

### 5.2 GREENHOUSE GAS EMISSIONS

This section of the Shea/Baker Ranch Draft Supplemental EIR (DSEIR) evaluates the potential for the SBRA Project to impact global climate change as a result of the project's construction to greenhouse gas emissions in the local and regional context.

At the time of circulation in 2008, the OSA PEIR disclosed that the still-developing nature of greenhouse gas emissions thresholds would result in a speculative analysis of potential impacts. Due to the uncertainty of the data and methodologies for analyzing greenhouse gas emissions, the City could not state with certainty that the implementation of any particular mitigation measures would reduce the project's contribution of greenhouse gas emissions to less than cumulatively considerable levels. Therefore, in an abundance of caution, the OSA PEIR concluded that impacts from greenhouse gas emissions on global climate change to be significant and unavoidable.

Since the certification of the OSA PEIR, additional methods for analyzing greenhouse gas emissions have become available, enabling an informed analysis of greenhouse gas emissions resulting from the SBRA project. Therefore, this project-level analysis is considered new information pursuant to Public Resources Code section 21166(c) and State CEQA Guidelines Section 15162(a)(3)(A). The DSEIR evaluates this new information to determine if it results in new potentially significant impacts.

On December 30, 2009, the California Natural Resources Agency (CNRA) adopted the amendments to the CEQA Guidelines to address GHG emissions. These amendments became effective on March 18, 2010. This section evaluates the potential for implementation of the SBRA Project to impact global climate change. The analysis in this section is based on the following:

- *Air Quality Analysis, Shea Baker Ranch, Lake Forest California.* LSA Associates, December 2011.

A complete copy of this study is included in Appendix C to this DSEIR.

#### 5.2.1 Environmental Setting

##### Regulatory Setting

##### *Regulation of GHG Emissions on a National Level*

The federal government has taken a number of steps toward addressing global climate change over the past 30 years, but thus far, such actions have been mostly policy oriented. In 1978, Congress enacted the National Climate Program Act, which required an investigation into climate change. In 1987, Congress enacted the Global Climate Protection Act for the purpose of establishing a national climate program that will assist the Nation and the world to understand and respond to natural and man-induced climate processes and their implications (15 USC § 2902). The act required the establishment of various programs to further climate change research (15 USC § 2904(d)).

On April 2, 2007, the United States Supreme Court ruled that the U.S. Environmental Protection Agency (EPA) has the authority to regulate carbon dioxide (CO<sub>2</sub>) emissions under the Federal Clean Air Act. After a thorough examination of the scientific evidence and careful consideration of public comments, the EPA announced on December 7, 2009, that GHG emissions threaten the public health and welfare of the American people. The EPA also finds that GHG emissions from on-road vehicles contribute to that threat. The EPA's final findings respond to the 2007 U.S. Supreme Court decision that GHG emissions fit within the Clean Air Act definition of air pollutants. The findings do not in and of themselves impose any emission



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reduction requirements, but do allow the EPA to finalize the GHG standards proposed in 2009 for new light-duty vehicles as part of the joint rulemaking with the Department of Transportation.

The EPA's endangerment finding covers emissions of six key greenhouse gases—carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>)—that have been the subject of scrutiny and intense analysis for decades by scientists in the United States and around the world.

#### **Regulation of GHG Emissions on a State Level**

Assembly Bill 32 (AB 32), the Global Warming Solutions Act, was passed by the California state legislature on August 31, 2006, to place the state on a course toward reducing its contribution of GHG emissions. AB 32 follows the 2020 tier of emissions reduction targets established in Executive Order S-3-05, signed June 1, 2005. The Executive Order requires the state's global warming emissions to be reduced to 1990 levels by the year 2020 and by 80 percent of 1990 levels by the year 2050. It is projected that GHG emissions in California by 2020 will be approximately 596 million metric tons (MMTons) of CO<sub>2e</sub> (CARB 2008). In December 2007, the California Air Resources Board (CARB) approved a 2020 emissions limit of 427 MMTons (471 million tons) of CO<sub>2e</sub> for the state (CARB 2008). The 2020 target requires emissions reductions of 169 MMTons, 28.5 percent of the projected emissions compared to projected year 2020 emissions (i.e., 28.5 percent of 596 MMTons) (CARB 2008). CARB defines the projected 2020 emissions as business-as-usual (BAU) in its Scoping Plan as emissions levels that would occur if California continued to grow and add new GHG emissions but did not adopt any measures to reduce emissions. Projections for each emission-generating sector were compiled and used to estimate emissions for 2020 based on 2002–2004 emissions intensities. Under CARB's definition of BAU, new growth is assumed to have the same carbon intensities as was typical in 2002 through 2004.

In order to effectively implement the cap, AB 32 directed CARB to establish a mandatory reporting system to track and monitor global warming emissions levels for large stationary sources that generate more than 25,000 metric tons (MTons) per year, prepare a plan demonstrating how the 2020 deadline can be met, and develop appropriate regulations and programs to implement the plan by 2012. The Climate Action Registry Reporting Online Tool was established through the Climate Action Registry to track GHG emissions. In June 2008, CARB released a draft of the Climate Change Scoping Plan, which was revised in October 2008. The final Scoping Plan was adopted by CARB on December 11, 2008. Key elements of CARB's GHG reduction plan are:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Increases the State's Renewable Portfolio Standard (RPS) to 33 percent by 2020. Retail sellers of electricity are required to increase the portion of electricity they provide each year by renewable energy to achieve the 33 percent goal;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system for large stationary sources;
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard

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- Creating target 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.

Table 5.2-1, *Scoping Plan Greenhouse Gas Reduction Measures and Reductions toward 2020 Targets*, shows the proposed reductions from regulations and programs outlined in the Scoping Plan. While local government operations were not accounted for in achieving the 2020 emissions reduction, CARB estimates that land use changes implemented by local governments that integrate jobs, housing, and services are estimated to result in a reduction of 5 MMTons of CO<sub>2e</sub>, which is approximately 3 percent of the 2020 GHG emissions reduction goal. In recognition of the critical role local government plays in successful implementation of AB 32, CARB is recommending GHG reduction goals of 15 percent of today's levels by 2020 to ensure that municipal and community-wide emissions match the state's reduction target. Measures that local governments take to support shifts in land use patterns are anticipated to emphasize infill and refill, compact, low-impact developments over growth on undevelopment, greenfield areas, resulting in fewer per capita miles driven by passenger vehicle. According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles travelled by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 MMTons of CO<sub>2e</sub> (or approximately 1.2 percent of the GHG reduction target).

#### SB 97

In addition to the requirements under AB 32 to address GHG emissions and global climate change in general plans and CEQA documents, Senate Bill 97 (Chapter 185, 2007) required the Governor's Office of Planning and Research (OPR) to develop CEQA guidelines for addressing global warming emissions and mitigating project-generated GHG emissions. OPR transmitted the proposed guidelines to CNRA and the guidelines were adopted on December 30, 2009. The amended CEQA Guidelines became effective on March 18, 2010.

The new CEQA Guidelines concerning GHG emissions do not include or recommend any particular threshold of significance; instead, they leave that decision to the discretion of the lead agency. However, with respect to adopting thresholds of significance, newly added CEQA Guidelines section 15064.7(c) provides: [A] lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence. The new CEQA Guidelines also do not suggest or recommend the use of any specific GHG emission mitigation measures. Instead, newly added CEQA Guidelines section 15126.4(c) provides that 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.

Among other things, CNRA noted in its public notice for these changes to the CEQA Guidelines that the impacts of GHG emissions should be considered in the context of a cumulative impact, rather than a project impact. The public notice states:

While the Proposed Amendments do not foreclose the possibility that a single project may result in greenhouse gas emissions with a direct impact on the environment, the evidence before [CNRA] indicates that in most cases, the impact will be cumulative. Therefore, the Proposed Amendments emphasize that the analysis of greenhouse gas emissions should center on whether a project's incremental contribution of greenhouse gas emissions is cumulatively considerable.



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**Table 5.2-1  
Scoping Plan GHG Reduction Measures Toward 2020 Target**

<b>Recommended Reduction Measures</b>	<b>Reductions Counted toward 2020 Target of 169 MMTons CO<sub>2e</sub></b>	<b>Percentage of Statewide 2020 Target</b>
<b>Cap and Trade Program and Associated Measures</b>		
California Light-Duty Vehicle GHG Standards	31.7	19%
Energy Efficiency	26.3	16%
Renewable Portfolio Standard (33 percent by 2020)	21.3	13%
Low Carbon Fuel Standard	15	9%
Regional Transportation-Related GHG Targets <sup>1</sup>	5	3%
Vehicle Efficiency Measures	4.5	3%
Goods Movement	3.7	2%
Million Solar Roofs	2.1	1%
Medium/Heavy Duty Vehicles	1.4	1%
High Speed Rail	1.0	1%
Industrial Measures	0.3	0%
Additional Reduction Necessary to Achieve Cap	34.4	20%
<b>Total Cap and Trade Program Reductions</b>	<b>146.7</b>	<b>87%</b>
<b>Uncapped Sources/Sectors Measures</b>		
High Global Warming Potential Gas Measures	20.2	12%
Sustainable Forests	5	3%
Industrial Measures (for sources not covered under cap and trade program)	1.1	1%
Recycling and Waste (landfill methane capture)	1	1%
<b>Total Uncapped Sources/Sectors Reductions</b>	<b>27.3</b>	<b>16%</b>
<b>Total Reductions Counted toward 2020 Target</b>	<b>174</b>	<b>100%</b>
<b>Other Recommended Measures – Not Counted toward 2020 Target</b>		
State Government Operations	1.0 to 2.0	1%
Local Government Operations	To Be Determined <sup>2</sup>	NA
Green Buildings	26	15%
Recycling and Waste	9	5%
Water Sector Measures	4.8	3%
Methane Capture at Large Dairies	1	1%
<b>Total Other Recommended Measures – Not Counted toward 2020 Target</b>	<b>42.8</b>	<b>NA</b>

Source: CARB, 2008.

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

<sup>2</sup> According to the Measure Documentation Supplement to the Scoping Plan, local government actions and targets are anticipated to reduce vehicle miles by approximately 2 percent through land use planning, resulting in a potential GHG reduction of 2 million metric tons of CO<sub>2e</sub> (or approximately 1.2 percent of the GHG reduction target). However, these reductions were not included in the Scoping Plan reductions to achieve the 2020 target.

#### Executive Order S-03-05

In summary, current State of California guidance and goals for reductions in GHG emissions are generally embodied in AB 32 and Executive Order S-03-05. AB 32 establishes a goal of reaching 1990 levels by 2020 and describes a process for achieving that goal. Executive Order S-03-05 sets a goal for the following for reduction of GHG emissions:

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

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#### *Energy Conservation Standards*

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission in June 1977 and most recently revised in 2008 (Title 24, Part 6 of the California Code of Regulations [CCR]).<sup>1</sup> Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2006 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608) were adopted by the California Energy Commission on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and nonfederally regulated appliances.

On July 17, 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (Title 24, California Code of Regulations). The green building standards that became mandatory in the 2010 edition of the code established voluntary standards on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The mandatory provisions of the California Green Building Code Standards became effective January 1, 2011.

#### *Renewable Power Requirements*

A major component of California's Renewable Energy Program is the renewable portfolio standard (RPS) established under Senate Bills (SBs) 1078 (Sher) and 107 (Simitian). Under the RPS, certain retail sellers of electricity are required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. CARB has now approved an even higher goal of 33 percent by 2020. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral.

In addition to the States RPS, Senate Bill 1368 limits long-term investments in baseload generation by utility power plants to meet emissions performance standard established by CEC and the California Public Utilities Commission. New, or capital investment in, electricity generating facilities owned by or under contract to publically owned utilities are required to achieve an emissions standard of 1,100 lbs per megawatt-hour (MWh).

#### *Vehicle Emission Standards/Improved Fuel Economy*

Vehicle GHG emission standards were enacted under AB 1493 (Pavley I) and the Low Carbon Fuel Standard (LCFS). Pavley I is a clean-car standard that reduces GHG emissions from new passenger vehicles (light duty auto to medium duty vehicles) from 2009 through 2016 and is anticipated to reduce GHG emissions from new passenger vehicles by 30 percent in 2016. The LCFS requires a reduction of 2.5 percent in the carbon intensity of California's transportation fuels by 2015 and a reduction of at least 10 percent by 2020.<sup>2</sup>

In summary, current State of California guidance and goals for reductions in GHG emissions are generally embodied in AB 32 and Executive Order S-03-05.

<sup>1</sup> Although new building energy efficiency standards were adopted in April 2008, these standards did not go into effect until 2009.

<sup>2</sup> CARB's user guide for the Pavley I + Low Carbon Fuel Standard Postprocessor provides more detail. Available at: <http://www.arb.ca.gov/cc/sb375/tools/pavleylcf-userguide.pdf> (accessed August 2010).



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#### **Regulation of GHG Emissions on a Regional Level**

In 2008, SB 375 was adopted and was intended to represent the implementation mechanism necessary to achieve the GHG emissions reductions targets established in the Scoping Plan for the transportation sector as it relates to local land use decisions that affect travel behavior. Implementation is intended to reduce GHG emissions from light-duty trucks and automobiles (excludes emissions associated with goods movement) by aligning regional long-range transportation plans, investments, and housing allocations with local land use planning. This coordination is expected to reduce per capita GHG emissions that result from travel. Specifically, SB 375 requires CARB to establish GHG emissions reduction targets for each of the 17 regions in California managed by a metropolitan planning organization (MPO). SCAG is the MPO for the southern California region, which includes the counties of Los Angeles, Orange, San Bernardino County, Riverside, Ventura, and Imperial. SCAG's targets are an 8 percent per capita reduction from 2005 GHG emissions levels by 2020 and a 13 percent per capita reduction from 2005 GHG emissions levels by 2035.

The 2020 targets are smaller than the 2035 targets because a significant portion of the built environment in 2020 has been defined by decisions that have already been made. In general, the 2020 scenarios reflect that more time is needed for large land use and transportation infrastructure changes. Most of the reductions in the interim are anticipated to come from improving the efficiency of the region's existing transportation network. The proposed targets would result in 3 MMTons of GHG reductions by 2020 and 15 MMTons of GHG reductions by 2035. Based on these reductions, the passenger vehicle target in CARB's Scoping Plan (for AB 32) would be met (CARB 2010).

SB 375 requires the MPOs to prepare a Sustainable Communities Strategy (SCS) in their regional transportation plan. SCAG released a draft Regional Transportation Plan (RTP)/SCS in December 2011 and anticipates adoption of the RTP/SCS in April 2012. The SCS will set forth a development pattern for the region, which, when integrated with the transportation network and other transportation measures and policies, would reduce GHG emissions from transportation (excluding goods movement). The SCS is meant to provide regional growth strategies that will achieve the regional GHG emissions reduction targets. However, the SCS does not require that local general plans, specific plans, or zoning be consistent with the SCS, but provides incentives for consistency for governments and developers. If the SCS is unable to achieve the regional GHG emissions reduction targets, the MPO is required to prepare an Alternative Planning Strategy that shows how the GHG emissions reduction target could be achieved through other development patterns, infrastructure, and/or transportation measures.

#### **Greenhouse Gases and Climate Change**

Climate change is a term that refers to the variation of Earth's climate over time, whether due to natural variability or as a result of human activities. The climate system is interactive, consisting of five major components: the atmosphere, the hydrosphere (ocean, rivers, and lakes), the cryosphere (sea ice, ice sheets, and glaciers), the land surface, and the biosphere (flora and fauna). The atmosphere is the most unstable and rapidly changing part of the system. It is made up of 78.1 percent nitrogen (N<sub>2</sub>), 20.9 percent oxygen (O<sub>2</sub>), and 0.93 percent argon (Ar). These gases have only limited interaction with the incoming solar radiation and do not interact with infrared (long-wave) radiation emitted by the Earth. However, there are a number of trace gases, such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and ozone (O<sub>3</sub>), that absorb and emit infrared radiation and therefore have an effect on climate. These are GHGs, and while they comprise less than 0.1 percent of the total volume mixing ratio in dry air, they play an essential role in influencing climate (IPCC 2001).

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Non-CO<sub>2</sub> GHGs are those listed in the Kyoto Protocol<sup>3</sup> (CH<sub>4</sub>, N<sub>2</sub>O, hydrofluorocarbons [HFC], perfluorocarbons [PFC], and sulfur hexafluoride [SF<sub>6</sub>]) and those listed under the Montreal Protocol and its Amendments<sup>4</sup> (chlorofluorocarbons [CFC], hydrochlorofluorocarbons [HCFC], and halons). Table 5.2-2 lists a selection of some of the GHGs and their relative global warming potentials (GWP) as compared to CO<sub>2</sub>. Although not included in this table, water vapor (H<sub>2</sub>O) is the strongest GHG, also the most variable in its phases (vapor, cloud droplets, ice crystals). However, water vapor is not considered a pollutant in the atmosphere (IPCC 2001). The major GHGs are briefly described below the table.

**Table 5.2-2  
Greenhouse Gases and Their Relative Global Warming Potential Compared to CO<sub>2</sub>**

GHG	Atmospheric Lifetime (years)	Global Warming Potential Relative to CO <sub>2</sub> <sup>1</sup>
Carbon Dioxide (CO <sub>2</sub> )	50 to 200	1
Methane (CH <sub>4</sub> ) <sup>2</sup>	12 (±3)	21
Nitrous Oxide (N <sub>2</sub> O)	120	310
Hydrofluorocarbons:		
HFC-23	264	11,700
HFC-32	5.6	650
HFC-125	32.6	2,800
HFC-134a	14.6	1,300
HFC-143a	48.3	3,800
HFC-152a	1.5	140
HFC-227ea	36.5	2,900
HFC-236fa	209	6,300
HFC-4310mee	17.1	1,300
Perfluoromethane: CF <sub>4</sub>	50,000	6,500
Perfluoroethane: C <sub>2</sub> F <sub>6</sub>	10,000	9,200
Perfluorobutane: C <sub>4</sub> F <sub>10</sub>	2,600	7,000
Perfluoro-2-methylpentane: C <sub>6</sub> F <sub>14</sub>	3,200	7,400
Sulfur Hexafluoride (SF <sub>6</sub> )	3,200	23,900

Source: USEPA

<sup>1</sup> Based on 100-Year Time Horizon of the Global Warming Potential (GWP) of the air pollutant relative to CO<sub>2</sub>.

<sup>2</sup> The methane GWP includes the direct effects and those indirect effects due to the production of tropospheric ozone and stratospheric water vapor. The indirect effect due to the production of CO<sub>2</sub> is not included.

- **Carbon dioxide (CO<sub>2</sub>)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, respiration, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.
- **Methane (CH<sub>4</sub>)** is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste, including waste in solid waste landfills.

<sup>3</sup> Kyoto Protocol: Established by the United Nations Framework Convention on Climate Change (UNFCCC) and signed by more than 160 countries (excluding the United States) stating that they commit to reduce their GHG emissions by 55 percent or engage in emissions trading.

<sup>4</sup> Montreal Protocol and Amendments: International Treaty signed in 1987 and subsequently amended in 1990 and 1992. Stipulates that the production and consumption of compounds that deplete ozone in the stratosphere (CFC, halons, carbon tetrachloride, and methyl chloroform) are to be phased out by 2000 (2005 for methyl chloroform).



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- **Nitrous oxide (N<sub>2</sub>O)** is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- **Fluorinated gases** are synthetic, strong greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High GWP gases.<sup>5</sup>
  - **Chlorofluorocarbons (CFCs)** are greenhouse gases covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere (troposphere, stratosphere), CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are also ozone-depleting gases and are therefore being replaced by other compounds that are also GHGs covered under the Kyoto Protocol.
  - **Perfluorocarbons (PFCs)** are a group of human-made chemicals composed of carbon and fluorine only. These chemicals (predominantly perfluoromethane [CF<sub>4</sub>] and perfluoroethane [C<sub>2</sub>F<sub>6</sub>]) were introduced as alternatives, along with HFCs, to the ozone-depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they have a high global warming potential.
  - **Sulfur Hexafluoride (SF<sub>6</sub>)** is a colorless gas that is soluble in alcohol and ether, and is slightly soluble in water. SF<sub>6</sub> is a strong greenhouse gas used primarily in electrical transmission and distribution systems as an insulator.
  - **Hydrochlorofluorocarbons (HCFCs)** contain hydrogen, fluorine, chlorine, and carbon atoms. Although ozone-depleting substances, they are less potent at destroying stratospheric ozone than CFCs. They have been introduced as temporary replacements for CFCs and are also greenhouse gases.
  - **Hydrofluorocarbons (HFCs)** contain only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone-depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. While they do not significantly deplete the stratospheric ozone layer, they are strong greenhouse gases (EPA 2008a, IPCC 2001, IPCC 2007).

### California's GHG Sources and Relative Contribution

California is the second largest emitter of GHG in the United States, only surpassed by Texas, and the tenth largest GHG emitter in the world (CEC 2005). This is due to both its physical land area and its large population and employment base. However, because of more stringent air emission regulations, in 2001 California ranked fourth lowest in carbon emissions per capita and fifth lowest among states in CO<sub>2</sub> emissions from fossil fuel consumption per unit of Gross State Product (total economic output of goods and

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<sup>5</sup> At present, there is a federal ban on chlorofluorocarbons (CFCs) and halons; therefore, it is assumed the project would not generate emissions of CFCs or halons. The project may emit a small amount of HFC emissions from leakage and service of refrigeration and air conditioning equipment and from disposal at the end of the life of the equipment. However, the details regarding refrigerants to be used in the project site are unknown at this time. PFCs and sulfur hexafluoride are typically used in industrial applications, none of which would be used on the project site. Therefore, it is not anticipated that the project would contribute significant emissions of these additional GHGs.



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services) (CEC 2006). CARB's latest update to the statewide GHG emissions inventory was conducted in 2010 for year 2008 emissions. In 2008, California produced 478 MMTons of CO<sub>2</sub>-equivalent (CO<sub>2</sub>e) GHG emissions, California's transportation sector is the single largest generator of GHG emissions, producing 36.6 percent of the state's total emissions. Electricity consumption is the second largest source, comprising 24.4 percent. Industrial activities are California's third largest source of GHG emissions, comprising 19.4 percent of state's total emissions. Other major sources of GHG emissions include commercial and residential, recycling and waste, high global warming potential GHGs, agriculture, and forestry (CARB 2010).

#### **Human Influence on Climate Change**

For approximately 1,000 years before the Industrial Revolution, the amount of GHG in the atmosphere remained relatively constant (IPCC 2007). During the 20th century, however, scientists observed a rapid change in the climate and climate change pollutants that are attributable to human activities. The amount of CO<sub>2</sub> has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million (ppm) per year since 1960, mainly due to combustion of fossil fuels and deforestation (IPCC 2007). These recent changes in climate change pollutants far exceed the extremes of the ice ages, and the global mean temperature is warming at a rate that cannot be explained by natural causes alone. Human activities are directly altering the chemical composition of the atmosphere through the buildup of climate change pollutants (CAT 2006).

Climate-change scenarios are affected by varying degrees of uncertainty (IPCC 2007). The Intergovernmental Panel on Climate Change's (IPCC) 2007 IPCC Fourth Assessment Report projects that the global mean temperature increase from 1990 to 2100, under different climate-change scenarios, will range from 1.4 to 5.8 °C (2.5 to 10.4°F). In the past, gradual changes in the earth's temperature changed the distribution of species, availability of water, etc. However, many scientists believe that human activities are accelerating this process so that environmental impacts associated with climate change no longer occur in a geologic timeframe but within a human lifetime (IPCC 2007).

#### **Potential Climate Change Impacts for California**

Climate change is not a local environmental impact; it is a global impact. Unlike criteria pollutants, CO<sub>2</sub> emissions cannot be attributed to a direct health effect. However, human-caused increases in GHG have been shown to be highly correlated with increases in the surface and ocean temperatures on Earth (IPCC 2007). What is not clear is the extent of the impact on environmental systems.

Like the variability in the projections of the expected increase in global surface temperatures, the environmental consequences of gradual changes in the Earth's temperature are also hard to predict. Likewise, there are varying degrees of uncertainty in environmental impact scenarios. Because of this uncertainty, the IPCC uses five different confidence levels to quantify climate change impacts on the environment: Very High Confidence (95 percent or greater), High Confidence (67 to 95 percent), Medium Confidence (33 to 67 percent), Low Confidence (5 to 33 percent), and Very Low Confidence (5 percent or less).

In California and western North America, 1) observations in the climate have shown a trend toward warmer winter and spring temperatures, 2) a smaller fraction of precipitation is falling as snow, 3) there is a decrease in the amount of spring snow accumulation in the lower and middle elevation mountain zones, 4) there is an advance snowmelt of 5 to 30 days earlier in the spring, and 5) there is a similar shift (5 to 30 days earlier) in the timing of spring flower blooms (CAT 2006). According to the California Climate Action Team (CAT), even if actions could be taken to immediately curtail climate change emissions, the potency of emissions that have already built up, their long atmospheric lifetimes (see Table 5.2-1), and the inertia of the Earth's climate



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system could produce as much as 0.6°C (1.1°F) of additional warming. Consequently, some impacts from climate change are now considered unavoidable.

CAT and Cal/EPA use the results from the recent analysis of global climate change impacts for California under three IPCC scenarios: lower emissions (B1), medium-high emissions (A2), and high emissions (A1F1); each is associated with an increasing rise in average global surface temperatures. According to the California Energy Commission's (CEC) 2006 report, "Our Changing Climate, Assessing the Risks to California," global climate change risks to California include public health impacts (poor air quality made worse and more severe heat), water resources impacts (decreasing Sierra Nevada snow pack, challenges in securing adequate water supply, potential reduction in hydropower, and loss of winter recreation), agricultural impacts (increasing temperatures, increasing threats from pests and pathogens, expanded ranges of agricultural weeds, and declining productivity), coast sea level impacts (rising coastal sea levels, increasing coastal floods, and shrinking beaches), forest and biological resource impacts (increasing wildfires, increasing threats from pest and pathogens, declining forest productivity, and shifting vegetation and species distribution), and electricity impacts (increased energy demand).

Specific climate change impacts that could result from the SBRA Project include health impacts from a reduction in air quality, water resources impacts from a reduction in water supply, and increased energy demand.

#### 5.2.2 Project Design Features

The following Project Design Features (PDFs) from the OSA PEIR, as modified to apply more specifically to the SBRA Project, reduce potential greenhouse gas emissions by reducing energy consumption and promoting alternative forms of transportation:

GHG PDF-1 (OSA PEIR GCC PDF1) The recreational centers proposed as part of development of Site 1 (Shea Baker Ranch Associates) shall be designed and constructed to include a photovoltaic system to reduce energy consumption.

GHG PDF-2 (OSA PEIR GCCPDF2) Residential development shall be constructed with the following features to reduce energy consumption so long as they pose no conflict with applicable Building Code requirements: installation of a majority of Energy Star appliances; installation of high efficiency HVAC equipment with SEER rating of 13 or higher and TXV valve; installation of vinyl frame windows with dual pane low emissivity glass; installation of natural gas clean burning fireplaces; installation of water efficient plumbing fixtures to reduce water consumption; and provision of an option to the homeowner to include electric vehicle charging facilities in the residence garage.

GHG PDF-3 (OSA PEIR GCCPDF3) Bicycle lanes and walking paths shall be incorporated into the street system of new residential development to provide alternative circulation routes to reach logical points of destinations such as schools, parks and retail areas.

In addition, the following PDFs included in Section 5.1, *Air Quality*, would also serve to reduce potential impacts related to greenhouse gas emissions.

AQ PDF-1 The applicant shall use "Green Building Materials," such as those materials that are rapidly renewable or resource efficient, and recycled and manufactured in an environmentally friendly way, for at least 10 percent of the project, as defined on the CalRecycle website, to the satisfaction of the Director of Development Services.

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- AQ PDF-2 The applicant shall incorporate the following design features into the project. These design features shall be identified on building plans:
- Low emission water heater, or solar water heaters shall be installed.
  - Exterior windows shall include window treatments for efficient energy conservation.
  - Water efficient fixtures and builder-provided appliances shall be water-efficient (low-flow, dual flush toilets) and shall reduce indoor water consumption by 20 percent from the Building Standard Code from baseline water consumption.
  - A home-owner's manual shall be provided for each residence that describes operation and maintenance of equipment, appliances, drainage, space conditioning, irrigation, and water reuse systems installed.
- AQ PDF-3 Buildings shall be constructed to achieve the voluntary Tier 1 California Green Building Code (CALGreen) standards. In accordance with the current Tier 1 standards, project buildings shall exceed the 2008 Building and Energy Standards by 15 percent. Building envelope improvements to achieve this standard may include:
- Increased insulation, such that heat transfer and thermal bridging is minimized.
  - Limit air leakage through the structure or within the heating and cooling distribution system to minimize energy consumption.
  - Energy-Star rated windows, space heating and cooling equipment, appliances, or other applicable electric equipment.
  - Install efficient lighting and offer lighting control systems as an option.
  - Use daylight as an integral part of the lighting system in buildings.
  - Install energy-efficient HVAC systems, appliances, equipment, and control systems.
- AQ PDF-4 The applicant shall provide a comprehensive water conservation strategy in compliance with the City of Lake Forest Water Efficient Landscape Ordinance No. 207. Landscape plans shall include the following:
- Sprinkler controls that are weather- or soil-moisture-based
  - Drought tolerant plans
  - Reclaimed water for landscape irrigation, where available
- AQ PDF-5 Site plans for development projects shall identify the area for collection of recyclable materials. The recycling collection area(s) shall be within, near, or adjacent to each trash disposal area. The recycling collection area shall be a minimum of 50 percent of the area provided for the trash enclosure.



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AQ PDF-6 Site plans for development projects, including landscaping and improvement plans, shall identify the location of bicycle access and bicycle rack areas, to the satisfaction of the Director of Development Services. These improvements shall be installed in accordance with those plans.

#### 5.2.3 Thresholds of Significance

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

- GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- GHG-2 Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

. As permitted by CEQA, the analysis of the proposed project's GHG impacts follows the guidance and methodologies recommended in the South Coast Air Quality Management District's (SCAQMD) *CEQA Air Quality Handbook* and the significance thresholds on SCAQMD's website.<sup>6</sup> The following is a summary of these AQMD recommended methodologies:

#### South Coast Air Quality Management District Significance Criteria

To provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents, SCAQMD has convened a GHG CEQA Significance Threshold Working Group (Working Group). Based on the last Working Group meeting (Meeting No. 15) held in September 2010, SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency:

- Tier 1 If a project is exempt from CEQA, project-level and cumulative GHG emissions are less than significant.
- Tier 2 If the project complies with a GHG emissions reduction plan or mitigation program that avoids or substantially reduces GHG emissions in the project's geographic area (i.e., city or county), project-level and cumulative GHG emissions are less than significant.

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

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

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<sup>6</sup> SCAQMD's Air Quality Significance Thresholds are current as of March 2011 and can be found at: <http://www.aqmd.gov/ceqa/hdbk.html>.

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

If a project fails to meet any of these emissions efficiency targets, the project would move to Tier 5. Tier 5 would require projects that implement off-site GHG mitigation that includes purchasing offsets to reduce GHG emission impacts to purchase sufficient offsets for the life of the project (30 years) to reduce GHG emissions to less than the applicable GHG screening threshold level.

SCAQMD is proposing to adopt an efficiency target for projects that exceed the screening threshold. The current recommended approach is per capita efficiency targets. SCAQMD is not recommending use of a percent emissions reduction target. Instead, SCAQMD proposes a 2020 efficiency target of 4.8 MTons per year per service population (MTons/year/SP) for project-level analyses and 6.6 MTons/year/SP for plan level projects (e.g., program-level projects such as specific plans and general plans).<sup>7</sup> If projects exceed these per capita efficiency targets, GHG emissions would be considered potentially significant in the absence of mitigation measures. The following analysis uses the proposed SCAQMD efficiency target of 4.8 MTons per year per service population (MTons/year/SP).

#### 5.2.4 Environmental Impacts

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

**IMPACT 5.2-1: CONSTRUCTION AND OPERATION OF THE PROPOSED SBRA PROJECT WOULD GENERATE ADDITIONAL GHG EMISSIONS. [THRESHOLD GHG-1]**



**Impact Analysis:** Global climate change is not confined to a particular project area and is generally accepted as the consequence of global industrialization over the last 200 years. A typical project, even a very large one, does not generate enough GHG emissions on its own to influence global climate change significantly; hence, the issue of global climate change is, by definition, a cumulative environmental impact. The analysis below provides the conclusions on the project-specific impact toward the cumulative impact of global climate change. The State of California, through its governor and its legislature, has established a comprehensive framework for the substantial reduction of GHG emissions over the next 10+ years. This will occur primarily through the implementation of AB 32 and SB 375, which address GHG emissions on a statewide cumulative basis.

The Proposed SBRA Project would result in an increase in GHG emissions from transportation sources, offsite energy production required for onsite activities, natural gas used on site for heating and cooking, water use, and waste disposal. Life cycle emissions are not included in this analysis because not enough information is available for the SBRA Project, and therefore life cycle GHG emissions would be speculative.<sup>8</sup>

<sup>7</sup> It should be noted that the Working Group also considered efficiency targets for 2035 for the first time in this Working Group meeting.

<sup>8</sup> Life cycle emissions include indirect emissions associated with materials manufacture. However, these indirect emissions involve numerous parties, each of which is responsible for GHG emissions of their particular activity. Because the amount of materials consumed during the operation or construction of the Proposed SBRA Project is not known, the origin of the raw materials purchased is not known, and manufacturing information for those raw materials are also not known, calculation of life cycle emissions would be speculative. Governor's Office of Planning and Research (OPR). A life-cycle analysis is not warranted (OPR 2008).

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#### GHG Emissions Impacts

Construction and operation of project development would generate GHG emissions, with the majority of energy consumption (and associated generation of GHG emissions) occurring during the project's operation (as opposed to its construction). Typically, more than 80 percent of the total energy consumption takes place during the use of buildings, and less than 20 percent is consumed during construction (LSA November 2011). As of yet, there is no study that quantitatively assesses all of the GHG emissions associated with each phase of the construction and use of an individual development. Overall, the following activities associated with the Proposed Project could directly or indirectly contribute to the generation of GHG emissions:

- **Construction Activities:** During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. Furthermore, CH<sub>4</sub> is emitted during the fueling of heavy equipment.
- **Gas, Electric and Water Use:** Natural gas use results in the emissions of two GHGs: CH<sub>4</sub> (the major component of natural gas) and CO<sub>2</sub> from the combustion of natural gas. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy-intensive. Preliminary estimates indicate that the total energy used to pump and treat this water exceeds 6.5 percent of the total electricity used in the State per year. (LSA November 2011)
- **Solid Waste Disposal:** Solid waste generated by the Project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste, and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH<sub>4</sub> from the anaerobic decomposition of organic materials. CH<sub>4</sub> is 25 times more potent a GHG than CO<sub>2</sub>. However, landfill CH<sub>4</sub> can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere.
- **Motor Vehicle Use:** Transportation associated with the Proposed Project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

GHG emissions associated with the SBRA Project would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with project-related new vehicular trips and stationary source emissions, such as natural gas used for heating and electricity usage for lighting. Preliminary guidance from OPR and recent letters from the Attorney General critical of CEQA documents that have taken different approaches indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, and construction activities. The calculation presented below includes construction emissions in terms of CO<sub>2</sub> and annual CO<sub>2</sub>e GHG emissions from increased energy consumption, water usage, solid waste disposal, and estimated GHG emissions from vehicular traffic that would result from implementation of the project.

GHG emissions generated by the SBRA Project would predominantly consist of CO<sub>2</sub>. While emissions of other GHGs, such as CH<sub>4</sub>, are important with respect to GCC, emission levels of other GHGs are less dependent on the land use and circulation patterns associated with the proposed land use development project than are levels of CO<sub>2</sub>.

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Construction activities produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, asphalt paving, and motor vehicles transporting the construction crew. Exhaust emissions from on-site construction activities would vary daily as construction activity levels change.

#### Construction Phase

Table 5.1-9 in Section 5.1, *Air Quality*, lists CO<sub>2</sub>e emissions that represent a peak day during the most intense of the planned construction phases. Table 5.1-9 shows that the peak daily CO<sub>2</sub>e emissions associated with construction equipment exhaust for the Proposed Project would be highest during the building construction phase, which would be approximately 28,000 lbs/day. It is estimated that annual construction emissions of CO<sub>2</sub>e would range from 260 to 11,300 MTons per year, totaling approximately 45,000 MTons overall. Construction emissions are amortized over a 30-year period and are included in the GHG emissions inventory, pursuant to SCAQMD recommendations.

#### Operational Phase

Long-term operation of the SBRA Project would generate GHG emissions from area and mobile sources and indirect emissions from stationary sources associated with energy consumption. Mobile-source emissions of GHGs would include project-generated vehicle trips associated with onsite facilities and visitors/deliveries to the Project Site. Area-source emissions would be associated with activities such as landscaping and maintenance of proposed land uses, natural gas for heating, and other sources. Increases in stationary source emissions would also occur at off-site utility providers as a result of demand for electricity, natural gas, and water by the proposed uses.

The GHG emission estimates presented in Table 5.2-3 show the emissions associated with the level of development envisioned by the Proposed Project at build out. The Air Quality Study (DSEIR Appendix C) includes the CalEEMod results showing the details of the GHG emissions calculations. As shown in Table 5.2-3, the Project would produce 46,000 MTons per year of CO<sub>2</sub>e, which is 0.046 MMTons of CO<sub>2</sub>e per year.



**Table 5.2-3  
Long-Term Operational Greenhouse Gas Emissions**

Source	Pollutant Emissions, MTons/year					
	Bio- CO <sub>2</sub>	NBio- CO <sub>2</sub>	Total CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
Construction Emissions Amortized over 30 Years	0	1,800	1,800	0.087	0	1,800
Area Sources	0	1,600	1,600	0.09	0.03	1,600
Energy Sources	0	7,300	7,300	0.24	0.13	7,300
Mobile Sources	0	33,000	33,000	1.2	0	33,000
Waste Sources	400	0	400	24	0	900
Water Usage	0	840	840	3.9	0.11	950
<b>Total Project Emissions</b>	<b>400</b>	<b>45,000</b>	<b>45,000</b>	<b>30</b>	<b>0.27</b>	<b>46,000</b>

Source: LSA Associates, Inc., July 2011.

Note: Numbers in table may not appear to add up correctly due to rounding of all numbers to two significant digits.

Bio-CO<sub>2</sub> = biologically generated CO<sub>2</sub>

MTons = metric tons

NBio-CO<sub>2</sub> = Non-biologically generated CO<sub>2</sub>

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**Energy/Natural Gas Use.** Buildings represent 39 percent of the United States' primary energy usage and 70 percent of electricity consumption (LSA 2011). The Proposed Project would increase the demand for electricity and natural gas due to the increased building area and number of residents. The Project would indirectly result in increased GHG emissions from off-site electricity generation at power plants and on-site natural gas consumption (7,300 MTons of CO<sub>2</sub>e/year).

**Area Sources.** Area sources of GHG emissions include architectural coatings, carpet systems, resilient flooring, composite wood, consumer products, hearth, and landscaping. The Project would not result in measurable increased GHG emissions from the area sources (1,600 MTons of CO<sub>2</sub>e/year).

**Water Use.** Water-related energy use consumes 19 percent of California's electricity every year (LSA 2011). Energy use and related GHG emissions are based on electricity used for water supply and conveyance, water treatment, water distribution, and wastewater treatment. The Project would comply with provisions of California Green Building Code and would install water efficient fixtures, such that it would experience reduction of indoor potable water use by 20 percent from what is required in the California Buildings Standards Code. In addition, the outdoor water use would be monitored by irrigation controls as prescribed in the Cal. Green Building Code. The SBRA Project would indirectly result in increased GHG emissions from the off-site electricity generation at power plants and on-site natural gas consumption (950 MTons of CO<sub>2</sub>e/year).

**Solid Waste Disposal.** The SBRA Project would also generate solid waste during the operation phase of the project. Average waste generation rates from a variety of sources are available from the California Integrated Waste Management Board. The SBRA Project would indirectly result in increased GHG emissions from solid waste disposal at area landfills (900 MTons of CO<sub>2</sub>e/year).

**Mobile Sources.** Mobile sources (vehicle trips and associated miles traveled) are the largest source of GHG emissions in California and represent approximately 38 percent of annual CO<sub>2</sub> emissions generated in the State. Like most land use development projects, vehicle miles traveled (VMT) is the most direct indicator of CO<sub>2</sub> emissions from the SBRA Project, and associated CO<sub>2</sub> emissions function as the best indicator of total GHG emissions.

The SBRA Project would generate up to 46,000 MTons of CO<sub>2</sub>e per year of new emissions, as shown in Table 5.2-3. The emissions from vehicle exhaust would comprise approximately 72 percent of the Project's total CO<sub>2</sub>e emissions. The emissions from vehicle exhaust are controlled by the State and federal governments and are outside the control of the City.

As shown in Table 5.2-3, the total GHG emissions of 46,000 MTons per year of CO<sub>2</sub>e from the SBRA Project will be higher than the SCAQMD proposed tiered GHG emissions threshold for mixed-use projects of 3,000 MTons per year of CO<sub>2</sub>e (Tier 3). Assuming a service population of 6,900, the Project would result in 6.67 MTons per year per service population, which exceeds the proposed SCAQMD efficiency target of 4.8 MTons per year per service population (MTons/year/SP). Thus, this impact would be potentially significant and mitigation measures would be required.

**IMPACT 5.2-2:           THE PROPOSED PROJECT WOULD NOT CONFLICT WITH APPLICABLE PLANS, POLICIES OR REGULATIONS RELATED TO THE REDUCTION OF GREENHOUSE GAS EMISSIONS. [THRESHOLD GHG-2]**

CAT and CARB have developed several reports to achieve the Governor's GHG targets that rely on voluntary actions of California businesses, local government and community groups, and State incentive and regulatory programs. These include the CAT's 2006 *Report to Governor Schwarzenegger and the Legislature*,



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CARB's 2007 *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California*, and CARB's *Climate Change Proposed Scoping Plan: a Framework for Change*.

The reports identify strategies to reduce California's emissions to the levels proposed in EO S-3-05 and AB 32 that are applicable to the SBRA Project. The Proposed Scoping Plan is the most recent document, and the strategies included in the Scoping Plan that apply to the Project are contained in Table 5.2-4, which also summarizes the extent to which the Project would comply with the strategies to help California reach the emission reduction targets.

The strategies listed in Table 5.2-4 are either part of the Project, required mitigation measures, or requirements under local or State ordinances. With implementation of these strategies/measures, the Project's contribution to cumulative GHG emissions would be reduced. In order to ensure that the Proposed Project complies with and would not conflict with or impede the implementation of reduction goals identified in AB 32, the Governor's EO S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor, mitigation measures described in Section 5.2.8 shall be implemented. Many of the individual elements of these measures are already included as part of the SBRA Project or are required as part of project-specific mitigation measures. With the inclusion of the project design features, project specific mitigation measures and regulatory requirements applicable to the SBRA project, the Project would not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

The Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, and for this reason the Project would have a less than significant impact under this second threshold.



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<b>Table 5.2-4</b>	
<b>Project Compliance with Greenhouse Gas Emission Reduction Strategies</b>	
<b>Strategy</b>	<b>Project Compliance</b>
<b>Mandatory Code</b>	
<p><b>California Green Building Code.</b> The CALGreen Code prescribes a wide array of measures that would directly and indirectly result in reduction of GHG emissions from the Business as Usual Scenario (California Building Code). The mandatory measures that are applicable to residential projects include site selection, energy efficiency, water efficiency, materials conservation and resource efficiency, and environmental quality measures.</p>	<p><b>Compliant.</b> The Project would be required to adhere to the residential mandatory measures as required by the CALGreen Code.</p>
<b>Energy Efficiency Measures</b>	
<p><b>Energy Efficiency.</b> Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities).</p> <p><b>Renewables Portfolio Standard.</b> Achieve a 33 percent renewable energy mix statewide.</p> <p><b>Green Building Strategy.</b> Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.</p>	<p><b>Compliant with Mitigation Incorporated.</b> The SBRA Project will comply with Title 24 standards throughout the multi-year construction process, including the new 2010 California Building Code (CBC), for building construction. In addition, the Project would be required to comply with the requirements of Section 5.2.8 Mitigation Measures, identified later, including measures to incorporate energy efficient building design features.</p>
<b>Water Conservation and Efficiency Measures</b>	
<p><b>Water Use Efficiency.</b> Continue efficiency programs and use cleaner energy sources to move and treat water. Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions. The Cal Green Code prescribes that new residential construction shall include plumbing fixtures designed to achieve a 20 percent reduction in water use.</p>	<p><b>Compliant with Mitigation Incorporated.</b> The Project would be required to comply with Title 24 standards and with the requirements of Section 5.2.8 Mitigation Measures, identified later, including measures to increase water use efficiency.</p>
<b>Solid Waste Reduction Measures</b>	
<p><b>Increase Waste Diversion, Composting, and Commercial Recycling, and Move Toward Zero-Waste.</b> Increase waste diversion from landfills beyond the 50 percent mandate to provide for additional recovery of recyclable materials. Composting and commercial recycling could have substantial GHG reduction benefits. In the long term, zero-waste policies that would require manufacturers to design products to be fully recyclable may be necessary.</p>	<p><b>Compliant with Mitigation Incorporated.</b> Data available from the California Integrated Waste Management Board (CalRecycle) indicates that the City has not achieved the 50 percent diversion rate. The Proposed Project would be required to comply with Section 5.2.8 Mitigation Measures, identified later, including measures to increase solid waste diversion, composting, and recycling.</p>
<b>Transportation and Motor Vehicle Measures</b>	
<p><b>Vehicle Climate Change Standards.</b> AB 1493 (Pavley) required the State to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of GHG emissions from passenger vehicles and light-duty trucks. Regulations were adopted by the CARB in September 2004.</p> <p><b>Light-Duty Vehicle Efficiency Measures.</b> Implement additional measures that could reduce light-duty GHG</p>	<p><b>Compliant.</b> The Project does not involve the manufacture of vehicles. However, construction vehicles that are purchased and used within the Project site would comply with any vehicle and fuel standards that the CARB adopts.</p>

**Table 5.2-4  
Project Compliance with Greenhouse Gas Emission Reduction Strategies**

Strategy	Project Compliance
<p>emissions. For example, measures to ensure that tires are properly inflated can both reduce GHG emissions and improve fuel efficiency.</p> <p><b>Adopt Heavy- and Medium-Duty Fuel and Engine Efficiency Measures.</b> Regulations to require retrofits to improve the fuel efficiency of heavy-duty trucks that could include devices that reduce aerodynamic drag and rolling resistance. This measure could also include hybridization of and increased engine efficiency of vehicles.</p> <p><b>Low Carbon Fuel Standard.</b> CARB identified this measure as a Discrete Early Action Measure. This measure would reduce the carbon intensity of California’s transportation fuels by at least 10 percent by 2020.</p>	
<p><b>Regional Transportation-Related Greenhouse Gas Targets.</b> Develop regional GHG emissions reduction targets for passenger vehicles. Local governments will play a significant role in the regional planning process to reach passenger vehicle GHG emissions reduction targets. Local governments have the ability to directly influence both the siting and design of new residential and commercial developments in a way that reduces GHGs associated with vehicle travel.</p>	<p><b>Compliant.</b> Specific regional emission targets for transportation emissions do not directly apply to this project; regional GHG reduction target development is outside the scope of this project. The Project will comply with any plans developed by the City and the County.</p>
<p><b>Measures to Reduce High Global Warming Potential (GWP) Gases.</b> CARB has identified Discrete Early Action measures to reduce GHG emissions from the refrigerants used in car air conditioners, semiconductor manufacturing, and consumer products. CARB has also identified potential reduction opportunities for future commercial and industrial refrigeration, changing the refrigerants used in auto air conditioning systems, and ensuring that existing car air conditioning systems do not leak.</p>	<p><b>Compliant.</b> New products used or serviced on the Project site (after implementation of the reduction of GHG gases) would comply with future CARB rules and regulations.</p>
<p>Source: LSA Associates, Inc., December 2011. AB = Assembly Bill CALGreen Code = California Green Building Standards Code GCC = global climate change</p>	



**5.2.5 Cumulative Impacts**

As described under Impact 5.2-1, project-related GHG emissions are not confined to a particular air basin but are dispersed worldwide. Hence, GHG impacts are by nature a cumulative impact. Consequently, it is speculative to determine how an individual project’s GHG emissions would impact California. Therefore, impacts identified under Impact 5.2-1 are not project-specific impacts to global warming, but the proposed project’s contribution to this cumulative impact. Because the project’s GHG emissions were considered significant even with mitigation, the project’s GHG emissions and contribution to global climate change impacts are considered cumulatively considerable and therefore significant for GHG emissions. As with the OSA PEIR, impacts remain significant and unavoidable.

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#### 5.2.6 Existing Regulations

- CARB Rule 2485 – Airborne Toxics Control Measure (ATCM)
- SCAQMD Rule 201 – Permit to Construct
- SCAQMD Rule 402 – Nuisance Odors
- SCAQMD Rule 403 – Fugitive Dust
- SCAQMD Rule 1108 – Cutback Asphalt
- SCAQMD Rule 1113 – Architectural Coatings
- SCAQMD Rule 1301 – New Source Review
- SCAQMD Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities
- 40 CFR Part 85 – Control of Air Pollution from Mobile Sources
- 40 CFR Part 89 – Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines
- Building Energy Efficiency Standards (Title 24)
- Appliance Energy Efficiency Standards (Title 20)
- Motor Vehicle Standards (AB 1493)

#### 5.2.7 Level of Significance Before Mitigation

Impact 5.5-2 was determined to be less than significant.

Upon implementation of regulatory requirements the following impact would be **potentially significant** without mitigation:

- Impact 5.2-1 The Shea/Baker Ranch project would generate up to 46,000 MTons of CO<sub>2</sub>e per year of new emissions resulting in a substantial increase in GHG emissions.

#### 5.2.8 Applicable OSA Program EIR Mitigation Measures

The following mitigation measures are taken directly from the OSA PEIR. Modifications to the original mitigation measures are identified in ~~strikeout text~~ to indicate deletions and **bold underlined** to signify additions. They have been renumbered in this document for ease of reference. All of the mitigation measures listed apply to and will be implemented for the proposed Shea/Baker Ranch project to mitigate Impact 5.2-1.

~~GHG MM 1 (OSA PEIR Mitigation Measure MM GCC1) The City shall comply with the future requirements for implementation of AB 32 and SB 97 once those implementation requirements are developed.~~

GHG MM-1 (OSA PEIR Mitigation Measure MM GCC2) Prior to the issuance of building permits for new commercial and retail projects or residential projects ~~within the Opportunities Study Area~~, the City shall review the plans to confirm that the SBRA Project complies with the requirements of Title 24 of the California Code of Regulations.

GHG MM-2 (OSA PEIR Mitigation Measure MM GCC3) Prior to the issuance of a Site Development Permit for new commercial and retail projects ~~within the Opportunities Study project area~~, site plans shall include prioritized parking for electric vehicles, hybrid vehicles, and alternative fuel vehicles.

GHG MM-3 (OSA PEIR Mitigation Measure MM GCC4) The City shall identify energy efficient street lights and water and wastewater pumps and treatment systems which are currently available and which when installed will provide for a 10 percent reduction beyond the 2007 baseline

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energy use for this infrastructure, and shall require the use of this technology in all new development. All new traffic lights installed within the City shall use LED technology.

- GHG MM-4 (OSA PEIR Mitigation Measure MM GCC5) The **applicant shall** ~~City shall require all new development projects in the Opportunities Study Area to recycle and/or salvage at least 25~~ **50** percent of nonhazardous construction and demolition debris. To implement this requirement, the applicant shall submit a construction waste management plan for review and approval of the Director of Development Services prior to issuance of a Building Permit. The construction waste management plan shall identify materials to be diverted from disposal and whether the materials will be stored on-site or commingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculation can be done by weight or volume but must be documented.
- GHG MM-5 (OSA PEIR Mitigation Measure MM GCC6) Prior to approval of a Site Development Permit, **the applicant shall demonstrate on conceptual landscape plans** ~~for new development in the Opportunity Study Area, the City shall require that new development will use~~ reclaimed water for public and common area landscaping where available; install 50 percent native/drought-tolerant plant species in developer-installed landscaped areas; and utilize “smart” advanced capability controllers (e.g., Weather-Trac) to reduce water and energy consumption.
- GHG MM-6 (OSA PEIR Mitigation Measure MM GCC7) Prior to approval of a Site Development Permit for new commercial, retail and industrial projects, site plans must incorporate any combination of the following strategies to reduce heat gain created by impervious areas:
- Utilizing shade trees in common area landscaping;
  - Reducing the street widths to minimize impervious areas and reduce the use of asphalt;
  - Utilizing light-colored and reflective roofing materials and paint;
  - Incorporating bioswales where feasible in development areas to capture urban runoff and increase the amount of pervious surfaces.
- GHG MM-7 (OSA PEIR Mitigation Measure MM GCC8) All commercial, industrial and retail development shall be required to post signs and limit idling time for commercial vehicles, including delivery trucks to no more than 5 minutes.



#### 5.2.9 Additional Mitigation Measures

No additional mitigation measure are available. All feasible mitigation measures have been incorporated into the proposed SBRA Project as discussed in Section 5.2.2 above.

## *5. Environmental Analysis*

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### GREENHOUSE GAS EMISSIONS

#### **5.2.10 Level of Significance After Mitigation**

##### **Impact 5.2-1**

While PDFs and mitigation measures would result in reduced GHG emissions associated with the SBRA Project, these reductions would not be sufficient to reduce all emissions to a less than significant level. Thus, the GHG emissions impacts would remain significant and unavoidable. Impacts related GHG emissions were also identified as significant in the OSA PEIR.