

**CHAPTER IV. G**  
**Global Climate Change**



1 The information provided in this section is based on recently established California  
2 goals for reducing greenhouse gas (GHG) emissions as well as a project-specific  
3 emissions inventory developed for the Lakeview Promenade Project. Determining how  
4 a proposed project might contribute to climate change, and what the overall impact of a  
5 project would be based on that contribution, is still speculative at this time. There are  
6 currently no published thresholds or recommended methodologies for determining the  
7 significance of a project's potential cumulative contribution to global climate change in  
8 CEQA documents. In fact, Section 21083.05 of the Public Resources Code (Senate Bill 97)  
9 requires the state Office of Planning and Research to develop CEQA Guidelines for that  
10 analysis by July 1, 2009, and for the state Resources Agency to adopt those guidelines by  
11 January 1, 2010. An individual project does not generate enough greenhouse gas  
12 emissions to significantly influence global climate change; therefore, the issue of global  
13 climate change is by definition a cumulative impact.

14 The information presented in this chapter describes the global climate change issue and  
15 the regulatory framework currently in place. It is intended to provide a local and  
16 regional context for discussion of the issue and a good faith effort at disclosing the  
17 nature of the project's potential impact with regard to greenhouse gas emission, as well  
18 as suggest programmatic measures as appropriate to reduce potential greenhouse gas  
19 emissions.

## 20 1. Background and Content

21 Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, seeks to  
22 address global climate change from the perspective of greenhouse gas reduction. AB32  
23 caps California's greenhouse gas emissions at 1990 levels by 2020. Greenhouse gases  
24 (GHGs) are those gases that trap heat that would otherwise radiate into space. Some  
25 greenhouse gases occur naturally in the atmosphere, while others result from or are  
26 concentrated by activities including the burning of fossil fuels such as oil, natural gas,  
27 and coal. Greenhouse gases include water vapor, carbon dioxide, methane, nitrous  
28 oxide, and ozone. Carbon dioxide and water vapor are the primary GHG components,  
29 and carbon dioxide is the primary target for reducing GHG and addressing global  
30 climate change as this is more effectively regulated than some of the other GHG.

## 31 2. Analysis and Discussion

32 As there are no adopted thresholds, this analysis conforms closely to the methodologies  
33 recommended in the California Air Pollution Control Officers Association (CAPCOA)  
34 *CEQA and Climate Change* discussion (2008). Calculations of carbon dioxide, methane,  
35 and nitrous oxide under the proposed Lakeview Promenade Project are provided for full  
36 disclosure of the magnitude of potential impacts. While a project may result in emission  
37 of GHGs, the significance of the impacts of a single project on the global climate cannot  
38 be determined at this time. The full disclosure of project GHG emission is intended to  
39 provide information, which may be useful for regional agencies in the context of  
40 eventually developing regional or statewide emission projections.

### 41 a. Indirect Emissions from Electricity Use

42 Operational emissions of CO<sub>2</sub> were quantified using the California Air Resource Board's  
43 URBEMIS 2007 (version 9.2.4) computer model. Nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>)  
44 emissions were quantified using the California Climate Action Registry (2006) indirect

1 emissions factors for electricity use. Annual Electricity Use was based upon the South  
 2 Coast Air Quality Management District’s estimated generation rates for various land  
 3 uses for the proposed Lakeview Promenade Project.

4 The following equations are used to determine total emission from Indirect Electricity  
 5 Use:

$\text{CH}_4 \text{ Emission (metric tons) =}$ $\text{Electricity Use (kWh)} \times \text{CH}_4 \text{ Electricity Emission Factor (0.0067 lbs/MWh)} / 2,204.62 \text{ lbs/metric tons}$
$\text{N}_2\text{O Emission (metric tons) =}$ $\text{Electricity Use (kWh)} \times \text{N}_2\text{O Electricity Emission Factor (0.0037 lbs/MWh)} / 2,204.62 \text{ lbs/metric tons}$

11 Equations to determine Carbon Dioxide Equivalent (CO<sub>2</sub>e) include:

$\text{Metric Tons of CO}_2\text{e} = \text{Metric tons of CH}_4 \times 23 \text{ (GWP CH}_4 \text{)}$
$\text{Metric Tons of CO}_2\text{e} = \text{Metric tons of N}_2\text{O} \times 296 \text{ (GWP N}_2\text{O)}$

15 ***b. Direct Emissions from Mobile Combustion***

16 Emissions of CO<sub>2</sub> were quantified using the California Air Resource Board’s URBEMIS  
 17 2007 (version 9.2.4) computer model. Nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>) emissions  
 18 were quantified using the California Climate Action Registry (2006) direct emissions  
 19 factors for mobile combustion. Total daily mileage of the proposed Lakeview  
 20 Promenade Project was calculated in URBEMIS 2007 and extrapolated out to derive total  
 21 annual mileage. Emission rates were based on the vehicle mix output generated by  
 22 URBEMIS and the emission factors found in the California Climate Action Registry  
 23 General Reporting Protocol.

24 Equations to determine total emission from Fuel Use in Motor Vehicles include:

$\text{CH}_4 \text{ Emission (metric tons) =}$ $\text{Emission Factor by Vehicle and Fuel Type (g/mi)} \times \text{Annual Mileage (mi)} \times 0.000001 \text{ metric tons/g}$
$\text{N}_2\text{O Emission (metric tons) =}$ $\text{Emission Factor by Vehicle and Fuel Type (g/mi)} \times \text{Annual Mileage (mi)} \times 0.000001 \text{ metric tons/g}$

30 It should be noted that one of the limitations to a quantitative analysis is that emission  
 31 models such as URBEMIS evaluate aggregate emissions and do not demonstrate, with  
 32 respect to a global impact, how much of these emissions are “new” emissions  
 33 specifically attributable to the proposed project in question. For most projects, the main  
 34 contribution of GHG emissions is from motor vehicles, but the quantity of these  
 35 emissions appropriately characterized as “new” is uncertain. New projects do not create  
 36 new drivers because drivers typically relocate from a different geographical area. Some  
 37 mixed use and transportation-oriented projects can actually reduce the number of  
 38 vehicle miles traveled that a person drives.

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1 c. Quantification of GHG Emissions

2 i. Operational Emission

3 Development of the proposed project at buildout would consume approximately  
 4 2,915,079 kWh/year (please see Appendix C for calculations). The generation of  
 5 electricity through combustion of fossil fuels typically yields carbon dioxide, and to a  
 6 smaller extent nitrous oxide and methane. As discussed above, annual electricity  
 7 emission can be calculated using the California Climate Action Registry Protocols.  
 8 Carbon dioxide emission estimates using the URBEMIS model also take into account  
 9 emissions from other operational sources such as natural gas use for space heating.  
 10 Table IVG-1 shows the estimated operational emissions of GHGs from the proposed  
 11 Lakeview Promenade Project.

**Table IVG-1 Estimated Annual Operational Emissions of Greenhouse Gases**

Emission Source	Annual Emissions	
	Emissions	CO <sub>2</sub> e
Carbon Dioxide (CO <sub>2</sub> ) <sup>1</sup>	1,996.83 tons (short, US)	1,811.49 metric tons CO <sub>2</sub> e
Methane (CH <sub>4</sub> ) <sup>2</sup>	0.00886 metric tons	0.204 metric tons CO <sub>2</sub> e
Nitrous Oxide (N <sub>2</sub> O) <sup>2</sup>	0.00489 metric tons	1.447 metric tons CO <sub>2</sub> e
<b>Project Total</b>		<b>1,813 metric tons CO<sub>2</sub>e</b>

Source:

1 Operational Emissions from URBEMIS 2007 (version 9.2.4).

2 California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 2.2, March 2007, page 30-35.

See Appendix C for calculations

12 ii. Transportation Emission

13 Mobile source GHG emissions were estimated using the average daily trips estimate  
 14 generated and the total vehicle miles traveled estimated in URBEMIS 2007 (v. 9.2.4). The  
 15 URBEMIS model estimates that the Lakeview Promenade Project could generate up to  
 16 trips, which translates to daily vehicle miles, or annual miles.

**Table IVG-2 Estimated Annual Mobile Emissions of Greenhouse Gases**

Emission Source	Annual Emissions	
	Emissions	CO <sub>2</sub> e
Carbon Dioxide (CO <sub>2</sub> ) <sup>1</sup>	6,320 tons (short, US)	5,734 metric tons CO <sub>2</sub> e
Methane (CH <sub>4</sub> ) <sup>2</sup>	5.68 metric tons	130 metric tons CO <sub>2</sub> e
Nitrous Oxide (N <sub>2</sub> O) <sup>2</sup>	6.28 metric tons	1,859 metric tons CO <sub>2</sub> e
<b>Project Total</b>		<b>7,722 metric tons CO<sub>2</sub>e</b>

Source:

1 Operational Emissions from URBEMIS 2007 (version 9.2.4).

2 California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 2.2, March 2007, page 30-35.

See Appendix C for calculations

1 *iii. Combined Stationary and Mobile Source Emissions*

2 Table IVG-3 lists the combined operational and mobile emission sources for the  
 3 proposed project. Using the numbers described above, the combined stationary and  
 4 mobile source greenhouse gas emissions for the proposed project total approximately  
 5 7,722 metric tons per year in carbon dioxide equivalency units. This total represents  
 6 roughly 0.0016% of California’s total 2004 emissions of 492 million metric tons. These  
 7 emission projections indicate the majority of the Lakeview Promenade Project GHG  
 8 emissions are associated with vehicle miles traveled (81%), and to a lesser extent from  
 9 electricity consumption (19%). As stated earlier, there is no regulatory standard or  
 10 guideline by a federal, state, or regional agency against which to measure carbon  
 11 dioxide, methane, or nitrous oxide emissions to determine whether the emissions would  
 12 directly or cumulatively result in a significant global climate change impact.

**Table IVG-3. Combined Annual Emissions of Greenhouse Gases**

<i>Emission Source</i>	<i>Annual Emissions</i>
Operational	1,813 metric tons CO <sub>2</sub> e
Mobile	7,722 metric tons CO <sub>2</sub> e
<b>Lakeview Promenade Total</b>	<b>9,535 metric tons CO<sub>2</sub>e</b>

Sources:

Operational Emissions from URBEMIS 2007 (version 9.2.4).

California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 2.2, March 2007.

See Appendix C for calculations

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1 *d. Consistency with Climate Action Team Strategies*

2 In the absence of quantitative emissions thresholds, consistency with adopted programs  
 3 and policies can be used to examine the significance of project impacts from a  
 4 cumulative perspective. The Climate Action Team, established by Executive Order S-3-  
 5 058, has recommended strategies to reduce GHG emissions at a statewide level to meet  
 6 the goals of the Executive Order. The proposed project contains several components  
 7 that would result in reduced emissions of HFC, reduced solid waste, reduced energy  
 8 usage, increased energy efficiency, and implementation of green building design.  
 9 Achievement of these measures would help reduce the GHG emissions associated with  
 10 the proposed Lakeview Promenade Project. Table IVG-4 lists the proposed project  
 11 elements that are consistent with Climate Action Team Strategies.

**Table IVG-4. City Standards to Achieve Climate Action Team Strategies**

Strategy	Project Element
<p><b>Achieve 50 percent Statewide Recycling Goal:</b> Achieving the State’s 50 percent waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. A diversion rate of 48 percent has been achieved on a statewide basis. Therefore, a 2 percent additional reduction is needed.</p>	<p>This reduction in project-related climate change emissions would be achieved through the City’s existing curbside recycling program that would service proposed residential and commercial land uses.</p>
<p><b>Water Use Efficiency:</b> 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 greenhouse gas emissions.</p>	<p>This reduction in project-related greenhouse gas emissions would result from the project’s implementation of existing City ordinance requirements including the provision of low flow appliances (i.e., toilets, dishwashers, shower heads, washing machines, etc.) and drought resistant landscaping.</p>
<p><b>Building Energy Efficiency Standards in Place and in Progress:</b> Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).</p>	<p>The project would comply with current Title 24 Standards to achieve a greater reduction in proposed project building space heating, cooling and water heating energy</p>
<p><b>Appliance Energy Efficiency Standards in Place and in Progress:</b> Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California).</p>	<p>The regulatory process ensures that appliances purchased by proposed project residents and commercial tenants would be energy efficient, meeting Public Resources Code 25402 requirements.</p>

**Table IVG-4. City Standards to Achieve Climate Action Team Strategies**

Strategy	Project Element
<p><b>Smart Land Use and Intelligent Transportation Systems (ITS):</b> Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors.</p>	<p>The Lakeview Promenade Project would provide multi-family residential development in a mixed use setting, consistent with Smart Growth principles. Specifically, it would implement the following strategies:</p> <ul style="list-style-type: none"> <li>• promote jobs/housing proximity and transit-oriented development;</li> <li>• encourage mixed use multifamily residential/commercial development along a transit corridor; and</li> <li>• comprehensive, integrated, multimodal/intermodal transportation planning.</li> </ul>
<p><b>California Solar Initiative:</b> Installation of 1 million solar roofs or an equivalent 3,000 MW by 2017 on homes and businesses; increased use of solar thermal systems to offset the increasing demand for natural gas; use of advanced metering in solar applications; and creation of a funding source that can provide rebates over 10 years through a declining incentive schedule.</p>	<p>The City of Santa Maria has not at this time enacted an ordinance that would require projects to install photovoltaic cells or other solar options.</p>

*Source: State of California, Environmental Protection Agency, Climate Action Team, 2006.*