3.7 GREENHOUSE GAS EMISSIONS

Introduction

This section addresses the effects of the Project on global greenhouse gas (GHG) emissions and the potential for these emissions to contribute to global climate change. There is international scientific consensus that anthropogenic emissions of GHGs[1] have and will continue to contribute to changes in the global climate. Although there is uncertainty concerning the magnitude, rate, and ultimate effects of this change, it is generally accepted that climate change will result in a number of substantial adverse environmental impacts.

Climate change is the cumulative effect of all natural and anthropogenic sources of GHGs on a global scale. The GHG emissions from an individual project, even a very large development project, would not individually generate sufficient GHG emissions to measurably influence global climate change.[2] Consideration of a project's climate change impact, therefore, is essentially an analysis of a project's contribution to a cumulatively significant global impact through its emission of GHGs. While it is possible to examine the quantity of GHGs that would be emitted from individual project sources, it is not currently possible to link these GHGs emitted from a specific source or location to particular global climate changes.

Although environmental impacts associated with climate change cannot be directly linked to individual development projects, the State of California recognizes the link between development activities and GHG emissions and is in the process of developing standards for assessment and, ultimately, regulation of the GHG emissions associated with land use. The State of California, through Assembly Bill (AB) 32 and Executive Order S-3-05, has set Statewide targets for the reduction of GHG emissions. The goal of AB 32 and S-3-05 is to reduce future California GHG emissions in a State that is expected to experience rapid growth in population and economic output. While the California Environmental Quality Act (CEQA) focuses on reducing emissions associated with new development, other regulatory means will need to be implemented to reduce existing emissions.

GHGs would be emitted as the result of Project construction activities, direct and indirect operational sources, and mobile emissions associated with the trips generated by the Project. Emissions from sources such as construction equipment, vehicles, energy consumption, and solid waste generation, are inventoried and discussed quantitatively and qualitatively. Emissions associated with the water supply and wastewater treatment are also discussed. All emissions inventories are presented in metric tons (MT) unless otherwise indicated.

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1 For the purposes of this analysis, the term "greenhouse gases" refers to CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6, those gases regulated under California AB 32 and the Kyoto Protocol of the United Nations Framework Convention on Climate Change.

2 Association of Environmental Professionals (AEP). 2007. Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents. Accessed at: www.califaep.org/userdocuments/File/AEP_Global_Climate_Change_June_29_Final.pdf; and OPR, 2008. Technical Advisory, CEQA and Climate Change: Addressing Climate Change Through CEQA Review, p. 6.

This analysis was prepared based upon a literature review that included advice for preparing CEQA climate change analyses released by the California Office of Planning and Research (OPR[3]), as well as approaches prepared by a number of professional associations and agencies that have published strategies for complying with CEQA's environmental disclosure requirements. Such organizations include the California Attorney General's Office (AGO), the California Air Pollution Control Officers Association (CAPCOA), the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), California Air Resources Board (CARB), Bay Area Air Quality Management District (BAAQMD), California Climate Action Team (CAT), and the Association of Environmental Professionals (AEP).

Sources used for this section include energy forecasts and consumption reports produced by the California Energy Commission (CEC); energy consumption data provided by the Project Sponsor (see Appendix 3.7-B); data from the California Emission Estimator Model (CalEEMod™) version 2011.1.1 software; the transportation impact analysis prepared by DKS Associates (see Appendix 3.7-C); construction information provided by the Project Sponsor (see Appendix 3.7-D); and information from CARB and CAT.

Five comments pertaining to climate change were identified during the scoping meeting held for the Project or were received in response to the Notice of Preparation (NOP) (see Appendix 1). These comments expressed concern over the impacts of sea level rise. These comments have been addressed below, as well as in Section 3.12, Hydrology and Water Quality.

Applicable Plans and Regulations

Executive Order S-3-05. On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05, setting Statewide targets for the reduction of California's GHG emissions. The Executive Order S-3-05 states that GHGs should be reduced to:

- 2000 levels by the year 2010,
- 1990 levels by the year 2020, and
- 80 percent below 1990 levels by the year 2050.

The text of Executive Order S-3-05 does not explain how the targets should be applied to individual development projects.

Executive Order S-3-05 also established the CAT for state agencies. After numerous public meetings and review of thousands of submitted comments, the CAT released its first report, *Climate Action Team Report to the Governor and the Legislature*, in March 2006, identifying key carbon reduction recommendations. A second iteration of this report was released in draft version in March 2009 and the latest iteration was released in December 2010.

[3] OPR, Technical Advisory, CEQA and Climate Change: Addressing Climate Change through CEQA Review, 2008.

In April 2007, the CAT released a second report, *Proposed Early Actions to Mitigate Climate Change in California*, which identifies numerous strategies for initiation of other climate action regulations and efforts prior to the 2012 deadline established by AB 32 (discussed below). State agencies are moving ahead on many of these early actions.

Assembly Bill 32. Shortly after the issuance of Executive Order S-3-05, the California State Legislature adopted AB 32, the Global Warming Solutions Act of 2006. AB 32 recognizes that California is the source of substantial amounts of GHG emissions. In the Findings and Declarations for AB 32, the Legislature found that:

> The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to the marine ecosystems and that natural environment, and an increase in the incidences of infectious diseases, asthma and other health-related problems.

To avert these consequences, AB 32 requires CARB to create a plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." AB 32 requires CARB to design and implement emissions limits, regulations, and other measures, such that Statewide GHG emissions would be reduced to 1990 levels by 2020, the same 2020 threshold indicated in Executive Order S-3-05. AB 32 directs CARB to develop early actions to reduce GHG emissions while also preparing a Scoping Plan to identify how best to reach the 2020 limit. The measures and regulations to meet the 2020 target are to be in effect by 2012.

California Air Resources Board Climate Change Scoping Plan.[4] CARB's *Climate Change Scoping Plan* (Scoping Plan), adopted on December 11, 2008, reports that CARB has met the first milestones set by AB 32. As discussed below, CARB was required to prepare a historical emissions inventory and set emissions targets for 2020. In December 2007, CARB approved a 1990 emissions inventory of 427 million metric tons of carbon dioxide equivalent ($MMTCO_2e$) of GHGs. As AB 32 requires that emissions be reduced to 1990 levels by 2020, approval of this inventory effectively determined emissions targets for 2020. As required, CARB has also identified 44 early action measures that could be enforceable on or before 2010. These measures include potential regulations affecting landfills, motor vehicle fuels, refrigerant in cars, port operations and many other sources. Regulatory development for these measures is ongoing.

The Scoping Plan also proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, including:

- Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards;
- Achieving a Statewide renewable energy mix of 33 percent;

[4] CARB, Climate Change Scoping Plan, pp. ES-3 to ES-4, December 2008.

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

The Scoping Plan notes that local governments are "essential partners" in the effort to reduce greenhouse gas emissions, and that they have "broad influence and, in some cases, exclusive jurisdiction" over activities that contribute to GHG emissions. The Scoping Plan encourages local governments to adopt goals for reducing municipal GHG emissions and move towards adoption of a goal for reducing community emissions. These targets should parallel the State's commitment to reduce GHG emissions by approximately 15 percent of current levels by 2020. The Scoping Plan also observes that "[l]ocal governments have the ability to directly influence both the siting and design of new residential and commercial developments in a way that reduces greenhouse gases associated with vehicle travel, as well as energy, water, and waste"[5] and that "[i]ncreasing low-carbon travel choices (public transit, carpooling, walking and biking) combined with land use patterns and infrastructure that support these low-carbon modes of travel, can decrease average vehicle trip lengths by bringing more people closer to more destinations."[6] It also notes that regional targets would be set and achieved on a regional basis through the Senate Bill (SB) 375 implementation process, which "maintains regions' flexibility." SB 375 is discussed below.

In August 2011, The Scoping Plan was re-approved by the Board and includes the Final Supplement to the Scoping Plan Functional Equivalent Document. This document includes expanded analysis of project alternatives as well as updates the 2020 emission projections in light of the current economic forecasts. Considering the updated 2020 Business as Usual (BAU) estimate of 507 MMT, a 16 percent reduction below the estimated BAU levels would be necessary to return to 1990 levels by 2020. The document also excludes one measure identified in the 2008 Scoping Plan that has been adopted and one measure that is no longer under consideration by CARB.

Senate Bill 375. SB 375, which establishes mechanisms for the development of regional targets for reducing passenger vehicle GHGs, was adopted by the State on September 30, 2008. On September 23, 2010, CARB adopted the vehicular GHGs reduction targets that were developed in consultation with the Metropolitan Planning Organizations (MPOs); the targets require a seven to eight percent reduction by 2020 and between 13 to 16 percent reduction by 2035 for each MPO. SB 375 recognizes the importance of achieving significant GHG reductions by working with cities and counties to change land

[5] CARB, Climate Change Scoping Plan, p. 26, December 2008.
[6] CARB, Climate Change Scoping Plan, p. 48, December 2008.

use patterns and improve transportation alternatives. Through the SB 375 process, MPOs would work with local jurisdictions in the development of Sustainable Communities Strategies (SCS) designed to integrate development patterns and the transportation network in a way that reduces GHG emissions while meeting housing needs and other regional planning objectives. The MPOs would prepare their first SCS according to their respective Regional Transportation Plan (RTP) update schedule. To date, no region has adopted an SCS. The first of the RTP updates with SCS strategies are expected in 2012.

Senate Bill 97. The provisions of SB 97, enacted in 2007, amend CEQA to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. In March 2010, the California Office of Administrative Law codified into law CEQA amendments that provide regulatory guidance with respect to the analysis and mitigation of the potential effects of GHG emissions, as found in CEQA Guidelines Section 15183.5. To streamline the analysis, CEQA provides for analysis through compliance with a previously adopted plan or mitigation program under special circumstances.

Executive Order S-13-08. Executive Order S-13-08, the Climate Adaptation and Sea Level Rise Planning Directive, provides clear direction for how the State should plan for future climate impacts. The first result is the 2009 California Adaptation Strategy (CAS) report which summarizes the best known science on climate change impacts in the State to assess vulnerability and outlines possible solutions that can be implemented within and across State agencies to promote resiliency.

Assembly Bill 1493 (Pavley I). AB 1493 (Pavley) required the CARB to adopt regulations that will reduce GHG emissions from automobiles and light-duty trucks by 30 percent below 2002 levels by the year 2016, effective with 2009 models. By 2020, this requirement will reduce emissions in California by approximately 16.4 $MMTCO_2e$, representing 17.3 percent of emissions from passenger and light-duty vehicles in the State.

Assembly Bill 1493 (Pavley II). California committed to further strengthening the AB 1493 standards beginning in 2017 to obtain a 45 percent GHG reduction from 2020 model year vehicles. By 2020, this requirement will reduce emissions in California by approximately four $MMTCO_2e$, representing 2.5 percent of emissions from passenger/light-duty vehicles in the State.

Executive Order S-1-07 (Low Carbon Fuel Standard). The Low Carbon Fuel Standard (LCFS) requires a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. This requirement will reduce emissions in California by approximately 15 $MMTCO_2e$, representing 6.9 percent of emissions from passenger and light-duty vehicles in the State.

Renewable Portfolio Standard for Building Energy Use. Senate Bills 1075 (2002) and 107 (2006) created the State's Renewable Portfolio Standard (RPS), with an initial goal of 20 percent renewable energy production by 2010. Executive Order (EO) S-14-08 establishes a RPS target of 33 percent by the year 2020 and requires State agencies to take all appropriate actions to ensure the target is met. The 33 percent RPS by 2020 goal is supported by the ARB, though its feasibility is not certain due to current limitations in production and transmission of renewable energy.

California Code of Regulations (CCR) Title 24. CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to increase the baseline energy efficiency requirements. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG. The 2008 standards are the most recent version which went into effect on January 1, 2010.

CCR Title 24, Part 11: California's Green Building Standard Code (CALGreen) was adopted in 2010 and went into effect January 1, 2011. CALGreen is the first Statewide mandatory green building code and significantly raises the minimum environmental standards for construction of new buildings in California. The mandatory provisions in CALGreen would reduce the use of volatile organic compounds (VOC) emitting materials, strengthen water conservation, and require construction waste recycling. All projects in the City submitted for permit application on or after January 1, 2012 will be required to show conformance with CALGreen.

Bay Area Regional Agency Climate Protection Program. The Joint Policy Committee composed of the Association of Bay Area Governments (ABAG), BAAQMD, San Francisco Bay Conservation and Development Commission (BCDC), and Metropolitan Transportation Commission (MTC), approved the Bay Area Regional Agency Climate Protection Program on May 4, 2007 (amended July 20, 2007) to reduce potential effects of climate change. This program includes strategies to:

- Establish management priorities based on impacts, benefits, ease of implementation, and cost-effectiveness;
- Increase public awareness and motivate action through workshops and grass-roots outreach;
- Provide assistance, such as standardization of procedures for determining impacts, maintaining and distributing data, model codes and other tools, funding for demonstration projects, and others;
- Reduce driving and promote alternative modes of transportation through mechanisms such as road pricing, mode competitiveness, and regional development planning;
- Prepare to adapt, because regardless of regional reductions in potential causes contributing to global climate change, the region would be affected by changing environmental conditions; and
- Increase the importance of CEQA review of CO_2 emissions, conduct life-cycle costing of all capital projects, encourage energy-efficient development with sliding-scale permit fees, rebates and expedited permit review processes, and return the region's freeways to a maximum of 55 miles per hour.

Menlo Park Climate Action Plan. The City's Climate Action Plan (CAP) (adopted in May 2009) proposes local emissions reduction strategies designed to help meet AB 32 targets. The emissions reduction strategies are generally focused on City actions, although the City would be expected to

create programs directed towards reducing community emissions. The City subsequently prepared the CAP Assessment Report in July 2011. This report supplements the City's adopted 2009 CAP with revised information including additional information on the City's GHG reduction strategies.

As discussed below, the City's GHG emissions for 2009 are estimated to be 928,347 MT CO_2e. The CAP Assessment Report presents three possible reduction targets: 1) 10 percent by 2020 and 30 percent by 2050; 2) 17 percent by 2020 and 50 percent by 2050; and 3) the AB 32 Reduction goal of 27 percent by 2020 and 80 percent by 2050.

BAAQMD recently stated that jurisdictions, in developing a GHG Reduction Strategy should establish a GHG reduction target that meets or exceed AB 32 goals for consistency with CEQA guidelines and thresholds. Therefore, establishing GHG emissions reduction target for the City is line with regional efforts. These GHG reduction targets could be included in the General Plan update process that is currently planned for 2013-2014.

The CAP Assessment report recommends various community and municipal strategies for near-term and mid-term considerations. A cost benefit analysis of the selected strategies will be presented to City Council prior to implementation.

Menlo Park General Plan. Although the General Plan does not include policies explicitly designed to address GHG emissions and climate change, a number of goals and policies in the General Plan would be expected to contribute to this end. These policies include the following:

> **Goal I-G:** To promote the preservation of open-space lands for recreation, protection of natural resources, the production of managed resources, protection of health and safety, and/or the enhancement of scenic qualities.
>
> *Policy I-H-2:* The use of water-conserving plumbing fixtures in all new public and private development shall be required.
>
> *Policy I-H-3:* Plant material selection and landscape and irrigation design for City parks and other public facilities and in private developments shall adhere to the City's Water Efficient Landscape Ordinance.
>
> *Policy I-H-7:* The use of reclaimed water for landscaping and any other feasible uses shall be encouraged.
>
> *Policy I-H-12:* Street orientation, placement of buildings, and use of shading should contribute to the energy efficiency of the community.
>
> *Policy II-A-12:* The City shall endeavor to provide for the safe, efficient, and equitable use of streets by pedestrians and bicyclists through good roadway design, maintenance, and effective traffic law enforcement.

Goal II-B: To promote the use of public transportation.

Policy II-B-1: The City shall consider transit modes in the design of transportation improvements and the review and approval of development projects.

Policy II-B-3: The City shall promote improved public transit service and increased transit ridership, especially to office and industrial areas and schools.

Goal II-C: To promote the use of alternatives to the single occupant automobile.

Policy II-C-1: The City shall work with all Menlo Park employers to encourage employees to use alternatives to the single occupancy automobile in their commute to work.

Goal II-D: To promote the safe use of bicycles as a commute alternative and for recreation.

Policy II-D-3: The design of streets within Menlo Park shall consider the impact of street cross section, intersection geometrics and traffic control devices on bicyclists.

Policy II-D-4: The City shall require new commercial and industrial development to provide secure bicycle storage facilities on-site.

Existing Conditions

Overview of Climate Change

Global climate change refers to changes in the normal[7] weather of the earth measured by alterations in wind patterns, storms, precipitation, and temperature relative to historical averages. Such changes vary considerably by geographic location. Over time, the earth's climate has undergone periodic ice ages and warming periods, as observed in fossil isotopes, ice core samples, and through other measurement techniques. Recent climate change studies use the historical record to predict future climate variations and the level of fluctuation that might be considered statistically normal given historical trends.

Temperature records from the Industrial Age (ranging from the late 18th century to the present) deviate from normal predictions in both rate and magnitude. Most modern climatologists predict an unprecedented warming period during the next century and beyond, a trend that is increasingly attributed to human-generated GHG emissions resulting from the industrial processes, transportation, solid waste generation, and land use patterns of the twentieth and twenty-first centuries. According to the IPCC, GHG emissions associated with human activities have grown since pre-industrial times, increasing by 70 percent between 1970 and 2004.[8] Increased GHG emissions are largely the result of increasing fuel consumption, particularly the incineration of fossil fuels.

[7] "Normal" weather patterns include statistically normal variations within a specified range.

[8] IPCC, 2007, T. Baker et al. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policy Makers, p. 3.

The IPCC modeled several possible emissions trajectories to determine what level of reductions would be needed worldwide to stabilize global temperatures and minimize climate change impacts. Regardless of the analytic methodology used, global average temperature and sea level were predicted to rise under all scenarios.[9] In other words, there is evidence that emissions reductions can minimize climate change effects, but cannot reverse them entirely. However, emissions reductions can reduce the severity of impacts, which result in lesser environmental impacts. For example, the IPCC predicted that the range of global mean temperature change from year 1990 to 2100, given different emissions-reduction scenarios, could range from 1.1°C to 6.4°C.

Greenhouse Gases

Gases that trap heat in the atmosphere are called GHGs because they transform the light of the sun into heat, similar to the glass walls of a greenhouse. Common GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), ozone, and aerosols. Without the natural heat trapping effect of GHGs, the earth's surface would be about 34°C cooler.[10] However, it is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. Global atmospheric concentrations of CO_2, CH_4, and N_2O have increased markedly since the late 18th century as a result of human activities and, now, far exceed pre-industrial values.

Climate change results from radiative forcings and feedbacks. Radiative forcing is defined as the difference between the radiation energy entering the earth's atmosphere and the radiation energy leaving the atmosphere. GHGs allow solar radiation to penetrate the earth's atmosphere, but slow the release of atmospheric heat. A feedback is an internal process that amplifies or dampens the climate's response to a specific forcing. For example, the heat trapped by the atmosphere may cause temperatures to rise or may alter wind and weather patterns. A gas' or aerosol's global warming potential is defined as its ability to trap heat in the atmosphere; it is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas."[11]

Individual GHGs have varying global warming potentials and atmospheric lifetimes (see Table 3.7-1). The CO_2e is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent metric. The reference gas for global warming potential is CO_2; CO_2 has a global warming potential of one. By comparison, CH_4's global warming potential is 21, as CH_4 has a greater global warming effect than CO_2 on a mass to mass basis.[12] CO_2e is the mass of a project's emissions of an individual greenhouse gas multiplied by the gas's global warming potential.

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9 IPCC, 2007, R.B. Alley et al. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers, p. 13.

10 U.S. Environmental Protection Agency (EPA). March 2006. Climate Action Team Report to Governor Schwarzenegger and the Legislature, p. 7.

11 EPA, The U.S. Greenhouse Gas Emissions and Sinks 1991-2009, p. 2.

12 EPA, 2006, Non CO_2 Gases Economic Analysis and Inventory. Global Warming Potentials and Atmospheric Lifetimes, website: www.epa.gov/nonco2/econ-inv/table.html.

Table 3.7-1
Global Warming Potentials and Atmospheric Lifetimes of Select Greenhouse Gases

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide (CO_2)	50–200	1
Methane (CH_4)	12 ±3	21
Nitrous Oxide (N_2O)	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CF_4)	50,000	6,500
PFC: Hexafluoroethane (C_2F_6)	10,000	9,200
Sulfur Hexafluoride (SF_6)	3,200	23,900

Source: CCAR, 2009.

Of all GHGs in the atmosphere, water vapor is the most abundant, important, and variable. It is not considered a pollutant; in the atmosphere, it maintains a climate necessary for life. The main source of water vapor is evaporation from the oceans (approximately 85 percent). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from ice and snow, and transpiration from plant leaves.

Carbon dioxide (CO_2) is an odorless, colorless gas that has both natural and anthropogenic sources. The anthropogenic production and absorption of carbon dioxide occurs through the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees and wood products, and as a result of other chemical reactions, such as those required to manufacture cement. Globally, the largest source of CO_2 emissions is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, and industrial facilities. A number of specialized industrial production processes and product uses, such as mineral or metal production, and the use of petroleum-based products, leads to CO_2 emissions.

CO_2 is removed from the atmosphere (or sequestered) when it is absorbed by plants as part of the biological carbon cycle. Natural sources of CO_2 occur within the carbon cycle where billions of tons of atmospheric CO_2 are removed by oceans and growing plants and are emitted back into the atmosphere through natural processes. When in balance, total CO_2 emissions and removals from the entire carbon cycle are roughly equal. Since the Industrial Revolution in the 1700s, human activities, including burning of oil, coal, and gas and deforestation, increased CO_2 concentrations in the atmosphere by 35 percent as of 2005.[13]

Methane (CH_4) is a flammable gas and is the main component of natural gas. Methane is emitted from a variety of both human-related and natural sources. CH_4 is emitted during the production and transport of coal, natural gas, and oil, from livestock and other agricultural practices, and from the

[13] EPA, *Carbon Dioxide*, April 2011, website: http://www.epa.gov/climatechange/emissions/co2.html, accessed September 19, 2011.

decay of organic waste in municipal solid waste landfills. It is estimated that 60 percent of global CH_4 emissions are related to human activities. Natural sources of CH_4 include wetlands, gas hydrates,[14] permafrost, termites, oceans, freshwater bodies, non-wetland soils, and wildfires. CH_4 emission levels from a particular source can vary significantly from one country or region to another. These variances depend on many factors, such as climate, industrial and agricultural production characteristics, energy types and usage, and waste management practices. For example, temperature and moisture have a significant effect on the anaerobic digestion process, which is one of the key biological processes resulting in CH_4 emissions from both human and natural sources. Also, the implementation of technologies to capture and utilize CH_4 from sources, such as landfills, coal mines, and manure management systems, affects the emission levels from these sources.

Nitrous oxide (N_2O), also known as laughing gas, is produced naturally by microbial processes in soil and water. Concentrations of nitrous oxide also began to rise at the beginning of the Industrial Revolution reaching 314 parts per billion (ppb) by 1998. Microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen, produce nitrous oxide. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to the atmospheric load of N_2O.

Nitrogen trifluoride (NF_3) has no natural source, but is synthesized for use in the microelectronics industry. NF_3 is a colorless, toxic, odorless, nonflammable gas with a global warming potential around 17,000. No NF_3 emissions would be associated with the Project.

Chlorofluorocarbons (CFCs) have no natural source, but were synthesized for uses as refrigerants, aerosol propellants, and cleaning solvents. Since their creation in 1928, the concentrations of CFCs in the atmosphere have been rising. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken, and levels of the major CFCs are now remaining static or declining. However, their long atmospheric lifetimes mean that some of the CFCs would remain in the atmosphere for over 100 years. Since they are also a GHG, along with such other long-lived synthesized gases as CF_4 (carbontetrafluoride), SF_6 (sulfurhexafluoride) and NF_3 (nitrogen trifluoride), they are of concern. Another set of synthesized compounds called HFCs (hydrofluorocarbons) are also considered GHGs, though they are less stable in the atmosphere and, therefore, have a shorter lifetime and less of an impact. The uses of these gases are not typically found at commercial office buildings. Therefore, these GHGs are not included further in this analysis.

Greenhouse Gas Emissions Inventories

A GHG inventory is an accounting of the amount of GHGs emitted to or removed from the atmosphere over a specified period of time attributed to activities by a particular entity (e.g., annual emissions and reductions attributed to the State of California). A GHG inventory also provides information on the activities that cause emissions and removals, as well as the methods used to make the calculations. This section summarizes the latest information on global, State, regional, and local GHG emissions.

[14] Gas hydrates are crystalline solids that consist of a gas molecule, usually methane, surrounded by a "cage" of water molecules. (USGS, 1992).

Worldwide Inventories. Worldwide emissions of GHG in 2004 were nearly 30 billion tons of CO_2e per year (including both ongoing emissions from industrial and agricultural sources, but excluding emissions from land-use changes).[15]

United States Inventories. In 2004, the United States emitted 7.1 billion tons of CO_2e. Of the four major sectors nationwide — residential, commercial, industrial, and transportation — transportation accounts for the highest percentage of GHG emissions (approximately 35 to 40 percent); these emissions are entirely generated from direct fossil fuel combustion. In 2008, the United States emitted 6.9 billion tons of CO_2e, with transportation accounting for the highest percentage of GHG emissions, approximately 32 percent.[16]

California Inventory. In 2004, California emitted approximately 483 $MMTCO_2e$, or about six percent of the U.S. emissions. This large number is due primarily to the sheer size of California compared to other states. By contrast, California has one of the fourth lowest per-capita GHG emission rates in the country, due to the success of its energy-efficiency and renewable energy programs and commitments that have lowered the State's GHG emissions rate of growth by more than half of what it would have been otherwise. Another factor that has reduced California's fuel use and GHG emissions is its mild climate compared to that of many other states. In 2008, California's GHG emissions were approximately 478 $MMTCO_2e$, generally attributed to reduced travel and, therefore, transportation emissions.[17]

The CEC found that transportation is the source of approximately 41 percent of the State's GHG emissions, followed by electricity generation (both in-state and out-of-state) at 23 percent, and industrial sources at 20 percent. Agriculture and forestry is the source of approximately 8.3 percent, as is the source categorized as "other," which includes residential and commercial activities (CEC, 2007).

Bay Area Emissions. The BAAQMD prepared an updated inventory of GHG emissions in the San Francisco Bay Area Air Basin (Bay Area Basin) in February 2010. Total GHGs emissions within the Bay Area Basin in 2007 were estimated as 95.8 $MMTCO_2e$. Fossil fuel consumption in the transportation sector was the single largest source of the Bay Area Basin's GHG emissions in 2007. The transportation section contributed about 36.4 percent of GHG emissions in the Bay Area Basin. The transportation sector was followed by industrial/commercial (36.4 percent), electricity/co-generation (15.9 percent), residential fuel usage (7.1 percent), off-road equipment (3.1 percent), and agriculture/farming (1.16 percent).[18]

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[15] United Nations Framework Convention on Climate Change, Sum of Annex I and Non-Annex I Countries Without Counting Land-Use, Land-Use Change and Forestry (LULUCF). Predefined Queries: greenhouse gas total without LULUCF (Annex I Parties). Bonn, Germany, website: http://unfccc.int/ghg_emissions_data/predefined_queries/items/3814.php, accessed May 2, 2007.

[16] EPA. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008. EPA# 430-R-10-006, April 2011.

[17] EPA, Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2008. EPA# 430-R-10-006, April 2011.

[18] BAAQMD, 2010, Source Inventory of Bay Area Greenhouse Gas Emissions: Base Year 2007.

City of Menlo Park Inventory. The City's CAP Assessment Report[19] states that approximately 723,480 MT of CO_2e were emitted by the City in 2009. According to this estimate, 99.9 percent of this total constitutes "community" emissions, emissions attributed to vehicles on City roads and highways (62 percent); commercial, residential, and direct energy use (33 percent); and the Bayfront Park Landfill and other solid waste sources (five percent). The remaining emissions are municipal emissions, emissions generated by City buildings and vehicles, waste, streetlights, and electricity for pumping water and stormwater.

The 2011 CAP Assessment Report includes a forecast for 2020. This forecast assumes, without reduction strategies (i.e., BAU), that community emissions would increase by 204,867 MT CO_2e by 2020, for a total of 928,347 MT CO_2e. This represents a 28.3 percent increase from 2009.

Project Area Inventory. The Project site consists of a 56.9-acre East Campus and a 22-acre West Campus. The existing development on the East Campus includes nine buildings, totaling approximately one million square feet (sf), primarily office uses, multiple cafés, and fitness center. The existing development on the West Campus includes two office buildings totaling 127,246 sf, a surface parking lot with 347 parking stalls, landscape features, a basketball court, and a guard house. However, since those buildings are not currently in use, the existing development on the West Campus is not considered to generate GHG emissions. Thus, the discussion and data that follow do not include the West Campus.

An inventory of the GHG emissions generated by existing uses at the East Campus is provided in Table 3.7-2, below. To estimate total existing emissions, the emissions of the individual gases were estimated, then converted to their CO_2e using the individually determined global warming potential of each gas. Thus, total GHG emissions equals total CO_2 emissions plus total CO_2e emissions from CH_4 and N_2O. The inventory includes the following emissions:

- *Area Source Emissions.*[20] Area source emissions are direct emissions sources including existing emissions from landscaping equipment. These emissions were estimated using the CalEEMod version 2011.1.1 model.
- *Emissions Associated with Energy Use*. The generation of electricity through the combustion of fossil fuels typically yields CO_2, and to a much smaller extent, CH_4 and N_2O. By consuming electricity, existing facilities generated indirect GHG emissions. The combustion of natural gas on-site for heating, cooking and other purposes in buildings generates direct emissions of CO_2 and, to a much smaller extent, CH_4 and N_2O. Existing electricity and natural gas usage, which was used to estimate GHG emissions from existing facilities, is based upon the actual building usage as obtained from available records in 2008.
- *Emissions Associated with Water Supply*. GHG emissions are also generated by the infrastructure used to distribute and treat the domestic water supply and by infrastructure used

[19] City of Menlo Park, Climate Action Plan Assessment Report, July 2011, website: http://service.govdelivery.com/docs/CAMENLO/CAMENLO_121/CAMENLO_121_20110816_en.pdf, accessed November 11, 2011.

[20] Also known as "areawide" emissions.

to collect and treat wastewater. By consuming water and generating wastewater, development in the Project area contributes to these emissions. Emissions associated with the water supply were estimated based on per gallon electricity consumption rates reported in the CEC report *Refining Estimates of Water Related Energy Use in California*. The GHG emissions factors provided by the City to represent the carbon intensity of Pacific Gas & Electric (PG&E) supplied electricity were applied to this total. Existing water usage at the East Campus is based on operation assumptions by BKF.

- *Fugitive Solid Waste Disposed Emissions*. According to the United States Environmental Protection Agency's (EPA's) emissions reporting protocol, emissions of CO_2 from solid waste interment are considered to be biogenic GHGs and part of the carbon cycle and, as such, are typically not included in GHG emission inventories.[21] Nevertheless, fugitive CH_4 emissions associated with solid waste management have been estimated for use in this Draft EIR based on the method used by CalEEMod™.

- *Vehicular Emissions*. Employee and visitor vehicle trips associated with existing land uses represent the largest portion of the existing emissions inventory. Existing trips and corresponding GHG emissions were estimated using vehicle miles traveled (VMT) provided by DKS based on the number of trips and the Transportation Demand Management (TDM) program for 25 percent reduction in vehicle trips which reflect the permitted occupancy at the East Campus and the default vehicle emission factors for San Mateo County and year 2010 in the CalEEMod™ model.

It is believed that the above sources represent the vast majority of the GHG emissions associated with existing development on the East Campus. Existing facilities may emit a small amount of HFC emissions from leakage and service of refrigeration and air conditioning equipment and from disposal at the end of the life of the equipment;[22] however, the contributions of these emissions to the total inventory are likely quite small. PFCs and SF_6 are typically used in industrial activities that are not conducted at the Project site. Ozone has characteristics of a GHG; however, unlike regulated GHGs, ozone in the troposphere is relatively short-lived, and, therefore, has localized rather than global effects. According to CARB, it is difficult to make an accurate determination of the contribution of ozone precursors (nitrogen oxides [NO_X] and reactive organic gases [ROGs]) to global warming.[23] Facilities in the Project area do not emit CFCs, another gas with GHG characteristics, because CFCs are banned under federal regulations. Therefore, the inventory presented in Table 3.7-2, represents an estimate of all emissions directly and indirectly associated with current on-site operations at the East Campus.

[21] EPA, 1995, AP 42, Fifth Edition: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources.

[22] Godwin, David S., Marian Martin Van Pelt and Katrin Peterson. no date. Modeling Emissions of High Global Warming Potential Gases. Environmental Protection Agency.

[23] CARB, 2004, Fact Sheet, Climate Change Emission Control Regulations.

The total GHG emissions currently generated by existing development in the Project area on an annual basis are 27,413 MT of CO_2e. Specific characteristics used to estimate CO_2e emissions are summarized in Tables 1 through 5 of Appendix 3.7-A. Sources of emissions described in Table 3.7-2 are consistent with sources described above.

Table 3.7-2
Existing Annual Operational Greenhouse Gas Emissions
Within the Project Area

Source of Emissions	Emissions (MT CO_2e) Total
Area	>0.01
Energy Use	17,720[a]
Water and Wastewater	30[b]
Solid Waste	471[c]
Vehicular	9,192[d]
Total	**27,413**

Source: ENVIRON, Table 14 of Appendix 3.7-A.

Notes:

a. 17,720 MT CO_2e for energy use = 61,352,800 kWh per year of electricity use and 33,146,900 kBTU per year of natural gas use.

b. 30 MT CO_2e for water and wastewater = 20,159,700 gallons per year.

c. 471 MT CO_2e for solid waste = 1,035 tons per year.

d. 9,192 MT CO_2e for vehicle trips = 20,375,770 vehicle miles traveled.

Predicted Effects of Climate Change

Climate change could have a number of adverse effects. Although these effects would have global consequences, in most cases they would not disproportionately affect any one site or activity. In other words, many of the effects of climate change are not site-specific. Emission of GHGs would contribute to the changes in the global climate, which would in turn, have a number of physical and environmental effects. A number of general effects are discussed below.

Sea Level Rise and Flooding. Measurements taken in the San Francisco Bay (Bay) indicate that the current rate of sea level rise is about 3.5 inches per century at Alameda and 8.4 inches per century at San Francisco.[24] Climate change effects on sea levels could lead to even higher rates of sea level rise (accelerated sea level rise).

Different scenarios and models used to predict sea level rise result in different estimates of the magnitude of sea level rise. For example, the California Climate Change Center predicts that accelerated sea level rise could result in a sea level rise in California of 4.3 to 27.6 inches above the

[24] Floyd, M., M. Anderson, M. Roos, R. Peterson, M. Perrone, and D. Todd. 2006, Chapter 2: Potential Impacts of Climate Change on California's Water Resources, Table 2-6 Relative Sea Level Trends for Eight Tide Gauges Along the Coast of California with 50 Years or More of Record. p. 2-43. In: California Department of Water Resources, Progress on Incorporating Climate Change into Planning and Management of California's Water Resources Technical Memorandum Report, prepared July 2006.

existing mean sea level (msl) by 2099.[25] CAT projects that sea levels could rise between 20 and 55 inches by the year 2099.[26]

In October 2011, BCDC adopted the latest amendment to the Bay Plan. The Bay Plan states that the Bay will rise 10 to 17 inches by 2050, 17 to 32 inches by 2070, and 55 to 69 inches by the end of the century.[27]

Additionally, alterations in the flow regime and subsequent flood potential could also occur from effects of climate change on local and regional precipitation patterns. These issues are addressed in Section 3.12, Hydrology and Water Quality.

In the future, precipitation events are predicted to vary in terms of timing, intensity and volume according to many climate change models.[28] Extreme storm events may occur with greater frequency.[29] The effect on peak runoff is not known because most climate change models have not used a temporal (or spatial) scale necessary to identify effects on peak flows, and existing precipitation/runoff models for assessing the effects of climate change do not yet adequately predict rainfall/runoff scenarios.[30] Changes in rainfall and runoff could affect flows in surface water bodies, causing increased flooding and runoff to the storm drain system (Refer to Section 3.12, Hydrology and Water Quality).

Water Supply. California Health and Safety Code Section 38501(a) recognizes that climate change "poses a serious threat to the economic well-being, public health, natural resources, and the environment of California," and notes, "the potential adverse impacts of [climate change] include…reduction in the quality and supply of water to the State from the Sierra snowpack." As most of the State, including the Bay Area, depends on surface water supplies originating in the Sierra Nevada, this water supply reduction is a concern.

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[25] Cayan, D. P. Bromirski, K. Hayhoe, M. Tyree, M. Dettinger, and R. Flick. 2006. Projecting Future Sea Level: Table 3 Projected global sea level rise (SLR) (cm) for the SRES A1fi, A2, and B1 greenhouse gas emission scenarios. SLR for A2 and B1 scenarios is estimated by combining output recent global climate change model simulations with MAGICC projections for the ice melt component. SLR estimates for A1fi estimated from MAGICC based on A2 temperature changes scaled according to those in A1fi. A Report From the California Climate Change Center CEC-500-2005-2002-SF. p. 19.

[26] San Francisco Bay Conservation and Development Commission, Climate Change, 2007, www.bcdc.ca.gov/planning/climate_change/climate_change.shtml.

[27] San Francisco Bay Conservation and Development Commission, "Resolution No. 11-08: Adoption of Bay Plan Amendment No. 1-08 Adding New Climate Change Findings and Policies to the Bay Plan; And Revising the Bay Plan Tidal Marsh and Tidal Flats; Safety of Fills; Protection of the Shoreline; and Public Access Findings and Policies," website: http://www.bcdc.ca.gov/proposed_bay_plan/10-01Resolution.pdf, accessed October 31, 2011.

[28] EPA, 2008, Climate Change Science: Precipitation and Storm Changes. Accessed September 20, 2011 at: www.epa.gov/climatechange/science/recentpsc.html.

[29] EPA, 2008, Climate Change Science: Precipitation and Storm Changes. Accessed September 20, 2011 at: www.epa.gov/climatechange/science/recentpsc.html.

[30] Anderson. M. 2006. Chapter 6: Climate Change Impacts on Flood Management p. 6-22 and 6-27. In Medelin, J., J. Harou, M. Olivares, J. Lund, R. Howitt, S. Tanaka, M. Jenkins, K. Madani, and T. Zhu (Eds), Climate Warming and Water Supply Management In California: White Paper. A Report from Climate Change Center CEC-500-2005-195-SF.

Most of the scientific models addressing climate change show that the primary effect on California's climate would be a reduced snow pack and a shift in stream-flow seasonality. A higher percentage of the winter precipitation in the mountains would likely fall as rain rather than as snow in some locations, thereby reducing the overall snowpack. Further, as temperatures rise, snowmelt is expected to occur earlier in the year resulting in peak runoff that would likely come a month or so earlier. The end result of this would be that the State may not have sufficient surface storage to capture the resulting early runoff and, so, absent construction of additional water storage projects, a portion of the current supplies would be lost to the oceans, rather than be available for use in the State's water delivery systems.

Water Quality.[31] Climate change could have adverse effects on water quality, which would, in turn, affect the beneficial uses (habitat, water supply, etc.) of surface water bodies and groundwater. The changes in precipitation discussed above could result in increased sedimentation, higher concentration of pollutants, higher dissolved oxygen levels, increased temperatures, and an increase in the amount of runoff constituents reaching surface water bodies. Sea level rise, discussed above, could result in the encroachment of saline water into freshwater bodies.

Ecosystems and Biodiversity.[32] Climate change is expected to have effects on diverse types of ecosystems, from alpine to deep sea habitat. As temperatures and precipitation change, seasonal shifts in vegetation would occur; this could affect the distribution of associated flora and fauna species. As the range of species shifts, habitat fragmentation could occur, with acute impacts on the distribution of certain sensitive species. The IPCC states that "20 percent to 30 percent of species assessed may be at risk of extinction from climate change impacts within this century if global mean temperatures exceed 2 to 3°C (3.6 to 5.4°F) relative to pre-industrial levels."[33] Shifts in existing biomes could also make ecosystems vulnerable to invasive species encroachment. Wildfires, which are an important control mechanism in many ecosystems, may become more severe and more frequent, making it difficult for native plant species to repeatedly re-germinate. In general terms, climate change is expected to put a number of stressors on ecosystems, with potentially catastrophic effects on biodiversity.

Human Health Impacts.[34] Climate change may also increase the risk of vector-borne infectious diseases, particularly those found in tropical areas and spread by insects, such as malaria, dengue fever, yellow fever, and encephalitis. Cholera, which is associated with algal blooms, could also increase. While these health impacts would largely affect tropical areas in other parts of the world,

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31 IPCC, 2007: Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Parry, Martin L., Canziani, Osvaldo F., Palutikof, Jean P., van der Linden, Paul J., and Hanson, Clair E. (eds.)]. Cambridge University Press, Cambridge, United Kingdom, 1000 pp.

32 EPA, 2008, Climate Change – Ecosystems and Biodiversity, website: www.epa.gov/climatechange/effects/eco.html, accessed September 20, 2011.

33 IPCC, 2007: Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Parry, Martin L., Canziani, Osvaldo F., Palutikof, Jean P., van der Linden, Paul J., and Hanson, Clair E. (eds.)]. Cambridge University Press, Cambridge, United Kingdom, 1000 pp.

34 EPA, 2008, Climate Change – Health and Environmental Effects, website: www.epa.gov/climatechange/effects/health.html#climate, accessed September 20, 2011.

effects would also be felt in California. Warming of the atmosphere would be expected to increase smog and particulate pollution, which could adversely affect individuals with heart and respiratory problems, such as asthma. Extreme heat events would also be expected to occur with more frequency, and could adversely affect the elderly, children, and the homeless. Finally, the water supply impacts and seasonal temperature variations expected as a result of climate change could affect the viability of existing agricultural operations, making the food supply more vulnerable.

Impacts and Mitigation Measures

Standards of Significance

The Project would result in a significant impact with regard to GHGs and climate change, based on the 2010 amendments to the CEQA Guidelines if it would:

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

BAAQMD considers GHG impacts to be exclusively cumulative and, as such, assessment of significance is based on a determination of whether the GHG emissions from a project represent a cumulatively considerable contribution to the global atmosphere. Therefore, this section does not include a separate cumulative discussion of the Tier 1 and Tier 2 projects.

Climate Change Analysis Methodology

The analysis of climate change impacts involves determining a GHG emission inventory for the Project sources, which then can be used as a comparison to thresholds of significance to determine if the Project would result in cumulative impacts. This section describes the methodology that was used to develop the GHG emissions inventories associated with the Project. Separate emission inventories are presented for both the East Campus and West Campus. As recommended by the BAAQMD CEQA guidelines,[35] these inventories consider the following categories of GHG emissions: construction, area sources, energy use, water use, waste disposed, traffic, and stationary source emissions (which, in this case, consist solely of emergency generator testing). Electrical power would be supplied to the Project site by PG&E. Accordingly, indirect GHG emissions from electricity usage are calculated using the PG&E carbon-intensity factor used by the City of 0.568 pounds per kilowatt hour (lb/kWh).

PG&E would also supply natural gas to the Project site. Since natural gas emissions do not vary by provider as indirect electricity emissions do, the EPA AP-42 emission factors[36] for natural gas of 11.7 pounds per therm was used. Legislation and rules regarding climate change, as well as the scientific

[35] BAAQMD, *California Environmental Quality Act Air Quality Guidelines*, May 2011, p. 4-6.

[36] The EPA maintains a compilation of Air Pollutant Emission Factors and process information for several air pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. More information is available at http://www.epa.gov/ttnchie1/ap42/.

understanding of the extent to which different activities emit GHGs, continue to evolve; as such, the inventories in this report are a reflection of the guidance and knowledge currently available.

ENVIRON, the preparers of this section, primarily utilized the CalEEMod™[37] to assist in quantifying the GHG emissions in the inventories presented in this report for the Project. CalEEMod™ is a Statewide program designed to calculate both criteria and GHG emissions from development projects in California. This model was developed under the auspices of the South Coast Air Quality Management District (SCAQMD), which received input from other California air districts, including BAAQMD, and is a currently accepted model by BAAQMD for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod™ utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site-specific information is not available. These models and default estimates use sources, such as the EPA AP-42 emission factors,[38] CARB's on-road and off-road equipment emission models, such as the EMission FACtor model (EMFAC) and the Off-road Emissions Inventory Program model (OFFROAD),[39] and studies commissioned by California agencies such as the CEC and CalRecycle. With respect to the estimation of GHG emissions, CalEEMod™ is not only more current than URBEMIS 9.2.4 and the BAAQMD GHG model (BGM), but it also includes all of the GHG emission source categories required for a comprehensive GHG impacts analysis and updated vehicle emission factors that incorporate recent regulations described earlier in this section, such as Pavley I and the LCFS and incorporates state-of-the-science methods for quantifying mitigation and project design features not available in URBEMIS 9.2.4 or BGM.[40]

ENVIRON used San Mateo County CalEEMod™ defaults in the model runs unless otherwise noted in the methodology descriptions below. Details regarding the specific methodologies used by CalEEMod™ can be found in the CalEEMod™ User's Guide and associated appendices.[41] The CalEEMod™ output files are provided for reference in Appendix 3.7-E to this report and relevant CalEEMod™ inputs can be found in Tables 1 through 5 of Appendix 3.7-A.

Construction Emissions

This section describes the estimation of GHG emissions from construction activities at the West Campus. There are four major construction phases for an urban redevelopment: demolition, site preparation, grading, and building construction. The building construction phase can be broken down into three subphases: building construction, architectural painting, and asphalt paving. GHG emissions from these construction phases are largely attributable to fuel use from construction equipment and worker commuting. No GHG emissions that may be associated with landfilling of construction waste

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37 Available at: http://caleemod.com.

38 The EPA maintains a compilation of Air Pollutant Emission Factors and process information for several air pollution source categories. The data is based on source test data, material balance studies, and engineering estimates. More information is available at http://www.epa.gov/ttnchie1/ap42/.

39 OFFROAD refers to CARB's emissions estimation model and off-road refers to equipment that operate off the road.

40 See the Frequently Asked Questions (FAQs) available at www.caleemod.com for a list of differences between CalEEMod and URBEMIS.

41 Available at: http://www.caleemod.com.

are included in this estimate. The City requires that 60 percent of construction and demolition waste be diverted from landfills.

ENVIRON used CalEEMod™ to assist in quantification of the construction emissions. The construction schedule and equipment list are based on information provided by the Project Sponsor.[42] The CalEEMod™ output includes details on the parameters used to run the emissions estimation program and contains estimated emissions. The Off-road equipment emissions were adjusted from the emissions estimate contained in the CalEEMod™ output to account for a 33 percent reduction attributable to overestimation of load factors, which CARB has indicated to be appropriate.[43] The GHG emissions associated with construction of the West Campus total 1,711[44] MT of CO_2e and are shown in Table 3.7-3 with further details on equipment and vehicle operations emissions associated with construction contained in Tables 6 to 8 of Appendix 3.7-A.

Operational Emissions

Direct emissions from traffic and area sources and indirect emissions from energy, water use, wastewater, and waste management, would occur every year after build out. Emergency generator testing would also occur. This section outlines the operational GHG emissions associated with the Project. ENVIRON used CalEEMod™ to assist in quantification of the operational emissions except for emergency generator testing, which was based on the emission factor from OFFROAD2007 for diesel generators. Where available, site-specific information was used in CalEEMod™, as shown in Tables 1 and 5 of Appendix 3.7-A. For informational purposes only the average carbon intensity emission factor (GHG emissions per activity metric such as kilowatt hours, VMT, etc) for the various source categories that results from using site-specific information can be found in Appendix 3.7-H.

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[42] Justin Murphy, Development Services Manager, City of Menlo Park Community Development Department, Planning Division, electric communication with ENVIRON, July 14, 2011. Attachments: Facebook_ Construction_Data_Request_11-07-13.pdf and SCBI_EIR_Response _11-07-13.pdf.

[43] In September 2010, the ARB announced that its methods used to estimate the load factor for off-road equipment were incorrect and led to an overestimate of emissions by a factor of at least 33 percent. ARB is currently revising their emissions model, OFFROAD, which has not yet been released. In the meantime, we have received direction from ARB to reduce the load factors by a 33 percent to take into account this error and this will be accounted for into the analysis whether using OFFROAD directly or CalEEMod, which is based on OFFROAD. The slides from the ARB workshop discussing this change are available online at: http://www.arb.ca.gov/msprog/ordiesel/documents/emissions_inventory_presentation_full_10_09_03.pdf.

[44] Use of newer model engines and higher Tier (i.e., lower emitting) off-road equipment would only serve in most cases to reduce the GHG emissions. The exceptions are the use of compressed natural gas vehicles which could increase the GHG emissions from off-road vehicles slightly, and the use of diesel particulate filters, which have a small energy penalty associated with them.

Table 3.7-3
Summary of Construction GHG Emissions

Construction Phase	CO_2e Emissions		
	Equipment	Vehicles	Total
		MT	
Demolition I	56	26	82
Demolition II	108	48	156
Grading I	35	2	38
Grading II	19	2	21
Grading III	13	218	231
OTHER I	64	4	69
OTHER II	26	15	40
Building Construction I	66	44	110
Building Construction II	48	119	167
Building Construction III	49	25	74
Building Construction IV	104	259	363
Building Construction V	53	215	268
Paving	12	14	25
Site Preparation	37	25	63
Coating	1.7	2.7	4.4
Total	**693**	**1,018**	**1,711**

Source: ENVIRON, Table 8 of Appendix 3.7-A. Supporting information in Tables 6 and 7 of Appendix 3.7-A.

Energy use was provided by the Project Sponsor for the baseline usage at the East Campus and the anticipated usage at the East Campus and West Campus.[45] The anticipated energy usage takes into account adjustments in energy use due to higher employee occupancy, improved building system energy use based on the TIs, adjustments to account for California's current building codes and the Project Sponsor's commitment to sustainable efficiencies beyond current building code thresholds. Table 9 of Appendix 3.7-A contains the details of estimating GHG emissions in units of CO_2e associated with electricity and natural gas usage in the buildings. Water usage was based on the water supply assessment found in Appendix 3.7-F of this Draft EIR. Table 10 of Appendix 3.7-A contains the details of estimating GHG emissions in units of CO_2e associated with the water used in the buildings. The quantity of solid waste disposed for both the baseline and the Project was based on a trash analysis provided by the Project Sponsor through the City.[46] Table 11 of Appendix 3.7-A contains the details of estimating GHG emissions in units of CO_2e associated with the amount of waste generated by the occupants of the buildings. The VMT and trips were provided by DKS Associates[47] and the Project Sponsor,[48] respectively. DKS also provided an analysis of employee commute VMT in conjunction with the TDM program (including shuttle buses and vanpools). The weekend trips and

[45] KEMA. Facebook Menlo Park Campus Energy Demands. Memorandum between Erik Dyrr, KEMA and City of Menlo Park. August 2, 2011.

[46] Justin Murphy, Development Services Manager, City of Menlo Park Community Development Department, Planning Division, electric communication with ENVIRON, August 31, 2011. Attachments: Trash Analysis_revised_8_29_11.xlsx.

[47] Paul Stanis, DKS Associates, electronic communication with ENVIRON, October 26, 2011.

[48] Fehr & Peers. Transportation Demand Management Program. August 2011.

VMT were assumed to be 10 percent of the weekday trips provided. Table 12 of Appendix 3.7-A contains the details of estimating GHG emissions in units of CO_2e associated with the traffic from the Project.

As described in Table 13 of Appendix 3.7-A, there would be three diesel-fired emergency generators at the West Campus and there are nine diesel-fired emergency generators at the East Campus for a total of 12 emergency generators of varying sizes. The East Campus emergency generators, if assumed to be tested for 20 hours in a year (as shown in the BAAQMD permits in Appendix 3.7-G), result in 30 MT of CO_2e per year, which would be the same for both the baseline and the Project. The West Campus emergency generators, if assumed to be tested for 30 minutes each month (as specified by the Project Sponsor and shown in Appendix 3.7-G), result in 23 MT of CO_2e per year. Table 13 of Appendix 3.7-A contains the details of estimating the GHG emissions in CO_2e associated with the emergency generator testing.

A summary of GHG emissions from the sources described above is contained in Table 14 of Appendix 3.7-A and Tables 3.7-4 and 3.7-5 below. Based on the methods described above and as shown in the CalEEMod™ output contained in Appendix 3.7-E, the baseline emissions for the East Campus are 27,413 MT of CO_2e per year. The total East Campus emissions are 30,990 MT of CO_2e per year, resulting in incremental East Campus emissions of 3,577 MT of CO_2e per year.

The West Campus emissions are 12,169 MT of CO_2e per year. Therefore, the Project emissions are 3,577 and 12,169 MT of CO_2e per year for the East Campus and West Campus, respectively for a total of 15,747 of MT of CO_2e per year. With the amortized construction emissions included, the Project emissions are 3,577 and 12,226 MT of CO_2e per year for the East Campus and West Campus, respectively for a total of 15,804 MT of CO_2e per year. The detailed information is shown in Table 3.7-4 and Table 3.7-5.

Table 3.7-4
Summary of Operational Emissions

Emission Category	Units	East Campus Increment	West Campus
Area		< 0.01	< 0.01
Energy Use		-10,638	2,043
Water Use		29	30
Waste Disposed		369	357
Traffic	MT CO_2e/yr	13,817	9,740
Total Emissions		**3,577**	**12,169**
Construction Amortized[a]		NA	57
Total Plus Amortized Emissions		3,577	12,226
Emergency Generator Testing		0	23

Source: ENVIRON, Table 14 of Appendix 3.7-A.
Note:

a. Construction emissions are amortized over a 30-year project lifetime. Total construction emissions are 1,711 MT of CO_2e divided by 30 years is equal to 57 MT/yr.

Table 3.7-5
Summary of GHG Emissions

Category	Units	East Campus Baseline	East Campus	East Campus Increment	West Campus Increment	Total Project Increment
Area		0	0	0	0	0
Energy Use		17,720	7,083	-10,638	2,043	-8,595
Water Use		30	59	29	30	59
Waste Disposed	MT CO_2e/yr	471	840	369	357	726
Traffic		9,192	23,008	13,817	9,740	23,557
Construction Amortized[a]		NA	NA	NA	57	57
Total Emissions		**27,413**	**30,990**	**3,577**	**12,226**	**15,804**
Service Population	SP	3,600	6,600	3,000	2,800	5,800
Emissions per Service Population	**MT CO_2e/SP/yr**	**--**	**--**	**1.2**	**4.4**	**2.7**
BAAQMD Efficiency Metric Significance Threshold				**4.6**		
Emergency Generators	MT CO_2e/yr	30	30	0	23	23
BAAQMD Stationary Source Significance Threshold	MT CO_2e/yr			10,000		

Source: ENVIRON, Table 14 of Appendix 3.7-A.

Note:

a. Construction emissions are amortized over a 30-year project lifetime. Total construction emissions are 1,711 MT of CO_2e divided by 30 years is equal to 57 MT/yr. There are no construction emissions for the TIs for the East Campus.

The GHG emissions shown in Table 3.7-4 reflect Project design features associated with building energy use, water use, and waste disposal. These building design features include an improvement of 20-30 percent above Title 24-2008 energy code for the West Campus, open designed parking structure to reduce the need for fans, Energy Star rated computer equipment and appliances, and a 20 percent reduction in lighting energy used for the East Campus. The emissions associated with traffic reflect the daily trip caps, as well as the TDM program. The discrepancy in scale between the East Campus Increment and West Campus emissions is primarily due to the fact that the existing emissions on the East Campus were removed in the East Campus Increment.

Effects of Climate Change

The effects of climate change are evaluated for two impacts. The first impact is based on the GHG emission inventory according to the methodology outlined above. The second impact is based on consistency with applicable plans, policies, and regulations related to reducing GHG emissions.

Environmental Analysis

CC-1 ***Greenhouse Gas Emissions.*** *The Project, at both the East Campus and West Campus, would result in a net increase in GHG emissions. However, the increase would not exceed the BAAQMD's standards of significance, resulting in a less-than-significant impact. (LTS)*

BAAQMD has adopted thresholds of significance for operational emissions of GHGs for both stationary sources that require a district permit to operate, and projects other than stationary sources.[49] BAAQMD has not adopted a threshold of significance for construction-related emissions, but state in their CEQA Guidelines that the lead agency should quantify and disclose GHG emissions that would occur during construction and make a determination on the significance of these construction generated GHG impacts.[50] While there is no guidance on how to determine the significance of construction GHG emissions in the BAAQMD CEQA guidelines, the SCAQMD has recommended that construction emissions be amortized over a 30 year period and then combined with the operational emissions and compared to the operational emission threshold.[51] This approach is used in this document.

The stationary source threshold for permitted sources is 10,000 MT of CO_2e per year and is used to evaluate the emergency generator testing emissions. For project emissions other than permitted stationary sources, BAAQMD has three options that can be used for comparison based on the lead agency's discretion:[52]

- Compliance with a qualified GHG Reduction Strategy;
- Annual emissions less than 1,100 MT of CO2e per year; or
- 4.6 MT of CO2e per service population[53] per year (MT CO2e/SP/yr).

The BAAQMD Guidelines describe a qualified CAP adopted by a local jurisdiction as including the following:

- GHG Inventory for Current Year and Forecast for 2020 (and for 1990 if the reduction goal is based on 1990 emission levels);
- An adopted GHG Reduction Goal for 2020 for the jurisdiction from all sources (existing and future) which is consistent with AB 32's goals and the AB 32 Scoping Plan;

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49 BAAQMD, *Adopted Air Quality CEQA Thresholds of Significance*. June 2, 2010. website: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Adopted%20Thresholds%20Table_December%202010.ashx?la=en.

50 BAAQMD, *California Environmental Quality Act Air Quality Guidelines*, May 2011. p.p. 2-6.

51 SCAQMD, Draft *Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*. October. p.p. 3-8, 2008, website: http://www.aqmd.gov/ceqa/handbook/GHG/2008/oct22mtg/GHGguidance.pdf, accessed November 3, 2011.

52 BAAQMD, *California Environmental Quality Act Air Quality Guidelines*. May 2011, p.p. 2-4.

53 Service population is the sum of residents and employees of a land use development project.

- Identification of feasible reduction measures to reduce GHG emissions for 2020 to the identified target including application of relevant reduction measures included in the AB 32 Scoping Plan that are within the jurisdiction of the local land use authority (such as building energy efficiency, etc.);
- Quantification of the reduction effectiveness of each of the feasible measures identified including disclosure of calculation method and assumptions;
- Identification of implementation steps and financing mechanisms to achieve the identified goal by 2020;
- Procedures for monitoring and updating the GHG inventory and reduction measures at least twice before 2020 or at least every five years;
- Identification of responsible parties for implementation and a schedule for implementation; and
- A certified CEQA document or equivalent.

No relevant jurisdiction (the City, the County, etc.) has a qualified GHG reduction strategy, as described in the BAAQMD Guidelines. Accordingly, compliance with a qualified GHG reduction strategy is not an option. However, for information purposes, the City's CAP, which is not a qualified plan, is described in more detail below. Emissions from a Project of this magnitude are not appropriate to compare to the second threshold, 1,100 MT of CO_2e per year. Accordingly, BAAQMD guidance recommends comparison of emissions from large residential and commercial projects with the third threshold, which is a GHG efficiency metric. GHG efficiency metrics were developed from the emissions rates at the State level for the land use sector that would accommodate projected growth (as indicated by population and employment growth) under trend forecast conditions allowing for consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020).[54] For this Project, the efficiency goal of 4.6 MT CO_2e/SP/yr has been selected by the City, as the Lead Agency, as the threshold of significance for the land use related emissions of the Project combined with the amortized construction emissions.

Consistent with BAAQMD guidance, the threshold of 10,000 MT of CO_2e per year has been selected for emissions associated with the operation of the stationary sources at the Project, which are solely associated with emergency generator testing.

The GHG efficiency metric is calculated separately for the East Campus, the West Campus, and the Project as a whole. For the East Campus, because the Project is related only to increasing traffic at the site and not to any change in use, the efficiency metric is calculated based on the incremental GHG emissions from the incremental service population increase. For

[54] BAAQMD. *Revised Draft Options and Justification Report California Environmental Quality Act Thresholds of Significance*. October 2009, p. 48, website: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Revised%20Draft%20CEQA%20Thresholds%20%20Justification%20Report%20Oct%202009.ashx?la=en, accessed November 3, 2011.

the West Campus, the calculated efficiency metric is based on its Project emissions and service population. For the Project as a whole, the efficiency metric is based on the sum of the incremental GHG emissions at the East Campus and the emissions at the West Campus divided by the sum of the incremental service population at the East Campus and the new service population at the West Campus.

Table 3.7-5 summarizes the GHG emissions and the comparison to the applicable threshold of significance. The emergency generator testing emissions of 23 MT of CO_2e per year for the West Campus[55] are less than the stationary source threshold of 10,000 MT of CO_2e per year. The operational and amortized construction emissions[56] result in 1.2 and 4.4 MT of CO_2e per service population per year for the East Campus and West Campus, respectively, and the combined total for both Campuses of 2.7 MT of CO_2e per service population per year, which is less than the threshold of 4.6 MT of CO_2e per service population per year.

Since the stationary source, amortized construction and operational emissions for the Project are all less than the applicable thresholds of 4.6 MT of GHG emissions per service population or less than 10,000 MT of GHG emissions for the stationary sources, the impact of GHG emissions is ***less than significant***.

Based on the justification that BAAQMD utilized in establishing its threshold of significance for GHGs, it is not necessary to consider the impacts of other foreseeable projects such as the Tier 1and Tier 2 projects. As stated on page 2-1 of BAAQMD's CEQA Guidelines:

> The combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts. BAAQMD's approach to developing a *Threshold of Significance* for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move us towards climate stabilization. If a project would generate GHG emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact, and would be considered significant.

As stated above, the Project would not generate GHG emissions above the threshold and, therefore, in combination with present and future projects, would not contribute to a significant cumulative impact.

[55] The East Campus generator already exists and is not a part of this analysis.

[56] Construction associated with the TIs for the East Campus are not a part of this Project. Accordingly, only the West Campus's construction emissions are amortized into the operational emissions.

CC-2 ***Conflicts with Applicable Plans and Policies.*** *The Project, at both the East Campus and West Campus, would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs, resulting in a less-than-significant impact. (LTS)*

The Project would not pose any explicit conflict with the applicable list of CARB GHG reduction strategies outlined in the Climate Change Scoping Plan designed to meet the objectives of AB 32 to reduce GHG emissions to 1990 levels by 2020. Many of the reduction strategies outlined in the Scoping Plan require Statewide action by government, industry, or both. Some of the measures are applicable to the Project that do not require government action, such as improving building energy use, green buildings, water use efficiency, and solid waste reduction through recycling, all of which have been incorporated as part of the Project.

The Project is consistent with AB 32 goals by virtue of the City's reliance on the BAAQMD's AB 32 derived per-capita efficiency threshold of 4.6 MT of CO_2e per service population per year under Impact CC-1, above. The BAAQMD threshold was based on the 1990 GHG emission level divided by the service population for 2020. Since the Project's GHG emissions fall below this BAAQMD threshold derived from AB 32 attainment goals, the Project would not conflict with AB 32 and its associated planning efforts.

The City's General Plan does not include policies explicitly designed to address GHG emissions and climate change. However, a number of goals and policies in the General Plan would play a role in planning efforts to reduce GHG emissions. The Project would be consistent and would not conflict with a variety of General Plan policies, as listed earlier in this document under Applicable Plans and Regulations.

In 2009, the City published a CAP that outlines a number of municipal and community emissions reduction strategies. In 2011, a CAP Assessment Report was published, which evaluates the recent GHG emissions and suggests new GHG reduction strategies to consider. On July 26, 2011, the City Council approved that the strategies listed in this new assessment replace the strategies from the 2009 CAP. The Project would not conflict with implementation of the CAP. In fact, many sustainability strategies incorporated by the Project would be consistent with the CAP. Table 3.7-6, presents the community strategies contained in the CAP and correlates each to a specific element or mitigation measure of the Project that address the strategy. A review of the table indicates that the Project is consistent with all of the strategies that would reasonably be applicable to a land use development project.

For example, the Project would aim to reduce automobile dependence by improving bicycle infrastructure. This goal would help reinforce the CAP's strategies to implement bike improvements and to implement TDM strategies. Another strategy included in the Project relates to the CAP's goal to encourage larger local businesses to install recharging stations for electric vehicles and plug-in hybrid electric vehicles.

Beyond the goals of AB 32, Executive Order S-3-05 sets a goal of reducing emissions to 80 percent below 1990 emissions by 2050. AB 32 met one of S-3-05 objectives of reducing GHG emissions to 1990 levels by 2020. At this time, no specific strategies have been identified to reach the 2050 goal. The technologies needed to reach this goal are unknown and speculative but will likely be a result of technologies that reduce building energy use, water use, improve vehicle economy and decarbonization of the fuel supply for vehicles and electricity generation. Furthermore, it is unknown if the Project would be around at this time or have been modified from the use and design evaluated in this Draft EIR, as land uses may change within this time frame. Therefore, it is too speculative at this time to assess if the Project is consistent with the GHG emission goal for 2050.

MTC and ABAG are responsible for developing the local SCS which implements SB 375 GHG reductions. The SCS has not been developed at this time and, therefore, there is nothing to compare the Project to for consistency with this regulation and plan.

Based on the discussion above, the Project would not conflict with any applicable plans or policies that do not require speculation as to future emission reductions that could occur based on technologies not yet developed. Therefore, the Project's impact relative to conflicts with applicable Plans and Policies would be ***less than significant***.

Table 3.7-6
Climate Action Plan Strategies to be Implemented at the Community Level

CAP Strategies	Project Compliance
Energy Efficiency	
Consider adopting Sustainable Development/ Green Building standards that exceed California's 2010 Green Building Code (CalGreen) for Residential and Commercial	The Project would implement the mandatory CalGreen requirements and would exceed the mandatory requirements in some of the categories of the Code. The Project incorporates sustainability strategies reflected in the Leadership in Energy and Environmental Design (LEED) rating system developed by the U.S. Green Building Council. These programs would reduce energy consumption beyond current code requirements.
Consider actively marketing and providing additional incentives for residents to participate in the new Regional Energy Upgrade California Program	This strategy is not applicable to local development as it is a City-sponsored education program designated for further study.
Expand Menlo Park Municipal Water District Conservation Programs	This strategy designated for further study would implement further water conservation programs such as installation of artificial turf at playing fields and gray-water recycling. LEED designated construction strategies proposed by the Project would install low flow water facilities in new and redeveloped construction and would not conflict with this pending effort to reduce water demand.
Consider developing an Energy Efficiency/ Renewable Energy Program for Residential sector	This strategy is not applicable to local development as it is a City sponsored program designated for residential sector and not commercial.

Table 3.7-6
Climate Action Plan Strategies to be Implemented at the Community Level

CAP Strategies	Project Compliance
Develop a commercial energy efficiency program to encourage businesses to participate in a free energy efficiency audit when business license is issued or renewed	This strategy is not applicable to local development as it is a City-sponsored program designated for further study.
Consider local energy efficiency and renewable energy financing program	This strategy is not applicable to local development as it is a City-sponsored program designated for further study.
Consider development of an ordinance for energy and water efficiency standards for transfer of title transactions	This strategy is not applicable to local development as it is a City-sponsored program designated for further study.
Transportation	
Consider amending the City's General Plan to include new sustainability policies, goals and programs	These strategies are designated for further study and would be City-sponsored policies, goals and programs that are not developed at this time and therefore not applicable to the Project.
Consider social marketing programs/ campaigns to promote alternative transportation (walking, biking, public transit, etc.)	This strategy is not applicable to local development as it is a City-sponsored education program designated for further study. The Project's TDM program already includes this.
Consider implementation for City Car Sharing Program	The Project would have parking spaces available for the implementation of car share programs.
Implement Bike Improvements	The Project would include bicycle storage facilities and showers and changing rooms.
Solid Waste	
Consider adopting a Zero Waste Policy with 75% diversion by 2020 and 90% diversion by 2030.	These strategies are designated for further study and would be City-sponsored infrastructure and/or ordinance efforts to reduce solid waste disposal that would not be applicable to a land use project.
Consider adopting a mandatory Commercial Recycling Ordinance	These strategies are designated for further study and would be City-sponsored infrastructure and/or ordinance efforts to reduce solid waste disposal that would not be applicable to a land use project. The Project would have recycling.
Other	
Establish Climate Action Plan monitoring and progress reporting program	These strategies are designated for further study and would be City-sponsored policies, goals, and programs that are not applicable to the Project.
Expand Green Business Certification Program/Include Green Business education to new business permit applicants	This strategy is not applicable to local development as it is a City-sponsored education program designated for further study.
Consider amending the City's General Plan to include a "GHG Reduction Strategy" as outlined in the new CEQA Guidelines	These strategies are designated for further study and would be City sponsored policies, goals and programs that are not developed at this time and therefore not applicable to the Project.
Develop social marketing campaign to educate residents on reducing their personal greenhouse gas emissions.	This strategy is not applicable to local development as it is a City sponsored education program designated for further study.
Develop a promotion and education program to encourage local and or organic food production	This strategy is not applicable to local development as it is a City sponsored education program designated for further study.

Table 3.7-6
Climate Action Plan Strategies to be Implemented at the Community Level

CAP Strategies	Project Compliance
Consider an educational program and/or local ordinance to limit vehicle idling	This strategy is not applicable to local development as it is a City-sponsored program and ordinance designated for further study. Additionally, the California Air Resources Board has already implemented a heavy-duty truck idling emission reduction program that restricts truck idling to five minutes.
Research opportunities to improve methane capture at Marsh Road Landfill (Methane Emissions Mitigation)	These strategies are designated for further study and would be City-sponsored infrastructure and/or ordinance efforts to reduce emissions from solid waste disposal at a specific facility that would not be applicable to a land use project.

Source: ENVIRON, 2011; City of Menlo Park, 2009.