

## **H. GREENHOUSE GAS EMISSIONS**

This section provides a description of global climate change, greenhouse gas (GHG) emissions, the existing regulatory framework surrounding GHG emissions, and an analysis of the potential impacts related to GHGs associated with implementation of the proposed project. The GHG emissions associated with construction and operation of the proposed project are quantified and analyzed in the context of the evolving regulatory environment.

### ***ENVIRONMENTAL SETTING***

#### **GREENHOUSE GAS EMISSION SOURCES**

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the earth, similar to a greenhouse. The accumulation of GHGs has been implicated as a driving force for global climate change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities that alter the composition of the global atmosphere.

Individual projects contribute to the cumulative effects of climate change by emitting GHGs during demolition, construction, and operational phases. The primary GHGs associated with land use development projects are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). While the presence of the primary GHGs in the atmosphere are naturally occurring, CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are largely emitted from human activities, accelerating the rate at which these compounds accumulate in the earth's atmosphere. CO<sub>2</sub> is the "reference gas" for GHG emissions, meaning that emissions of total GHGs are typically reported in "carbon dioxide-equivalent" (CO<sub>2</sub>e). Emissions of CO<sub>2</sub> are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs, with much greater heat-absorption potential than CO<sub>2</sub>, include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

There is international scientific consensus that human-caused increases in GHGs have contributed and will continue to contribute to global warming, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include, but are not limited to, a decrease in snow pack, sea level rise, more extreme heat days per year, more high ozone days, increased

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frequency and intensity of wildfires, and more drought years.<sup>1</sup> Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

The Air Resources Board (ARB) estimated that in 2006 California produced about 484 million gross metric tons of CO<sub>2</sub>e (MMTCO<sub>2</sub>E), or about 535 million U.S. tons.<sup>2</sup> The ARB found that transportation is the source of 38 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 22 percent and industrial sources at 20 percent. Commercial and residential fuel use (primarily for heating) accounted for 9 percent of GHG emissions.<sup>3</sup> In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) and the industrial and commercial sectors are the two largest sources of GHG emissions, each accounting for approximately 36% of the Bay Area's 95.8 MMTCO<sub>2</sub>E emitted in 2007.<sup>4</sup> Electricity generation accounts for approximately 16% of the Bay Area's GHG emissions followed by residential fuel usage at 7%, off-road equipment at 3%, and agriculture at 1%.<sup>5</sup>

## **REGULATORY SETTING**

### **FEDERAL**

#### **Supreme Court Ruling on California Clean Air Act Waiver**

The EPA is the federal agency responsible for implementing the Clean Air Act (CAA). The Supreme Court of the United States ruled on April 2, 2007 that CO<sub>2</sub> is an air pollutant as defined under the CAA, and that the EPA has the authority to regulate emissions of GHGs. However, there are no federal regulations or policies regarding GHG emissions applicable to the proposed project. See AB 1493 for further information on the California Clean Air Act (CCAA) Waiver.

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<sup>1</sup> California Natural Resources Agency, 2009, *2009 California Climate Adaptation Strategy Discussion Draft*. Sacramento, CA, p. 48–55

<sup>2</sup> California Air Resources Board (ARB), *California Greenhouse Gas Inventory for 2000-2006—by Category as Defined in the Scoping Plan*, Available at: [http://www.arb.ca.gov/cc/inventory/data/tables/ghg\\_inventory\\_scopingplan\\_2009-03-13.pdf](http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_2009-03-13.pdf), Accessed: March 2, 2010.

<sup>3</sup> Ibid.

<sup>4</sup> Bay Area Air Quality Management District, *Source Inventory of Bay Area Greenhouse Gas Emissions: Base Year 2007, Updated: February 2010*, Available at: [http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/regionalinventory2007\\_2\\_10.ashx](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/regionalinventory2007_2_10.ashx), Accessed: March 2, 2010.

<sup>5</sup> Ibid.

### **Energy and Independence Security Act of 2007 and Corporate Average Fuel Economy Standards**

The Energy and Independence Security Act of 2007 (EISA) amended the Energy Policy and Conservation Act (EPCA) to further reduce fuel consumption and expand production of renewable fuels. The EISA's most significant amendment includes a statutory mandate for the National Highway Traffic Safety Administration (NHTSA) to set passenger car corporate average fuel economy (CAFE) standards for each model year (MY) at the maximum feasible level. This statutory mandate also eliminates the old default CAFE standard of 27.5 miles per gallon (mpg). The EISA requires that CAFE standards for MY 2011-2020 be set sufficiently high to achieve the goal of an industry-wide passenger car and light-duty truck average CAFE standard of 35 mpg. The rule making for this goal, per President Obama's request, has been divided into two separate parts. The first part, which was published in the Federal Register in March 2009, includes CAFE standards for MY 2011 in order to meet the statutory deadline (i.e., March 30, 2009). The second part of the rulemaking applies to MY 2012 and subsequent years. These would be the maximum CAFE standards feasible under the limits of the EPCA and EISA. The NHTSA and the EPA are currently working in coordination to develop a national program targeting MY 2012–2016 passenger cars and light trucks.

### **EPA Actions**

In response to the mounting issue of climate change, the EPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

#### *Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the Clean Air Act*

On April 23, 2009, the EPA published their Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding) in the Federal Register. The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of the EPA) should regulate and develop standards for “emission[s] of air pollution from any class or classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare.” The proposed rule addresses Section 202(a) in two distinct findings. The first addresses whether or not the concentrations of the six key GHGs (i.e., CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) in the atmosphere threaten the public health and welfare of current and future generations. The second addresses whether or not the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore increase the threat of climate change.

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The Administrator proposed the finding that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in “high atmospheric levels” of GHG emissions, which are very likely responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wild fires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also proposed the finding that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. The proposed finding cites that in 2006, motor vehicles were the second largest contributor to domestic GHG emissions (24 percent of total) behind electricity generation. Furthermore, in 2005, the U.S. was responsible for 18 percent of global GHG emissions. Therefore, GHG emissions from motor vehicles and motor vehicle engines were found to contribute to air pollution that endangers public health and welfare.

On December 7, 2009, the EPA finalized its decision that GHG emissions from motor vehicles constitute an “endangerment” under the CAA. This finding by the EPA allows for the establishment of GHG emissions standards for new motor vehicles.

### **STATE**

The California Air Resources Board (ARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the CCAA, which was adopted in 1988.

Various statewide and local initiatives to reduce the state’s contribution to GHG emissions have raised awareness that, even though the various contributors to, and consequences of, global climate change are not yet fully understood, global climate change is under way, and there is a real potential for severe, adverse environmental, social, and economic effects in the long term. Because every nation emits GHGs and therefore makes an incremental cumulative contribution to global climate change, cooperation on a global scale will be required to reduce the rate of GHG emissions to a level that can help to slow or stop the human-caused increase in average global temperatures and associated changes in climatic conditions.

### **Assembly Bill 1493**

In 2002, then-Governor Gray Davis signed AB 1493, which required that ARB develop and adopt, by January 1, 2005, regulations that achieve “the maximum feasible reduction of GHGs emitted by passenger

vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the state.”

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

In December 2004, a group of car dealerships, automobile manufacturers, and trade groups representing automobile manufacturers filed suit against ARB to prevent enforcement of 13 CCR Sections 1900 and 1961 as amended by AB 1493 and 13 CCR 1961.1 (*Central Valley Chrysler-Jeep et al. v. Catherine E. Witherspoon, in Her Official Capacity as Executive Director of the California Air Resources Board et al.*). The auto-makers’ suit in the U.S. District Court for the Eastern District of California contended California’s implementation of regulations that, in effect, regulate vehicle fuel economy violates various federal laws, regulations, and policies.

On December 12, 2007, the Court found that if California receives appropriate authorization from the EPA (the last remaining factor in enforcing the standard), these regulations would be consistent with, and have the force of, federal law, thus rejecting the automakers’ claim. This authorization to implement more stringent standards in California was requested in the form of a CAA Section 209, subsection (b) waiver in 2005. Since that time, the EPA failed to act on granting California authorization to implement the standards. Governor Arnold Schwarzenegger and Attorney General Edmund G. Brown filed suit against the EPA for the delay. In December 2007, EPA Administrator Stephen Johnson denied California’s request for the waiver to implement AB 1493. Johnson cited the need for a national approach to reducing GHG emissions, the lack of a “need to meet compelling and extraordinary conditions,” and the emissions

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reductions that would be achieved through the Energy Independence and Security Act of 2007 as the reasoning for the denial.<sup>6</sup>

The State of California filed suit against the EPA for its decision to deny the CAA waiver. The recent change in presidential administration directed the EPA to reexamine its position for denial of California's CAA waiver and for its past opposition to GHG emissions regulation. California received the waiver on June 30, 2009.

#### **Executive Order S-3-05**

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

#### **Assembly Bill 32**

In 2006, California passed the California Global Warming Solutions Act of 2006 (California Health and Safety Code Division 25.5, Sections 38500 et seq. [AB 32]), which requires ARB to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

AB 32 establishes a timetable for ARB to adopt emission limits, rules, and regulations designed to achieve the intent of the Act. In order to meet these goals, California must reduce its GHGs by approximately 30 percent below projected 2020 business-as-usual emissions levels or about 15 percent from today's levels.<sup>7</sup> In December 2008, ARB adopted their *Climate Change Scoping Plan*, which estimates a reduction of approximately 174 million metric tons of CO<sub>2</sub> equivalent (MMT CO<sub>2</sub>e) from the state's projected 2020 GHG emissions to achieve the AB 32 2020 target. Approximately one-third of the emissions reductions strategies fall within the transportation sector and include the following: California Light-Duty Vehicle GHG standards, the Low Carbon Fuel Standard, Regional Transportation-Related GHG Targets, Vehicle Efficiency Measures, Goods Movement, Medium and Heavy-Duty Vehicle

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<sup>6</sup> Office of the White House. 2009. *Memorandum for the Administrator of the Environmental Protection Agency*. Available at: [http://www.whitehouse.gov/the\\_press\\_office/Presidential\\_Memorandum\\_EPA\\_Waiver/](http://www.whitehouse.gov/the_press_office/Presidential_Memorandum_EPA_Waiver/), Accessed August 2009.

<sup>7</sup> California Air Resources Board (ARB), 2008, *Climate Change Scoping Plan*, Available at: [http://www.arb.ca.gov/cc/scopingplan/document/adopted\\_scoping\\_plan.pdf](http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf), Accessed: September 2009, p. ES-1.

Efficiency Measures, and High Speed Rail. These measures are expected to reduce GHG emissions by 62.3 MMT CO<sub>2</sub>e.<sup>8</sup> Emissions from the electricity sector are expected to reduce another 49.7 MMT CO<sub>2</sub>e.<sup>9</sup> Reductions from the electricity sector include Energy Efficiency (e.g., appliances, technology, policy, and standards), Renewable Portfolio Standard (33 percent renewable energy by 2020), and the Million Solar Roofs Program (AB 1470). Other reductions are expected from industrial sources, agriculture, forestry, recycling and waste, water, and emissions reductions from cap-and-trade programs. State and local government actions and regional GHG targets are also expected to yield GHG reductions. Measures that could become effective during implementation pertain to construction-related equipment and building and appliance energy efficiency. Some proposed measures will require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify. Additionally, some emissions reduction strategies may require their own environmental review under CEQA or the National Environmental Policy Act (NEPA). Applicable measures that are ultimately adopted will become effective during implementation of the proposed project and the proposed project could be subject to these requirements, depending on the proposed project's timeline. It should be noted that ARB has not determined the level of GHG emission reductions recommended for local government operations. The *Climate Change Scoping Plan* includes an estimate of GHG emission reductions from local land-use changes; however, these emission reductions are not intended to represent the Senate Bill (SB) 375's regional reduction targets, which are discussed further below. The regional targets and associated GHG emission reductions for SB 375 will be established by ARB in collaboration with the Regional Target Advisory Committee and a public consultation process with metropolitan planning organizations (MPO) and other stakeholders.

#### **Executive Order S-1-07**

Executive Order S-1-07, which was signed by Governor Schwarzenegger in 2007, proclaims that the transportation sector is the main source of GHG emissions in California, at over 40 percent of statewide emissions. It establishes a goal that the carbon intensity of transportation fuels sold in California should be reduced by a minimum of 10 percent by 2020. This order also directed ARB to determine if this Low Carbon Fuel Standard could be adopted as a discrete, early-action measure after meeting the mandates in AB 32. ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

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<sup>8</sup> Ibid, p. 17.

<sup>9</sup> Ibid, p. 17.

### **Senate Bill 1078 and 107 and Executive Order S-14-08 and S-21-09**

SB 1078 (Chapter 516, Statutes of 2002) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (Chapter 464, Statutes of 2006) changed the target date to 2010. In November 2008, Governor Schwarzenegger signed Executive Order S-14-08, which expands the state's Renewable Energy Standard to 33 percent renewable power by 2020. Governor Schwarzenegger plans to propose legislative language that will codify the new higher standard.<sup>10</sup> In September 2009, Governor Schwarzenegger continued California's commitment to the Renewable Energy Standard by signing Executive Order S-21-09, which directs ARB under its AB 32 authority to enact regulations to help the state meet its Renewable Energy Standard goal of 33 percent by 2020.

### **Senate Bill 97**

SB 97, signed August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. This bill directs the California Office of Planning and Research (OPR) to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA by July 1, 2009. The California Natural Resources Agency is required to certify or adopt those guidelines by January 1, 2010. On April 13, 2009, OPR submitted to the Secretary for Natural Resources its proposed amendments to the state *CEQA Guidelines* for GHG emissions, as required by SB 97. These *CEQA Guidelines* amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in draft CEQA documents. On December 30, 2009, the Natural Resources Agency adopted the *CEQA Guidelines* amendments, as required by SB 97. The amendments have been reviewed by the Office of Administrative Law (OAL) and on February 16, 2010, were transmitted to the Secretary of State for inclusion into the California Code of Regulations (CCR). The amendments became effective March 18, 2010. OPR's *CEQA Guidelines* amendments have been incorporated into this analysis accordingly.

### **Senate Bill 375**

SB 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocations. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). ARB, in consultation with MPOs, will provide each affected region with reduction targets

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<sup>10</sup> Office of the Governor, 2008, *Press Release: Governor Schwarzenegger Advances State's Renewable Energy Development*, Available at: <http://gov.ca.gov/index.php?/press-release/11073>, Accessed: August 2009.

for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every 8 years, but can be updated every 4 years, if advancements in emissions technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

This bill also extends the minimum time period for the Regional Housing Needs Allocation (RNHA) cycle from 5 years to 8 years for local governments located within an MPO that meets certain requirements. City and county land use policies (including general plans) are not required to be consistent with the RTP (and associated SCS or APS). However, new provisions of CEQA would incentivize qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

## **LOCAL**

### **Bay Area Air Quality Management District Climate Protection Program**

The Bay Area Air Quality Management District (BAAQMD) established a climate protection program to reduce pollutants that contribute to global climate change and affect air quality in the San Francisco Bay Area Air Basin (SFBAAB). The climate protection program includes measures that promote energy efficiency, reduce vehicle miles traveled, and develop alternative sources of energy, all of which assist in reducing emissions of GHGs and in reducing air pollutants that affect the health of residents. BAAQMD also seeks to support current climate protection programs in the region and to stimulate additional efforts through public education and outreach, technical assistance to local governments and other interested parties, and promotion of collaborative efforts among stakeholders. The BAAQMD is currently in the process of updating its *CEQA Guidelines*, which includes proposed significance thresholds for GHG emissions. The proposed GHG significance thresholds are discussed in further detail in the Significance Thresholds section.

### **City and County of San Francisco Environmental Protection Plans, Policies, and Programs**

San Francisco has a history of environmental protection policies and programs aimed at improving the quality of life for San Francisco's residents and reducing impacts on the environment. The following plans, policies, and legislation demonstrate San Francisco's continued commitment to environmental protection and are relevant to GHG emissions that would be generated by the proposed project.

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###### *Transit First Policy*

In 1973, San Francisco instituted the Transit First Policy, which added Article 8A, Section 8A.115 to the City Charter with the goal of reducing the city's reliance on freeways and meeting transportation needs by emphasizing mass transportation. The Transit First Policy gives priority to public transit investments; adopts street capacity and parking policies to discourage increased automobile traffic; and encourages the use of transit, bicycling, and walking rather than use of single-occupant vehicles.

###### *San Francisco Sustainability Plan*

In July 1997, the Board of Supervisors endorsed the Sustainability Plan for the City and County of San Francisco establishing sustainable development as a fundamental goal of municipal public policy.

###### *The Electricity Resource Plan (Revised December 2002)*

San Francisco adopted the Electricity Resource Plan to help address growing environmental health concerns in San Francisco's southeast community, the site of two power plants. The plan presents a framework for assuring a reliable, affordable, and renewable source of energy for the future of San Francisco.

###### *The Climate Action Plan for San Francisco*

In February 2002, the San Francisco Board of Supervisors passed the Greenhouse Gas Emissions Reduction Resolution (Number 158-02) that set a goal for the City and County of San Francisco to reduce GHG emissions to 20 percent below 1990 levels by the year 2012. In September 2004, the San Francisco Department of the Environment and the Public Utilities Commission published the *Climate Action Plan for San Francisco: Local Actions to Reduce Greenhouse Gas Emissions*.<sup>11</sup> The Climate Action Plan provides the context of climate change in San Francisco and examines strategies to meet the 20 percent GHG reduction target. Although the Board of Supervisors has not formally committed the City to perform the actions addressed in the plan, and many of the actions require further development and commitment of resources, the plan serves as a blueprint for GHG emission reductions, and several actions have been implemented or are now in progress.

###### *San Francisco Municipal Transportation Agency's Zero Emissions 2020 Plan*

The Zero Emissions 2020 plan focuses on the purchase of cleaner emission transit buses including hybrid diesel-electric buses. Under this plan hybrid buses will replace the oldest diesel buses, some dating back

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<sup>11</sup> San Francisco Department of the Environment and San Francisco Public Utilities Commission (SFPUC), 2004, *Climate Action Plan for San Francisco*, Local Actions to Reduce Greenhouse Emissions, September.

to 1988. The hybrid buses emit 95 percent less PM (soot) than the buses they replace, they produce 40 percent less NO<sub>x</sub>, and they reduce GHGs by 30 percent.

### *Zero Waste*

In 2004, the City and County of San Francisco committed to a goal of diverting 75 percent of its waste from landfills by 2010, with the ultimate goal of zero waste by 2020. San Francisco currently recovers 72 percent of discarded material.

### *Construction and Demolition Debris Recovery Ordinance*

In 2006 the City and County of San Francisco adopted Ordinance No. 27-06, requiring all construction and demolition debris to be transported to a registered facility that can divert a minimum of 65 percent of the material from landfills. This ordinance applies to all construction, demolition, and remodeling projects within the city.

### *Greenhouse Gas Reduction Ordinance*

In May 2008, the City and County of San Francisco adopted an ordinance amending the San Francisco Environment Code to establish city GHG emission targets and departmental action plans, to authorize the Department of the Environment to coordinate efforts to meet these targets, and to make environmental findings. The ordinance establishes the following GHG emissions reduction limits for San Francisco and the target dates to achieve them:

- Determine 1990 city GHG emissions by 2008, the baseline level with reference to which target reductions are set;
- Reduce GHG emissions by 25 percent below 1990 levels by 2017;
- Reduce GHG emissions by 40 percent below 1990 levels by 2025; and
- Reduce GHG emissions by 80 percent below 1990 levels by 2050.

The ordinance also specifies requirements for City departments to prepare Climate Action Plans that assess, and report to the Department of the Environment, GHG emissions associated with their department's activities and activities regulated by them, and prepare recommendations to reduce emissions. As part of this, the San Francisco Planning Department is required to: (1) update and amend the City's applicable *General Plan* elements to include the emissions reduction limits set forth in this ordinance and policies to achieve those targets; (2) consider a project's impact on the City's GHG reduction limits specified in this ordinance as part of its review under CEQA; and (3) work with other City departments to enhance the "transit first" policy to encourage a shift to sustainable modes of transportation thereby reducing emissions and helping to achieve the targets set forth by this ordinance.

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On July 1, 2008, the San Francisco Public Utilities Commission (SFPUC) launched its “GoSolarSF” program to San Francisco’s businesses and residents, offering incentives in the form of a rebate program that could pay for approximately half the cost of installation of a solar power system and more to those qualifying as low-income residents.

*City and County of San Francisco’s Green Building Ordinance*

On August 4, 2008, Mayor Gavin Newsom signed into law San Francisco’s Green Building Ordinance for newly constructed residential and commercial buildings and renovations to existing buildings. The ordinance specifically requires newly constructed commercial buildings over 5,000 square feet, residential buildings over 75 feet in height, and renovations on buildings over 25,000 square feet to be subject to an unprecedented level of LEED® and green building certifications, which makes San Francisco the city with the most stringent green building requirements in the nation. Cumulative benefits of this ordinance includes reducing CO<sub>2</sub> emissions by 60,000 tons, saving 220,000 megawatt hours of power, saving 100 million gallons of drinking water, reducing waste and storm water by 90 million gallons of water, reducing construction and demolition waste by 700 million pounds, increasing the valuations of recycled materials by \$200 million, reducing automobile trips by 540,000, and increasing green power generation by 37,000 megawatt hours.<sup>12</sup>

The Green Building Ordinance also continues San Francisco’s efforts to reduce the City’s GHG emissions to 20 percent below 1990 levels by the year 2012, a goal outlined in the City’s 2004 Climate Action Plan. In addition, by reducing San Francisco’s emissions, this ordinance furthers the State’s efforts to reduce GHG emissions statewide as mandated by the California Global Warming Solutions Act of 2006.

The City has also passed ordinances to reduce waste from retail and commercial operations. Ordinance 295-06, the Food Waste Reduction Ordinance, prohibits the use of polystyrene foam disposable food serviceware and requires biodegradable/compostable or recyclable food serviceware by restaurants, retail food vendors, city departments and city contractors. Ordinance 81-07, the Plastic Bag Reduction Ordinance, requires stores located within the City and County of San Francisco to use compostable plastic, recyclable paper, and/or reusable checkout bags.

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<sup>12</sup> These findings are contained within the final Green Building Ordinance, signed by the Mayor on August 4, 2008.

The San Francisco Planning Department and DBI have also developed a streamlining process for Solar Photovoltaic Permits and priority permitting mechanisms for projects pursuing LEED® Gold Certification.

The City's Planning Code reflects the latest smart growth policies and includes: electric vehicle refueling stations in City parking garages, bicycle storage facilities for commercial and office buildings, and zoning that is supportive of high density mixed-use infill development. The City's more recent area plans, such as Rincon Hill and the Market and Octavia Area Plan, provide transit-oriented development policies that allow for neighborhood-oriented retail services and where off-street parking is limited to accessory parking spaces.<sup>13</sup> At the same time there is also a community-wide focus on ensuring San Francisco's neighborhoods are "livable" neighborhoods, including the Better Streets Plan that would improve streetscape policies throughout the City, the Transit Effectiveness Plan that aims to improve transit service, and the Bicycle Plan. All of these plans are intended to promote alternative transportation options for residents and visitors.

#### *City and County of San Francisco Commuter Benefits Ordinance*

The City and County of San Francisco adopted an ordinance, effective January 19, 2009, that allows commuters to deduct up to \$230 per month, pre-tax, for transit and vanpool expenses. These commuter benefits must be offered by any employer operating within the City and County of San Francisco with 20 employees or more. In order to qualify for these benefits, employees must work at least 10 hours per week averaged over a calendar month. Although not required by the ordinance, employers can offer the commuter benefits to employees that work less than 10 hours per week average over a month.

#### *City and County of San Francisco Mandatory Recycling and Composting Ordinance*

The City and County of San Francisco adopted an ordinance, effective October 21, 2009, that requires all business and residences to compost food scraps and biodegradable products. Green, blue, and black bins will be distributed to residents and businesses to sort their food/biodegradable waste, recycling, and trash, respectively. Businesses and residences that do not comply with the ordinance are subject to fines depending on the level and duration of noncompliance. A moratorium on fines will be in place until July 2011 for owners and tenants of multi-family buildings and multi-tenant commercial buildings to allow time to adjust to the mandatory recycling and composting.

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<sup>13</sup> See City of San Francisco Planning Code Sections 206.4 and 155.

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Each of the policies and ordinances discussed above include measures that would decrease the amount of GHG emitted into the atmosphere and decrease San Francisco's overall contribution to climate change. These programs are collectively referred to as San Francisco's GHG Reduction Strategy.

## **IMPACTS**

### **SIGNIFICANCE THRESHOLDS**

#### **CEQA Guidelines Appendix G Checklist Questions**

With respect to GHG emissions, OPR has updated Appendix G of the state *CEQA Guidelines* to address impacts of GHG emissions, as directed by SB 97 (2007). These amendments became effective March 18, 2010. It should be noted that although the amendments provide criteria to evaluate a projects GHG emissions, the amendments do not establish quantitative significance thresholds. According to the revised Appendix G of the *CEQA Guidelines*, an impact related to global climate change is considered significant if the proposed project would:

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

### **ANALYSIS METHODOLOGY**

OPR's Technical Advisory states that, "Although climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment. CEQA authorizes reliance on previously approved plans and mitigation programs that have adequately analyzed and mitigated GHG emissions to a less-than-significant level as a means to avoid, or substantially reduce the cumulative impact of a project." OPR also states, "In determining whether a proposed project's emissions are cumulatively considerable, the lead agency must consider the impact of the project when viewed in connection with the effects of "past, current, and probable future projects."<sup>14</sup>

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<sup>14</sup> Governor's Office of Planning and Research, 2008, *Technical Advisory: CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review, June 19*. Available at: <http://opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf>, Last updated June 19, 2008, Accessed: September 2009, p. 5.

Direct and indirect GHG emissions associated with the proposed project are analyzed according to the recommendations of OPR's Technical Advisory.<sup>15</sup> In addition to GHG sources recommended to be quantified by the Technical Advisory (i.e., construction, electricity consumption, water consumption, area sources, mobile sources), this analysis also quantifies the solid waste-related GHG emissions associated with the proposed project. In the Technical Advisory, OPR recommends that "lead agencies under CEQA make a good-faith effort, based on available information, to estimate the quantity of GHG emissions that would be generated by a proposed project, including the emissions associated with vehicular traffic, energy consumption, water usage, solid waste disposal, and construction activities, to determine whether the impacts have the potential to result in a project or cumulative impact and to mitigate the impacts where feasible mitigation is available."

In addition, it should be noted that GHG emissions associated with construction and operation of the proposed project would predominantly be in the form of CO<sub>2</sub>. While emissions of other GHGs, such as CH<sub>4</sub> and N<sub>2</sub>O, are important with respect to global climate change, the proposed project is not expected to emit substantial quantities of GHGs other than CO<sub>2</sub>, even when factoring in the relatively larger global warming potential of CH<sub>4</sub> and N<sub>2</sub>O. This is because most emissions from the proposed project would be associated with vehicular emissions (i.e., mobile-source emissions). Although vehicles also emit small quantities of N<sub>2</sub>O and CH<sub>4</sub> (even when considering their higher global warming potential), the primary GHG emitted during fuel combustion is CO<sub>2</sub>. Both State law and the EPA's proposed endangerment finding also include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride as important GHGs, as discussed above in the regulatory setting. However, these compounds are typically emitted by industrial processes and are not applicable to the proposed project. Thus, project-generated emissions of CO<sub>2</sub>e, which includes emissions of CH<sub>4</sub> and N<sub>2</sub>O, were used as a proxy for total GHG emissions, unless otherwise noted.

Model assumptions used to estimate construction-related GHG emissions are similar to those described for Impact AQ-1 in Section IV.G, Air Quality. Operational area- and mobile-source emissions were estimated using URBEMIS2007 version 9.2.4.<sup>16</sup> Modeling was based on project-specific data (e.g., size

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<sup>15</sup> Governor's Office of Planning and Research, 2008, *Technical Advisory- CEQA and Climate Change: Addressing Climate Change to the California Environmental Quality Act (CEQA) Review*, June, Available at: [www.opr.gov](http://www.opr.gov), Accessed: July 2009.

<sup>16</sup> Rimpo and Associates, op. cit.

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and type of proposed use) and vehicle trip information from the traffic analysis prepared for this project.<sup>17</sup> Indirect emissions associated with energy consumption were estimated using electricity consumption rates from the CEC's *California Energy Demand 2000–2010* report<sup>18</sup> and an emission factor for electricity consumption from the California Climate Action Registry's (CCAR) *General Reporting Protocol*, Version 3.1.<sup>19</sup> In addition, indirect GHG emissions associated with the consumption of water during project operations were calculated based on the estimated level of electricity required to convey, treat, and distribute the project's estimated total water usage and the aforementioned emission factor for electricity consumption from CCAR. Specifically, the water demand of the existing and proposed land uses on the project site was estimated using methodologies from published literature and case studies,<sup>20,21,22,23</sup> and the electricity consumption associated with that water consumption was estimated using an electricity consumption rate from the CEC's *California Energy Demand 2000–2010* report.<sup>24</sup> Landfill emissions associated with the project's waste disposal were calculated using waste disposal rates from the CalRecycle and landfill emission factors from the Altamont Landfill.<sup>25,26</sup>

### **PROPOSED PROJECT<sup>27</sup>**

The existing Fairmont Hotel complex voluntarily implements business practices to reduce operational GHG emissions associated with electricity consumption, natural gas consumption, and water consumption. The following practices and design features are provided for informational purposes and were not used to calculate GHG emission reductions for this analysis. The hotel does not launder bed sheets after one night unless requested by the guest. This practice reduces the hotel's water consumption

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<sup>17</sup> LCW Consulting, 2009, *950 Mason Street Transportation Study*, December 24, op. cit., pp. 24–26, 29. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case No. 2008.0081E.

<sup>18</sup> California Energy Commission (CEC), 2000, *California Energy Demand Staff Report P200-00-002*, pp. 15, 18.

<sup>19</sup> California Climate Action Registry (CCAR), 2009, *General Reporting Protocol v 3.1 January 2009*, pp. 94–95.

<sup>20</sup> Gleick, Peter, 2003, *Waste Not, Want Not: The Potential for Urban Water Conservation in California*. Pacific Institute, November, Appendix C p. 1–14.

<sup>21</sup> Hanak, Ellen, 2005, *Water Growth: California's New Frontier*. Public Policy Institute of California, p. 18.

<sup>22</sup> Southern California Association of Governments (SCAG), 2001, *Employment Density Summary Report*, pp. 15–16.

<sup>23</sup> Seattle Public Utilities, 2002, *Hotel Water Conservation prepared by O'Neill & Siegelbaum and The RICE Group*, p. 4.

<sup>24</sup> California Energy Commission (CEC), 2000, *California Energy Demand Staff Report P200-00-002*, pp. 15, 18.

<sup>25</sup> CalRecycle, 2009, Residential Waste Disposal Rates, Available at: <http://www.calrecycle.ca.gov/wastechar/ResDisp.htm>, Accessed March 3, 2010.

<sup>26</sup> Vintze, David, Bay Area Air Quality Management District, 2008. Email to Jessica Range of MEA regarding Altamont Landfill GHG emissions and solid waste disposal. (April 2008).

<sup>27</sup> Isaacson, Glenn, 2009, Conversion Management Associates, Personal Communication with AECOM on November 19, 2009.

associated with washing sheets and electricity consumption associated with operation of washers and dryers. The hotel has also replaced all incandescent bulbs with compact fluorescent bulbs, when possible, to increase energy efficiency and reduce electricity consumption. The hotel is currently in the process of installing energy conserving thermostats in each room to avoid excessive use of natural gas for heating and electricity for air conditioning.

In addition, the proposed project intends to attain a LEED Gold standard, which involves a variety of design features that result in the reduction of GHG emissions compared to standard building practices. Although the City and County of San Francisco's Green Building Ordinance would require the project to attain a LEED certified standard, the proposed project would exceed the minimum required LEED rating.<sup>28</sup> During construction of the proposed project, the contractor would be required to divert 65 percent of the construction and demolition debris per the Construction and Demolition Debris Recovery Ordinance (described above), which is required by law. However, as part of the project's LEED measures, the contractor would exceed the required construction and demolition debris diversion rate and divert up to 75 percent of construction waste from landfills, which would reduce future landfill GHG emissions and provide potentially recyclable materials for future projects. In addition, 20 percent of building materials used to construct the proposed project would come from recycled materials, which would reduce the energy inputs and associated GHG emissions associated with extracting raw materials and manufacturing building materials.

Operation of the proposed project would include several LEED measures that would reduce GHG emissions from the project compared to standard building practices. The building would be expected to meet the maximum Optimized Energy Performance LEED measure, which would result in approximately 42 percent better energy efficiency than that required by Title 24. Other proposed energy-related LEED features include lighting controllability for 90 percent of the building, thermal controllability for 50 percent of the building, and availability of daylight to 75 percent of the building. All of the energy-related LEED features would reduce the amount of electricity and natural gas required to maintain the building for its occupants, and would therefore, reduce GHG emissions associated with electricity consumption and natural gas combustion. The project would also include LEED features that reduce indoor water use by 20 percent and outdoor (landscaping) water use by 50 percent, which would reduce the electricity associated with water treatment, conveyance, and distribution.

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<sup>28</sup> New construction projects can achieve four different LEED certification levels: Certified, Silver, Gold, and Platinum. Certified is the minimum requirement, while Platinum is highest LEED certification level. The proposed project intends to attain a LEED Gold standard.

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Due to the high-density, urban nature of the project site, the project would comply with several of the LEED Sustainable Site requirements. LEED features such as public transportation access, bicycle storage and showers, and limiting parking capacity would promote the use of alternative modes of transportation and reduce transportation-related GHG emissions, which are a major source of GHG emissions from land use projects. Finally, pursuant to the LEED Green Building Education measures, the project would include signage or an interactive exhibit in the lobby that highlights the LEED features of the building. Due to the amount of residents and hotel patrons that would use the lobby, educational materials could be effective in broadcasting the benefits of LEED features with respect to GHG emissions and environmental resources.

## IMPACT EVALUATION

**Impact GH-1 The proposed project would emit GHG emissions during construction activities. However, construction activities for the proposed project would be consistent with the goals and strategies of the *Climate Change Scoping Plan* and the San Francisco Climate GHG Reduction Strategy. (Less than Significant) [Criteria H.a and H.b]**

For disclosure purposes and consistent with the OPR Technical Advisory on CEQA and Climate Change<sup>29</sup> and the recently amended *CEQA Guidelines*, construction-related GHG emissions were modeled using project specifications (e.g., volume to be demolished, duration, volume of soil to be exported) described in Chapter III, Project Description, and default settings and parameters contained in URBEMIS2007 for San Francisco County. **Table IV.H-1: Construction-Related Greenhouse Gas Emissions** below, summarizes the levels of GHG emissions that would be directly generated during each phase and year of the construction period.

No agency has established thresholds of significance for construction-related GHG emissions. While extensive demolition and excavation activities would be required, the proposed construction activities would be temporary (i.e., approximately 36 months) and would cease following completion of the proposed project. The demolition and excavation activities would use more off-road construction equipment than a typical construction project due to the bulk of the building to be demolished and large quantity of soil to be excavated and removed from the site, which would lead to additional GHG emissions from equipment and vehicle exhaust. In addition, the proposed project would contribute demolition materials to the local landfill and require construction materials to be shipped for the new residential tower, mid-rise residential component, and podium structure. However, as part of the project

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<sup>29</sup> Governor's Office of Planning and Research, 2008, Technical Advisory- CEQA and Climate Change: Addressing Climate Change to the California Environmental Quality Act (CEQA) Review, June, Available at: [www.opr.gov](http://www.opr.gov), Accessed: July 2009.

**Table IV.H-1  
Construction-Related Greenhouse Gas Emissions**

<b>Construction Year – Phase</b>	<b>GHG Emissions (CO<sub>2</sub>) (metric tons)<sup>1,2</sup></b>
<b>Year (2012)</b>	
Demolition	205
Excavation/Site Grading	39
Total GHG Emissions in 2012	244
<b>Year (2013)</b>	
Excavation/Site Grading	158
Building Construction	0.1
Ramp Demolition	36
Total GHG Emissions in 2013	194
<b>Year (2014)</b>	
Building Construction	<0.1
Interior/Exterior Finishing	105
Total GHG Emissions in 2014	105
<b>Total GHG Emissions</b>	<b>543</b>
Notes: GHG = greenhouse gases; CO <sub>2</sub> = carbon dioxide; 1 Construction emissions were modeled with the URBEMIS 2007 computer model using the same assumptions and input parameters to estimate criteria air pollutant emissions in Section IV.G, Air Quality. The URBEMIS 2007 model does not account for CO <sub>2</sub> emissions associated with the production of concrete or other building materials used in project construction. It also does not estimate GHG emissions other than CO <sub>2</sub> , such as CH <sub>4</sub> and N <sub>2</sub> O, though these levels are expected to be nominal in comparison to the estimated CO <sub>2</sub> levels, even when considering their higher global warming potential. 2 The values presented do not include the full life cycle of GHG emissions that would occur over the production/transport of materials used during construction of the proposed project and the end of life of the materials and processes that would occur as an indirect result of the proposed project. Estimating the GHG emissions associated with these processes would be speculative and would require analysis beyond the current state of the art in impact assessment, and may lead to a false or misleading level of precision in reporting project-related GHG emissions. Indirect emissions associated with in-state energy production and solid waste would relate directly at the source or facility that would handle these processes and, therefore, be regulated directly by regulations under the AB 32 mandate. The emissions associated with off-site facilities in California would be closely controlled, reported, capped, and traded under AB 32 and ARB programs. Therefore, it is assumed that GHG emissions associated with these life-cycle stages would be consistent with AB 32 requirements. Detailed assumptions and modeling output files available for review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case No. 2008.0081E.	

Source: Modeling conducted by AECOM in 2009.

sponsor's Construction Management Plan, construction activities would implement construction BMPs, which would reduce GHG emissions from construction equipment by using alternative-fueled (e.g., biodiesel, electric) construction vehicles/equipment for at least 15 percent of the fleet, using at least 10 percent local building materials, and recycling at least 50 percent of construction waste and demolition materials. Therefore, although construction of the proposed project would include more GHG-emitting

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activities than a typical construction project, BMPs to reduce GHG emissions would be implemented as part of the project. It should be noted that the use of local building materials and recycling of demolition materials would result in a reduction of life-cycle GHG emissions and not direct GHG emission reductions by the proposed project. Therefore, the reductions have been discussed qualitatively and no quantitative emission reductions have been calculated for these measures as part of this analysis.

The proposed project would also be required to comply with the Construction and Demolition Debris Recovery Ordinance and the Green Building Ordinance. These ordinances have been adopted by the City and County of San Francisco as part of its GHG Reduction Strategy, which furthers the state's efforts to reduce GHG emissions as mandated by AB 32. Therefore, the project's compliance with the City and County's construction-related ordinances also makes it consistent with the GHG reductions goals of AB 32. The Construction and Demolition Debris Recovery Ordinance requires the contractor to divert at least 65 percent of the construction and demolition debris from landfills. The Green Building Ordinance requires the project to be LEED certified. As part of the project's LEED Gold certification, the proposed project has chosen measures designed to reduce GHG emissions from construction activities. These measures include the diversion of 75 percent of construction waste from landfills, exceeding the requirements of the Construction and Demolition Debris Recovery Ordinance. It should be noted that the 75 percent diversion rate is also a requirement of the Green Building Ordinance. This measure would reduce the amount of GHG emissions generated as a result of the project's construction waste and allow the construction and demolition materials to be potentially recycled for future projects. As part of the LEED measures, the project would also use recycled contents for 20 percent of the building materials. By using recycled materials, the project reduces the amount of energy consumed to extract and process virgin raw construction materials. As discussed above, these ordinances would reduce life-cycle GHG emissions, which are not analyzed as part of this analysis. Nevertheless, the proposed project would comply with these ordinances, which have been developed to further the goals of AB 32. Therefore, the proposed project would be consistent with both the San Francisco's GHG Reduction Strategy and the *Climate Change Scoping Plan*.

The project's commitment to be LEED Gold certified is consistent with the strategies of the *Climate Change Scoping Plan*, which uses LEED certification as a tool for buildings to meet the goals of AB 32. The San Francisco GHG Reduction Strategy cites the expansion of construction and demolition waste recycling as an action to meet solid waste GHG reduction goals. As discussed above, the project's construction waste diversion rate would exceed the Construction and Demolition Debris Recovery Ordinance's. Although the proposed project would emit GHG emissions during construction, the project

would be required to comply with applicable City regulations that reduce the project's construction-related contribution to GHG emissions. Therefore, the proposed project would not generate GHG emissions that would have a significant impact on the environment and the proposed project would not conflict with a plan, policy, or regulation developed for the purpose of reducing GHG emissions. The proposed project's construction-related GHG emissions would be less than significant.

**Impact GH-2      Implementation of the proposed project would result in a net increase in operational GHG emissions. However, the proposed project would be consistent with the *Climate Change Scoping Plan* and San Francisco's GHG Reduction Strategy. (Less than Significant) [Criteria H.a and H.b]**

The proposed project would result in increased intensity of land uses on site by replacing the existing 226 hotel rooms with 160 residential units. The existing five-story podium and associated uses would be replaced with another podium structure with changes to the mix of commercial and retail uses. The proposed residential tower, mid-rise residential component, and podium structure intends to attain a LEED Gold standard, but would be required to be LEED Certified by the San Francisco Green Building Ordinance. GHG emissions would be generated throughout the operational life of the proposed project. Operational emissions would be generated by area and mobile sources. Area-source emissions would be associated with activities such as combustion of natural gas for space and water heating, maintenance of landscaping and grounds, and other sources. Mobile-source emissions of GHGs would include project-generated vehicle trips for residents, employees, and visitors. In addition, GHG emissions would occur at off-site utility providers from electricity generation that would supply power to the proposed project. Thus, the GHGs associated with electricity consumption on the project site are considered an indirect source. On-site consumption of water would also result in indirect GHG emissions because of the electricity consumption associated with the off-site conveyance, distribution, and treatment of that water.

Direct operational CO<sub>2</sub> emissions from area and mobile sources were calculated using URBEMIS2007, Version 9.2.4.<sup>30</sup> Area-source GHG emissions for the existing and proposed project were estimated based on the proposed land use types and sizes identified in Chapter III, Project Description. Regional mobile-source emissions for the existing and proposed project were estimated based on trip generation rates provided in the traffic study prepared for the project,<sup>31</sup> and default settings and parameters contained in URBEMIS2007 for San Francisco County.

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<sup>30</sup> Rimpo and Associates, 2008, op. cit.

<sup>31</sup> LCW Consulting, 2009, op. cit., pp. 24–26, 29.

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Indirect sources such as electricity and water consumption associated with the existing and proposed uses were estimated using sources and assumptions described below. Electricity consumption estimates were obtained from the CEC's California Energy Demand 2000–2010 report, which provides average electricity consumption per household and commercial square feet.<sup>32</sup> For the purposes of this analysis, all podium uses were considered commercial uses. Although it is acknowledged that retail uses such as restaurants could have varied electricity consumption rates, using this methodology allows a direct comparison between the existing hotel uses and the proposed project. Because the proposed project would be considered a new development, the proposed podium, mid-rise residential component, and residential tower would be required to meet the building standards in the California Green Building Code. The impact analysis for the 2005 and 2008 Title 24 Standards provided percent reductions in energy consumption from the previous versions of the Title 24 Standards (i.e., 2001 and 2005 standards, respectively).<sup>33,34</sup> Therefore, a 38 and 12 percent reduction for residential and nonresidential uses, respectively, was applied to the electricity consumption rates for the proposed project to account for the increased energy efficiency (as a result of 2001 and 2005 Title 24 Standards) when the CEC report was prepared. The newly calculated rate of electricity consumption for the proposed project is representative of a project compliant with 2008 Title 24 Standards or the California Green Building Code Standards. Emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O associated with electricity consumption from CCAR's General Reporting Protocol were used to calculate metric tons of CO<sub>2</sub>e for the existing condition and proposed project.<sup>35</sup>

The project would also be required to comply with the City's Green Building Ordinance, which requires the project to be LEED Certified and would result in additional energy efficiency. However, no additional emission reduction was applied to the project's energy consumption because the energy reductions associated with the LEED certification relative to the California Green Building Code Standard is not available at this time.

On-site consumption of water would also result in indirect GHG emissions because of the electricity consumption associated with the off-site conveyance, distribution, and treatment of that water. Water consumption for the existing and proposed uses was estimated based on water consumption rates for

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<sup>32</sup> California Energy Commission (CEC), 2000, *California Energy Demand Staff Report P200-00-002*, pp. 15, 18.

<sup>33</sup> California Energy Commission (CEC), 2003, *Impact Analysis 2005 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*, p. 4.

<sup>34</sup> California Energy Commission (CEC), 2007, *Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings*, p. 4.

<sup>35</sup> California Climate Action Registry (CCAR), 2009, *General Reporting Protocol Version 3.1. January*, pp. 94–95.

commercial, retail, hotel, and residential land uses. For the existing and proposed commercial and retail uses, the square footage for each respective use was used to estimate the relative number of employees based on employment density data (i.e., square feet/employee) from the Southern California Association of Governments (SCAG).<sup>36</sup> The absolute number of commercial and retail employees was estimated based on the proportion of relative commercial or retail employees and multiplying by the assumed number of hotel employees for the proposed project (i.e., eastern portion of Fairmont Hotel complex). The assumed number of hotel employees for the eastern portion of the Fairmont Hotel complex was estimated based on square footage information for the eastern portion and the total Fairmont Hotel complex, and the total number of hotel employees. A gallons-per-employee water consumption rate for commercial and retail uses (obtained from a literature review) was used to estimate water consumption for commercial and retail uses.<sup>37</sup> Water consumption by hotel patrons was estimated using the Hotel Water Conservation report prepared for the Seattle Public Utilities Resource Conservation Section.<sup>38</sup> Lastly, residential water consumption was estimated using a per capita consumption rate and the projected maximum number of residents for the proposed residential tower (i.e., 368).<sup>39</sup> A CEC electricity consumption rate (i.e., kilowatt-hours/million gallons/year) was used to estimate the electricity consumption associated with water use. Similar to the method described above, electricity consumption emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O from CCAR's General Reporting Protocol were used to estimate metric tons of CO<sub>2</sub>e associated with water-related electricity consumption.

**Table IV.H-2: Existing, Proposed, and Net Change in Greenhouse Gas Emissions Associated with Proposed Project Implementation** below, summarizes the GHG emissions associated with operation of the existing and proposed land uses on the project site, including direct emissions from area and mobile sources and indirect emissions associated with electricity consumption and water consumption. As shown in Table IV.H-2, the proposed project would cause a net increase of approximately 317 MT CO<sub>2</sub>e per year.

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<sup>36</sup> Southern California Association of Governments, 2001, *Employment Density Summary Report*, pp. 15–16.

<sup>37</sup> Gleick, Peter, 2003, *Waste Not, Want Not: The Potential for Urban Water Conservation in California*. Pacific Institute, November, Appendix C p. 1–14.

<sup>38</sup> Seattle Public Utilities, 2002, *Hotel Water Conservation prepared by O'Neill & Siegelbaum and The RICE Group*, p. 4.

<sup>39</sup> Hanak, Ellen, 2005, *Water Growth: California's New Frontier*. Public Policy Institute of California, p. 18.

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**Table IV.H-2  
Existing, Proposed, and Net Change in Greenhouse Gas Emissions Associated with  
Proposed Project Implementation**

Emissions Source	GHG Emissions (MT CO <sub>2</sub> e/yr)		
	Existing <sup>1</sup>	Proposed <sup>2</sup>	Net Change
Area Sources	302	332	30
Mobile Sources	627	801	174
Electricity Consumption	760	848	88
Water Consumption	46	58	12
Solid Waste	23	36	13
Total GHG Emissions <sup>2</sup>	1,758	2,075	317

Notes: Totals may not add exactly due to rounding.  
GHG = greenhouse gas; MT CO<sub>2</sub>e/yr = metric tons carbon dioxide equivalent per year  
1 Existing emissions shown represent operation of the existing 23-story hotel tower and five-story hotel podium and not the historical portion of the Fairmont Hotel.  
2 Proposed emissions shown represent operation of the proposed 26-story residential tower, mid-rise residential component, and five-story podium structure.  
Detailed assumptions, calculations, and modeling output files are available for review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case No. 2008.0081E.

Source: Modeling conducted by AECOM in 2009.

Once the project is completed, the project would be required to comply with San Francisco’s GHG Reduction Strategy, which would reduce GHG emissions associated with transportation, solid waste, and energy consumption. Given that the City has adopted numerous GHG reduction strategies recommended in the *Climate Change Scoping Plan*; that the City’s GHG Reduction Strategy includes binding, enforceable measures to be applied to development projects, such as the proposed project; and that the City’s GHG Reduction Strategy has produced measurable reductions in GHG emissions, the proposed project would not conflict with either the state or local GHG reduction strategies. In addition the proposed project would not conflict with any plans, policies, or regulations adopted for the purpose of reducing GHG emissions.

Furthermore, when evaluating the project’s consistency with the *Climate Change Scoping Plan* and the San Francisco GHG Reduction Strategy, it is important to consider the transportation and energy efficiency aspects of the project due to both activities accounting for approximately 79 percent of the project’s total operational GHG emissions. Both the *Climate Change Scoping Plan* and the San Francisco GHG Reduction Strategy cite increasing the use of alternative modes of transportation, such as walking, bicycling, and public transit, as a major strategy to reduce transportation-related GHG emissions. The proposed project would add 160 dwelling units to a dense, highly urbanized area, which provides the ideal built environment for residents to walk, bike, and/or use public transportation to serve their day-to-day

transportation needs (e.g., commute, shopping trips). The availability of multiple public transportation options (i.e., San Francisco Municipal Railway [Muni], Bay Area Rapid Transit [BART], Caltrain, Amtrak) provides residents with the ability to travel locally, as well as regionally, using public transit, thereby increasing the potential for transportation-related GHG emissions reductions. The project would also include bicycle storage for residents as part of its LEED measures. In addition, preferential parking would be provided for hybrids or a hybrid Zipcar at the project site. Therefore, the project's residents would be provided with multi-modal transportation options that could reduce transportation-related GHG emissions.

The LEED certified design of the proposed project would be consistent with the goals and strategies of the *Climate Change Scoping Plan* and the San Francisco GHG Reduction Strategy. As discussed above, the *Climate Change Scoping Plan* identifies LEED certification as a tool used to meet the energy efficiency goals of the AB 32. The San Francisco GHG Reduction Strategy identifies increasing energy efficiency in residential and commercial buildings as strategy to achieve its GHG reduction goal. The proposed project includes multiple LEED features that would reduce the direct and indirect GHG emissions associated with operation of the proposed project compared to standard building methods and compared with the existing structure. The building's electricity consumption would be reduced through design features such as the availability of daylight for 75 percent of the building and lighting controllability for 90 percent of the building. Natural gas combustion would be reduced through thermal controllability for 50 percent of the building. In addition, indoor and outdoor water consumption would be reduced by 50 and 20 percent, respectively, through LEED features. Considering this information, and the fact that the proposed project is an infill development with multiple alternative modes of transportation for residents, the proposed project would be consistent with the San Francisco GHG Reduction Strategy and the *Climate Change Scoping Plan* such that it would not impede implementation of the GHG reduction goals established by San Francisco's Greenhouse Gas Reduction Ordinance or AB 32, respectively.

AB 32 contains a comprehensive approach for developing regulations to reduce statewide GHG emissions. ARB acknowledges that decisions on how land is used will have large effects on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas sectors. Many of the measures in the *Climate Change Scoping Plan* – such as implementation of increased fuel efficiency for vehicles (the “Pavley” standards), increased efficiency in utility operations, and development of more renewable energy sources – require statewide action by government, industry, or both.

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Some of the *Climate Change Scoping Plan* measures are at least partially applicable to development projects, such as increasing energy efficiency in new construction, installation of solar panels on individual build roofs, and a “green building” strategy. As evidenced above, the City has already implemented several of these measures that require local government action, such as a Green Building Ordinance, a Zero Waste strategy, a Construction and Demolition Debris Recovery Ordinance, and a solar energy generation subsidy program, to realize meaningful reductions in GHG emissions. These programs (and including other not listed) collectively comprise San Francisco’s GHG Reduction Strategy and continue San Francisco’s efforts to reduce the City’s GHG emissions to 20 percent below 1990 levels by the year 2012, a goal outlined in the City’s 2004 Climate Action Plan. The City’s GHG Reduction Strategy also furthers the state’s efforts to reduce statewide GHG emissions as mandated by AB 32. The proposed project would be consistent with the City’s GHG Reduction Strategy and *Climate Change Scoping Plan*, which are the applicable plans to reduce GHG emission in the City and state, respectively; therefore, the project would have a less-than-significant impact with respect to GHG emissions.

#### **Proposed BAAQMD Draft Air Quality Guidelines**

##### **Bay Area Air Quality Management District’s Proposed Thresholds of Significance for Greenhouse Gases**

BAAQMD has released its *Draft Air Quality Guidelines*, which include recommended guidance for the analysis of GHG emissions as well as quantitative thresholds of significance for GHG emissions. For informational purposes and in anticipation of the future adoption of the *Draft Air Quality Guidelines*, the proposed project’s GHG emissions will be evaluated using guidance from the proposed BAAQMD *Draft Air Quality Guidelines*. It should be noted that the recommended methodologies for analyzing operational GHG emissions presented in BAAQMD’s *Draft Air Quality Guidelines* are consistent with guidance from OPR’s Technical Advisory for addressing climate change through CEQA review.<sup>40</sup> For individual land use development projects (e.g., residential, commercial), long-term operational emissions of GHGs would result in a cumulatively considerable contribution of GHG emissions and a significant impact to global climate change if:

- Operation-related GHG emissions would exceed 1,100 metric tons of carbon dioxide equivalent per year (MTCO<sub>2</sub>e/yr); and

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<sup>40</sup> Governor’s Office of Planning and Research, 2008, *Technical Advisory- CEQA and Climate Change: Addressing Climate Change to the California Environmental Quality Act (CEQA) Review*, June, Available at: [www.opr.gov](http://www.opr.gov), Accessed: July 2009.

- The GHG efficiency of the project would be greater than 4.6 MTCO<sub>2</sub>e/yr per service population (SP)<sup>41</sup>; or
- The project would be inconsistent with a qualified climate action plan or program<sup>42</sup>.

As explained above, the significance criteria proposed in BAAQMD's *Draft Air Quality Guidelines* have not yet been adopted by BAAQMD's Board of Directors. It is anticipated that the BAAQMD Board of Directors will be adopting the *Draft Air Quality Guidelines* in June 2010.

### **Proposed BAAQMD Guidelines Impact Evaluation**

The following analyses are provided for informational purposes and in anticipated of BAAQMD's adoption of their *Draft Air Quality Guidelines*. The CEQA Checklist criterion or criteria that would be addressed by each analysis below is also provided for informational purposes.

#### **Construction GHG Impact Analysis [Criteria H.a and H.b]**

BAAQMD is not proposing a quantitative threshold of significance for construction-related GHG emissions. However, the *Draft Air Quality Guidelines* recommend that the project's construction-related GHG emissions be quantified and that the Lead Agency should attempt to make a significance determination in the absence of a numeric significance threshold.

The proposed project would implement all required measures to reduce GHG emissions associated with construction activities (i.e., proposed BAAQMD BMPs). It should be noted that construction emissions are temporary emissions and that all construction emissions would cease following project completion. In addition, the total GHG emissions, over approximately 3 years, associated with project construction would be less than half of the proposed annual threshold for operational GHG emissions (i.e., 1,100 MT CO<sub>2</sub>e). It is not the intent of this analysis to use the operational threshold to evaluate construction emissions, but to provide context for the magnitude of construction emissions.

The project's construction-related GHG emissions would be temporary and cease following buildout of the proposed project. In addition, the project would implement all BAAQMD-recommended BMPs, the Dust and Demolition Debris Recovery Ordinance, and LEED measures related to reducing construction-related GHG emissions. Therefore, construction-related GHG emissions would not be considered

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<sup>41</sup> Service population is defined as the number of jobs plus the number of residents supported by a proposed project.

<sup>42</sup> According to BAAQMD, a "qualified climate action plan or program" should including the following: a GHG inventory for base year and GHG emissions projections; an adopted GHG reduction goal for 2020 that aligns with the goals of AB 32; identification of GHG reduction measures that would achieve the target; application of relevant reduction measures included in the Climate Change Scoping Plan; quantification of the GHG reductions of each measure and disclosure of calculation assumptions and methods; identification of implementation steps, responsible parties, and financing mechanisms; monitoring and updating procedures; and be accompanied by a certified CEQA document or adopted in an equivalent public review process.

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cumulatively considerable. Should the BAAQMD adopt its *Draft Air Quality Guidelines*, this impact would be considered less than significant.

**Operational GHG Impact Analysis [Criteria H.a and H.b]**

As shown in Table IV.H-2, the proposed project would result in a net increase in long-term operational GHG emissions as a result of mobile sources, and residential, commercial, and retail operations associated with heating, electricity consumption, and water consumption (i.e., area sources and indirect sources). Although this analysis does not fully incorporate the GHG emission reductions associated with the proposed project's LEED features, which was not possible at the time of writing, it should be noted that the proposed project is a more GHG emissions-intensive land use (i.e., residential uses typically require more vehicle trips, solid waste generation, energy consumption, and water consumption than hotel uses that are not always occupied) than the existing land use. The existing land uses generate approximately 1,758 MTCO<sub>2</sub>e/yr. The proposed project would result in approximately 2,075 MTCO<sub>2</sub>e/yr, which represents a net increase of approximately 317 MTCO<sub>2</sub>e/yr. The net increase in operational emissions associated with implementation of the proposed project would be less than the proposed BAAQMD threshold of 1,100 MTCO<sub>2</sub>e/yr. Should BAAQMD adopt its proposed *Draft Air Quality Guidelines*, this impact would be less-than-cumulatively considerable, and therefore, less than significant.

In addition, the proposed project is anticipated to accommodate up to approximately 430 full-time-equivalent employees and approximately 283–368 residents.<sup>43</sup> As shown in Table IV.H-2, the proposed project's gross operational GHG emissions would be approximately 2,075 MTCO<sub>2</sub>e/yr, which would result in a GHG-efficiency of the project of 4.40 MTCO<sub>2</sub>e/SP/yr. Therefore, the proposed project's GHG emissions per SP would be less than BAAQMD's proposed criterion of 4.6 MTCO<sub>2</sub>e/SP/yr for project-level analysis, which would apply to the proposed project should the proposed BAAQMD *Draft Air Quality Guidelines* be adopted. BAAQMD has not formally adopted its *Draft Air Quality Guidelines* nor the quantitative significance thresholds presented in this analysis. Should BAAQMD adopt its proposed *Draft Air Quality Guidelines*, this impact would be less than significant.

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<sup>43</sup> Number of residents represents the average range of expected residences from Section IV.C, Population and Housing.

### **CUMULATIVE IMPACTS**

As previously discussed in Significance Thresholds, OPR considers climate change a “cumulative impact.”<sup>44</sup> Therefore, Impact GH-1 and GH-2 provides cumulative analyses of greenhouse gases and climate change.

### **MITIGATION AND IMPROVEMENT MEASURES**

The proposed project would result in less-than-significant impacts to greenhouse gas emissions. No mitigation or improvement measures would be required.

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<sup>44</sup> Governor’s Office of Planning and Research, 2008, *Technical Advisory: CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review, June 19*. Available at: <http://opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf>, Last updated June 19, 2008, Accessed: September 2009, p. 5.

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