedro.
Policy M6.1	Priority transit routes. Support the identification of transit priority street segments with high transit vehicle volumes to facilitate public transit circulation as paramount to vehicular circulation needs and to encourage investment in transit improvement programs for the identified routes.
Policy M6.2	Pedestrian routes to transit. Improve pedestrian amenities and urban design on streets served by transit to create welcoming conditions for pedestrians accessing transit.

Table 4.6-3 Proposed San Pedro Community Plan Policies	
No.	Goal/Policy
Policy M6.3	Express bus focus. Connect express bus service, such as Express, Rapid and Bus Rapid Transit, to transit centers and park and ride facilities to key destinations within the Community Plan and region.
Policy M7.1	Priorities for capacity enhancements. Implement a safe and efficient transportation network, and increase its capacity through, in priority order, the provision of alternative transit options (Transit), transportation demand management (TDM), and traffic system management (TSM) before considering street widening and network completion.
Policy M8.3	Special event coordination. Encourage coordination of park-and-ride shuttle services to activities centers and special events such as street fairs and parades.
Policy M9.1	Regional coordination. Coordinate with Councils of Government and regional transportation planning agencies (such as SCAG and Metro) and adjacent cities to improve shuttle services, encourage ridesharing, bicycle sharing, and other TDM programs within the region.
Policy M9.2	Reduce auto trips. Create incentives for employers, institutions, and residential neighborhoods to reduce their vehicle trips by encouraging mixed-use developments that minimize Vehicle Miles Traveled (VMT).
Policy M9.3	Alternatives to the automobile. Reduce automobile dependency by providing a safe, convenient transit system, pedestrian linkages and a network of safe and accessible bikeways and by encouraging alternatives, such as reduced emission vehicles, including electric and neighborhood electric vehicles (NEVs).
Policy M9.4	TDM Plans. Encourage major development to submit a TDM Plan to the City and provide employee incentives for utilizing alternatives to the single-driver automobile (i.e., carpools, vanpools, buses, telecommuting, bicycling, and walking, etc.).
Policy M11.1	Parking management districts. Support the creation of a parking management district(s) in areas of high demand to facilitate parking within a group of shared facilities.
Policy M11.4	Convenient parking. Provide public parking proximate to transit centers.
Policy M12.1	Reduced parking near transit centers. Consider reductions in parking requirements for projects located within the Downtown Regional Center.
Policy M12.2	Park Once strategy. Collaborate with the business community to improve parking services including shared-parking facilities and public valet services in appropriate locations to more effectively use the overall parking supply and implement a "park once and walk" strategy for commercial districts.
Policy M12.3	Priority parking for alternative fuel vehicles. Encourage new commercial and retail developments to provide prioritized parking for shared vehicles, electric vehicles and vehicles using alternative fuels.
Policy M12.4	Connections for electric vehicles. Encourage new construction to include vehicle access to properly wired outdoor receptacles to accommodate zero emission vehicles (ZEVs) and/or plug-in electric hybrids (PHEV).
Policy CF.5.9:	Neighborhood parks. Encourage neighborhood parks and recreational centers near concentrations of residential areas and include pedestrian walkways and bicycle paths that encourage non-motorized use.
Policy CF.7.4	Street trees. Facilitate the planting and maintenance of street trees, which provide shade and give scale to residential and commercial streets in all neighborhoods in the City.
Policy CF.8.1:	Water conservation. Meet increases in the demand for water through conservation, the use of recycled water, and recharged local groundwater aquifers where permitted.
Policy CF.8.2:	Limit water usage. Require water conservation measures/devices that limit water usage for all new municipal and private projects and major alterations to existing municipal and private facilities.
Policy CF.9.1:	Reduce wastewater output. Require that wastewater flows be minimized in existing and future developments through stricter water conservation measures (e.g. xeriscaping landscaping and installation of low-flow toilet requirements), recycling efforts and other features that reduce on-site wastewater output.
Policy CF.9.2:	Recycled water for industrial use. Promote the use of recycled water in new Industrial developments.

Table 4.6-3 Proposed San Pedro Community Plan Policies

No.	Goal/Policy
Policy CF.9.3:	Waste reduction and diversion. Promote advanced waste reduction and diversion methods for all wastewater and solid waste treatment, including the establishment of methane recovery facilities and the implementation of waste-to-energy projects where characteristics meet criteria for effective energy generation.
Policy CF.10.1:	On-site recycling. Promote on-site facilities for recycling and waste reduction in single-family, multi-family, commercial and industrial development projects that support the transformation of waste disposal into resource recovery and economic development opportunities.
Policy CF.10.2:	Recycling of construction materials. Encourage recycling of construction material, both during construction and building operation. Encourage dismantling and reuse of materials rather than demolition and dumping.
Policy CF.11.1:	Maximize the capture and reuse of stormwater.
Policy CF.12.1	Conservation techniques for electrical facilities. Work with LADWP to ensure that adequate electrical facilities are available to meet the demand of existing and future developments and to ensure conservation techniques are integrated into new and existing development projects.
Policy CF.12.5	Renewable energy. Support efforts to promote the use of clean, renewable energy that is diverse in technology and location to decrease dependence on fossil fuels, reduce emissions of greenhouse gases and increase reliability of power supply.
Policy CF.13.1	Energy management. Ensure efficient and effective energy management while providing appropriate levels of lighting to meet safety needs.

Consistency Analysis

The proposed plan and implementing ordinances contain goals, objectives, policies, and programs which the City would promote during the life span of the San Pedro Community Plan. Goals of the proposed plan are intended to promote and enhance infill, mixed-use, and transportation development within the CPA area. The increase in density will aid in the reduction of climate change impacts from utility usage and vehicle miles traveled. The proposed plan and implementing ordinances would be consistent with the policies set forth the City’s General Plan document. Therefore, the proposed plan would be consistent with applicable guidelines and regulations.

4.6.3 Project Impacts and Mitigation

■ Analytic Method

The impact analysis for the San Pedro Community Plan is based on a GHG emissions analysis, which is presented in the Environmental Analysis, below. GHG emissions associated with the development and operation of the proposed plan were estimated using the URBEMIS 2007 software, trip generation data from the project traffic analysis,⁷⁶ emissions factors from the California Climate Action Registry, and other sources. The methodology and assumptions used in this analysis are detailed below for construction and operation activities. Refer to Appendix C for model output and detailed calculations.

Because the impact each GHG has on climate change varies, a common metric of CO₂e is used to report a combined impact from all of the GHGs. The effect each GHG has on climate change is measured as a combination of the volume of its emissions, and its global warming potential, and is expressed as a

⁷⁶ Iteris, *Proposed San Pedro Community Plan Transportation Improvement Mitigation Program (TIMP)* (September 7, 2011).

function of how much warming would be caused by the same mass of CO₂. Thus, GHG emissions in this analysis are measured in terms of metric tons of CO₂ equivalents (MT CO₂e).

Construction

Construction activities can alter the carbon cycle in many different ways. Construction equipment typically utilizes fossil fuels, which generates GHGs such as carbon dioxide, methane, and nitrous oxide. Methane may also be emitted during the fueling of heavy equipment. The raw materials used to construct new buildings can sequester carbon; however, demolition of structures can result in the gradual release of the carbon stored in waste building materials into the atmosphere as those materials decompose in landfills. Since the exact nature of the origin or make-up of the construction materials is unknown, construction related emissions are typically based on the operation of vehicles and equipment during construction.

Construction is a temporary source of emissions necessary to facilitate development in the CPA area. Although these emissions are temporary, they must be accounted for, as the impact from the emissions of GHGs is cumulative. Based on current SCAQMD methodology, all of the GHGs emitted during construction are amortized over an estimated 30-year project lifetime. The amortized emissions are then combined with the operational emissions to provide a cumulative estimate of annual GHG emissions for the plan. However, because the exact nature and timing of development with the CPA area is unknown, emissions from construction activities cannot be quantified. Therefore, for the purposes of this analysis, construction emissions are analyzed on a qualitative level.

Operation

Operational emissions will be generated by the development of land uses as proposed within the CPA. The Community Plan specifically addresses environmental impacts related to the proposed growth within the City. Therefore, this analysis focuses on emissions anticipated from that growth and does not address emissions from current City operations. The following sources of GHG emissions are generated from the operation of the residential, commercial, and industrial land uses proposed under the CPA:

- **Vehicular trips**—Vehicle trips generated by growth within the CPA would result in GHG emissions through combustion of fossil fuels. Carbon dioxide emissions were determined based on the annual vehicle miles traveled (VMT) provided in the traffic analysis⁷⁷ with trip rates and average trip lengths in the URBEMIS 2007 model averaged to match as close as possible the VMT in the traffic analysis. Methane and nitrous oxide emissions were estimated using the VMT from the traffic analysis and EPA emission factors for on-road vehicles.
- **On-site use of natural gas and other fuels**—Natural gas would be used by the CPA area development for heating of residential, commercial, and industrial space, as well as some industrial operations, resulting in a direct release of GHGs. The use of landscaping equipment would also result in on-site GHG emissions. Estimated emissions from the combustion of natural gas and other fuels from the implementation of the San Pedro Community Plan is based on the number of dwelling units and square footage of non-residential building use and as estimated by the URBEMIS 2007 model. GHG emissions associated with building envelope energy use vary based on the size of structures, the type and extent of energy-efficiency measures incorporated into

⁷⁷ Iteris, *Proposed San Pedro Community Plan Transportation Improvement Mitigation Program (TIMP)* (September 7, 2011).

structural designs, and the type and size of equipment installed. Complete building envelope details could not be incorporated into the project inventory, as such information was not available at the time of the analysis. Therefore, it was assumed that the building envelopes would comply with the current minimal standards for all business-as-usual (BAU) analysis and for new development in the San Pedro CPA area.

- **Electricity use**—Electricity is generated by a combination of methods, which include combustion of fossil fuels. By using electricity, new development in the CPA area would contribute to the indirect emissions associated with electricity production.
- **Water use and wastewater generation**—California’s water conveyance system is energy-intensive, with electricity used to pump and treat water. Typically, development in the CPA would contribute to indirect emissions by consuming water and generating wastewater.
- **Solid waste**—Disposal of organic waste in landfills can lead to the generation of methane, a potent greenhouse gas. By generating solid wastes, proposed development would contribute to the emission of fugitive methane from landfills, as well as CO₂, CH₄ and N₂O from the operation of trash collection vehicles.

■ Thresholds of Significance

Neither the SCAQMD nor the CEQA Guidelines provides numeric or qualitative thresholds of significance for greenhouse gas emissions. The CEQA Guideline Amendments, adopted in December 2010, state that each local lead agency must develop its own significance criteria based on local conditions, data, and guidance from public agencies and other sources. Implementation of the proposed plan may have a significant adverse impact on climate change if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases

For the purposes of this analysis and based on full consideration of the available information, compliance with AB 32 is used in evaluating the plan’s incremental contribution to global warming impacts. AB 32, the California Global Warming Solutions Act of 2006, requires that greenhouse gases emitted in California be reduced to 1990 levels by the year 2020. The 2020 reduction target equates to a decrease of approximately 29 percent below the current BAU emissions. BAU is defined as the anticipated emissions from a project not accounting for anticipated laws or project features that will reduce construction or operational emissions from the project.

■ Effects Not Found to Be Significant

There were no effects identified that would not have any impact with respect to climate change.

■ Less-Than-Significant Impacts

There are no less-than-significant impacts of implementation of the proposed plan with respect to climate change.

■ Significant and Unavoidable Impacts

Impact 4.6-1 **Implementation of the proposed plan would result in development that could contribute substantial emissions of greenhouse gases. Implementation of feasible mitigation measure MM4.6-1 would reduce this impact, but not to less than significant. Therefore, this impact is *significant and unavoidable*.**

Implementation of the San Pedro Community Plan would generate greenhouse gases through the construction and operation of new residential, commercial, and industrial uses. Greenhouse gas emissions from development under the proposed plan would specifically arise from project construction and from sources associated with project operation, including direct sources such as motor vehicles, natural gas consumption, solid waste handling/treatment, and indirect sources such as electricity generation. Emissions from these operational sources are estimated and presented below in Table 4.6-4 (Estimated Unmitigated Annual CO₂e Emissions [MT CO₂e]). Following the SCAQMD recommendations, construction emissions would be amortized over an anticipated 30-year structure lifetime and added to the operational emissions to provide a complete average annual emissions estimate. However, because the extent of equipment use and duration of individual construction projects are unknown, emissions of greenhouse gases for construction activities cannot be determined.

<i>Emission Source</i>	<i>2005</i>	<i>Current San Pedro Plan (2030)</i>	<i>Current Plan Growth</i>	<i>Proposed San Pedro Plan (2030)</i>	<i>Proposed Plan Growth</i>
Residential	115,730	150,699	34,970	150,408	34,678
Commercial	55,375	56,477	1,102	40,356	(15,018)
Industrial	14,130	27,403	13,274	39,044	24,915
Transportation	107,427	153,984	46,557	129,620	22,193
Solid Waste	6,737	7,987	1,250	8,854	2,117
Total	299,398	396,550	97,153	368,282	68,885

SOURCE: URBEMIS 2007 was used to determine construction emissions. Atkins calculation for operational emissions and URBEMIS output is included in Appendix C.

Estimated future emissions from area sources, electricity consumption, and landfills do not account for reductions that would occur under policies described above. This is due to the fact that (1) such reductions are highly uncertain as most policies will only “encourage” or “promote” various measures, and (2) the reductions that could be achieved by these measures are difficult to quantify without specific data. Furthermore, a large amount of the increase in emissions is a direct result of increased VMT. Estimated future VMT under the proposed plan does include reductions that would result from the Plan’s transportation improvement and mitigation program (TIMP).

Emissions of greenhouse gases are presented in terms of metric tons of CO₂ equivalents (MT CO₂e). CO₂e is the combination of all greenhouse gas impacts when normalized by comparing the effects of the impacts of each individual gas to that of a reference gas (CO₂). This metric allows for the representation of greenhouse gas impacts as a single number. Table 4.6-4 shows the estimated unmitigated GHG

emissions with respect to maximum build-out under the proposed plan. Detailed emission calculations are included in Appendix C. The table identifies the estimated emissions for the City as a whole and the growth associated with both the current plan as well as the proposed plan. Because the San Pedro New Community Plan addresses policies for growth within the City, the analysis herein is limited the emissions associated with that growth.

The San Pedro Community Plan would provide for infill development in an already established urban area. This, along with the implementation of state mandated regulations would result in the reduction of GHG emissions. Any future discretionary development project pursuant to the Plan would require project level environmental clearance and would also be subject to regulations. These, coupled with mitigation measures identified in Section 4.2 (Air Quality) and the mitigation outlined below, would help reduce potential impacts from operational emissions, but not to less-than-significant level. Therefore this impact would be considered *significant and unavoidable*.

Detailed reduction assumptions and calculations are included in Appendix C.

To reduce emissions from energy usage, ClimateLA proposes the following goals: increase the amount of renewable energy provided by the Los Angeles Department of Water and Power (LADWP); present a comprehensive set of green building policies to guide and support private sector development; reduce energy consumed by City facilities and utilize solar heating where applicable; and help citizen to use less energy. Policy LU11.7, Policy LU5.10, Policy LU14.6, and Policy LU16.5 promote green building and the use of renewable energy. These policies would help the City achieve these goals by promoting the use of clean, renewable energy that is diverse in technology and location to decrease dependence on fossil fuels, reduce emissions of GHGs and increase the reliability of the power supply.

With regard to water, ClimateLA sets the following goals: meet all additional demand for water resulting from growth through water conservation and recycling; reduce per capita water consumption by 20 percent; and implement the City's water and wastewater integrated resources plan that will increase conservation, and maximize the capture and reuse of storm water. Policy CF8.1 encourages water conservation and the use of recycled water, and Policy CF8.2 requires water-conservation measures/devices that limit water usage for all new municipal and private projects and major alterations to existing municipal and private facilities. Policy CF9.2 promotes the use of recycled water in new industrial developments. Policy CF11.1 maximizes the capture and reuse of stormwater. Finally, Policy CF9.1 requires that wastewater flows be minimized in existing and future developments through stricter water conservation measures, recycling efforts, and other features that reduce on-site wastewater output. These policies would be consistent with ClimateLA goals by promoting policies which conserve water, recharge local groundwater aquifers and reduce the pollution of water resources to help meet increases in demand for water.

With regard to transportation, ClimateLA primarily focuses on reducing emissions from City-owned vehicles. However, it does also include measures to help reduce GHG emissions from private vehicle use. Policies LU5.18, LU5.19, LU11.7, M1.1, M1.3, M1.4, M3.2, M4.1, M4.4, M5.1, M5.2, M5.3, M5.4, M6.3, M9.1, M9.2, M9.3, M9.4, and CF5.9 all promote locating facilities near transit, providing for pedestrian and bicycle connections, providing connections to regional transit, increasing transit use, providing incentives for alternative-fuel vehicles, and providing a multi-modal facility for alternative

forms of transportation to the automobile. All of these policies would reduce auto dependence and promote transit-oriented development policies to reduce vehicle trips, thereby reducing GHG emissions. Land use policies such as promoting high density near transportation, promoting transit-oriented development, and making underutilized land available for housing and mixed-use development especially when near transit are included in the ClimateLA plan. As discussed above, proposed policies would promote transit-oriented development to reduce vehicle trips. Furthermore, the proposed plan uses a strategy for targeted growth which encourages mixed-use development along commercial and industrial corridors as well as the Downtown, which are well served by public transportation.

With regard to waste, ClimateLA sets the goal of reducing or recycling 70 percent of trash by 2015. Proposed Policy LU1.7 (also Policy LU5.10, Policy LU14.6, and Policy LU16.5) promotes build green strategies to reduce waste and offset carbon emissions. The proposed plan would further help promote this ClimateLA goal through policies such as Policy CF9.3, which promotes advanced waste-reduction and diversion methods for all wastewater and solid waste treatment; Policy CF10.1, which promotes on-site facilities for recycling and waste reduction in development projects; and Policy CF10.2, which encourages recycling of construction material, both during construction and building operation, and encourages reuse of materials rather than demolition and dumping.

With regard to open space and greening, ClimateLA includes the following goals: create 35 new parks; revitalize the Los Angeles River to create open space opportunities; plant one million trees throughout the City; identify opportunities to “daylight” streams; identify promising locations for stormwater infiltration to recharge groundwater aquifers; and collaborate with schools to create more parks in neighborhoods. The proposed plan would help promote such measures through Policy CF7.1, which recognizes the importance of street trees; Policy CF7.2, which requires inclusion of on-site trees in new development projects whenever possible; Policy CF7.3, which encourages community and private partnership involvement in urban forestry issues; and Policy CF7.4, which facilitates the planting and maintenance of street trees. Policies CF5.1 through CF5.9 pertain to providing open space and parks throughout the City.

Project-level mitigation measures would enhance the reductions identified in the San Pedro Community Plan by strengthening them or identifying specific reduction goals. In addition, mitigation measure MM4.6-1 is incorporated into the proposed plan to ensure the further reduce greenhouse gas emissions by CPA development.

Table 4.6-5 (Estimated Reduced Annual CO₂e Emissions) shows the annual emissions with the incorporation of the above measures. GHG emissions from the construction and operation of development pursuant to the proposed plan would be reduced by 41.89 percent from business-as-usual levels and would meet the AB 32 reduction threshold with the implementation of MM4.6-1. Implementation of the Community Plan could still have a substantial adverse effect. However, any future discretionary development project pursuant to the Plan would require project level environmental clearance and would also be subject to regulations. These, coupled with mitigation measures identified in Section 4.2 (Air Quality) and the mitigation outlined below, would help reduce potential impacts from operational emissions, but not to less-than-significant level. Therefore this impact would be considered ***significant and unavoidable***. For both the Current and Proposed Plan the table identifies emissions

anticipated from growth without reduction, emissions anticipated once plan policies are implemented, and the percent reductions associated with each source as well as the overall reduction for each plan.

Table 4.6-5 Estimated Reduced Annual CO ₂ e Emissions							
Emission Sources	Existing (2005)	Current Plan (2030)			Proposed Plan (2030)		
		Unreduced Growth	Mitigated Growth	% Reduction	Unreduced Growth	Mitigated Growth	% Reduction
Residential	115,730	34,970	21,565	38.33%	34,678	21,385	38.33%
Commercial	55,375	1,102	918	16.74%	(15,018)	(15,018)	0.00%
Industrial	14,130	13,274	11,052	16.74%	24,915	20,744	16.74%
Transportation	107,427	46,557	24,881	46.56%	22,193	11,860	46.56%
Solid Waste	6,737	1,250	625	50.00%	2,117	1,058	50.00%
Total	299,398	97,153	59,040	39.23%	68,885	40,029	41.89%

SOURCE: URBEMIS 2007 was used to determine construction emissions. Atkins calculation for operational emissions and URBEMIS output is included in Appendix C.

Comparison to 1999 Plan

As shown in Table 4.6-4 (Estimated Unmitigated Annual CO₂e Emissions) and Table 4.6-5 (Estimated Reduced Annual CO₂e Emissions), above, continuation of development within the City of the 1999 Plan would generate GHG emissions that exceed emissions from the proposed San Pedro Community Plan. While the 1999 Plan does not specifically address GHG emissions, California as a whole is required to reduce future GHG emissions and therefore, even without the update to the Community Plan, the City would be required to reduce GHG emissions. Therefore, for the purpose of comparison, it was anticipated that a similar level of reductions would be seen by sector. Even with similar reduction levels, the type of growth under the New Community Plan is anticipated to result in less GHG emissions than the current plan.

Impact 4.6-2 **Project emissions of greenhouse gases would have the potential to conflict with the implementation of AB 32. Implementation of feasible mitigation measure MM4.6-1 would reduce this impact, but not to *less than significant*. Therefore, this impact is *significant and unavoidable*.**

As indicated in Impact 4.6-1, the San Pedro Community Plan would result in a reduction of 41.89 percent from BAU levels. In light of the characteristics and design features as well as the identified mitigation measures, implementation of the proposed plan would comply with the goals and policies established by AB 32. However, because the greenhouse gas emissions must include emissions generated during construction, the total impact on climate change from the San Pedro Community Plan cannot be determined. This is considered a potentially significant impact. These reductions, combined with the operational reductions and implementation of MM4.6-1 would reduce impacts from construction activities, but not to a less-than-significant level. Therefore, this impact is *significant and unavoidable*.

■ Mitigation Measures

The proposed plan includes policies and programs that would reduce any potential greenhouse gas emission impacts. In addition, the following mitigation measure would be implemented for all discretionary development in the CPA:

MM4.6-1 The City, as a condition of approval for all applicable discretionary projects, shall require developers to implement applicable GHG-reduction measures in project design and comply with regulatory targets.

■ Level of Significance After Mitigation

With implementation of the mitigation measures and conditions of approval, outlined above, all impacts relative to greenhouse gas emissions would be reduced. Any future discretionary development project pursuant to the Plan would require project level environmental clearance and would also be subject to regulations. This, coupled with mitigation measures identified in Section 4.2 (Air Quality) and MM4.6-1, would help reduce potential impacts from operational emissions, but not to less-than-significant level. Therefore this impact would be considered *significant and unavoidable*.

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