4.F Greenhouse Gas Emissions

4.F.1 Introduction

This section presents an overview of region-specific information related to greenhouse gas (GHG) emissions. The impact analysis discusses the expected GHG emissions associated with Project Site development operations and construction activities inclusive of soil transport and remediation, and reflects elements incorporated into Project Site development construction and operations that would reduce Project GHG impacts. Feasible mitigation measures are identified to reduce significant impacts. The impact analysis includes an evaluation of the consistency of Project Site development scenarios with statewide and local planning efforts to reduce GHG emissions. Impacts of climate change on the Project Site, including sea level rise, are addressed in Section 4.H, *Hydrology and Water Quality*, of this EIR.

4.F.2 Environmental Setting

"Global warming" and "global climate change" are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to be unequivocal (IPCC, 2007), with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years.

Natural processes and human actions have been identified as the causes of this warming. The International Panel on Climate Change (IPCC) concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. After 1950, however, increasing GHG concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the earth's atmosphere are thought to be the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space. Some GHGs occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Greenhouse Gases

Carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are the principal GHGs. When concentrations of these gases exceed natural concentrations in the atmosphere, the greenhouse

effect may be enhanced. CO_2, CH_4, and N_2O occur naturally, and are also generated through human activity. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing[1] associated with agricultural practices and landfills. Other human-generated GHGs, which have much higher heat-absorption potential than CO_2, include fluorinated gases such as hydrofluorocarbons (HFCs), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6), which are byproducts of certain industrial processes.

CO_2 is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2. CH_4 and N_2O are substantially more potent GHGs than CO_2, with GWPs of 21 and 310 times that of CO_2, respectively.

In emissions inventories, GHG emissions are typically reported in terms of pounds or metric tons of CO_2 equivalents (CO_2e). CO_2e are calculated as the product of the mass emitted of a given GHG and its specific GWP. While CH_4 and N_2O have much higher GWPs than CO_2, CO_2 is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in CO_2e, both from residential developments and human activity in general.

Effects of Human Activity on GHG Emissions

Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions (and thus substantial increases in atmospheric concentrations). In 1994, atmospheric CO_2 concentrations were found to have increased by nearly 30 percent above pre-industrial (c. 1860) concentrations.

There is international scientific consensus that human-caused increases in GHGs have contributed and will continue to contribute to global warming.

Global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years. Secondary effects are likely to include the displacement of thousands of coastal businesses and residences, impacts on agriculture, changes in disease vectors, and changes in habitat and biodiversity. As the California Air Resources Board (CARB) *Climate Change Scoping Plan* noted, the legislature in enacting Assembly Bill (AB) 32 found that global warming would cause detrimental effects to some of the state's largest industries, including agriculture, winemaking, tourism, skiing, commercial and recreational fishing, forestry, and the adequacy of electrical power generation. The *Climate Change Scoping Plan* states as follows (CARB, 2011): "The impacts of global warming are already being felt in California. The Sierra snowpack, an important source of water supply for the state, has shrunk 10 percent in the last 100 years. It is expected to continue to decrease by as much as 25 percent by 2050. World-wide changes are

[1] Off-gassing is defined as the release of chemicals under normal conditions of temperature and pressure.

causing sea levels to rise – about eight inches of increase has been recorded at the Golden Gate Bridge over the past 100 years – threatening low coastal areas with inundation and serious damage from storms."

Impacts of Climate Change

Ecosystem and Biodiversity Impacts

Climate change is expected to have effects on diverse types of ecosystems, from alpine to deep-sea habitat (U.S. EPA, 2008a). As temperatures and precipitation change, seasonal shifts in vegetation would occur; this 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 3.6 to 5.4°F relative to pre-industrial levels" (IPCC, 2007). Shifts in existing biomes could also make ecosystems vulnerable to encroachment by invasive species. 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 such as malaria, dengue fever, yellow fever, and encephalitis (U.S. EPA, 2008b). Cholera, which is associated with algal blooms, could also increase. 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.

Greenhouse Gas Emissions Estimates

Global Emissions

Worldwide emissions of GHGs in 2004 were 30 billion tons of CO_2e per year (UNFCCC, 2012). This includes both ongoing emissions from industrial and agricultural sources, but excludes emissions from land use changes.

U.S. Emissions

In 2009, the United States emitted about 6.7 billion tons of CO_2e or about 21 tons per year per person. Of the four major sectors nationwide — residential, commercial, industrial, and

transportation — transportation accounts for the highest fraction of GHG emissions (approximately 33 percent); these emissions are entirely generated from direct fossil fuel combustion (U.S. EPA, 2011).

State of California Emissions

In 2004, California emitted approximately 550 million tons of CO_2e, 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 one of the 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 (CEC, 2007). Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states.

The California Environmental Protection Agency (CalEPA) Climate Action Team stated in its March 2006 report that the composition of gross climate change pollutant emissions in California in 2002 (expressed in terms of CO_2 equivalence) were as follows (CalEPA, 2006):

- CO_2 accounted for 83.3 percent;
- CH_4 accounted for 6.4 percent;
- N_2O accounted for 6.8 percent; and
- Fluorinated gases (HFCs, PFC, and SF_6) accounted for 3.5 percent.

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 are the source of approximately 8.3 percent, as is the source categorized as "other," which includes residential and commercial activities (CEC, 2007).

Bay Area Emissions

In the San Francisco Bay Area, the transportation sector and industrial/commercial sector represent the largest sources of GHG emissions, accounting for 36.4 percent each of the Bay Area's 95.8 million tons of CO_2e in 2007. Electricity/co-generation sources account for about 15.9 percent of the Bay Area's GHG emissions, followed by residential fuel usage at about 7.1 percent. Off-road equipment and agricultural/farming sources currently account for approximately three percent and 1.2 percent of the total Bay Area GHG emissions, respectively (BAAQMD, 2010).

San Mateo County Emissions

San Mateo County is in the process of compiling an inventory of countywide GHG emissions. The inventory is in draft form at the time of this analysis. Countywide GHG emissions were estimated to have been 905,090 metric tons per year in 2005 (San Mateo County, 2012). Of the sources in this total, the largest contributors include transportation sources, industrial energy, and solid waste disposal, which contribute 52 percent, 18 percent, and 14 percent, respectively.

Existing Emissions in the Project Site Vicinity

A GHG inventory for City of Brisbane governmental operations was completed as part of an effort to develop a citywide energy strategy. The inventory was established for a 2005 base year[2] consistent with the State's *Climate Change Scoping Plan*. A baseline year 2005 GHG inventory of Brisbane's local government operations identified the amount and source of emissions associated with municipal operations, such as buildings, facilities, vehicle fleet, and public lighting. GHG emissions of City governmental operations totaled 1,265 metric tons per year (San Mateo County, 2012). In addition to a GHG inventory for governmental operations, the City completed an inventory of communitywide GHG emissions for the following sectors (City of Brisbane, 2010):

- Residential, including electricity and natural gas usage in homes;
- Commercial/Industrial, including electricity and natural gas usage in businesses;
- Transportation, including emissions from fuel consumption in on-road vehicles and off-road equipment;
- Landfills, including emissions from organic waste decomposing in community landfills;
- Solid Waste Generation, including future emissions from the expected decomposition of waste generated by the community in the base year.

In 2005, non-governmental activities and operations taking place within Brisbane resulted in approximately 160,944 metric tons of CO_2e. This number includes emissions from the combustion of fuels in the residential, commercial/industrial, and transportation sectors within the City, as well as consists of emissions from the decomposition of organic waste in community landfills in 2005. In addition, this number contains emissions associated with community electricity consumption (emissions that occur as a result of electricity consumption within the City, but that occur at sources located outside of the City's jurisdiction), and future emissions from waste generated by the community.

GHG emissions are also generated by existing uses at the Project Site, which include two lumberyards, the Recology solid waste facility, a cooking fuels and equipment manufacturing/ distribution company, an industrial park, a rock and concrete crushing operation, a soils processing operation, and associated construction equipment parking. The lumberyards would be relocated by Project Site development while others, such as the industrial park, would be replaced; existing emissions from uses to be replaced are considered in the impact analysis. GHG emissions from these facilities are generated primarily from motor vehicle and truck trips, but also by existing electrical demand, natural gas demand, solid waste generation, and water and

[2] While 2005 is the appropriate base year for analysis of GHG impacts in relation to meeting statewide GHG reduction targets, CEQA requires that a project's impacts be evaluated in relation to conditions as they exist at the time of issuance of a Notice of Preparation (December 2010 for the Brisbane Baylands EIR). Because GHG emissions contribute to global climate change and CO_2 concentrations are worldwide and not a localized phenomenon, the CEQA analysis of GHG emissions focuses on the total amount of project-related emissions, and is not additive to existing conditions.

wastewater conveyance and treatment. The Bay Area Air Quality Management District (BAAQMD) Bay Area Greenhouse Gas Model (BGM) estimates GHG emissions associated with 231,400 square feet of industrial uses to be replaced to total 2,762 metric tons per year of CO_2e.

4.F.3 Regulatory Setting

Project Site development must comply with federal, state, regional, and local regulations. This section discusses these requirements to the extent that they will affect the way development occurs within the Project Site.

Federal Regulations

U.S. Environmental Protection Agency "Endangerment" and "Cause or Contribute" Findings

The U.S. Supreme Court held that the United States Environmental Protection Agency (U.S. EPA) must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency* et al., 12 states and cities, including California, together with several environmental organizations, sued to require the U.S. EPA to regulate GHGs as pollutants under the Clean Air Act (127 S. Ct. 1438 (2007)). The Supreme Court ruled that GHGs fit within the Clean Air Act's definition of a pollutant and the U.S. EPA had the authority to regulate GHGs.

On December 7, 2009, the U.S. EPA Administrator signed two distinct findings regarding GHGs under Section 202(a) of the federal Clean Air Act:

- ***Endangerment Finding:*** The current and projected concentrations of the six key well-mixed GHGs—CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6—in the atmosphere threaten the public health and welfare of current and future generations.
- ***Cause or Contribute Finding:*** The combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution that threatens public health and welfare.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the U.S. EPA released its final Greenhouse Gas Reporting Rule (Reporting Rule). The Reporting Rule is a response to the fiscal year 2008 Consolidated Appropriations Act (H.R. 2764; Public Law 110-161), that required the U.S. EPA to develop "…mandatory reporting of GHGs above appropriate thresholds in all sectors of the economy…." The Reporting Rule will apply to most entities that emit 25,000 metric tons of CO_2e or more per year. Starting in 2010, facility owners are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. The Reporting Rule also mandates recordkeeping and administrative requirements in order for the U.S. EPA to verify annual GHG emissions reports.

State Regulations

The legal framework for GHG emission reduction has come about through Executive Orders, legislation, and regulation. The major components of California's climate change initiative are reviewed below.

California Environmental Quality Act and Senate Bill 97

CEQA requires lead agencies to consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions have the potential to adversely affect the environment because they contribute to global climate change. In turn, global climate change has the potential to raise sea levels, affect rainfall and snowfall, and affect habitat.

Senate Bill 97

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is a prominent environmental issue requiring analysis under CEQA. This bill directed the Governor's Office of Planning and Research (OPR) to prepare, develop, and transmit to the California Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, no later than July 1, 2009. The California Natural Resources Agency was required to certify or adopt those guidelines by January 1, 2010.

On December 30, 2009, the Natural Resources Agency adopted the CEQA Guideline amendments, as required by SB 97. These CEQA Guideline amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. The amendments became effective March 18, 2010.

CEQA Guidelines

CEQA Guidelines Section 15064.4 specifically addresses the significance of GHG emissions. Section 15064.4 calls for a lead agency to make a "good-faith effort" to "describe, calculate or estimate" GHG emissions in CEQA environmental documents. Section 15064.4 further states that the analysis of GHG impacts should include consideration of (1) the extent to which the project may increase or reduce GHG emissions, (2) whether the project emissions would exceed a locally applicable threshold of significance, and (3) the extent to which the project would comply with "regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions." The revisions also state that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (CEQA Guidelines Section 15064(h)(3).) The CEQA Guidelines revisions do not, however, set a numerical threshold of significance for GHG emissions.

The revisions also include the following guidance on measures to mitigate GHG emissions, when such emissions are found to be significant:

Consistent with Section 15126.4(a), lead agencies shall consider feasible means, supported by substantial evidence and subject to monitoring or reporting, of mitigating the significant effects of greenhouse gas emissions. Measures to mitigate the significant effects of greenhouse gas emissions may include, among others:

(1) Measures in an existing plan or mitigation program for the reduction of emissions that are required as part of the lead agency's decision;

(2) Reductions in emissions resulting from a project through implementation of project features, project design, or other measures;

(3) Off-site measures, including offsets that are not otherwise required, to mitigate a project's emissions;

(4) Measures that sequester greenhouse gases; and

(5) In the case of the adoption of a plan, such as a general plan, long range development plan, or plans for the reduction of greenhouse gas emissions, mitigation may include the identification of specific measures that may be implemented on a project-by-project basis. Mitigation may also include the incorporation of specific measures or policies found in an adopted ordinance or regulation that reduces the cumulative effect of emissions (CEQA Guidelines Section 15126.4(a)).

Assembly Bill 1493

In 2002, then-Governor Gray Davis signed Assembly Bill (AB) 1493, which required the CARB to develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of GHGs emitted by passenger vehicles and light-duty trucks and other vehicles determined by CARB to be vehicles whose primary use is noncommercial personal transportation in the state."

To meet the requirements of AB 1493, the CARB approved amendments to the California Code of Regulations (CCR) in 2004, adding GHG emissions standards to California's existing standards for motor vehicle emissions. Amendments to CCR Title 13, Sections 1900 and 1961 (13 CCR 1900, 1961), and adoption of Section 1961.1 (13 CCR 1961.1), require automobile manufacturers to meet fleet-average GHG emissions limits for all passenger cars, light-duty trucks within various weight criteria, and medium-duty passenger vehicle weight classes (i.e., any medium-duty vehicle with a gross vehicle weight [GVW] rating of less than 10,000 pounds and that is designed primarily for the transportation of persons), beginning with model year 2009. For passenger cars and light-duty trucks with a loaded vehicle weight (LVW) of 3,750 pounds or less, the GHG emission limits for model year 2016 are approximately 37 percent lower than the limits for the first year of the regulations, model year 2009. For light-duty trucks with an LVW of 3,751 pounds to a GVW of 8,500 pounds, as well as for medium-duty passenger vehicles, GHG emissions will be reduced approximately 24 percent between 2009 and 2016.

Because the Pavley standards (named for the bill's author, state Senator Fran Pavley) would impose stricter standards than those under the federal Clean Air Act, California applied to the U.S. EPA for a waiver under the federal Clean Air Act; this waiver was denied in 2008. In 2009, however, the U.S. EPA granted the waiver.

Executive Order S-3-05

In 2005, in recognition of California's vulnerability to the effects of climate change, then-Governor Arnold Schwarzenegger established Executive Order S-3-05, which sets forth the following target dates by which statewide GHG emissions would be progressively reduced: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels.

Assembly Bill 32 and the California Climate Change Scoping Plan

Assembly Bill 32 Requirements

In 2006, the California legislature passed Assembly Bill 32 (California Health and Safety Code Division 25.5, Sections 38500, et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 requires the CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25-percent reduction in emissions). AB 32 anticipates that the GHG reduction goals will be met, in part, through local government actions. The CARB has identified a GHG reduction target of 15 percent from current levels for local governments themselves and notes that successful implementation of the plan relies on local governments' land use planning and urban growth decisions because local governments have primary authority to plan, zone, approve, and permit land development to accommodate population growth and the changing needs of their jurisdictions.

Scoping Plan Provisions

Pursuant to AB 32, the CARB adopted a *Climate Change Scoping Plan* in December 2008 (re-approved by the CARB on August 24, 2011 [CARB, 2008]) outlining measures to meet the 2020 GHG reduction goals. In order to meet these goals, California must reduce its GHG emissions by 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from today's levels. The Scoping Plan recommends measures that are worth studying further, and that the State of California may implement, such as new fuel regulations. It estimates that a reduction of 174 million metric tons of CO_2e (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and other sources could be achieved should the state implement all of the measures in the Scoping Plan. The Scoping Plan relies on the requirements of SB 375 (discussed below) to implement the carbon emission reductions anticipated from land use decisions.

Cap-and-Trade Program

The Scoping Plan identifies cap-and-trade as a key strategy for helping California reduce its GHG emissions. A cap-and-trade program sets the total amount of greenhouse gas emissions allowable for facilities under the cap and allows covered sources, including producers and consumers of energy, to determine the least expensive strategies to comply. AB 32 required the CARB to adopt the cap-and-trade regulation by January 1, 2011, and the program itself began in November 2012.

Carbon offset credits are created through the development of projects, such as renewable energy generation or carbon sequestration projects, that achieve the reduction of emissions from

activities not otherwise regulated, covered under an emissions cap, or resulting from government incentives. Offsets are verified reductions of emissions whose ownership can be transferred to others. As required by AB 32, any reduction of GHG emissions used for compliance purposes must be real, permanent, quantifiable, verifiable, enforceable, and additional. Offsets used to meet regulatory requirements must be quantified according to CARB-adopted methodologies, and the CARB must adopt a regulation to verify and enforce the reductions. The criteria developed will ensure that the reductions are quantified accurately and are not double-counted within the system (CARB, 2008).

Executive Order S-1-07

Executive Order S-1-07, signed by then-Governor Arnold Schwarzenegger in 2007, proclaimed that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. The order established a goal of reducing the carbon intensity of transportation fuels sold in California by a minimum of 10 percent by 2020. It also directed the CARB to determine whether this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. The CARB adopted the Low Carbon Fuel Standard on April 23, 2009.

Senate Bills 1078 and 107 and Executive Orders S-14-08 and S-21-09

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010.

In November 2008, then-Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Portfolio Standard to 33 percent renewable power by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the CARB under its AB 32 authority to enact regulations to help the state meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020.

The 33-percent-by-2020 goal was codified in April 2011 with SB X1-2, which was signed by Governor Edmund G. Brown, Jr. This new Renewable Portfolio Standard preempts the CARB 33 percent Renewable Electricity Standard and applies to all electricity retailers in the state, including publicly owned utilities, investor-owned utilities, electricity service providers, and community choice aggregators. All of these entities must adopt the new Renewable Portfolio Standard goals of 20 percent of retail sales from renewables by the end of 2013 and 25 percent by the end of 2016, with the 33 percent requirement being met by the end of 2020.

Senate Bill 1368

SB 1368 is the companion bill of AB 32 and was signed by then-Governor Schwarzenegger in September 2006. SB 1368 requires the California Public Utilities Commission to establish a GHG emission performance standard for baseload generation from investor-owned utilities by

February 1, 2007. The California Energy Commission was also required to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the California Public Utilities Commission and California Energy Commission.

Senate Bill 375

In addition to policy directly guided by AB 32, the legislature in 2008 passed SB 375, which provides for regional coordination in land use and transportation planning and funding to help meet the AB 32 GHG reduction goals. SB 375 aligns regional transportation planning efforts, regional GHG emissions reduction targets, and land use and housing allocations. SB 375 requires Regional Transportation Plans developed by the state's 18 metropolitan planning organizations to incorporate a "sustainable communities strategy" that will achieve GHG emission reduction targets set by the CARB. SB 375 also includes provisions for streamlined CEQA review for some infill projects, such as transit-oriented development. SB 375 would be implemented over the next several years.

The Metropolitan Transportation Commission is responsible for developing Regional Transportation Plans for the San Francisco Bay Area, and their 2013 Regional Transportation Plan will be its first plan subject to SB 375.

Regional Regulations

In June 2010, the BAAQMD issued its CEQA Air Quality Guidelines, replacing former guidelines adopted in December 1999, and adopted new thresholds of significance to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. Updated in May 2011, these guidelines include recommendations for analytical methodologies to determine air quality impacts and identify mitigation measures that can be used to avoid or reduce air quality impacts, including for GHGs (BAAQMD, 2011).

The *BAAQMD CEQA Guidelines* is an advisory document and local jurisdictions are not required to utilize the methodology outlined therein. The document describes the criteria that BAAQMD uses when reviewing and commenting on the adequacy of environmental documents. It recommends thresholds for use in determining whether projects would have significant adverse environmental impacts, identifies methodologies for predicting project emissions and impacts, and identifies measures that can be used to avoid or reduce air quality impacts. BAAQMD adopted new thresholds of significance (BAAQMD thresholds) on June 2, 2010, to assist lead agencies in determining when potential air quality impacts would be considered significant under CEQA. BAAQMD also released new *CEQA Guidelines* in May 2011, which advise lead agencies on how to evaluate potential air quality impacts with the adopted new thresholds of significance.

On March 5, 2012, the Alameda County Superior Court issued a judgment finding that BAAQMD had failed to comply with CEQA when it adopted its 2010 thresholds of significance. While the

court did not determine whether or not the thresholds were valid, it did find that the adoption of the thresholds was a project under CEQA, and therefore that BAAQMD should have conducted environmental review. As a result, the court set aside the thresholds and ordered BAAQMD to cease dissemination of them until it had complied with CEQA. BAAQMD has appealed the court's decision and the appeal is currently pending.

In compliance with the court's order, BAAQMD is no longer recommending that the thresholds be used as a generally applicable measure of a project's significant air quality impacts, and lead agencies are not required to use these thresholds in their environmental documents. However, nothing in the court's decision prohibits an agency's use of the thresholds to assess the significance of a project's air quality impacts. Therefore, based on substantial evidence, the analysis herein uses the BAAQMD thresholds and the methodologies in its 2012 *Air Quality CEQA Guidelines* (updated in May 2012) to determine the significance of Project Site development-related impacts with respect to air pollutant emissions.

Separate thresholds of significance are established for operational emissions from stationary sources (such as generators, furnaces, and boilers) and non-stationary sources (such as on-road vehicles). As no threshold has been established for construction-related emissions, the operational emissions thresholds apply. The threshold for stationary sources is 10,000 metric tons of CO_2e per year (i.e., emissions above this level may be considered significant). For non-stationary sources, three separate thresholds have been established:

- Compliance with a Qualified Greenhouse Gas Reduction Strategy (i.e., if a project is found to be out of compliance with a Qualified Greenhouse Gas Reduction Strategy, its GHG emissions may be considered significant); or
- 1,100 metric tons of CO_2e per year (i.e., emissions above this level may be considered significant); or
- 4.6 metric tons of CO_2e per service population per year (i.e., emissions above this level may be considered significant). (Service population is the sum of residents plus employees expected for a development project.)

For quantifying a project's GHG emissions, BAAQMD recommends that all GHG emissions from a project be estimated, including a project's direct and indirect GHG emissions from operations. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to a project's energy use and water consumption. BAAQMD has provided guidance on detailed methods for modeling GHG emissions from proposed projects (BAAQMD, 2012).

4.F.4 Impacts and Mitigation Measures

Significance Criteria

Criteria outlined in the CEQA Guidelines were used to determine the level of significance of identified impacts on greenhouse gases. Appendix G of the CEQA Guidelines indicates that a project would have a significant effect on the environment if it were to:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. The threshold identified in the 2009 BAAQMD Justification Report identifies emissions of 4.6 metric tons of CO2e per service population annually or more (the "efficiency threshold") as resulting in a significant GHG impact (BAAQMD, 2009); or
- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

Impact Assessment Methodology

Approach

This analysis uses both a quantitative and a qualitative approach. The quantitative approach is used to address the first significance criterion: Would the Project Site development generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? The quantitative efficiency threshold proposed by BAAQMD in its 2009 document *Revised Draft Options and Justification Report for California Environmental Quality Act Thresholds of Significance* is 4.6 metric tons of CO_2e per service population annually. If a Project scenario would exceed this threshold then, consistent with BAAQMD Guidelines, it would be considered to have a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact on climate change.

This analysis considers that, because the quantifiable thresholds developed by BAAQMD in its Justification Report were formulated based on AB 32 and California Climate Change Scoping Plan reduction targets for which its set of strategies were developed to reduce GHG emissions statewide, a project cannot exceed the numeric BAAQMD efficiency threshold of 4.6 metric tons of CO_2e per service population annually without also conflicting with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs (The state Climate Change Scoping Plan). Therefore, if a project exceeds the numeric threshold and therefore results in a significant cumulative impact, it would also result in a significant cumulative impact with respect to plan, policy, or regulation consistency, even though the Project Site development may incorporate measures and have features that would reduce its contribution to cumulative GHG emissions. Because of the utility of comparative analysis for this topic, the analysis of the different development scenarios is grouped together under each impact discussion.

Methods

GHG emissions resulting from Project Site development were estimated using a combination of the URBEMIS2007 model and the Bay Area Greenhouse Gas Model (BGM) as suggested by

BAAQMD CEQA Air Quality Guidelines. Vehicle trips assumed default trip lengths for urban land uses, which are embedded in URBEMIS2007. BGM then takes these data and makes adjustments for implementation of Pavley vehicle standards and Low Carbon Fuel Standards (see Subsection 4.F.3, *Regulatory Setting*, above). Model data and additional assumptions are included in **Appendix G** of this EIR. A post-processing adjustment to electrical GHG emissions was made to account for PG&E-specific future year emission rates. Construction emissions were also estimated using URBEMIS2007 for equipment and truck exhaust and construction worker vehicles.

Area and indirect sources (as opposed to transportation sources) associated with Project Site development would primarily result from electrical usage, water and wastewater transport (the energy used to pump water and wastewater to and from the Project Site development), and solid waste generation. GHG emissions from electrical usage are generated when energy consumed on the site is generated by fuel combustion. GHG emissions from water and wastewater treatment and transport as part of the proposed water transfer agreement envisioned under all scenarios are also indirect emissions resulting from the energy required to transport water from its source and the energy required to treat wastewater and transport it to its treated discharge point. Solid waste emissions are generated when the increased waste generated by a project are taken to a landfill to decompose. GHG emissions from electrical usage, water and wastewater conveyance, and solid waste were estimated using BGM.

Construction-related impacts associated with implementation of the Project Site development infrastructure improvements described in the Chapter 3, *Project Description*, are included in the analysis below.

Cumulative Approach

Both BAAQMD and the California Air Pollution Control Officers Association consider GHG impacts to be exclusively cumulative impacts (BAAQMD, 2011; CAPCOA, 2008); as such, assessment of significance is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere.

Project Impacts and Mitigation Measures

Impact 4.F-1: Would the Project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
LTS	LTS	SU	SU

SU = Significant Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

Potential Project GHG Emissions Sources

Application of BAAQMD's project-specific GHG emissions thresholds is to include both direct emissions from a project's vehicle trip generation and onsite water and space heating and other stationary sources, as well as indirect emissions from offsite electrical generation, solid waste generation, wastewater treatment, water conveyance and treatment, and Project Site remediation and construction.

The following activities associated with each of the proposed development scenarios would contribute to the generation of GHG emissions:

- ***Construction Activities.*** Project Site development involves remediation and construction. Construction equipment typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO_2, methane, and N_2O. Furthermore, methane is emitted during the fueling of heavy equipment. These emissions include equipment and truck operations for proposed movement of soils from the project site, as well as remediation (disposal) of contaminated soil.

- ***Solid Waste Disposal Emissions.*** Project Site development would generate solid waste. Resulting emissions associated with waste generation and disposal in landfills are indirect. Landfills emit anthropogenic methane from the anaerobic breakdown of material.

- ***Gas, Electricity, and Water Use.*** Project Site development would consume gas, electricity, and water. Natural gas use results in the emissions of two GHGs: methane (the major component of natural gas) and CO_2 from the combustion of natural gas. Methane is released prior to initiation of combustion of the natural gas (as before a flame on a stove is sparked), and from the small amount of methane that is uncombusted in a natural gas flame. Electricity use can result in GHG production if the electricity is generated by combustion of fossil fuel. The local utility provider, Pacific Gas & Electric Company (PG&E), calculates CO_2 emission factors for electricity annually based on the mix of renewable and non-renewable sources used to generate electricity which fluctuate depending on rainfall and water flows. All project scenarios assume implementation of a proposed water transfer agreement with Oakdale Irrigation District totaling 2,400 acre feet per year. GHG emissions associated with treatment and transport of this water is calculated using statewide emission factors.

- ***Motor Vehicle Use.*** Project Site development would generate motor vehicle trips. Transportation associated with the Project Site development would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips. However, not all of these emissions would be "new" to the region or state since drivers would likely have relocated from another area. Because it is not possible to accurately determine the proportion of Project Site development-related trip that would be "new" to the region compared to those that are relocating within the region to the Project Site, and in order to provide a conservative analysis, all vehicle trips predicted to be generated by Project Site development in the transportation analysis are assumed to be new trips.

- ***Stationary Sources.*** Project Site development does not include any new or expanded stationary sources that would exceed BAAQMD's industrial threshold of 10,000 metric tons per year (MT/yr) of CO2e. Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require an air district permit to operate.

The following activities would result in a decrease in GHG emissions within the Project Site:

- ***Removal of Existing Sources.*** While some of the existing sources of GHG emissions within the Project Site would be relocated (e.g., lumberyards) as a result of the Project Site development, some existing uses removed (existing industrial park) would be removed entirely and removal of their emissions would be incremental benefit of Project Site development.

- ***Installation of Photovoltaic or Other Renewable Energy Sources.*** The DSP and DSP-V scenarios would both allocate 25 acres to renewable energy generation. Specific renewable

energy facilities under the CPP and CPP-V scenarios are currently undefined, but would likely consist of small-scale wind and solar facilities that could be installed on rooftops and other non-dedicated spaces along with a dedicated solar facility. The CPP and CPP-V scenarios proposed an equivalent amount of onsite renewable energy generation to that of the DSP scenario. Additional renewable energy generation would be achieved in the CPP-V scenario due to processes that would be undertaken at the expanded Recology facility.

Impacts of Construction-Related GHG Emissions

CO_2 emissions associated with different aspects of construction activities for urban development can be estimated using a combination of software programs. BAAQMD's BGM model does not calculate GHG emissions from construction sources. Consequently, these emissions were calculated using the estimated CO_2 emissions from URBEMIS2007 and percentage emissions for other GHG's from diesel fuels as estimated by the General Reporting Protocol of the Climate Registry. OFFROAD2011 and the EMFAC2011 predict the same CO_2 emission factors as EMFAC2007 and OFFROAD2007 (embedded in URBEMIS2007) and therefore post processing adjustments were not necessary.

Assumptions regarding construction timing and the number, type, and operating hours of equipment are based on the number and type of equipment that would be used in the construction of the Project Site development, as well as the duration of each construction phase. Emissions estimates are conservative in that they do not account for any best management practices that may reduce GHG emissions. Construction emissions over an assumed 13-year construction period are annualized assuming a 20-year development life[3] (which is likely low), and added to overall project emissions for comparison to significance thresholds. Construction-related emissions would be a temporary occurrence and would not represent an ongoing burden to the regional GHG emission inventory.

DSP and DSP-V: Amortized annual GHG emissions associated with the construction of the DSP and DSP-V scenarios would result in annualized generation of 2,218 and 2,081 metric tons of CO_2e, respectively, as shown in Appendix G of this EIR.

CPP and CPP-V: GHG emissions associated with the construction phase of the CPP and CPP-V scenarios would result in annualized generation of 1,682 and 1,656 metric tons of CO_2e, respectively, as shown on pages 7 and 8 of Appendix G of this EIR, respectively.

Impacts of GHG Emissions from Project Site Operations

Tables 4.F-1 and **4.F-2** present gross estimates of each scenario's unmitigated operational CO_2e emissions in a horizon year of 2040 resulting from increases in motor vehicle trips, grid electricity usage, solid waste, and other sources (including area sources, natural gas combustion, and water/wastewater conveyance). These values were calculated using the BGM and output summaries are presented in Appendix G of this EIR, pages 11, 17, 23, and 30.[4] Reductions in

[3] The development life is the assumed lifetime of project buildings and facilities, after which the potential exists for the buildings and facilities to be demolished or substantially altered for a new land use, requiring CEQA review.

[4] Post processing adjustment for PG&E specific electrical emission factors are not reflected in BGM output for electrical emissions.

TABLE 4.F-1
ESTIMATED EMISSIONS OF GREENHOUSE GASES (2040)
FROM OPERATION OF THE DSP AND DSP-V SCENARIOS

Source	Emissions (metric tons of CO_2e per year)
Developer-Sponsored Plan (DSP)	
Construction (Amortized Annual Emissions)	2,218
Motor Vehicle Trips	39,457
Electricity	12,236
Natural Gas	10,069
Solid Waste	26,743
Other Sources (i.e., area sources, water/wastewater)	1,358
Existing land uses to be removed (Industrial Park)	-2,762
Renewable Energy Generation (PV)	-3,116
Total Unmitigated Operational GHG Emissions	86,203
Operational GHG Emissions per Service Population (17,540 jobs + 9,888 population = 27,428)	3.1
BAAQMD Efficiency Threshold	*4.6*
Significant (Yes or No)?	***No***
Developed-Sponsored Plan–Entertainment Variant (DSP-V)	
Construction (Amortized Annual Emissions)	2,081
Motor Vehicle Trips	37,023
Electricity	12,580
Natural Gas	10,789
Solid Waste	32,442
Other Sources (i.e., Area Sources, Water/Wastewater)	1,358
Existing land uses to be removed (Industrial Park)	-2,762
Renewable Energy Generation (PV)	-3,116
Total Mitigated Operational GHG Emissions	90,395
Operational GHG Emissions per Service Population (15,466 jobs) + 9,888 population = 25,354)	3.6
BAAQMD Efficiency Threshold	*4.6*
Significant (Yes or No)?	***No***

NOTE: GHG emissions from vehicles and area sources (including natural gas combustion) associated with the Project Sire development were calculated using the URBEMIS2007 model and BGM and trip generation data from the DSP and DSP-V scenarios traffic analysis. Additional data and assumptions are included in Appendix G of this EIR.

BAAQMD = Bay Area Air Quality Management District
GHG = greenhouse gas
CO_2e = carbon dioxide (CO_2) equivalents

SOURCE: ESA, 2012.

TABLE 4.F-2
ESTIMATED EMISSIONS OF GREENHOUSE GASES (YEAR 2040)
FROM OPERATION OF THE CPP AND CPP-V SCENARIOS

Source	Emissions (metric tons of CO_2e per year)
Community Proposed Project (CPP)	
Construction (Amortized Annual Emissions)	1,682
Motor Vehicle Trips	67,252
Electricity	11,503
Natural Gas	5,561
Solid Waste	26,766
Other Sources (i.e., area sources, water/wastewater)	1,336
Existing land uses to be removed (Industrial Park)	-2,762
Renewable Energy Generation (PV)	-3,116
Total Unmitigated Operational GHG Emissions	108,222
Operational GHG Emissions per Service Population (16,191 jobs	6.7
BAAQMD Efficiency Threshold	*4.6*
Significant (Yes or No)?	***Yes***
Community Proposed Project–Recology Expansion Variant (CPP-V)	
Construction (Amortized Annual Emissions)	1,656
Motor Vehicle Trips (non-Recology)	64,213
Recology Vehicle Trips	748
Electricity	10,839
Natural Gas	4,974
Solid Waste	24,824
Other Sources (i.e., area sources, water/wastewater)	1,336
Existing land uses to be removed (Industrial Park)	-2,762
Recology Renewable Energy Implementation	-11,022
Renewable Energy Generation (non-Recology PV)	-3,116
Total Unmitigated Operational GHG Emissions	**91,690**
Operational GHG Emissions per Service Population (16,073 jobs)	**5.7**
BAAQMD Efficiency Threshold	*4.6*
Significant (Yes or No)?	***Yes***

NOTE: GHG emissions from vehicles and area sources (including natural gas combustion) associated with the Project Site development were calculated using the URBEMIS2007 model and BGM and trip generation data from the CPP and CPP-V scenarios traffic analysis. Additional data and assumptions are included in Appendix G of this EIR.

BAAQMD = Bay Area Air Quality Management District
GHG = greenhouse gas
CO_2e = carbon dioxide (CO_2) equivalents

SOURCE: ESA, 2012.

GHG from existing sources to be removed and renewable energy (assumed to be photovoltaic) are also included in these tables. Model runs revealed that CO_2 motor vehicle emission factors in EMFAC2011 are equivalent to those in EMFAC2007 and no adjustments to BGM output were required.

Table 4.F-1 indicates that GHG emissions from the DSP and DSP-V scenarios would be below BAAQMD's "efficiency threshold" of 4.6 metric tons of CO_2e per service population per year. This would represent a cumulatively less-than-significant GHG impact for these two scenarios.

The CPP and CPP-V scenarios would produce between 1 and 25 percent more GHG emissions than the DSP and DSP-V scenarios. The primary reason for this difference in impact is that the number of vehicle trips generated by the CPP and CPP-V scenarios is predicted to be 81 and 72 percent greater than the number generated by the DSP and DSP-V scenarios, respectively. The larger number of vehicle trips occurring in the CPP and CPP-V scenarios results from the physical separation between onsite employment opportunities and offsite housing for Project Site employees. The accepted GHG modeling methodologies for the Bay Area place an emphasis on mixed use development and placing new jobs and housing in close proximity. Secondly, the CPP and CPP-V scenarios have fewer employees than the DSP and DSP-V scenarios and no residents; therefore, the denominator in the GHG emissions equation (on-site resident and employee population) is relatively small in the CPP and CPP-V scenarios as compared to the DSP, resulting in higher per service population emissions.

As shown in Table 4.F-2, emissions associated with the CPP and CPP-V scenarios would exceed BAAQMD's "efficiency threshold" of 4.6 metric tons of CO_2e per service population per year. Consequently, the CPP and CPP-V would make a cumulatively considerable contribution to cumulative GHG impacts and mitigation would be required.

Mitigation Measure 4.F-1 below is recommended to reduce the impacts of the CPP and CPP-V scenarios. Emissions must be reduced by a further 28 percent for the CPP and approximately 23 percent for the CPP-V (to approximately 68,457 metric tons of CO2e per year) to meet the BAAQMD "efficiency threshold" and reduce the impact to a less-than-significant level.

The following mitigation measures were identified within the BGM as appropriate mitigation measures for development projects and applied in a mitigated scenario using default values for calculation of GHG emissions after mitigation for the CPP and CCP-V scenarios (see **Table 4.F-3**).

Conclusion: The CPP and CPP-V would make a significant contribution to cumulative GHG impacts and mitigation would be required. Implementation of **Mitigation Measure 4.F-1** is recommended to reduce the impacts related to GHG emissions.

TABLE 4.F-3
MITIGATED EMISSIONS OF GREENHOUSE GASES
FROM OPERATION OF THE CPP AND CPP-V SCENARIOS

Source	Emissions (metric tons of CO_2e per year)
Community Proposed Project (CPP)	
Construction (Amortized Annual Emissions)	1,682
Motor Vehicle Trips	67,252
Electricity	9,202
Natural Gas	4,449
Solid Waste	25,089
Other Sources (i.e., area sources, water/wastewater)	1,336
Existing land uses to be removed (Industrial Park)	-2,762
Renewable Energy Generation (PV)	-3,116
Total Mitigated Operational GHG Emissions	103,132
BAAQMD GHG Bright Line Threshold	*1,100*
Significant (Yes or No)?	***Yes***
Operational GHG Emissions per Service Population (16,191 jobs)	6.4
BAAQMD Efficiency Threshold	*4.6*
Significant (Yes or No)?	***Yes***
Community Proposed Project–Recology Expansion Variant (CPP-V)	
Construction (Amortized Annual Emissions)	1,656
Motor Vehicle Trips (non-Recology)	64,213
Recology Vehicle Trips	748
Electricity	8,671
Natural Gas	3,980
Solid Waste	22,342
Other Sources (i.e., area sources, water/wastewater)	1,336
Existing land uses to be removed (Industrial Park)	-2,762
Recology Renewable Energy Implementation	-11,022
Renewable Energy Generation (non-Recology PV)	-3,116
Total Mitigated Operational GHG Emissions	86,038
Operational GHG Emissions per Service Population (16,073 jobs)	5.4
BAAQMD Efficiency Threshold	*4.6*
Significant (Yes or No)?	***Yes***

NOTE: GHG emissions from vehicles and area sources (including natural gas combustion) associated with the Project Site development were calculated using the URBEMIS2007 model and the BGM and trip generation data from the CPP and CPP-V scenarios traffic analysis. Additional data and assumptions are included in Appendix G of this EIR.

BAAQMD = Bay Area Air Quality Management District
GHG = greenhouse gas
CO_2e = carbon dioxide (CO_2) equivalents

SOURCE: ESA, 2012.

Mitigation

Mitigation Measure 4.F-1: All new development within the Project Site shall be required to develop and implement a Greenhouse Gases Emissions Reduction Plan (GHG Plan) containing strategies to increase energy efficiency and reduce GHG emissions to the greatest extent feasible with a minimum performance standard of five percent (as reflected in Table 4.F-3). The GHG Plan shall be submitted to the City for approval as part of the initial application process for building permits so that the measures will be verified as present in building specifications. The GHG Plan, as implemented, shall include strategies that exceed those already identified in the project description or required by law. The GHG Plan shall include strategies designed to reduce emissions generated by motor vehicles, as well as strategies to reduce stationary source emissions from energy consumption. Strategies shall include, but not be limited to, the following types of GHG reduction measures:

Mitigation Measure Applicability by Scenario			
DSP	**DSP-V**	**CPP**	**CPP-V**
–	–	✓	✓

✓ = measure applies
- = measure does not apply

- Motor Vehicle Emissions
  - Provide free transit passes to employees and onsite residences;
  - Provide secure bike parking (at least one space per 20 vehicle spaces);
  - Provide showers and changing facilities for employees;
  - Provide information on transportation alternatives to employees;
  - Establish a dedicated employee transportation coordinator; and
  - Include preferential carpool and vanpool parking.
- Stationary Source Emissions
  - Provide stand-alone or rooftop solar, wind, or other renewable energy generation facilities (e.g., co-generation) to accommodate at least 3,600 MT per year of GHG offset within the Project Site;
  - Upgrade buildings within the Project Site to achieve a LEED Gold rating, rather than the LEED Silver rating now required by the Brisbane Municipal Code;
  - Increase solid waste diversion from landfills by 10 percent beyond state and local diversion requirements;
  - Employ "cool roof" technology for buildings; and
  - Use electrically powered landscape equipment.

Additional measures that are not identified within the BGM may be feasible but would require the GHG Emissions Reduction Plan to develop and commit to effective GHG emission reductions and provide GHG reduction estimates for each measure. These additional measures are presented below in **Table 4.F-4**, along with the type of information needed to estimate further reductions in GHG emissions. Additionally, measures recommended by the state Attorney General's office that are not proposed or have not been considered by other mitigation above are also identified. These measures could be implemented as part of the required specific plan by developers of site-specific

TABLE 4.F-4
ADDITIONAL GREENHOUSE GAS EMISSION REDUCTION STRATEGIES AND DATA REQUIRED

Strategy	Data Required
Bay Area Greenhouse Gas Model (BGM) Measures	
Institute recycle and compost services	Percent waste reduction
Install water-efficient landscape	Gallons/year
Use reclaimed water	Percent use inside/outside
Water conservation strategy (precludes above two strategies)	Percent reduction inside/outside
Install high efficient lighting	Percent energy reduction
Provide ridesharing program	Percent employees eligible
Limit parking supply	Percent reduction
Increase on-street parking fee	Percent increase in price
Implement trip reduction program	Percent employees eligible
Charge for workplace parking	Percent employees eligible and amount
Implement employee vanpool/shuttle program	Percent employees eligible
State Attorney General's Office Measures	
Meet recognized green building standards, such as Leadership in Energy and Environmental Design (LEED), for individual buildings	
Use passive solar design to reduce energy demand for space heating and cooling.	
Reduce unnecessary outdoor lighting	
Build solar ready structures where solar systems cannot feasibly be incorporated at the outset	
Include energy storage to optimize renewable energy generation and avoid peak energy use	
Use onsite landfill gas in energy applications	
Reuse and recycle demolition and construction wastes	
Accommodate recycling collection areas in business spaces	

SOURCE: ESA, 2012.

development projects as a condition of building permit to be verified by the City through the permit process. Many of these measures are also identified in **Mitigation Measure 4.B-4** of Section 4.B, *Air Quality*, of this EIR to address regional criteria air pollutant impacts.

Conclusion with Mitigation: With the inclusion of **Mitigation Measure 4.F-1**, implementation of the CPP or CPP-V scenarios would result in a reduction of GHG emissions (approximately 4.5 percent), but that reduction would not reduce GHG emissions to the degree necessary (a 28- to 31-percent reduction) to achieve a less-than-significant environmental effect, as indicated by Table 4.F-3. Implementation of additional emissions reduction strategies such as those identified in Table 4.F-4 above could further reduce the impact of GHG emissions. However, because it is unclear to what extent such measures could feasibly be implemented and would reduce GHG

emissions to levels below the threshold of significance, the impact of GHG emissions from the CPP and CPP-V scenarios would remain significant unavoidable.

Impact 4.F-2: Would the Project conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

Impact Significance by Scenario (before Mitigation)			
DSP	**DSP-V**	**CPP**	**CPP-V**
LTS	LTS	SU	SU

SU = Significant Unavoidable
SM = Significant but Mitigable
LTS = Less than Significant
- = no impact

DSP, DSP-V, CPP, and CPP-V

Project Site development, inclusive of remediation, soil transport, and the proposed water transfer agreement, would result in impacts related to this criterion.

As indicated in Table 4.F-1, GHG emissions generated by operation of the DSP and DSP-V scenarios would be less than the BAAQMD "efficiency threshold" of 4.6 metric tons of CO_2e per service population per year. However, the GHG emissions generated by operation of the CPP and CPP-V scenarios would exceed the BAAQMD "efficiency threshold," as described in Impact 4.F-1, above. GHG efficiency metrics were developed for the emissions rates at the State level for the land use sector that would accommodate projected growth (as indicated by population and employment growth) under trend forecast conditions, and the emission rates needed to accommodate growth while allowing for consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020) (BAAQMD, 2009). As a result, the CPP and CPP-V scenarios would also be considered to impair attainment of GHG reduction goals established pursuant to AB 32 in the *Climate Change Scoping Plan*. BAAQMD thresholds were crafted in a manner that defined a project's emissions significant if the Project Site development would emit GHG in excess of the level needed to facilitate achievement of AB 32 goals.

Conclusion: The CPP and CPP-V scenarios would impair attainment of GHG reduction goals established pursuant to AB 32 in the *Climate Change Scoping Plan* and would therefore be considered to conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs. **Mitigation Measure 4.F-1** above is recommended for the CPP and CPP-V scenarios. The DSP and DSP-V scenarios would have a less-than-significant impact with regard to GHG reduction planning efforts, as emissions per service population would be below thresholds developed based on attainment of AB 32 goals.

Conclusion with Mitigation: As described above, even with the implementation of **Mitigation Measure 4.F-1**, above, the CPP and CPP-V scenarios would result in significant unavoidable environmental effects on GHG reduction planning efforts. The cumulative impact would be significant unavoidable because no mitigation measures have been identified that would reduce emissions to below the numeric threshold, as would be required for the CPP and CPP-V to comply with the State of California's goal to reduce GHG emissions.

References – Greenhouse Gas Emissions

Bay Area Air Quality Management District (BAAQMD), *Revised Draft Options and Justification Report for California Environmental Quality Act Thresholds of Significance*, 2009.

Bay Area Air Quality Management District (BAAQMD), *Source Inventory of Bay Area Greenhouse Gas Emissions*, updated February 2010.

Bay Area Air Quality Management District (BAAQMD), *California Environmental Quality Act Air Quality Guidelines*, May 2011.

California Air Pollution Control Officers Association (CAPCOA), *CEQA and Climate Change*, 2008.

California Air Resources Board (CARB), *Climate Change Scoping Plan*, adopted December 11, 2008, re-approved by the CARB on August 24, 2011.

California Energy Commission (CEC), *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004*, 2007.

California Environmental Protection Agency (CalEPA), Climate Action Team Report to Governor Schwarzenegger and the Legislature, 2006.

City of Brisbane, Agenda Report, Meeting of March 1, 2010.

Intergovernmental Panel on Climate Change (IPCC), Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fourth 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 University Press, Cambridge, United Kingdom, 2007.

San Mateo County, County of San Mateo Greenhouse Gas Emission Inventory. Draft, March 2012, www.co.sanmateo.ca.us/planning/rechargesmc/pdf/docs/SanMateoCo_%20Inventory &ReductionTargetMemo-3-5-12.pdf, viewed February 8, 2013.

United Nations Framework Convention on Climate Change (UNFCCC), Sum of Annex I and Annex II countries without counting Land-Use, Land-Use Change and Forestry (LULUCF), http://unfccc.int/ghg_emissions_data/predefined_queries/items/3814.php, viewed March 25, 2012. (For countries for which 2004 data was unavailable, the most recent year was used.)

United States Environmental Protection Agency (U.S. EPA), Climate Change – Ecosystems and Biodiversity, 2008a, www.epa.gov/climatechange/effects/eco.html, viewed March 19, 2012.

United States Environmental Protection Agency (U.S. EPA), Climate Change – Health and Environmental Effects, 2008b, www.epa.gov/climatechange/effects/health.html#climate, viewed March 19, 2012.

United States Environmental Protection Agency (U.S. EPA), *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2009; Executive Summary*, 2011. Originally accessed at www.epa.gov/climatechange/emissions/downloads11/US-GHG-Inventory-2011-Executive-Summary.pdf, (content now available online at http://www.epa.gov/climatechange/ Downloads/ghgemissions/US-GHG-Inventory-2011-Executive-Summary.pdf).