5.6 GREENHOUSE GAS

5.6.1 OVERVIEW AND SUMMARY

This section describes the environmental and regulatory setting for greenhouse gas (GHG) emissions, as well as current methods and efforts to evaluate the significance of a project's GHG emissions under the California Environmental Quality Act. This section also identifies relevant plans and policies developed in efforts to reduce GHG emissions for the implementation of the proposed Master Plan Update. Sources of GHG emissions from the proposed Master Plan Update are identified and discussed. Potential emissions are estimated along with mitigation measures to reduce the level of emissions and to reduce potential climate change impacts. Sources utilized in this discussion include the Santa Barbara County Air Pollution Control District (SBCAPCD) Scope and Content of Air Quality Sections in Environmental Documents *and guidance documents from the California Air Resources Board (CARB) and California Air Pollution Control Officers Association (CAPCOA). GHG emissions calculations conducted for the project are contained within* ***Appendix 5.5*** *of this environmental impact report (EIR).*

Construction and operation of the project would result in GHG emissions primarily from heavy-duty construction equipment and motor vehicles. GHG emissions would also be generated from electricity generated off site, which would be used to provide power for proposed water pumps and a water treatment facility. Stationary source emergency generators would also result in GHG emissions during routine maintenance and testing. Construction and operation of the project would result in GHG emissions that are less than the thresholds of significance recommended by the SBCAPCD. The project would also not conflict with plans to reduce GHG emissions pursuant to the state's goals under AB 32 (The Global Warming Solutions Act of 2006). The project would result in a less than significant impact with respect to GHG emissions (Class III).

5.6.2 DATA SOURCES AND METHODOLOGY

The data sources and tools used to evaluate the GHG impacts associated with construction and operation of the proposed Master Plan Update include the California Emissions Estimator Model (CalEEMod),[1] which was used to analyze the proposed Master Plan Update GHG emissions during construction and operation. CalEEMod is a program that calculates emissions from land use sources and incorporates CARB's EMFAC2007 model for on-road vehicle emissions and the OFFROAD2007 model for off-road vehicle emissions. CalEEMod also utilizes data from the California Energy Commission (CEC), CARB, U.S. EPA, guidance prepared by CAPCOA.[2] During project construction, the model can analyze emissions that occur during different phases, such as building construction and architectural coating,

---

1 ENVIRON, "CalEEMod, Version 2011.1.1," http://www.caleemod.com/.

2 California Air Pollution Control Officers Association, *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*, (2010). The document may be downloaded from the following website: http://www.capcoa.org/.

concurrently or separately. Site-specific or project-specific data were used in the CalEEMod model where available. Additional sources were relied upon as referenced. Emission calculations conducted for the proposed Master Plan Update are contained in **Appendix 5.5** (which includes both GHG emissions and criteria air pollutant emissions)**.**

5.6.3 APPLICABLE REGULATIONS

5.6.3.1 Federal Regulations

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

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

While these findings do not impose requirements on industry or other entities, this action was a prerequisite to regulating and finalizing the joint U.S. EPA and Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) proposed GHG emissions standards for light-duty vehicles. The new standards apply to model year 2012 through 2016 light-duty vehicles. For the 2012 model year, passenger cars and light-duty trucks would have to meet an average emissions standard of 295 grams of carbon dioxide (CO_2) per mile and 30.1 miles per gallon.[3] By 2016, the vehicles would have to meet an average standard of 250 grams of CO_2 per mile and 35.5 miles per gallon.[4] The final standards were adopted by the U.S. EPA and DOT on April 1, 2010.

On May 13, 2010, the U.S. EPA issued a final rule that sets thresholds for GHG emissions that define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. The Clean Air Act permitting requirements are phased in according to the following steps:

- **Step 1, January 2, 2011 to June 30, 2011:** Only sources that are already subject to the PSD or Title V programs are subject to the requirements for GHGs. Newly constructed or modified sources that are already subject to PSD and that increase GHG emissions by 75,000 tons per year on a carbon dioxide

---

3 US Environmental Protection Agency, "EPA and NHTSA Propose Historic National Program to Reduce Greenhouse Gases and Improve Fuel Economy for Cars and Trucks," http://epa.gov/otaq/climate /regulations/420f09047a.htm. 2009.

4 Ibid, "EPA and NHTSA Propose Historic Nation Program," 2009.

equivalent (CO_2e) basis (68,039 metric tons of CO_2e [$MTCO_2e$] per year) would need to determine the Best Available Control Technology (BACT) for their GHG emissions. No new sources would be subject to Clean Air Act permitting requirements due solely to GHG emissions.

- **Step 2, July 1, 2011 to June 30, 2013:** Newly constructed sources that emit at least 100,000 tons of CO_2e per year (90,718 $MTCO_2e$ per year) or modified sources that emit at least 75,000 tons of CO_2e per year (68,039 $MTCO_2e$ per year) would be subject to PSD even if they do not significantly increase emissions of any other criteria air pollutant. The Title V Operating Permit program would cover facilities that emit at least 100,000 tons of CO_2e per year (90,718 $MTCO_2e$ per year) even if they do not emit any other criteria air pollutant subject to Title V.

- **Step 3, Time Frame TBD:** This step may allow the U.S. EPA to explore options for streamlining future GHG permitting. If established, Step 3 would not require permitting for sources with GHG emissions below 50,000 tons of CO_2e per year (45,359 $MTCO_2e$ per year) and would not require permits for smaller sources until at least April 30, 2016.

5.6.3.2 State Regulations

Renewables Portfolio Standard

In 2002, Senate Bill 1078 (SB 1078, Sher) established California's Renewables Portfolio Standard (RPS) which requires investor-owned utilities, such as Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric, to increase energy production from renewable source 1 percent per year up to a minimum of 20 percent of total energy generation by 2017. SB 107 (Simitian), signed by the Governor on September 26, 2008, accelerated the RPS timeframe by requiring investor-owned utilities to meet the 20 percent target by 2010.

On September 15, 2009, the Governor issued Executive Order S-21-0911 requiring CARB, under its AB 32 authority, to adopt regulations to meet a 33 percent RPS target by 2020. The CARB regulations would use a phased-in or tiered requirement to increase the amount of electricity from eligible renewable sources over an eight-year period beginning in 2012. CARB adopted the regulation in September 2010. In March 2011, the Legislature passed SB X1-2, which was signed into law by the governor. SB X1-2 requires utilities to procure renewable energy products equal to 33 percent of retail sales by December 31, 2020, and also established interim targets: 20 percent by December 31, 2013 and 25 percent by December 31, 2016. SB X1-2 also includes publicly owned utilities in California.

Executive Order S-3-05 and the Climate Action Team

In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The

Secretary of California Environmental Protection Agency is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agency representatives involved in the GHG reduction plan include the Secretary of the Business, Transportation and Housing Agency, the Secretary of the Department of Food and Agriculture, the Secretary of the Resources Agency, the Chairperson of CARB, the Chairperson of the CEC, and the President of the Public Utilities Commission. Representatives from these agencies comprise the Climate Action Team.

Assembly Bill 32

To further the goals established in Executive Order S-3-05, the Legislature enacted Assembly Bill 32 (AB 32, Nuñez and Pavley), the California Global Warming Solutions Act of 2006, which was signed into law on September 27, 2006. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries with penalties for noncompliance. AB 32 requires the state to undertake several actions – the major requirements are discussed below.

State of California 1990 Greenhouse Gas Inventory

As required under AB 32, on December 6, 2007, CARB approved the 1990 greenhouse gas emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 million $MTCO_2e$. The inventory revealed that in 1990, transportation, with 35 percent of the state's total emissions, was the largest single sector generating carbon dioxide, followed by industrial emissions, 24 percent; imported electricity, 14 percent; in-state electricity generation, 11 percent; residential use, 7 percent; agriculture, 5 percent; commercial uses, 3 percent; and forestry emissions (excluding sinks), less than 1 percent. These figures represent the 1990 values. AB 32 does not require individual sectors to meet their individual 1990 GHG emissions inventory; the total statewide emissions are required to meet the 1990 threshold by 2020.

CARB Early Action Measures

CARB is responsible for carrying out and developing the programs and requirements necessary to achieve the goals of AB 32—the reduction of California's GHG emissions to 1990 levels by 2020. The first action under AB 32 resulted in CARB's adoption of a report listing three specific early action greenhouse gas emission reduction measures on June 21, 2007. On October 25, 2007, CARB approved an additional six early action GHG reduction measures under AB 32. CARB has adopted regulations for all early action measures. The original three adopted early action regulations meeting the narrow legal definition of "discrete early action GHG reduction measures" include:

- A low-carbon fuel standard to reduce the "carbon intensity" of California fuels;

- Reduction of refrigerant losses from motor vehicle air conditioning system maintenance to restrict the sale of "do-it-yourself" automotive refrigerants; and
- Increased methane capture from landfills to require broader use of state-of-the-art methane capture technologies.

The additional six early action regulations adopted on October 25, 2007, also meeting the narrow legal definition of "discrete early action GHG reduction measures," include:

- Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology;
- Reduction of auxiliary engine emissions of docked ships by requiring port electrification;
- Reduction of perfluorocarbons from the semiconductor industry;
- Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products);
- Requirement that all tune-up, smog check, and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency; and
- Restriction on the use of sulfur hexafluoride (SF_6) from non-electricity sectors if viable alternatives are available.

Climate Change Scoping Plan

As indicated above, AB 32 requires CARB to adopt a scoping plan indicating how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions. CARB released the *Climate Change Scoping Plan* in October 2008, which contained an outline of the proposed State strategies to achieve the 2020 GHG emission limits. The CARB Governing Board approved the *Climate Change Scoping Plan* on December 11, 2008. The *Climate Change Scoping Plan* indicates how emissions reductions will be achieved from significant sources of GHGs via regulations, market mechanism, and other actions. The *Climate Change Scoping Plan* identifies 18 recommended strategies the state should implement to achieve AB 32. CARB has identified ongoing programs and has adopted regulations for a number of individual measures to reduce GHG emissions in accordance with the *Climate Change Scoping Plan* strategies. CARB will continue to draft additional rule language and conduct public workshops and rulemaking procedures and is scheduled to finalize regulations by mid-2012.

Key elements of the *Climate Change Scoping Plan* include the following recommendations:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;

- Achieving a statewide renewable energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the state's long-term commitment to AB 32 implementation.

Under the *Climate Change Scoping Plan*, approximately 85 percent of the state's emissions are subject to a cap-and-trade program where covered sectors are placed under a declining emissions cap. The emissions cap incorporates a margin of safety whereby the 2020 emissions limit will still be achieved even in the event that uncapped sectors do not fully meet their anticipated emission reductions. Emission reductions will be achieved through regulatory requirements and the option to reduce emissions further or purchase allowances to cover compliance obligations. It is expected that emission reductions from the cap-and-trade program will account for a sizeable portion of the reductions required by AB 32.

Executive Order S-1-07

On January 18, 2007, California set a new Low Carbon Fuel Standard (LCFS) for transportation fuels sold within the state. Executive Order S-1-07 sets a declining standard for GHG emissions measured in CO_2-equivalent grams per unit of fuel energy sold in California. The target of the LCFS is to reduce the carbon intensity of California passenger vehicle fuels by at least 10 percent by 2020. The LCFS will apply to refiners, blenders, producers, and importers of transportation fuels and will use market-based mechanisms to allow these providers to choose how they reduce emissions during the "fuel cycle" using the most economically feasible methods. CARB identified the LCSF as an early action item under AB 32 and the final regulation was adopted on April 23, 2009. The emissions model used in this analysis (CalEEMod) accounts for GHG reductions pursuant to the LCFS.

CARB Mandatory Reporting Requirements

CARB adopted regulations requiring the mandatory reporting of GHG emissions for large facilities on December 6, 2007. The mandatory reporting regulations require annual reporting from the largest facilities in the state, which account for approximately 87 percent of greenhouse gas emissions from

industrial and commercial sources in California.[5] CARB estimates that about 750 separate facilities fall under the reporting rules. Under the latest proposed revisions to the regulation, the reporting requirements fall into three general categories:[6]

- **Reporters with No Reporting Threshold ("Whole-Sector" Reporting):** Consistent with the U.S. EPA, certain facilities are required to report under "whole-sector" reporting requirements. These include cement producers, lime manufacturers, nitric acid producers, petroleum refineries, natural gas liquid fractionators, carbon dioxide suppliers, and importers/exporters of electric power.

- **Reporters over 25,000 $MTCO_2e$:** Facilities that emit over 25,000 $MTCO_2e$ per year are subject to reporting requirements. Facilities subject to the latest proposed revisions include electricity generating and cogeneration facilities, electric retail providers and other importers and exporters of electric power, oil refineries, hydrogen plants, and cement plants. Other facilities that meet CO_2e reporting thresholds for stationary combustion and industrial processes are also required to report, including producers of glass, nitric acid, iron and steel, manufacturers of lime, and pulp and paper. Fuel suppliers (suppliers of transportation fuels, natural gas, natural gas liquids, and liquefied petroleum gas) and suppliers of carbon dioxide are also required to report.

- **Reporters between 10,000 and 25,000 $MTCO_2e$:** Facilities and suppliers that emit between 10,000 and 25,000 $MTCO_2e$ per year are subject to abbreviated reporting requirements. CARB expects that only some oil-and-gas production facilities, glass production facilities, and power plants would report within this range.

Under the latest proposed revisions to the regulation, no facility or supplier below 10,000 $MTCO_2e$ will be required to report to California, except for those that are covered under the "whole-sector" reporting requirements.

5.6.3.3 Local Regulations

County of Santa Barbara

Climate Action Strategy

In March 2009, the County Board of Supervisors adopted a Resolution[7] to take immediate, cost-effective and coordinated steps to reduce the County's collective greenhouse gas emissions in order to protect the community from the effects of climate change and implement programs to comply with the State of California's GHG reduction goals. The County of Santa Barbara's Climate Action Strategy (CAS) is being

---

5 California Air Resources Board, *Staff Report: Initial Statement of Reasons for Rulemaking, Revisions to the Regulation for Mandatory Reporting of Greenhouse Gas Emissions Pursuant to The California Global Warming Solutions Act of 2006 (Assembly Bill 32)*, (2010).

6 Ibid.

7 County of Santa Barbara, Board of Supervisors, Climate Action Strategy, S Resolution 09-059 March 2009.

developed to address GHG emissions pursuant to "take immediate, cost-effective, and coordinated steps to reduce the County's collective GHG emissions." Benefits of climate protection include improved economic vitality, public health and safety, natural resource protection, and infrastructure stability.

The draft CAS serves as the first step in a coordinated approach to progress the County towards regional sustainability and regulatory compliance with climate legislation. This Strategy is not intended to be an adaptation strategy focused on managing risks related to climate change. Rather, it is a strategy document that lays out future steps the County can take to reduce GHG emissions and meet the goals of AB 32, comply with SB 97 and SB 375, and prepare for any emerging federal climate legislation in its roles as: 1) a producer of GHG emissions, 2) a regulator of GHG emitting activities, and 3) to incentivize GHG reductions.

The CAS follows a two-phase structure intended to promote an informed public dialogue prior to County commitment to concrete actions to reduce emissions.

Phase 1: Climate Action Study. The Climate Action Study is the first phase of the overarching CAS and includes:

- GHG inventory and forecast for the unincorporated County,
- discussion of GHG emission reduction target options that the County could pursue,
- list of current County activities which reduce GHG emissions,
- evaluation of potential additional emission reduction measures (ERMs) the County could implement, and
- recommendations for implementation of the Study through a Climate Action Plan (CAP).

The draft CAS was completed in September 2011.[8]

Phase 2: Energy and Climate Action Plan. The Energy and Climate Action Plan (ECAP) will identify ways the County can reduce GHG emissions and implement energy-saving measures in support of a thriving, well-balanced and sustainable community. The ECAP is being prepared to assist the County with reducing its GHG emissions consistent with State Assembly Bill 32. The ECAP will:

- reduce the County's greenhouse gas emissions,

---

8 County of Santa Barbara, Planning and development Department, Climate Action Strategy – Phase 1 Climate Action Study, September 2011.

- increase the community's resilience to the effects of climate change,
- allow for programmatic mitigation of GHG emissions as required under CEQA,
- identify energy efficiency goals and targets,
- create an energy efficiency strategy to meet the County's energy reduction goals, and
- implement programs to comply with the state of California's GHG reduction and long-term energy efficiency goals.

A total of 34 GHG ERMs have been identified and categorized in the CAS by topic area: 1) Air and Energy, 2) Land Use and Transportation 3) Green Building, and 4) Resource Conservation. These proposed measures serve to create a comprehensive strategy for the County to reduce GHG emissions through multiple methods in all emission sectors.

Energy consumption, both gas and electric, by businesses and homes represents 9 percent of the total emissions in California and GHGs released through energy generation from public utilities accounts for 25 percent of the GHG emissions in the State. Promoting and achieving more efficient use of energy promises to offer one of the most readily achievable and cost effective means of GHG reduction in the County.

Implementation of the CAS will occur through a number of existing GHG emission-related regulatory compliance initiatives as well as incentive-based program opportunities. First, the CAS will be used in the completion of a Climate Action Plan (CAP) in compliance with SB 97, which requires the analysis of plan and project level GHG emissions under CEQA.

The CAP will provide the County with a policy framework to reduce greenhouse GHG with a suite of GHG emission reductions options that may be implemented as a means to reduce cumulative greenhouse gas emission impacts. Additionally, the ERMs identified in the CAS will be used by the County as it works with Santa Barbara County Association of Governments on the implementation of SB 375 and associated development of a regional Sustainable Communities Strategy. The CAS will also be used to enhance the incentive-based Innovative Building Review Program, in the development of a new green building ordinance, and as a resource in the implementation of the County Sustainable Action Plan to maximize municipal GHG emission opportunities.

Air Pollution Control District

Santa Barbara County Air Pollution Control District (SBAPCD) staff is in the process of developing a proposal to adopt greenhouse gas thresholds of significance for stationary source projects. While there is no requirement for a GHG threshold, the SBAPCD proposes adoption of GHG thresholds for stationary sources of 10,000 MTCO2e per year to provide a standard methodology for GHG impact analysis.[9]

When serving as a CEQA lead agency, the SBAPCD would apply the GHG threshold to stationary source projects that require SBAPCD permits. By adopting GHG thresholds, the SBAPCD as a lead agency could assess significance of and mitigate adverse impacts from GHG emissions within new projects in a fair, objective, and legally defensible manner. As a responsible agency under CEQA, SBAPCD staff regularly comments on environmental analyses for discretionary decisions requiring CEQA review and supports the use of thresholds for determining significance of impacts.

An SBAPCD-adopted GHG threshold could be used by lead agencies other than the SBAPCD, such as City of Solvang. But other CEQA lead agencies are not required to use SBAPCD's thresholds. Land use decisions are generally outside the SBAPCD's regulatory authority, and county jurisdictions may choose to apply other thresholds of significance for GHGs.

City of Solvang

General Plan

The City's General Plan Conservation and Open Space Element[10] sets forth the City's goals and policies for development that indirectly relates to air quality. Several of these goals and policies also relate to GHG emissions. The following goals, policies, and actions from the General Plan are relevant to GHG emissions from the proposed Master Plan Update:

Goal 3.1 To protect and conserve the City's natural and cultural resources.

Objective 6.0 Reduce the City's demands upon conventional, non-renewable sources of energy.

Policy 6.a The City shall require new development to incorporate alternative energy systems.

---

9 Santa Barbara County Air Pollution Control District, CEQA Significance Thresholds for GHGs - Questions and Answers, May 2011.

10 City of Solvang, General Plan, Conservation Element, adopted 1988.

5.6.4 EXISTING CONDITIONS

5.6.4.1 Climate Change and Greenhouse Gas Background

Global climate change refers to any significant change in climate measurements, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer).[11] Climate change may result from:

- Natural factors (e.g., changes in the sun's intensity, slow changes in the Earth's orbit around the sun);
- Natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHG and other gases to the atmosphere from volcanic eruptions); and
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

The natural process through which heat is retained in the troposphere[12] is called the "greenhouse effect." The greenhouse effect traps heat in the troposphere through a three-fold process: (1) short-wave radiation in the form of visible light emitted by the Sun is absorbed by the Earth as heat; (2) long-wave radiation re-emitted by the Earth; and (3) GHGs in the atmosphere absorbing or trapping the long-wave radiation and re-emitting it back towards the Earth and into space. This third process is the focus of current climate change actions.

While water vapor and carbon dioxide (CO_2) are the most abundant GHGs, other trace GHGs have a greater ability to absorb and re-radiate long-wave radiation. Scientists have established a Global Warming Potential (GWP) to gauge the potency of each GHG's ability to absorb and re-emit long-wave radiation. The GWP of a gas is determined using CO_2 as the reference gas with a GWP of 1 over 100 years. For example, a gas with a GWP of 10 is 10 times more potent than CO_2 over 100 years. The sum of each GHG multiplied by its associated GWP is referred to as carbon dioxide equivalents or CO_2e.

State law defines GHGs to include the following compounds:[13]

- **Carbon Dioxide (CO_2).** CO_2 is primarily generated from fossil fuel combustion from stationary and mobile sources. CO_2 is the reference gas (GWP of 1) for determining the GWPs of other GHGs.

---

11 US Environmental Protection Agency, "Glossary of Climate Change Terms," http://www.epa.gov /climatechange/glossary.html#Climate_change. 2011.

12 The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers.

13 All Global Warming Potentials are given as 100-year values. Unless noted otherwise, all Global Warming Potentials were obtained from the Intergovernmental Panel on Climate Change. *Climate Change 1995: The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge (UK): Cambridge University Press, 1996.

- **Methane (CH_4).** Methane is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. The GWP of methane is 21.

- **Nitrous Oxide (N_2O).** Is produced by human-related sources including agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The GWP of nitrous oxide is 310.

- **Hydrofluorocarbons (HFCs).** HFCs typically are used as refrigerants in both stationary refrigeration and mobile air conditioning. The GWPs of HFCs ranges from 140 for HFC-152a to 11,700 for HFC-23.

- **Perfluorocarbons (PFCs).** Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. The GWPs of PFCs range from 5,700 to 11,900.

- **Sulfur Hexafluoride (SF_6).** Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride has a GWP of 23,900. It is not prevalent in the atmosphere (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm] of CO_2).[14]

The primary GHGs of concern relative to the proposed Master Plan Update are CO_2, CH_4, and N_2O. These three GHGs are generally emitted from combustion activities. HFCs are associated with refrigeration and air conditioning and are accounted for in this analysis with respect to motor vehicle air conditioning system leakage. The other GHGs listed above are related to specific industrial uses and not anticipated to be emitted in measurable or substantial quantities by the proposed Master Plan Update.

State of California Greenhouse Gas Emissions Inventory

The CARB compiles GHG inventories for the State of California. Based on the 2008 GHG inventory data (the latest year for which data are available), California emitted 474 million metric ton carbon dioxide equivalent ($MMTCO_2e$) ***including*** emissions resulting from imported electrical power in 2008.[15] Based on the CARB inventory data and GHG inventories compiled by the World Resources Institute, California's total statewide GHG emissions rank second in the United States (Texas is number one) with emissions of 417 $MMTCO_2e$ *excluding* emissions related to imported electrical power.[16]

The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which

---

14 US Environmental Protection Agency, "High GWP Gases and Climate Change," http://www.epa.gov/highgwp/scientific.html#sf6. n.d.

15 California Air Resources Board, "California Greenhouse Gas 2000-2008 Inventory by Scoping Plan Category - Summary," http://www.arb.ca.gov/cc/inventory/data/data.htm. 2010.

16 Ibid.

include commercial and residential activities. **Table 5.6-1, GHG Emissions in California**, provides a summary of GHG emissions reported in California in 1990 and 2008 separated by categories defined by the United Nations Intergovernmental Panel on Climate Change (IPCC).

Between 1990 and 2008, the population of California grew by approximately 8.1 million (from 29.8 to 37.9 million).[17] This represents an increase of approximately 27.2 percent from 1990 population levels. In addition, the California economy, measured as gross state product, grew from $773 billion in 1990 to $1.9 trillion in 2008 representing an increase of approximately 147 percent (over twice the 1990 gross state product).[18] Despite the population and economic growth, California's net GHG emissions only grew by approximately 11 percent. The CEC attributes the slow rate of growth to the success of California's renewable energy programs and its commitment to clean air and clean energy.[19]

Global Ambient CO2, CH4, and N2O Concentrations

Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of carbon dioxide, methane, and nitrous oxide from before the start of the industrialization, around 1750, to over 650,000 years ago. For that period, it was found that carbon dioxide concentrations ranged from 180 ppm to 300 ppm. For the period from around 1750 to the present, global carbon dioxide concentrations increased from a pre-industrialization period concentration of 280 ppm to 379 ppm in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.[20] Recent values continue this upward trend. Global methane and nitrous oxide concentrations show similar increases for the same period (see **Table 5.6-2, Comparison of Global Pre-Industrial and Current GHG Concentrations**).

Effects of Global Climate Change

The primary effect of global climate change has been a rise in the average global tropospheric temperature of 0.2° Celsius per decade, determined from meteorological measurements worldwide between 1990 and 2005.[21] Climate change modeling using 2000 emission rates shows that further

---

17 US Census Bureau, "Data Finders," http://www.census.gov/. 2009; California Department of Finance, "E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-1008, with 2000 Benchmark," http://www.dof.ca.gov/research/demographic/reports/estimates/e-5/2009/. 2010.

18 California Department of Finance, "Financial & Economic Data: Gross Domestic Product, California," http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm. 2011. Amounts are based on current dollars as of the data of the report (June 7, 2011).

19 California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004*, (2006).

20 Ibid.

warming is likely to occur, which would induce further changes in the global climate system during the current century.[22] Changes to the global climate system and ecosystems and to California could include:

- Declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures;[23]
- Rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets;[24]
- Changing weather patterns, including changes to precipitation, ocean salinity, and wind patterns; and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;[25]

Table 5.6-1
GHG Emissions in California

Source Category	1990 ($MMTCO_2e$)	Percent of Total	2008 ($MMTCO_2e$)	Percent of Total
ENERGY	**386.41**	**89.2%**	**413.80**	**86.6%**
Energy Industries	157.33	36.3%	171.23	35.8%
Manufacturing Industries & Construction	24.24	5.6%	16.67	3.5%
Transport	150.02	34.6%	173.94	36.4%
Other (Residential/Commercial/Institutional)	48.19	11.1%	46.59	9.8%
Non-Specified	1.38	0.3%	0.00	0.0%
Fugitive Emissions from Oil & Natural Gas	2.94	0.7%	3.28	0.7%
Fugitive Emissions from Other Energy Production	2.31	0.5%	2.09	0.4%
INDUSTRIAL PROCESSES & PRODUCT USE	**18.34**	**4.2%**	**30.11**	**6.3%**
Mineral Industry	4.85	1.1%	5.35	1.1%
Chemical Industry	2.34	0.5%	0.06	0.0%
Non-Energy Products from Fuels & Solvent Use	2.29	0.5%	1.97	0.4%
Electronics Industry	0.59	0.1%	0.80	0.2%
Substitutes for Ozone Depleting Substances	0.04	0.0%	13.89	2.9%
Other Product Manufacture and Use	3.18	0.7%	1.66	0.3%
Other	5.05	1.2%	6.39	1.3%
AGRICULTURE, FORESTRY, & OTHER LAND USE	**19.11**	**4.4%**	**24.42**	**5.1%**
Livestock	11.67	2.7%	16.28	3.4%
Land	0.19	0.0%	0.19	0.0%

21 Intergovernmental Panel on Climate Change, "Climate Change 2007: The Physical Science Basis, Summary for Policymakers," http://ipcc-wg1.ucar.edu/wg1/docs/WG1AR4_SPM_PlenaryApproved.pdf. 2007.

22 Ibid.

23 Ibid.

24 Ibid.

25 Ibid.

Source Category	1990 ($MMTCO_2e$)	Percent of Total	2008 ($MMTCO_2e$)	Percent of Total
Aggregate Sources & Non-CO_2 Sources on Land	7.26	1.7%	7.95	1.7%
WASTE	**9.42**	**2.2%**	**9.41**	**2.0%**
Solid Waste Disposal	6.26	1.4%	6.71	1.4%
Wastewater Treatment & Discharge	3.17	0.7%	2.70	0.6%
EMISSIONS SUMMARY				
Gross California Emissions	433.29		477.74	
Sinks from Forests and Rangelands	-6.69		-3.98	
Net California Emissions	426.60		473.76	

Sources:

[1] *California Air Resources Board, "California Greenhouse Gas 1990-2004 Inventory by IPCC Category - Summary," http://www.arb.ca.gov/cc/inventory/archive/archive.htm. 2010.*

[2] *Ibid, "California Greenhouse Gas 2000-2008 Inventory by IPCC Category - Summary," http://www.arb.ca.gov/cc/inventory/data/data.htm. 2010.*

Table 5.6-2
Comparison of Global Pre-Industrial and Current GHG Concentrations

Greenhouse Gas	Natural Range for Last 650,000 Years[1] (ppm)	Year 1750 Concentrations (Early Industrial Period)[1] (ppm)	Year 2005 Concentrations[1] (ppm)	Year 2010 Concentrations[2,3] (ppm)
Carbon Dioxide (CO_2)	180 to 300	280	379	389
Methane (CH_4)	0.320 to 0.790	0.715	1.774	1.870/1.748
Nitrous Oxide (N_2O)	0.180 to 0.260	0.270	0.319	0.323/0.322

Sources:

[1] *Intergovernmental Panel on Climate Change, Climate Change 2007: The Physical Science Basis, (2007) 3, 100.*

[2] *Dr. Pieter Tans, National Oceanic and Atmospheric Administration (NOAA)/Earth System Research Laboratory (ESRL), "Trends in Atmospheric Carbon Dioxide," http://www.esrl.noaa.gov/gmd/ccgg/trends. 2011.*

[3] *Carbon Dioxide Information Analysis Center, "Recent Greenhouse Gas Concentrations," http://cdiac.ornl.gov/pns/current_ghg.html. 2011. The first value for CH_4 and N_2O represents Mace Head, Ireland, a mid-latitude Northern-Hemisphere site, and the second value represents Cape Grim, Tasmania, a mid-latitude Southern-Hemisphere site.*

- Declining Sierra snowpack levels, which account for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;[26]

- Increasing the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas located in the Southern California area and the San Joaquin Valley by the end of the 21st century;[27]

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

- Increasing the potential for erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Delta and associated levee systems due to the rise in sea level;[28]
- Increasing pest infestation making California more susceptible to forest fires;[29] and
- Increasing the demand for electricity by 1 to 3 percent by 2020 due to rising temperatures resulting in hundreds of millions of dollars in extra expenditures.[30]

In 2009, the California Natural Resources Agency (CNRA) published the *California Climate Adaptation Strategy*[31] as a response to the Governor's Executive Order S-13-2008. The CNRA report lists specific recommendations for state and local agencies to best adapt to the anticipated risks posed by a changing climate. In accordance with the *California Climate Adaptation Strategy*, the CEC was directed to develop a web site on climate change scenarios and impacts that would beneficial for local decision makers.[32] The website, known as Cal-Adapt, became operational in 2011.[33] According to the Cal-Adapt website, the project region could result in an average increase in temperature of approximately 5 to 8 percent (about 2.8 to 4.8° Fahrenheit) by 2070-2090, compared to the baseline 1961-1990 period. The project region could result in an average increase in potential amount of area burned in 2085 of 1.1 to 1.2 times the present-day 2010 burn risk. According to the Cal-Adapt website, these numbers represent a projection of potential future climate scenarios. The data are comprised of the average values from a variety of scenarios and models and is meant to illustrate how the climate may change based on a variety of different potential social and economic factors.

5.6.5 THRESHOLDS OF SIGNIFICANCE

In order to assist in determining whether a project would have a significant effect on the environment, the *California Environmental Quality Act (CEQA) Guidelines* identify criteria for conditions that may be deemed to constitute a substantial or potentially substantial adverse change in physical conditions.

---

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

28 Ibid.

29 Ibid.

30 Ibid.

31 Ibid, *2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008*, (2009).

32 California Natural Resources Agency, Climate Action Team, *2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008*, (2009), Page 9.

33 The Cal-Adapt website address is: http://cal-adapt.org.

Specifically, Appendix G of the *State CEQA Guidelines* (Environmental Checklist Form) lists the following threshold, under which a project may be deemed to have a significant impact on greenhouse gas if it would:

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

The SBCAPCD has not adopted a numerical threshold of significance for GHG emissions. The County of Santa Barbara recommends using the thresholds adopted by the Bay Area Air Quality Management District (BAAQMD) as an interim method to determine the significance of a project's GHG emissions. While the County of Santa Barbara is not the lead agency for the project, this analysis also uses the thresholds adopted by the BAAQMD. According to the BAAQMD, a project would be significant if it would:

- Generate greenhouse gas emissions from non-stationary sources, either directly or indirectly, that exceed 1,100 $MTCO_2e$; or
- Generate greenhouse gas emissions from stationary sources, either directly or indirectly, that exceed 10,000 $MTCO_2e$.

5.6.6 ENVIRONMENTAL IMPACTS

The environmental impact analysis presented below is based on determinations made in the Notice of Preparation (NOP) for issues that were determined to be potentially significant with mitigation incorporated, or for issues identified by reviewing agencies, organizations, or individuals commenting on the NOP that made a reasonable argument that the issue was potentially significant (see Responses to NOP, **Appendix 1.0**).

5.6.6.1 Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Impacts

Construction

Master Plan Update

The Master Plan Update recommends that the City provide infrastructure improvements to the water system. These improvements include implementing an annual waterline, fire hydrant, and valve

replacement program to replace aging infrastructure and undersized waterlines. The Master Plan Update makes several recommendations for inspecting and replacing undersized waterlines and fire hydrants and valves over 50 years old (or those known to be malfunctioning).

The Master Plan Update also recommends the City construct additional storage of approximately 400,000 gallons in Zone 1 within the next 10 years or prior to any significant new development and recommends other water storage improvements. These recommendations and improvements are described in detail in **Section 2.0, Project Description**.

Well Drilling and Installation

The Master Plan Update recommends that the City install new wells along the Santa Ynez River in order to extract a peak flow of 5 cfs from the river underflow. Hopkins Groundwater Consultants (2002) has indicated that the maximum number of wells required would be six wells. Borehole depths for the proposed wells will likely not exceed 65 feet below ground surface and the proposed diameters will be 12 inches. Construction of the wells will require access by construction equipment, trucks, and a drilling rig. Access to the new wells would be provided by existing roadways along the north side of the river channel. Existing informal dirt roads on the floodplain also would be used to access wells. At each well site, a 2,500-square-foot area (about 50 by 50 feet) will be cleared and graded to a flat surface. The well will be installed within this area, which will also be used for the drilling rig, stockpiling, and other equipment parking. It also may be necessary for construction trucks to temporarily park along the existing dirt roads at each well site.

After well development is complete, each well will be subject to several days of pump testing, which would occur on a 24-hour basis. A portable diesel engine and generator will power the well pumps. Pumped groundwater will be discharged to open areas in the floodplain near the well site in such a manner as to avoid erosion. It is estimated that well testing will occur for 1 to 2 days for each well.

Well drilling, completion, development, and testing will require about 5 days at each well site. Work will likely be coordinated so that one well is being drilled while another is being developed and tested. Pump testing will occur immediately after well installation. The water lines and electrical conduits will be installed after well testing. The proposed well installation will be completed in a phased approach.

Water Treatment Plant

The City has determined that the most cost effective and reliable treatment technology is conventional surface water treatment plant. The dimensions of the electrical/instrumentation and booster station building would be about 48 feet long, 24 feet wide, and 16 feet high. The existing pedestrian walkway

that currently runs through the proposed treatment plant site would be re-routed around the westerly side of the treatment plant site. Site improvements would include minor low profile landscaping with native and drought tolerant plant species. The treatment plant would not normally be occupied, but would be visited a few hours each day by City operations personnel. Electrical power will be provided from Pacific Gas and Electric (PG&E) lines that would be run underground to the treatment plant. Construction of the treatment plant will occur in the following phases:

1. Grading and construction of foundation and retaining wall, if necessary on the east side of the building site;
2. Building construction;
3. Utility connections, including electricity, cable, sewer, and the water line from the river wells; and
4. Installation of the treatment modules.

Construction activities are expected to be completed in a nine-month period. The initial grading will involve the use of a loader and backhoe for several days, followed by concrete trucks. Building construction and system installation will involve various work trucks and construction worker vehicles.

Construction GHG Emissions Summary

Construction activity that would result from the recommendations in the Master Plan Update would result in one-time GHG emissions – that is, the GHG emissions would not be ongoing but would only occur during construction activity. Construction GHG emissions would primarily result from the combustion of fossil fuels from heavy-duty construction equipment and from construction worker trucks and vehicles. The primary GHG emissions during construction are CO_2, CH_4, and N_2O. The other GHGs defined by state law (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are typically associated with specific industrial sources and processes and would not be emitted during construction of the proposed Master Plan Update. The CalEEMod model was used to estimate the construction-related GHG emissions assuming that all the activities described above are undertaken. The types of construction equipment for each of the activities described above are shown in **Table 5.6-3, Summary of Construction Equipment**. The estimated construction-related GHG emissions are provided in **Table 5.6-4, Estimated Construction GHG Emissions**. Detailed construction model inputs and emissions calculations are provided in **Appendix 5.5**.

It is common practice to amortize construction-related GHG emissions over the project's lifetime in order to include these emissions as part of a project's amortized lifetime total emissions so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies.

Table 5.6-3
Summary of Construction Equipment

Construction Activity	Equipment Type
Infrastructure: Waterline, Fire Hydrant/Valve Replacement	Trencher, Loader/Backhoe, Concrete Trucks, Concrete/Industrial Saw, Generator, Welder, Worker Trucks/Vehicles
Infrastructure: Additional Water Storage	Loader/Backhoe, Dozer, Concrete Trucks, Generator, Worker Trucks/Vehicles
Well Drilling, Installation, and Testing	Drill Rig, Trencher, Loader/Backhoe, Welder, Generator, Concrete Trucks, Worker Trucks/Vehicles
Water Treatment Plant	Loader/Backhoe, Forklift, Trencher, Concrete Trucks, Concrete Mixers, Welder, Generator, Paver, Roller, Air Compressor, Worker Trucks/Vehicles

Source: Impact Sciences, Inc. Construction model inputs are provided in ***Appendix 5.5****.*
[1] *Amortized GHG emissions are calculated by dividing the total construction GHG emissions over a conservative project lifetime of 30 years.*

Table 5.6-4
Estimated Construction GHG Emissions

Construction Activity	GHG Emissions (Metric Tons CO_2e/year)
Infrastructure	3,772
Well Drilling, Installation, and Testing	51
Water Treatment Plant	329
Total GHG Emissions	**4,152**
Amortized GHG Emissions[1]	**138**

Source: Impact Sciences, Inc. Emissions calculations are provided in ***Appendix 5.5****.*
[1] *Amortized GHG emissions are calculated by dividing the total construction GHG emissions over a conservative project lifetime of 30 years.*

A conservative project lifetime is 30 years. However, it is likely that the components of the project would last well beyond this assumed timeframe. The construction GHG emissions have been amortized over a 30-year period and are included in the amortized operational GHG emissions discussed in the next section. It should be noted that the BAAQMD thresholds of significance do not apply to construction-related GHG emissions. Therefore, the inclusion of the amortized construction emissions is a conservative approach to assessing the project's level of significance.

Operation

The Master Plan Update recommends that the City implement an annual waterline, fire hydrant, and valve replacement program and provide additional water storage capacity. This program would result in additional vehicle trips, which would generate GHG emissions. The proposed six wells would also generate additional vehicle trips for maintenance purposes. The proposed water treatment plant would not normally be occupied, but would be visited a few hours each day by City operations personnel, which would also generate additional vehicle trips and emissions. Emissions would also be generated from electricity from Pacific Gas and Electric (PG&E) that would be used to power pumps at the proposed six wells and the proposed water treatment plant.

The number of vehicle trips was conservatively estimated assuming that all components of the Master Plan Update, as described in detail in **Section 2.0, Project Description**, are built out. It was assumed that the waterline, fire hydrant, and valve replacement program would generate up to 12 additional vehicle trips per day (four trips each for waterline, fire hydrant/valve, and the additional water storage inspection/maintenance). Similarly, up to 24 additional vehicle trips per day were assumed for the six wells (four trips for each well). It was assumed that the water treatment plant would generate 8 additional vehicle trips per day (two crews each making four trips per day). Based on these assumptions, the total number of additional trips would be 44 trips per day.

The proposed six new wells would provide the City with a total of eight potentially active wells that are capable of providing an average of 300 gallons per minute (gpm) or 0.67 cubic feet per second (cfs) each, for a total capability of 2,400 gpm (5.33 cfs). However, the proposed six new wells will be designed to produce up to 400 gpm (0.89 cfs) each on a long-term continuous basis. The electricity needed for a well pump varies considerably, but is conservatively estimated at a maximum of 210 megawatt-hours (MWh) per year for each of the six wells operating at 400 gpd for 24 hours a day, for a total of 1,260 MWh per year.[34] The proposed water treatment plant would have an initial capacity of 2 million gallons per day (MGD) or 3.09 cfs, but would be designed to allow for the addition of a third parallel treatment train of 1 MGD capacity to bring the total treatment plant capacity to 3 MGD (4.64 cfs) in the future, if necessary. The electricity needed for the water treatment plant is estimated at 330 MWh per year, assuming a capacity of 3 MGD.[35]

---

34 Goleta Water District, *Facility Plan, Corona Del Mar Water Treatment Plant, GWD Project No. 00.3309*, (2004) 11-3. A typical well might use as much as 2,000 kilowatt-hours (kWh) per million gallons of water produced and pumped up to system pressure at hydraulic grade level equal to 230 feet. Half of the kWh value was assumed for the project assuming a 50 percent lower hydraulic grade level.

35 Goleta Water District, *Facility Plan, Corona Del Mar Water Treatment Plant, GWD Project No. 00.3309*, (2004) 11-2. This is based on an average of 300 kWh per million gallons.

Stationary source emissions would be generated from two emergency generators that would be used to improve water supply reliability during power outages. One would be used at the existing SWP Pumping Station and one would be used at the proposed site for the water treatment plant. The sizes of the emergency generators are unknown at this time; therefore, it was assumed that each would be 1,000 kilowatts. Emergency generators may be subject to SBCAPCD air quality permitting requirements and would be scheduled to operate during standard testing and maintenance activities, which is anticipated to be about 1 hour per week and 50 hours per year.

A summary of the operational GHG emissions is provided in **Table 5.6-5, Estimated Operational GHG Emissions**. Detailed emission calculations are provided in **Appendix 5.5**.

The emissions shown **Table 5.6-5** are based on conservative assumptions. Therefore, the emissions should be viewed as maximum emissions under a reasonably assumed "worst-case" scenario. Nonetheless, the emissions would not exceed the thresholds of significance and would be considered less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant (Class III).

5.6.6.2 Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Impacts

Construction

The primary GHG emissions regulation in California is AB 32, which requires the state to reduce its GHG emissions inventory to 1990 levels by 2020. Construction activity would be required to comply with CARB's anti-idling rule, which prohibits vehicles from idling for more than 5 minutes with certain exceptions, such as concrete trucks that must idle in order to mix and dispense concrete. Compliance with this rule would limit construction-related GHG emissions. As discussed above, the construction GHG emissions are included in the project's operational GHG emissions and assessed together. Therefore, the project's level of significance with respect to this threshold is discussed below under the operational subheading.

Table 5.6-5
Estimated Operational GHG Emissions

Emission Source	GHG Emissions (Metric Tons CO_2e/year)
Non-Stationary Sources	
Amortized Construction	138
Energy (Infrastructure)	0
Energy (Wells)	369
Energy (Water Treatment Plant)	97
Mobile Sources (Infrastructure)	12
Mobile Sources (Wells)	23
Mobile Sources (Water Treatment Plant)	9
Total	**648**
Non-Stationary Source Threshold of Significance	**1,100**
Exceeds Non-Stationary Source Threshold?	**NO**
Stationary Sources	
Emergency Generators (2)	71
Stationary Source Threshold of Significance	**10,000**
Exceeds Stationary Source Threshold?	**NO**

*Emission calculations are provided in **Appendix 5.5**.*
Note: Totals in table may not appear to add exactly due to rounding.

Operation

The primary GHG emissions regulation in California is AB 32, which requires the state to reduce its GHG emissions inventory to 1990 levels by 2020. The SBCAPCD recommends using thresholds of significance that have been adopted by the BAAQMD. The BAAQMD developed its GHG significance thresholds in order to ensure compliance with AB 32 emissions reductions requirements in the Bay Area. Therefore, if a proposed Master Plan Update emits below the significance threshold, it can be assumed to comply with AB 32. While the project is not located in the Bay Area, it can be reasonably assumed that the project would also not conflict with AB 32 if it does not exceed the same thresholds. This is a reasonable assumption because Santa Barbara County as a whole generates fewer emissions than the San Francisco Bay Area Air Basin (SFBAAB); thus, GHG emissions from Santa Barbara County contribute less to the statewide inventory compared to the SFBAAB. As shown in **Table 5.6-5**, the proposed Master Plan Update would not exceed the significance thresholds for non-stationary and stationary source emissions. Furthermore, the project would not conflict with the mandate that PG&E increase its renewable energy portfolio to 33 percent by 2020. General Plan Policy 6.a would support the increased use of renewable

energy. As a result, the project would not conflict with the state's ability to meet its GHG goals under AB 32 and would result in a less than significant impact.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant (Class III).

5.6.7 CUMULATIVE ANALYSIS

Cumulative Impacts

Global climate change is, by definition, a cumulative impact as GHG emissions do not have a localized impact; they impact the globe as a whole. Therefore, any analysis of the proposed Master Plan Update's GHG emissions is, by definition, a cumulative analysis. As discussed above, the project's GHG would be less than significant. Cumulative impacts would be the same as those discussed above. Therefore, the project's contribution to cumulative impacts would not be cumulatively considerable.

Cumulative Mitigation Measures

No mitigation is required.

Residual Cumulative Impacts

Impacts would be less than significant (Class III).