

## 4.6 GREENHOUSE GASES

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### 4.6.1 INTRODUCTION

*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. Sources of GHG emissions from the allowed development in the Westside Community Planning Area are identified and discussed and 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 Ventura County Air Pollution Control District (VCAPCD) Ventura County Air Quality Assessment Guidelines and guidance documents from the California Air Pollution Control Officers Association (CAPCOA). GHG emissions calculations conducted for the project are contained within **Appendix 4.6** of this environmental impact report (EIR).*

### 4.6.2 ENVIRONMENTAL SETTING

#### a. Physical setting

Construction and operation of development within the Westside Community Planning project area would result in emissions of GHGs, which are pollutants that trap heat in the Earth's atmosphere and may alter or change the global climate.

#### *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 (i.e., decades or longer).<sup>1</sup> Climate change may result from

- natural factors, such as changes in the sun's intensity or 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., burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

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<sup>1</sup> U.S. Environmental Protection Agency, "Glossary of Climate Change Terms," [http://www.epa.gov/climatechange/glossary.html#Climate\\_change](http://www.epa.gov/climatechange/glossary.html#Climate_change). 2008.

The natural process through which heat is retained in the troposphere<sup>2</sup> is called the greenhouse effect. The greenhouse effect traps heat in the troposphere through a three-fold process as follows: (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<sub>2</sub>) are the most abundant GHG, other trace GHGs have a greater ability to absorb and re-radiate long-wave radiation. To gauge the potency of GHGs, scientists have established a Global Warming Potential (GWP) for each GHG based on its ability to absorb and re-emit long-wave radiation over a specific period. The GWP of a gas is determined using CO<sub>2</sub> 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<sub>2</sub> over 100 years. The use of GWP allows GHG emissions to be reported using CO<sub>2</sub> as a baseline. The sum of each GHG multiplied by its associated GWP is referred to as carbon dioxide equivalents (CO<sub>2</sub>e). This essentially means that 1 metric ton of a GHG with a GWP of 10 has the same climate change impacts as 10 metric tons of CO<sub>2</sub>.

State law defines GHGs to include the following compounds:<sup>3</sup>

- **Carbon Dioxide (CO<sub>2</sub>).** CO<sub>2</sub> is primarily generated from fossil fuel combustion from stationary and mobile sources. CO<sub>2</sub> is the most widely emitted GHG and is the reference gas (GWP of 1) for determining the GWPs of other GHGs.
- **Methane (CH<sub>4</sub>).** 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<sub>2</sub>O).** 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 use of HFCs for cooling and foam blowing is growing particularly as the continued phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The GWPs of HFCs ranges from 140 for HFC-152a to 11,700 for HFC-23.

<sup>2</sup> The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth's surface to 10 to 12 kilometers.

<sup>3</sup> 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.

- **Perfluorocarbons (PFCs).** Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a Global Warming Potential several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years).<sup>4</sup> The GWPs of PFCs range from 5,700 to 11,900.
- **Sulfur Hexafluoride (SF<sub>6</sub>).** 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. However, it is not prevalent in the atmosphere (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm] of CO<sub>2</sub>).<sup>5</sup>

The primary GHGs of concern relative to the proposed project are CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. 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 project.

#### *State of California Greenhouse Gas Emissions Inventory*

The California Air Resources Board (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 MMTCO<sub>2e</sub> *including* emissions resulting from imported electrical power in 2008.<sup>6</sup> 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<sub>2e</sub> *excluding* emissions related to imported electrical power.<sup>7</sup>

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 include commercial and residential activities. **Table 4.6-1, 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).

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<sup>4</sup> Energy Information Administration, "Other Gases: Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride," [http://www.eia.doe.gov/oiaf/1605/gg00rpt/other\\_gases.html](http://www.eia.doe.gov/oiaf/1605/gg00rpt/other_gases.html). n.d.

<sup>5</sup> U.S. Environmental Protection Agency, "High GWP Gases and Climate Change," <http://www.epa.gov/highgwp/scientific.html#sf6>. n.d.

<sup>6</sup> 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.

<sup>7</sup> Ibid.

**Table 4.6-1  
GHG Emissions in California**

<b>Source Category</b>	<b>1990 (MMTCO<sub>2</sub>e)</b>	<b>Percent of Total</b>	<b>2008 (MMTCO<sub>2</sub>e)</b>	<b>Percent of Total</b>
<b>ENERGY</b>	<b>386.41</b>	<b>89.2%</b>	<b>413.80</b>	<b>86.6%</b>
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%
<b>INDUSTRIAL PROCESSES &amp; PRODUCT USE</b>	<b>18.34</b>	<b>4.2%</b>	<b>30.11</b>	<b>6.3%</b>
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%
<b>AGRICULTURE, FORESTRY, &amp; OTHER LAND USE</b>	<b>19.11</b>	<b>4.4%</b>	<b>24.42</b>	<b>5.1%</b>
Livestock	11.67	2.7%	16.28	3.4%
Land	0.19	0.0%	0.19	0.0%
Aggregate Sources & Non-CO <sub>2</sub> Sources on Land	7.26	1.7%	7.95	1.7%
<b>WASTE</b>	<b>9.42</b>	<b>2.2%</b>	<b>9.41</b>	<b>2.0%</b>
Solid Waste Disposal	6.26	1.4%	6.71	1.4%
Wastewater Treatment & Discharge	3.17	0.7%	2.70	0.6%
<b>EMISSIONS SUMMARY</b>				
Gross California Emissions	433.29		477.74	
Sinks from Forests and Rangelands	-6.69		-3.98	
Net California Emissions	426.60		473.76	

## Sources:

<sup>1</sup> 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.

<sup>2</sup> California Air Resources Board, "California Greenhouse Gas 2000–2008 Inventory by IPCC Category - Summary," <http://www.arb.ca.gov/cc/inventory/data/data.htm>. 2010.

Between 1990 and 2008, the population of California grew by approximately 8.1 million (from 29.8 to 37.9 million).<sup>8</sup> 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 \$788 billion in 1990 to \$1.8 trillion in 2008 representing an increase of approximately 128 percent (over twice the 1990 gross state product).<sup>9</sup> Despite the population and economic growth, California's net GHG emissions only grew by approximately 11 percent. The California Energy Commission (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.<sup>10</sup>

#### *Global Ambient CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O 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.<sup>11</sup> Recent values continue this upward trend. Global methane and nitrous oxide concentrations show similar increases for the same period (see **Table 4.6-2, Comparison of Global Pre-Industrial and Current GHG Concentrations**).

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<sup>8</sup> U.S. 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.

<sup>9</sup> California Department of Finance, "Financial & Economic Data: Gross Domestic Product, California," [http://www.dof.ca.gov/HTML/FS\\_DATA/LatestEconData/FS\\_Misc.htm](http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm). 2010. Amounts are based on current dollars as of the data of the report (June 2, 2009).

<sup>10</sup> California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004*, (2006).

<sup>11</sup> California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004*, (2006).

**Table 4.6-2**  
**Comparison of Global Pre-Industrial and Current GHG Concentrations**

<b>Greenhouse Gas</b>	<b>Natural Range for Last 650,000 Years<sup>1</sup> (ppm)</b>	<b>Year 1750 Concentrations (Early Industrial Period)<sup>1</sup> (ppm)</b>	<b>Year 2005 Concentrations<sup>1</sup> (ppm)</b>	<b>Year 2010 Concentrations<sup>2,3</sup> (ppm)</b>
Carbon Dioxide (CO <sub>2</sub> )	180 to 300	280	379	390
Methane (CH <sub>4</sub> )	0.320 to 0.790	0.715	1.774	1.870/1.745
Nitrous Oxide (N <sub>2</sub> O)	0.180 to 0.260	0.270	0.319	0.323/0.322

*Sources:*

<sup>1</sup> Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis*, (2007) 3, 100.

<sup>2</sup> 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.

<sup>3</sup> Carbon Dioxide Information Analysis Center, "Recent Greenhouse Gas Concentrations," [http://cdiac.ornl.gov/pns/current\\_ghg.html](http://cdiac.ornl.gov/pns/current_ghg.html). 2011. The first value for CH<sub>4</sub> and N<sub>2</sub>O represents Mace Head, Ireland, a mid-latitude Northern-Hemisphere site, and the second value represents Cape Grim, Tasmania, a mid-latitude Southern-Hemisphere site.

### *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.<sup>12</sup> Climate change modeling using 2000 emission rates shows that further warming is likely to occur, which would induce further changes in the global climate system during the current century.<sup>13</sup> Changes to the global climate system, 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;<sup>14</sup>
- rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets;<sup>15</sup>

<sup>12</sup> 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](http://ipcc-wg1.ucar.edu/wg1/docs/WG1AR4_SPM_PlenaryApproved.pdf). 2007.

<sup>13</sup> Ibid.

<sup>14</sup> Ibid.

<sup>15</sup> Ibid.

- 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;<sup>16</sup>
- 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;<sup>17</sup>
- 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 21<sup>st</sup> century;<sup>18</sup>
- 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;<sup>19</sup>
- increasing pest infestation making California more susceptible to forest fires;<sup>20</sup> 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.<sup>21</sup>

In June 2010, CARB released a report, *Climate Change Impact on Air Quality in California*, which studied how climate change will influence air quality in California through changes to meteorology and emissions.<sup>22</sup> The report analyzed the effect of temperature and other meteorological changes consistent with future predicted meteorological conditions from Global Climate Models (GCMs) on ozone and particulate matter concentrations with a focus on the South Coast Air Basin and the San Joaquin Valley Air Basin. According to the modeling results, by 2050, temperature and other meteorological changes predicted to occur due to a changing climate could increase the number of days with conditions likely to encourage ozone concentrations greater than 90 parts per billion (equal to the state 1-hour average ozone ambient air quality standard) anywhere from 6 to 30 days per year under various GCM scenarios.<sup>23</sup> This climate-change increase is referred to as a climate penalty. The results of the report indicate that warmer future temperatures would require air quality management districts and air pollution control districts to

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<sup>16</sup> 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](http://ipcc-wg1.ucar.edu/wg1/docs/WG1AR4_SPM_PlenaryApproved.pdf). 2007.

<sup>17</sup> California Environmental Protection Agency, Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*, (2006).

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

<sup>21</sup> Ibid.

<sup>22</sup> Kleeman, M. J., Chen, S., and Harley, R.A., *Climate Change Impact on Air Quality in California: Report to the California Air Resources Board*, (2010).

<sup>23</sup> Ibid., 95.

implement additional emissions control regulations in affected air basins in California to offset the climate penalty, particularly for ozone.

In 2009, the California Natural Resources Agency (CNRA) published the *California Climate Adaptation Strategy*<sup>24</sup> 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 California Energy Commission (CEC) was directed to develop a web site on climate change scenarios and impacts that would be beneficial for local decision makers.<sup>25</sup> The website, known as Cal-Adapt, became operational in 2011.<sup>26</sup> According to the Cal-Adapt website, the project region could result in an average increase in temperature of approximately 6 to 10 percent (about 3.5 to 5.8° Fahrenheit) by 2070-2090, compared to the baseline 1961-1990 period. According to the Cal-Adapt website, this represents a projection of potential future climate scenarios. The data are comprised of the average values from a variety of scenarios and models and are meant to illustrate how the climate may change based on a variety of different potential social and economic factors.

## **b. Regulatory Framework**

### *Federal*

On September 15, 2009, the U.S. EPA and the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) issued a joint proposal to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles that will reduce GHG emissions and improve fuel economy. In 2012, passenger cars and light-duty trucks would have to meet an average emissions standard of 295 grams of CO<sub>2</sub> per mile and 30.1 miles per gallon.<sup>27</sup> By 2016, the vehicles would have to meet an average standard of 250 grams of CO<sub>2</sub> per mile and 35.5 miles per gallon.<sup>28</sup> The final standards were adopted by the U.S. EPA and DOT on April 1, 2010.

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<sup>24</sup> 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).

<sup>25</sup> *Ibid.*, Page 9.

<sup>26</sup> The Cal-Adapt website address is: <http://cal-adapt.org>.

<sup>27</sup> U.S. 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.

<sup>28</sup> U.S. EPA, "EPA and NHTSA Propose Historic Nation Program," 2009.

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 additional requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. EPA's proposed GHG emissions standards for light-duty vehicles, as discussed above.

### *State*

The State of California has enacted regulations that target reductions in GHG emissions. The major regulations, policies, and legislation are provided below in approximate chronological order.

### **Title 24 Building Standards Code**

The CEC first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods.

Part 11 of the Title 24 Building Standards Code is referred to as the California Green Building Standards Code (CALGreen Code). The purpose of the CALGreen Code is to "improve public health, safety and general welfare by enhancing the design and construction of buildings through the use of building concepts having a positive environmental impact and encouraging sustainable construction practices in the following categories: (1) Planning and design; (2) Energy efficiency; (3) Water efficiency and conservation; (4) Material conservation and resource efficiency; and (5) Environmental air quality."<sup>29</sup> The CALGreen Code is not intended to substitute for or be identified as meeting the certification

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<sup>29</sup> California Building Standards Commission, 2008 California Green Building Standards Code, (2009) 3.

requirements of any green building program that is not established and adopted by the California Building Standards Commission (CBSC). Part 11 of the Title 24 Building Standards Code became effective on January 1, 2011. Unless otherwise noted in the regulation, all newly constructed buildings in California are subject to the requirements of the CALGreen Code.

### **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 sources by 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 Renewable Portfolio Standard 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.

### **Assembly Bill 1493**

Assembly Bill 1493 (AB 1493, Pavley) was enacted on July 22, 2002 to reduce CO<sub>2</sub> emissions from the transportation sector. Under AB 1493, CARB set GHG emission standards for passenger vehicles, light-duty trucks, and other vehicles whose primary use is noncommercial personal transportation. The standards were adopted in September 2004 and were to be phased in during the 2009 through 2016 model years. However, before the regulation could go into effect, the U.S. EPA had to grant California a waiver under the federal CAA, which ordinarily preempts state regulation of motor vehicle emission standards. The U.S. EPA did not issue the waiver until June 30, 2009.

On September 15, 2009, the U.S. EPA and the Department of Transportation's (DOT) National Highway Traffic Safety Administration (NHTSA) issued a joint proposal to establish a national program consisting of new standards for model year 2012 through 2016 light-duty vehicles. The proposed standards would be phased in and would require passenger cars and light-duty trucks to comply with a declining CO<sub>2</sub>

emissions standard. In 2012, passenger cars and light-duty trucks would have to meet an average emissions standard of 295 grams of CO<sub>2</sub> per mile and 30.1 miles per gallon.<sup>30</sup> By 2016, the vehicles would have to meet an average standard of 250 grams of CO<sub>2</sub> per mile and 35.5 miles per gallon.<sup>31</sup> These standards were formally adopted by the U.S. EPA and DOT on April 1, 2010. In light of the U.S. EPA and NHTSA standards, California—and states adopting California emissions standards—have agreed to defer to the proposed national standard through model year 2016. The 2016 endpoint of the federal and state standards is similar, although the federal standard ramps up slightly more slowly than required under the state standard. The state standards (called the Pavley standards) require additional reductions in CO<sub>2</sub> emissions beyond 2016 (referred to as Pavley Phase II standards), which have not yet been adopted.

#### **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 (CalEPA) 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.

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<sup>30</sup> U.S. 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.

<sup>31</sup> U.S. EPA, "EPA and NHTSA Propose Historic Nation Program," 2009.

### 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);
- Require 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<sub>6</sub>) from non-electricity sectors if viable alternatives are available.

### 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 MMTCO<sub>2e</sub>. 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.

#### 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, conduct public workshops and rulemaking procedures through 2011, and is scheduled to finalize regulations by January 1, 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 renewables 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. Emissions 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 significant 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<sub>2</sub>-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.

#### **Senate Bill 375**

The California Legislature passed SB 375 (Steinberg) on September 1, 2008. SB 375 requires CARB, working in consultation with the metropolitan planning organizations (MPOs), to set regional greenhouse gas reduction targets for the automobile and light truck sector for 2020 and 2035. The target must then be incorporated within that region's Regional Transportation Plan (RTP), which is used for long-term transportation planning, in a Sustainable Communities Strategy (SCS). Certain transportation planning and programming activities would then need to be consistent with the SCS; however, SB 375 expressly provides that the SCS does not regulate the use of land, and further provides that local land use plans and policies (e.g., General Plan) are not required to be consistent with either the RTP or SCS.

On August 9, 2010, CARB staff issued the *Proposed Regional Greenhouse Gas Emission Reduction Targets for Automobiles and Light Trucks Pursuant To Senate Bill 375*.<sup>32</sup> CARB staff proposed draft per capita reduction targets for the four largest MPOs (Bay Area, Sacramento, Southern California, and San Diego) of 7 to 8 percent for 2020 and reduction targets between 13 to 16 percent for 2035. For the Southern California

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<sup>32</sup> California Air Resources Board (CARB), *Staff Report: Proposed Regional Greenhouse Gas Emission Reduction Targets For Automobiles And Light Trucks Pursuant To Senate Bill 375*, (2010).



The City's 2005 General Plan sets forth transportation-related goals, policies, and actions that are designed to partially alleviate increases in traffic and energy consumption, and associated increases in GHG emissions. Examples of these goals, policies, and actions include:

Goal	Provide residents with more transportation choices by strengthening and balancing bicycle, pedestrian, and transit opportunities in the City and surrounding region.
Policy 4A	Ensure that the transportation system is safe and easily accessible to all travelers.
Action 4.3	Provide transportation services that meet the special mobility needs of the community including youth, elderly, and disabled persons.
Action 4.4	Combine education with enforcement to encourage safe and courteous use of the shared public roadway.
Action 4.5	Utilize existing roadways to meet mobility needs, and only consider additional travel lanes when other alternatives are not feasible.
Action 4.6	Require new development to be designed with interconnected transportation modes and routes to complete a grid network.
Action 4.8	Implement the City's Neighborhood Traffic Management Program and update as necessary to improve livability in residential areas.
Action 4.9	Identify, designate, and enforce truck routes to minimize the impact of truck traffic on residential neighborhoods.
Action 4.10	Modify traffic signal timing to ensure safety and minimize delay for all users.
Action 4.11	Refine level of service standards to encourage use of alternative modes of transportation while meeting state and regional mandates.

Action 4.12 Design roadway improvements and facility modifications to minimize the potential for conflict between pedestrians, bicycles, and automobiles.

Policy 4B Help reduce dependence on the automobile.

Action 4.14 Provide development incentives to encourage projects that reduce automobile trips.

Action 4.15 Encourage the placement of facilities that house or serve elderly, disabled, or socioeconomically disadvantaged persons in areas with existing public transportation services and pedestrian and bicycle amenities.

Action 4.16 Install roadway, transit, and alternative transportation improvements along existing or planned multi-modal corridors, including primary bike and transit routes, and at land use intensity nodes.

Action 4.17 Prepare and periodically update a Mobility Plan that integrates a variety of travel alternatives to minimize reliance on any single mode of transportation.

Action 4.18 Promote the development and use of recreational trails as transportation routes to connect housing with services, entertainment, and employment.

Action 4.19 Adopt new development code provisions that establish vehicle trip reduction requirements for all development.

Action 4.20 Develop a transportation demand management program to shift travel behavior toward alternative modes and services.

Action 4.21 Require new development to provide pedestrian and bicycle access and facilities as appropriate, including connected paths along the shoreline and watercourses.

- Action 4.22 Update the General Bikeway Plan as needed to encourage bicycle use as a viable transportation alternative to the automobile and include the bikeway plan as part of a new Mobility Plan.
- Action 4.23 Upgrade and add bicycle lanes when conducting roadway maintenance as feasible.
- Action 4.24 Require sidewalks wide enough to encourage walking that include ramps and other features needed to ensure access for mobility-impaired persons.
- Action 4.25 Adopt new development code provisions that require the construction of sidewalks in all future projects.
- Action 4.27 Extend stubbed-end streets through future developments, where appropriate, to provide necessary circulation within a developing area, and for adequate internal circulation within and between neighborhoods. Require new developments in the North Avenue area, where applicable, to extend Norway Drive and Floral Drive to connect to Canada Larga Road; and connect the existing segments of Floral Drive. Designate the extension of Cedar Street between Warner Street and south of Franklin Lane and the linking of the Cameron Street segments in the Westside community as high priority projects.
- Policy 4C Increase transit efficiency and options.
- Action 4.28 Require all new development to provide for citywide improvements to transit stops that have sufficient quality and amenities, including shelters and benches, to encourage ridership.
- Action 4.29 Develop incentives to encourage City employees and local employers to use transit, rideshare, walk, or bike.
- Action 4.30 Work with public transit agencies to provide information to riders at transit stops, libraries, lodging, and event facilities.

- Action 4.31 Work with public and private transit providers to enhance public transit service.
- Action 4.32 Coordinate with public transit systems for the provision of additional routes as demand and funding allow.
- Action 4.33 Work with Amtrak, Metrolink, and Union Pacific to maximize efficiency of passenger and freight rail service to the City and to integrate and coordinate passenger rail service with other transportation modes.
- Action 4.34 Lobby for additional transportation funding and changes to federal, state, and regional transportation policy that support local decision making.
- Action 4.35 The City shall pursue funding and site location for a multi-modal transit facility in coordination with VCTC, SCAT, U.P.R.R., Metrolink, Greyhound Bus Lines, and other forms of transportation.

### ***Bicycle Master Plan***

The Ventura Bicycle Master Plan was adopted on May 2, 2011 and is the primary planning tool that represents the 20-year long-range bicycle plan for the City. The purpose of the Bicycle Master Plan is to recommend bicycle facility, program, and policy-oriented improvements that will best serve the community based on an assessment of existing conditions and the desires of the City's residents. Refer to **Section 4.13, Transportation and Circulation**, for additional details regarding the Ventura Bicycle Master Plan.

### **4.6.3 IMPACT ANALYSIS**

#### **a. Thresholds of Significance**

Based upon Appendix G of the *State CEQA Guidelines* under Section VII, Greenhouse Gas Emissions, a project may have a significant impact related to Greenhouse Gas Emissions if it would:

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

The *State CEQA Guidelines* (Section 15064.7) provide that, when available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make determinations of significance. Significance thresholds, quantitative or otherwise have not been adopted by the Ventura County Air Pollution Control District (VCAPCD) or the City of Ventura. CAPCOA's *CEQA and Climate Change* white paper<sup>33</sup> discusses three possible approaches to evaluating the significance of GHG emissions; however, CAPCOA does not endorse any particular approach. The three alternative significance approaches are (1) not establishing a significance threshold for GHG emissions; (2) setting the GHG emission threshold at zero; and (3) setting the GHG emission threshold at some non-zero level. The white paper evaluates potential considerations and pitfalls associated with the three approaches.

*State CEQA Guidelines* Section 15064.4 expressly provides that a "lead agency shall have discretion to determine, in the context of a particular project," whether to "[u]se a model or methodology to quantify greenhouse gas emissions resulting from a project, and which model or methodology to use." A lead agency also has discretion under the *State CEQA Guidelines* to "[r]ely on a qualitative analysis or [quantitative] performance based standards." A number of significance thresholds have been adopted or are in the process of being developed in other regions of the state. Furthermore, *State CEQA Guidelines* Section 15130(a) recognizes that there may be a point where a project's contribution, although above zero, would not be a considerable contribution to the cumulative impact. Therefore, a threshold of greater than zero is considered more appropriate for the analysis of the proposed project's GHG emissions under CEQA.

The CAPCOA white paper describes a "tiered" approach for setting the GHG emission threshold at some non-zero level. Under this "tiered" approach, a lead agency would "establish different levels at which to determine if a project would have a significant impact." For a regional plan, such as this proposed project, the plan should demonstrate that it is in compliance with the general emissions reduction target in AB 32:

- Plan demonstrates that projected 2020 emissions will be equal to or less than 1990 emissions.
- Plans are expected to fully document 1990 and 2020 GHG emission inventories.

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<sup>33</sup> California Air Pollution Control Officers Association, *CEQA and Climate Change*, (2008).

- Projection of 2020 emissions is complicated by the fact that CARB is expected to promulgate emission reductions in the short term. Until explicit CARB regulations are in place, unmitigated GP 2020 emission inventories represent business-as-usual scenarios.
- EIRs for plans that demonstrate 2020 mitigated emissions are less than or equal to 1990 emissions are considered less than significant.

The neighboring South Coast Air Quality Management District (SCAQMD) has convened a GHG CEQA Significance Threshold Working Group, the goal of which is to develop and reach consensus on an acceptable CEQA significance threshold for GHG emissions that would be utilized on an interim basis until CARB (or some other state agency) develops statewide guidance on assessing the significance of GHG emissions under CEQA. In September 2010, the Working Group announced its most recent iteration of the draft thresholds, which recommended plan-level efficiency targets of 6.6 metric tons of carbon dioxide equivalents per year (MTCO<sub>2e</sub>/yr) per service population as a 2020 target and 4.1 MTCO<sub>2e</sub>/yr per service population as a 2035 target.<sup>34</sup> Service population is the sum of residential and employee populations. While the proposed project is not located in an area under the jurisdiction of the SCAQMD, this threshold provides another option for measuring the significance of the project with respect to GHG emissions.

The City of Ventura has not adopted a plan, policy, or regulation for the purpose of reducing the emissions of GHGs to a level that would be considered less than significant under CEQA. However, in August 2010, CAPCOA released a resource document for lead agencies to use to estimate GHG emission reductions from various mitigation measures.<sup>35</sup> This resources document provides information on mitigation measures targeting the major sources of GHG emissions from local land use development including energy, transportation, water, landscaping equipment, solid waste, vegetation, construction, and other miscellaneous sources. A consistency analysis with the applicable measures is provided to assess the project's consistency with these GHG reduction measures.

Based upon Appendix G of the State *CEQA Guidelines* under Section VII, Greenhouse Gas Emissions, and the CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures*, (2010), the following significance thresholds are used to evaluate impacts related to GHG Emissions.

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<sup>34</sup> South Coast Air Quality Management District, "Greenhouse Gases (GHG) CEQA Significance Thresholds Working Group Meeting #15," <http://www.aqmd.gov/ceqa/handbook/GHG/2010/sept28mtg/sept29.html>. 2010.

<sup>35</sup> 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).

- GHG-1 Would the project generate greenhouse gas emissions, either directly or indirectly, that conflict with the emission reduction target adopted under AB 32 or exceed 6.6 MTCO<sub>2</sub>e/yr per service population in 2020 target and/or 4.1 MTCO<sub>2</sub>e/yr per service population in 2035?
- GHG-2 Would the project conflict with applicable GHG reduction measures in CAPCOA's resource document for local governments, *Quantifying Greenhouse Gas Mitigation Measures*?

#### b. Methodology

The data sources and tools used to evaluate the GHG impacts associated with construction and operation of the land uses proposed in the Westside Community Planning Area include the California Emissions Estimator Model (CalEEMod),<sup>36</sup> which was used to analyze the proposed project emissions during construction and operation. CalEEMod is a program that calculates air 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 CEC, IPCC, CARB, U.S. EPA, and guidance prepared by CAPCOA.<sup>37</sup> During project construction, the model can analyze emissions that occur during different phases, such as building construction and architectural coating, concurrently or separately. Site-specific or project-specific data were used in the CalEEMod model where available. Additionally, some elements of this analysis are based on data provided in other sections of this EIR; for example, trip generation rates are based on the traffic impact analysis prepared for this project (refer to **Section 4.13, Transportation and Circulation**). Additional sources were relied upon, as referenced. Emission calculations conducted for the proposed project are contained in **Appendix 4.6**

#### c. Analysis, Mitigation Measures, and Residual Impacts

- GHG-1 Would the project generate greenhouse gas emissions, either directly or indirectly, that conflict with the emission reduction target adopted under AB 32 or exceed 6.6 MTCO<sub>2</sub>e/yr per service population in 2020 target and/or 4.1 MTCO<sub>2</sub>e/yr per service population in 2035? (Class II, Significant but Mitigable)

The Westside Community Plan contains goals, policies, and actions related to GHG emissions. These are identified in the analysis below, where appropriate.

<sup>36</sup> ENVIRON, "CalEEMod, Version 2011.1.1," <http://www.caleemod.com/>.

<sup>37</sup> California Air Pollution Control Officers Association, *Quantifying Greenhouse Gas Mitigation Measures*, (2010). The document may be downloaded from the following website: <http://www.capcoa.org/>.

### *Analysis*

The land uses permitted in the Westside Community Planning Area include 1,415 new dwelling units, 100,641 square feet of retail, 163,450 square feet of office, and 77,000 square feet of industrial over existing conditions. Development of these land uses in the Westside Community Planning Area would occur as individual projects are proposed and approved. No specific developments are proposed or analyzed at the project-level in this program EIR at this time. Project-level review will be required for individual projects proposed within the Westside Community Planning Project Area. It is estimated that these land uses would be developed by 2025. Development of these uses would result in construction and operational GHG emissions, both directly and indirectly. The construction and operational GHG emissions are discussed below.

### **Construction Emissions**

Construction activity that would result from the allowed development in the Westside Community Planning Area 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 vehicles. The manufacture of construction materials used by the project would indirectly contribute to GHG emissions (upstream emission source). Upstream emissions are emissions that are generated during the manufacture of products used for construction (e.g., cement, steel, and transport of materials to the region). The upstream GHG emissions for this project are not estimated because they are not within the control of the City of Ventura and would require speculation as the necessary data to quantify such upstream emissions are not known or available.

The primary GHG emissions during construction are CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. 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 project. The CalEEMod model was used to estimate the construction-related GHG emissions. The emissions were calculated assuming buildout of all of the allowed land uses in the Westside Community Planning Area.

The estimated construction-related GHG emissions are provided in **Table 4.6-3, Estimated Construction GHG Emissions**. Construction GHG emissions would occur only when construction activities are underway. However, 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. The SCAQMD’s Draft GHG CEQA Guidance recommends using 30 years as a project lifetime. Therefore, the construction GHG emissions have been amortized over a 30-year period and included in the amortized operational total discussed in the next section.

**Table 4.6-3**  
**Estimated Construction GHG Emissions**

<b>Construction</b>	<b>GHG Emissions (Metric Tons CO<sub>2</sub>e/year)</b>
Total GHG Emissions	13,647
Amortized GHG Emissions <sup>1</sup>	455

Source: Impact Sciences, Inc. Emissions calculations are provided in **Appendix 4.6**.

<sup>1</sup> Amortized GHG emissions are calculated by dividing the total construction GHG emissions over a recommended project lifetime of 30 years.

### Operational Emissions

The land uses that would be allowed in the Westside Community Planning Area are anticipated to be operational by 2025. At full buildout, the project would result in ongoing annual GHG emissions. The direct emissions, primarily CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, are the result of fossil fuel combustion from area sources (e.g., building heating systems, landscaping equipment) and motor vehicles. Building and motor vehicle air conditioning systems may use HFCs (and HCFCs and CFCs to the extent that they have not been completely phased out at later dates). CalEEMod includes these emissions for motor vehicles. It should be noted that CARB has drafted a proposed “Regulation for Management of High Global Warming Potential Refrigerants” that would reduce emissions of these refrigerants from stationary refrigeration and air-conditioning systems by requiring persons subject to the rule to reclaim, recover, or recycle refrigerant and to properly repair or replace faulty refrigeration and air conditioning equipment.<sup>38</sup> Area source emissions were calculated using default assumptions in CalEEMod for the following land use types: mid-rise apartments, regional shopping center, office park, and general light industrial. Mobile source emissions were calculated using CalEEMod, based on the Institute of Transportation and Engineering 8<sup>th</sup> Edition trip generation rates.<sup>39</sup>

The Westside Community Plan would implement goals, policies, and actions designed to partially alleviate increases in traffic and energy consumption, and associated increases in air pollutant emissions. Examples of these goals and policies are contained in the *Our Accessible Community* element of the

<sup>38</sup> California Air Resources Board, “Stationary Equipment Refrigerant Management Program,” <http://www.arb.ca.gov/cc/reftrack/reftrack.htm>. 2009. This regulation is an early action measure under AB 32.

<sup>39</sup> Institute of Transportation and Engineering, *ITE Trip Generation Rates – 8<sup>th</sup> Edition*, 2008.

Westside Community Plan, which includes goals and policies that would improve infrastructure for alternative modes of transportation, reduce dependence on the automobile, and provide parking improvements:

Goal Encourage various modes of travel by providing infrastructure for buses, bikes, and pedestrians as well as cars and improved connections from the Ventura River Trail to neighborhoods to the hillsides.

Goal Improve parking along Ventura Avenue for commercial business customers.

Policy 12 Q Improve roadway design along Ventura Avenue to enhance pedestrian safety, facilitate safe crossing of pedestrians and bicyclists, and improve parking. Ensure that the Westside circulation system is interconnected and usable by all modes of transportation.

Action 12.4.1 Develop street standards that emphasize the safe and efficient movement of vehicles, pedestrian safety, streetscapes, and compatibility with adjoining urban features and incorporate naturalistic 'green street' design elements into the streetscapes. Action implemented through Regulating Code.

Action 12.4.2 Where appropriate, reinstate the Neighborhood Traffic Management program and consider implementation on a block-by-block or neighborhood-by-neighborhood basis to slow traffic through residential neighborhoods.

Action 12.4.3 Extend Stanley Avenue to Cedar Street and extend Cedar Street to Mohawk Avenue.

Action 12.4.4 City Public Works will utilize tools such as improved signage, signalization, and curb extensions to provide improved bicycle and pedestrian safety crossings across Ventura Avenue at locations such as Vince, Warner, McFarland, and DeAnza when funding is available.

Action 12.4.5 Consider restricting commercial truck loading along Ventura Avenue to ensure parking for customers and facilitate pedestrian and bicycle mobility.

- Policy 12 R Improve bike and pedestrian connections to the Ventura River Trail and through the neighborhoods.
- Action 12.4.7 Develop a bicycle and pedestrian accessible extension of Olive Street from Stanley Avenue to Shoshone Street.
  - Action 12.4.8 Develop connections from the regional Ventura River Trail bike trail to adjoining neighborhoods consistent with the Bicycle Master Plan and explore connections at Simpson Street and Riverside Drive among other potential locations.
  - Action 12.4.9 Develop bicycle/pedestrian boulevards along Cameron Street, Vince Street, Simpson Street, and Park Row to facilitate east-west mobility and improve access to the Ventura River Trail.
  - Action 12.4.10 Connect portions of Cedar Street for multi-modal access, including bicycles, pedestrians, and automobiles.
  - Action 12.4.11 Integrate bicycle trails into the Westside Community to serve both as transportation corridors and as recreational amenities.
- Policy 12 S Develop an access strategy connecting the Westside Community to the hillsides along Cedar Street.
- Action 12.4.13 Where the hillside has been stabilized, develop a workplan to connect Westside residents to Grant Park by creating pedestrian trails where possible and where elevation grades will permit along Cedar Street corridor.
- Policy 12 T Enhance the mobility grid network through new and existing alleys.
- Action 12.4.14 Develop a long-range master Westside Community circulation plan for alleys and streets to establish the urban form to guide future redevelopment.
  - Action 12.4.15 Identify blocks in the lower Westside planning area likely to experience future redevelopment and most suitable for creation of alley structure to provide connectivity within neighborhoods;

include this as development standard in the Development Code.  
Action implemented through Regulating Code.

Action 12.4.16 Reconnect existing alleys to link portions of neighborhoods to Ventura Avenue.

Policy 12 U Reduce dependence on the automobile in the Westside Community.

Action 12.4.17 Prepare a Westside Parking Study to assess supply and demand and recommend revised parking standards for the Westside Community. (Note: The Westside Parking Study was completed in August 2011 and identifies the parking supply and demand within the project area. The Westside Parking Study includes recommendations to meet the optimal amount of parking while reducing traffic congestion, encouraging alternate transportation and accommodating new development and a variety of land uses.)

Action 12.4.18 Provide for shared parking and transportation improvements.

Action 12.4.19 Require all new development to contribute toward a Transportation Demand Management (TDM) fund to be used to develop community, City, and regional transportation programs that reduce transportation-related air pollutants.

Action 12.4.20 Facilitate the establishment of a Westside car-sharing service by preparing a feasibility study when funding is available, such as from the TDM fund.

Action 12.4.21 Require all new development and existing development, where feasible, to provide bike racks that meet League of American Bicyclists standards for public use and bike lockers and shower facilities for employee use. Action implemented through Regulating Code.

Policy 12 V Westside Community public transit and transportation options.

- Action 12.4.22 In consultation with VCTC/Gold Coast Transit, complete a long-range transit study to establish Westside Community transit needs and identify viable long-term funding mechanisms.
- Action 12.4.23 Subject to available long-term funding, establish secondary transit circulation on Olive Avenue and other streets as needed to facilitate access to primary transit trunk lines along Ventura Avenue.
- Action 12.4.24 Coordinate with VCTC/Gold Coast Transit to relocate transit stops to areas subject to the most intense urban centers as designated in the Regulating Code.
- New Policy XX: Restore and enhance connection to the local beach.
- New Action 12.4.XX: Create a safe and attractive pedestrian and bicycle crossing at Olive Street and the Stanley Ave/Highway 33 off ramp as specified in the Bicycle Master Plan.
- New Action 12.4.XX: Create a safe and attractive extension of the southern end of the Ventura Rive Bicycle Path at Rex St, so it crosses the Highway 33 on/off ramp as specified in the Bicycle Master Plan.

The Westside Community Plan goals, policies, and actions would result in transportation enhancements necessary to improve mobility and reduce vehicle miles traveled (VMT) in the Westside Community Planning Area. Along Ventura Avenue, the corridor would be designed as a place where pedestrian mobility is the preferred and necessary mode to activate the public realm and invigorate the corridor. Public transit options that provide safe linkages from the neighborhoods to the Ventura Avenue transit trunk lines would be necessary to maintain accessibility for residents from their home to the commercial corridor or places of work. Within neighborhoods, the Westside Community Plan calls for providing improvements and linkages to bicycle facilities and calls for connections in the street grid where blockages inhibit mobility.

Research indicates that infill development reduces VMT and associated air pollutant emissions as compared to development on sites at the periphery of metropolitan areas, also known as “greenfield” sites. For example, a 1999 simulation study conducted for the U.S. EPA comparing infill development to greenfield development found that infill development results in substantially fewer VMT per capita and

generates fewer emissions of most air pollutants and GHGs. The findings of this study are provided in **Table 4.2-3** in **Section 4.2, Air Quality**. CAPCOA has provided a resources document for local governments to assess emission reductions from various types of land use planning and development mitigation measures.<sup>40</sup> According to CAPCOA, increasing density would reduce VMT and associated air pollutant emissions by as much as 30 percent.<sup>41</sup> The potential for reductions are based on changes in densities compared to the typical suburban residential and employment densities in North America, referred to as “Institute of Transportation Engineers (ITE) densities.” These densities are used as a baseline to mirror those densities reflected in the ITE Trip Generation Manual, which is the baseline method for determining VMT. The reduction in VMT from the project’s features (increased density; increased diversity; improved destination accessibility; and improved pedestrian network) were taken into account in CalEEMod.

The proposed project would also result in indirect GHG emissions due to the electricity demand. The emission factor for CO<sub>2</sub> due to electrical demand from Southern California Edison, the electrical utility that serves the Westside Community Planning Area, was selected in the CalEEMod model. Emission factors for CO<sub>2</sub> are based on CARB’s Local Government Operations Protocol.<sup>42</sup> Emission factors for CH<sub>4</sub> and N<sub>2</sub>O are based on U.S. EPA E-Grid values.<sup>43</sup> The cited factors in the CARB report are based on data collected by the California Climate Action Registry. The emission factors take into account the current mix of energy sources used to generate electricity and the relative carbon intensities of these sources, and include natural gas, coal, nuclear, large hydroelectric, and other renewable sources of energy. Electricity consumption was based on default CalEEMod data for the proposed land uses. In addition to electrical demand, the project would also result in indirect GHG emissions due to water consumption, wastewater treatment, and solid waste generation. GHG emissions from water consumption are due to the electricity needed to convey, treat, and distribute water. The annual electrical demand factors for potable water were obtained from the CEC.<sup>44</sup> The default CalEEMod assumptions were used for GHG emissions from water consumption, wastewater production, and solid waste generation. In 2006, the most recent year for which information is available, the City diverted 70 percent of its solid waste from landfills as part of its

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<sup>40</sup> 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).

<sup>41</sup> *Ibid.*, p. 155. See discussion for mitigation measure LUT-1.

<sup>42</sup> California Air Resources Board, *Local Government Operations Protocol for the Quantification and Reporting of Greenhouse Gas Emissions Inventories*, Version 1.1, (2010) 208.

<sup>43</sup> U.S. Environmental Protection Agency, “E-Grid,” <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>. nd.

<sup>44</sup> California Energy Commission, *Refining Estimates of Water-Related Energy Use in California, PIER Final Project Report* (CEC-500-2006-118), (2006) 22. Prepared by Navigant Consulting, Inc.

compliance with the requirements of AB 939.<sup>45</sup> Therefore, a solid waste diversion rate of 70 percent was applied in CalEEMod.

A summary of the operational emissions at full buildout of the maximum potential development in the Westside Community Planning Area is provided in **Table 4.6-4, Estimated Operational GHG Emissions**. Detailed emission calculations are provided in **Appendix 4.6**.

**Table 4.6-4  
Estimated Operational GHG Emissions**

Emission Source	GHG Emissions (Metric Tons CO <sub>2</sub> e/year)
Amortized Construction	455
Area Sources	18
Energy	4,160
Mobile Sources	12,163
Waste	736
Water	2,646
<b>Total</b>	<b>20,178</b>
<b>GHG Emissions Per Service Population</b>	<b>4.22</b>
<b>Draft Plan-Level 2020 Threshold</b>	<b>6.6</b>
<b>Exceeds Draft Plan-Level 2020 Threshold?</b>	<b>NO</b>
<b>Draft Plan-Level 2035 Threshold</b>	<b>4.1</b>
<b>Exceeds Draft Plan-Level 2035 Threshold?</b>	<b>YES</b>

*Source: Impact Sciences, Inc. Emission calculations are provided in Appendix 4.6.*

*Note: Totals in table may not appear to add exactly due to rounding.*

As shown in **Table 4.6-4**, development of the allowed land uses in the Westside Community Planning Area would not exceed the draft plan-level 2020 thresholds, but would exceed the draft plan-level 2035 threshold. However, it is clear that the project would be on a trajectory to meet the draft plan-level 2035 threshold given that future GHG reductions from motor vehicles and energy are anticipated in California due to future regulations that are anticipated to be in effect by 2035. Nonetheless, as these regulations are only anticipated at this time, the impact is considered potentially significant and mitigation measures are recommended to reduce the project's GHG emissions to a less than significant level.

<sup>45</sup> CalRecycle, "Jurisdiction Diversion and Disposal Profile: California Waste Stream Profiles," <http://www.calrecycle.ca.gov/profiles/Juris/JurProfile2.asp?RG=C&JURID=430&JUR=San+Buenaventura>.

### *Mitigation Measures*

The following mitigation measures shall be implemented to reduce GHG impacts to a less than significant level:

MM GHG-1 Westside Community Planning Area developers shall be required to reduce GHG emissions by implementing the following measures:

- All land uses shall be required to implement CAPCOA Level 1 mitigation measures. Level 1 measures include the following:
  - Bicycle parking for multi-family residential, office, and retail uses;
  - Transit stops for planned routes;
  - Energy Star roofs;
  - Energy Star appliances;
  - Title 24 compliance;
  - Water use efficiency measures.
- Residential land uses shall be required to provide and install certified Energy Star appliances or similarly rated energy-efficient appliances.
- Residential and commercial land uses shall be required to provide and install low-flow toilets and low-flow showers.

**Section 4.2, Air Quality**, includes the following mitigation measure that would reduce criteria air pollutant emissions and would have co-benefits of reducing operational GHG emissions from motor vehicles:

MM AQ-1 The VCAPCD *Ventura County Air Pollution Control District Air Quality Assessment Guidelines* recommends that all development projects with significant air quality impacts fully mitigate excess emissions through funding measures for at least three years. The VCAPCD guidelines provide an updated cost of \$7.05 for ROG and \$10.27 for NO<sub>x</sub> (January 2011 Consumer Price Index (CPI) at 228.652), for every pound in excess of VCAPCD thresholds. Westside Community Planning Area developers shall contribute to a Transportation Demand Management (TDM) fund to be used to develop regional programs to offset air pollutant emissions. The total amount that would be contributed to

the TDM fund is \$657,655. Payment of fees shall occur prior to issuance of building permits.

The amount provided by residential development would be about 68.7 percent of this total (based on the estimated residential portion of VMT), or \$451,809. The amount provided by commercial development would be 26 percent of the total, or \$205,846. Applicants for residential developments that would generate a net increase in units would pay \$319.30 per unit (assuming 1,415 residential units). Applicants for commercial and industrial development that would generate a net increase in building area would pay \$603.49 per 1000 square foot (assuming a total of 341,091 square feet). These fee estimates include an adjustment for inflation, but may be further adjusted by the City over time if development totals or emission factors change.

The TDM funds shall be used to finance City programs to reduce regional air pollutant emissions. Specific mitigation measures that could be undertaken using the TDM fund include, but are not limited to, enhanced public transit service, vanpool programs/subsidies, rideshare assistance programs, clean fuel programs, improved pedestrian and bicycle facilities, and park-and-ride facilities.

### *Residual Impacts*

Class II, Significant but Mitigable.

Mitigation measure **MM GHG-1** would reduce energy and water GHG emission by a minimum of 49 MTCO<sub>2e</sub> and 278 MTCO<sub>2e</sub>, respectively. Mitigation measure **MM AQ-1**, which is required to offset the project's ozone precursor emissions, would also offset the project's GHG emissions. Contribution to the TDM fund, as required by **MM AQ-1**, would substantially offset the project's mobile source GHG emissions. The combination of these mitigation measures would reduce the project's per service population GHG emissions to less than 4.1 MTCO<sub>2e</sub>. Therefore, with mitigation, the impacts would be reduced to less than significant levels.

GHG-2 Would the project conflict with applicable GHG reduction measures in the CAPCOA's resource document for local governments, *Quantifying Greenhouse Gas Mitigation Measures?* (Class III, Not Significant)

### Analysis

As previously discussed, the Westside Community Plan would implement goals, policies, and actions that would result in transportation enhancements necessary to improve mobility and reduce VMT in the Westside Community Planning Area. The Westside Community Plan calls for providing improvements and linkages to bicycle facilities and calls for connections in the street grid where blockages inhibit mobility. **Table 4.6-5, Consistency of Westside Community Plan VMT Reduction Actions with CAPCOA Measures**, presents an analysis of the project's VMT reduction measures with recommended CAPCOA measures. As shown, the project would be generally consistent with recommended CAPCOA measures and the project would have a less than significant impact.

**Table 4.6-5  
Consistency of Project VMT Reduction Measures with CAPCOA Measures**

CAPCOA Measure	Description	Consistent Project Measure
<b>Transportation: Land Use/Location</b>		
Increase Transit Accessibility	Locating a project with high density near transit will facilitate the use of transit by people traveling to or from the project site. The use of transit results in a mode shift and therefore reduced VMT.	Westside Community Plan Actions 12.4.20; 12.4.22; 12.4.24. 2005 General Plan Actions 4.3; 4.15; 4.16; 4.18.
Improve Design of Development	The project will include improved design elements to enhance walkability and connectivity. Improved street network characteristics within a neighborhood include street accessibility, usually measured in terms of average block size, proportion of four-way intersections, or number of intersections per square mile. Design is also measured in terms of sidewalk coverage, building setbacks, street widths, pedestrian crossings, presence of street trees, and a host of other physical variables that differentiate pedestrian-oriented environments from auto-oriented environments.	Westside Community Plan Actions 12.4.3; 12.4.4; 12.4.7; 12.4.8; 12.4.9; 12.4.10, 12.4.11; 12.4.14; 12.4.16. 2005 General Plan Actions 4.6; 4.12; 4.16; 4.22; 4.23; 4.24; 4.25.
Infill Development	According to data provided in the California Air Pollution Control Officers Association <i>CEQA and Climate Change (2008)</i> , infill development reduces the number of vehicle miles traveled per trip.	The Westside Community Planning Area would consist of largely infill development projects.

CAPCOA Measure	Description	Consistent Project Measure
<b>Transportation: Neighborhood/Site Enhancements</b>		
Provide Pedestrian Network Improvements	Providing a pedestrian access network to linked areas of the Project site encourages people to walk instead of drive. This mode shift results in people driving less and thus a reduction in VMT. The project will provide a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. The project will minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, landscaping, and slopes that impede pedestrian circulation will be eliminated.	Westside Community Plan Actions 12.4.1; 12.4.4; 12.4.7; 12.4.8; 12.4.9; 12.4.10, 12.4.11; 12.4.14; 12.4.15; 12.4.16. 2005 General Plan Actions 4.12; 4.15; 4.16; 4.18; 4.21; 4.24; 4.25; 4.28.
Provide Bike Parking in Non-residential Projects	The project will provide short-term and long-term bicycle parking facilities to meet peak season maximum demand.	Westside Community Plan Action 12.4.21. 2005 General Plan Actions 4.15; 4.21.
<b>Transportation: Commute Trip Reduction Programs</b>		
Implement Commute Trip Reduction Program	The project will implement a voluntary Commute Trip Reduction (CTR) program with employers to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking.	2005 General Plan Action 4.29
<b>Transportation: Transit System Improvements</b>		
Implement Transit Access Improvements	The project will improve access to transit facilities through sidewalk/crosswalk safety enhancements and bus shelter improvements.	Westside Community Plan Actions 12.4.4; 12.4.15; 12.4.22; 12.4.23; 12.4.24. 2005 General Plan Actions 4.3; 4.6; 4.15; 4.21; 4.24; 4.25; 4.28; 4.30; 4.31.
<b>Transportation: Road Pricing/Management</b>		
Require Project Contributions to Transportation Infrastructure Improvement Projects	The project should contribute to traffic-flow improvements or other multi-modal infrastructure projects that reduce emissions and are not considered as substantially growth inducing. The local transportation agency should be consulted for specific needs. Larger projects may be required to contribute a proportionate share to the development and/or continuation of a regional transit system. Contributions may consist of dedicated right-of-way, capital improvements, easements, etc. The local transportation agency should be consulted for specific needs.	Westside Community Plan Actions 12.4.19; 12.4.20. 2005 General Plan Action 7.22

**Sources:**

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);  
City of Ventura, Community Development, Draft Westside Community Plan, (2011).

**Mitigation Measures**

No mitigation is required.

**Residual Impacts**

Class III, Not Significant.

**d. 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. All the emission reduction goals, policies, and actions that the 2005 General Plan and Westside Community Plan would implement would assist in the reduction of GHG emissions. Therefore, any analysis of the proposed project's GHG emissions is by definition a cumulative analysis. As discussed above, the project's GHG would be mitigated to a less than significant level. The project would not conflict with recommended CAPCOA measures and would be required to comply with CAPCOA Level 1 GHG reduction measures. Cumulative impacts would be the same as those discussed above under Thresholds of Significance GHG-1 and GHG-2, that is, they would be reduced to less than significant levels with implementation of mitigation measures. The project's contribution to cumulative impacts would not be cumulatively considerable.