

4.10 CLIMATE CHANGE

4.10.1 ENVIRONMENTAL SETTING

GREENHOUSE GASES

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). Both natural processes and human activities emit GHGs. The accumulation of GHGs in the atmosphere regulates the earth's temperature; however, emissions from human activities such as electricity production and vehicles have elevated the concentration of these gases in the atmosphere. This accumulation of GHGs has contributed to an increase in the temperature of the earth's atmosphere and contributed to climate change.

The principal GHGs are carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone, and water vapor.¹ Of these gases, carbon dioxide (CO₂) and methane are emitted in the greatest quantities from human activities and CO₂ is the "reference gas" for climate change. Emissions of carbon dioxide 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 carbon dioxide) include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride, and are generated in certain industrial processes (CCAR, 2007). Carbon dioxide is the reference gas for climate change, meaning that emissions of GHGs are typically reported in "carbon dioxide-equivalent" measures.

There is international scientific consensus that human-caused increases in GHGs have contributed, and will continue to contribute, to global warming, although there is much uncertainty concerning the magnitude and rate of the warming. Some of the potential impacts in California of global warming may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CARB, 2006a). Globally, climate change has the potential to impact numerous environmental resources through potential, though uncertain, impacts related to future air temperatures and precipitation patterns. The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects, according to the Intergovernmental Panel on Climate Change:²

¹ Ozone is not directly emitted, but forms from other gases in the troposphere, the lowest level of the earth's atmosphere, which contributes to the retention of heat.

² Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: The Physical Science Basis; Summary for Policymakers*, February 5, 2007. Available on the internet at: <http://www.ipcc.ch/SPM2feb07.pdf>. The IPCC was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme to assess scientific, technical and socio-economic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation.

- Snow cover is projected to contract, with permafrost areas sustaining thawing.
- Sea ice is projected to shrink in both the Arctic and Antarctic.
- Hot extremes, heat waves, and heavy precipitation events are likely to increase in frequency.
- Future tropical cyclones (typhoons and hurricanes) will likely become more intense.
- Non-tropical storm tracks are projected to move poleward, with consequent changes in wind, precipitation, and temperature patterns. Increases in the amount of precipitation are very likely in high-latitudes, while decreases are likely in most subtropical regions.
- Warming is expected to be greatest over land and at most high northern latitudes, and least over the Southern Ocean and parts of the North Atlantic Ocean.

There are also many secondary effects that are projected to result from global warming, including global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity. While the possible outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, the potential for substantial environmental, social, and economic consequences over the long term may be great.

The California Energy Commission estimated that in 2004 California produced 500 million gross metric tons (about 550 million U.S. tons) of carbon dioxide-equivalent GHG emissions.³ The CEC 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 23 percent and industrial sources at 13 percent (CEC, 2007).

In the Bay Area, fossil fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of the Bay Area's GHG emissions, accounting for just over half of the Bay Area's 85 million tons of GHG emissions in 2002. Industrial and commercial sources were the second largest contributors of GHG emissions with about one-fourth of total emissions. Domestic sources (e.g., home water heaters, furnaces, etc.) account for about 11 percent of the Bay Area's GHG emissions, followed by power plants at 7 percent. Oil refining currently accounts for approximately 6 percent of the total Bay Area GHG emissions (BAAQMD, 2006).

California has taken a leadership role in addressing the trend of increasing GHG emissions, with the passage in 2006 of California Assembly Bill 32 (AB 32), the Global Warming Solutions Act. This legislation is discussed below, under Regulatory Setting.

³ Because of the differential heat absorption potential of various GHGs, GHG emissions are frequently measured in "carbon dioxide-equivalents," which present a weighted average based on each gas's heat absorption (or "global warming") potential.

4.10.2 REGULATORY OVERVIEW

FEDERAL STANDARDS

Current federal actions with respect to greenhouse gases focus on research, information, and voluntary programs and do not include any mandatory emissions reductions. Regulatory programs affecting emissions of greenhouse gases (Yacobucci and Parker, 2006):

- Monitoring Rules: Requires carbon dioxide monitoring by electric generating facilities.
- Energy and Environmental Programs Related to Emissions Reductions: Emissions Reductions from Landfills, Significant New Alternatives Policy Determinations, Residential Appliance Standards, Updating State Commercial Building Codes, Promoting Renewable Energy through the 1978 Public Utility Regulatory Policies Act.
- Transportation-Related Programs: Corporate Average Fuel Economy (CAFE)
- Energy Usage Reductions: Federal Energy Independence and Security Act of 2007, which contains provisions for new minimum efficiency standards and research.

In addition, Executive Order 13432 was signed by President Bush on May 14, 2007, which directed the U.S. Environmental Protection Agency (US EPA) to coordinate with the Departments of Transportation, Energy, and Agriculture, to regulate greenhouse gas emissions from motor vehicles, non-road vehicles, and non-road engines, and use of motor vehicle fuels, including alternative fuels. The order also requires the US EPA to coordinate closely with other federal agencies to consider the President's Twenty-in-Ten Plan. The Twenty-in-Ten Plan would establish a new alternative fuel standard that would require the use of 35 billion gallons of alternative and renewable fuels by 2017.

STATE STANDARDS

At the state level, California has passed a number of bills that reduce greenhouse gas emissions and help fight climate change (global warming). State programs currently being implemented to address climate change include the following:

Global Warming Solutions Act of 2006 (Assembly Bill 32)

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 GHG would be progressively reduced, as follows:

- By 2020, reduce GHG emissions to 1990 levels, a reduction of approximately 30 percent
- By 2050, reduce GHG emissions to 80 percent below 1990 levels

In 2006, California passed the California Global Warming Solutions Act of 2006 (Assembly Bill No. 32; California Health and Safety Code Division 25.5, Sections 38500, et seq.), which requires that statewide greenhouse gas (GHG) emissions in 2020 are no greater than those that occurred in 1990. AB 32 requires the California Air Resources Board (CARB) to adopt a comprehensive blueprint for limiting greenhouse gas emissions by the end of 2008 and complete the necessary rulemaking to implement that plan by the end of 2011, including adoption of a list of discrete, Early Action Measures that can be implemented before January 1, 2010.

Pursuant to this requirement, CARB released its Draft Scoping Plan in June 2008, and adopted the final version on December 11, 2008. The Plan's key policy commitments for reducing California's greenhouse gas emissions to 1990 levels by 2020 include the following:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards
- Achieving a statewide renewables energy mix of 33 percent
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the low carbon fuel standard
- 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 estimates that a total reduction of 174 million metric tons of CO₂-E (MMTCO₂-E) will be needed to meet AB 32 target reductions. Reductions of approximately 147 MMTCO₂-E are estimated to result from the combination of a cap-and-trade program and complementary measures such as:

- Transportation Sector: Approximately 62.3 MMTCO₂-E (36%) of the emissions reductions strategies fall within this sector and include the following: California light-duty vehicle GHG standards, low carbon fuel standard, regional transportation-related GHG targets, vehicle efficiency measures, heavy-duty vehicle GHG emission reduction (aerodynamic efficiency), and medium- and heavy-duty vehicle hybridization, high speed rail, and efficiency improvements in goods movement.
- Energy Efficiency: Energy efficiency measures are expected to reduce GHGs by another 49.7 MMTCO₂-E (about 30%). Reductions from this sector include building and appliance energy efficiency and conservation, increased combined heat and power, solar water heating (AB 1470 goal),

the Renewables Portfolio Standard (33% renewable energy by 2020), and the existing Million Solar Roofs Program (see Section 4.9, Energy, for more discussion).

- **Uncapped Sources:** Measures in this sector for sources not covered under the cap-and-trade program are expected to reduce GHGs by another 27.3 MMTCO₂-E (about 15%). They include industrial measures such as oil and gas extraction and transmission, sustainable forests, high global warming potential gas measures, and recycling and waste (landfill methane capture).

However, to achieve the 174 MMTCO₂-E 1990 target, there needs to be 20% in additional reductions, which have not yet been defined. In addition to the above measures, the Scoping Plan identifies some additional savings from the following sources: State Government Operations (1 to 2 MMTCO₂-E), Local Government Operations (to be determined), Green Buildings (26 MMTCO₂-E), Recycling and Waste measures (9 MMTCO₂-E), Water Sector Measures (4.8 MMTCO₂-E), and Methane Capture at Large Diaries (1.0 MMTCO₂-E). Applicable measures that are ultimately adopted will become effective during implementation of proposed Master Plan and individual facility projects could be subject to these requirements, depending on each project's timeline.

Greenhouse Gas Emission Reductions through Smart Growth (Senate Bill 375)

Passed in August 2008, this law, which builds on AB 32, reduces greenhouse gas emissions by adding the nation's first law to control greenhouse gas emissions through smart, coordinated regional planning. SB 375 requires the CARB to develop emissions reduction goals for regions and provides incentives for local governments and developers to follow new conscientiously planned growth patterns. It also enhances the CARB's ability to reach AB 32 goals by directing the CARB to develop regional greenhouse gas emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035. The CARB will also work with California's 18 metropolitan planning organizations to give them incentives to align their regional transportation, housing and land use plans and to prepare "sustainable communities strategies" to reduce the amount of vehicle miles traveled in their respective regions and demonstrate the regions' ability to attain their respective greenhouse gas reduction targets. Additionally, SB 375 provides incentives for creating attractive, walkable and sustainable communities and revitalizing existing communities. In addition, it provides a qualified exemption from CEQA for defined "transit priority projects" determined to be consistent with the new sustainable community strategies.

Long Term Energy Efficiency Strategic Plan

In September 2008, the California Public Utilities Commission (CPUC) adopted the Long Term Energy Efficiency Strategic Plan, which provides a framework for energy efficiency in California through the year 2020 and beyond. It articulates a long-term vision as well as goals for each economic sector, identifying specific near-term, mid-term, and long-term strategies to assist in achieving these goals (see Section 4.9, Energy, for more discussion).

Other State Bills Addressing Greenhouse Gas Emissions

Other bills that have been passed to reduce greenhouse gas emissions and address climate change include the following:

Low Carbon Fuel Standard (Executive Order S-1-07). This law establishes a new Low Carbon Fuel Standard (LCFS) by setting a declining standard for GHG emissions of fuels sold in California. The LCFS will apply to refiners, blenders, producers, and importers of transportation fuels. To start, the LCFS will reduce carbon content in all passenger vehicle fuels sold in California by at least 10 percent by 2020 and more thereafter.

Renewable Portfolio Standard (Senate Bills 1078 and 107). California's RPS calls for more energy to come from clean, renewable sources and SB 107 accelerates the schedule for achieving the state's goal to have 20 percent of California's energy come from renewable energy sources. The RPS program requires electric corporations to increase procurement from eligible renewable energy resources by at least 1 percent of their retail sales annually until they reach 20 percent by 2010.

Million Solar Roofs Initiative. This initiative establishes an incentive plan to install one million solar roofs in California by the year 2018, provide 3,000 megawatts of clean energy and reduce greenhouse gas emissions by 3 million tons.

Guidelines for CEQA and Climate Change (Senate Bill 97). This law directs the Governor's Office of Planning and Research (OPR) to develop guidelines under California Environmental Quality Act (CEQA) for mitigation of greenhouse gas emission. OPR is to develop proposed guidelines by July 1, 2009, and the Resources Agency is directed by adopt guidelines by January 1, 2010. On June 19, 2008, OPR issued a technical advisory as interim guidance regarding the analysis of GHG mission in CEQA documents (OPR, 2008). The advisory indicated that project's GHG emission, including those associated with vehicular traffic, energy consumption, water usage, and construction activities, should be identified and estimated. The advisory further recommended that the lead agency determine significance of the impacts and impose all mitigation measures that are necessary to reduce GHG emissions to a less-than-significant level. The advisory did not recommend a specific threshold of significance – either quantitative or qualitative – leaving this to the lead agency's judgment and discretion, based upon factual data and regulatory agencies and guidance from other sources were available and applicable.

Greenhouse Gas Emissions Performance Standards for Electricity (Senate Bill 1368). SB 1368 requires the California Energy Commission to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by public-owned utilities.

LOCAL STANDARDS

In 2006, the Santa Clara City Council endorsed a set of Greenhouse Gas Reduction Principles for its municipally-owned electric utility, Silicon Valley Power. The principles address the critical need to reduce greenhouse gases while maintaining high power reliability and low, stable rates. The Greenhouse Gas Reduction Principles were jointly developed by member utilities of the California Municipal Utilities Association, a statewide association of local governments providing water, gas and electricity to California consumers, and include the commitment to:

- Proactively implement state law that requires the acquisition of all available energy efficiency and demand reduction resources that are cost-effective, reliable and feasible in its procurement of energy
- Aggressively pursue its renewable energy supplies
- Quantify the financial risk of GHG-producing resources in planning and procurement
- Measure and verify programs that reduce GHG emissions
- Support standardized, mandatory GHG reporting
- Consider environmental justice issues in its GHG reduction policies
- Educate customers on ways to reduce GHG emissions

In October 2007, the Santa Clara City Council authorized the City Manager to join the International Council for Environmental Initiatives (ICLEI) for assistance in completing a greenhouse gas inventory for cities in the region and at a later date, city operations. The City has capital projects and programs supporting environmental stewardship include the following (City of Santa Clara, 2007):

- Energy efficiency rebates
- Solar and green (renewable) power programs
- Solid waste reduction, reuse, and recycling (including a construction and demolition debris materials recycling requirement)
- Street Tree Program
- Ultra Low/Zero Emission Vehicles
- Water conservation and recycling

The City's construction and demolition debris recycling requirement and water recycling program are discussed in Section 4.8, Public Services and Utilities.

4.8.3 POTENTIAL IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Although neither the Bay Area Air Quality Management District (BAAQMD) or any other agency has adopted significance criteria for evaluating a project's contribution to climate change, the Office of Planning and Research (OPR) has asked the California Air Resources Board to "recommend a method for setting thresholds of significance to encourage consistency and uniformity in the CEQA analysis of GHG emissions" throughout the state because OPR has recognized that "the global nature of climate change warrants investigation of a statewide threshold for GHG emissions" (OPR, 2008). In the interim, OPR released a Technical Advisory for addressing climate change through CEQA review. OPR's Technical Advisory offers informal guidance on the steps that lead agencies should take to address climate changes in their CEQA documents, in the absence of statewide thresholds. OPR will develop, and the California Resources Agency will certify and adopt, amendments to the CEQA guidelines on or before January 1, 2010, pursuant to Senate Bill 97. OPR's Technical Advisory (OPR, 2008) recommends the following approach for analyzing greenhouse gas emissions:

- Identify and quantify the project's greenhouse gas emissions;
- Assess the significance of the impact on climate change; and
- If the impact is found to be significant, identify alternatives and/ or mitigation measures that would reduce the impact to less than significant levels.

As of January 2009, when this Draft EIR was released for public review, CARB staff had not yet completed the task that OPR had asked it to perform: establishing CEQA significance thresholds for GHG emissions. CARB staff published some initial thoughts on the subject in an October 24, 2008 document entitled, "Preliminary Draft Staff Proposal, Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act." Although the document identified some possible general strategies for setting thresholds with respect to various categories of projects (with many blanks yet to be filled in), college campuses were not among those categories of projects. Even so, however, the following statement from the document pertains to this analysis:

"ARB staff believes that for the project types under consideration, non-zero thresholds can be supported by substantial evidence. ARB staff believes that zero thresholds are not mandated in light of the fact that (1) some level of emissions in the near term and at mid-century is still consistent with climate stabilization and (2) current and anticipated regulations and programs apart from CEQA (e.g., AB 32, the Pavley vehicle regulations, the Renewable Portfolio Standard, the California Solar Initiative, and the commitment to net-zero-energy buildings by 2020 (residential) and 2030 (commercial)) will proliferate and increasingly will reduce the GHG contributions of past, present, and future projects."

The analysis in this chapter estimates construction-related and operational GHG emissions associated with implementation of the proposed Master Plan as recommended by OPR. However, since there are no quantitative thresholds recommended by OPR, the significance of estimated project-related GHG emissions are evaluated based on whether the project would impede or conflict with the emissions reduction targets and strategies prescribed in or developed to implement AB 32, which is stated as follows:

- Conflict with the state goal of reducing GHG emissions in California to 1990 levels by 2020, as set forth by the timetable established in AB 32 (California Global Warming Solutions Act of 2006), such that the project's GHG emissions would result in a substantial contribution to global climate change.

METHODOLOGY

To date, there is no adopted methodology for calculating GHG emissions and there is no single model that can estimate GHG emissions associated with a development project. Therefore, GHG emissions were estimated using various pertinent procedures presented in the following models and reports:

- URBEMIS2007, Version 9.2.4
- California Climate Action Registry (CCAR), *General Reporting Protocol (Version 2.2)* (March 2007)
- South Coast Air Quality Management District (SCAQMD), *CEQA Air Quality Handbook, Appendix 9* (1993)
- California Air Resources Board (California ARB), *Proposed Methodology to Model Carbon Dioxide Emissions and Estimate Fuel Economy*.
- California Energy Commission, *Commercial Electricity Use, PG&E Systemwide*
- California Integrated Waste Management Board, *Waste Generation Rates*

Results from the hybrid model that was used and applied to derive Plan-related estimates are included in Appendix E.

GREENHOUSE GAS EMISSIONS

Impact 4.10-1: Plan implementation would result in increases in greenhouse gas (GHG) emissions and would have the potential to conflict with the state goal of reducing GHG emissions in California to 1990 levels by 2020. (Less than Significant)

Based on the methodology described above, GHG or CO₂-Equivalents emissions were estimated for the Master Plan and results are presented in **Table 4.10-1**. In accordance with AB 32, the Global Warming Solutions Act, California began implementing a statewide GHG emissions limit, which is designed to reduce emissions to 1990 levels by 2020. The 2020 GHG emissions limit for California (as adopted by CARB in December 2007) is approximately 427 million metric tons of CO₂-Equivalents (MMTCO₂E).

TABLE 4.10-1
SUMMARY OF GHG (CO₂-EQUIVALENTS) EMISSIONS
ASSOCIATED WITH IMPLEMENTATION OF THE MASTER PLAN (TONS/YEAR)

Buildout Year	Construction	Transportation	Heating & Hot Water	Electricity Consumption	Solid Waste	TOTAL
2025	1,183	3,994	226	721	329	6,453

Note: See Appendix E for model output.

When compared to the statewide GHG emissions limit, GHG emissions associated with implementation of the Master Plan would represent 0.00002% of this 2020 limit. Within the Bay Area, GHG emissions associated with the Master Plan would represent 0.00006% of total GHG emissions estimated for the entire Bay Area (2008).⁴

While OPR's Technical Advisory indicates that GHG emissions should be calculated, there are not yet any adopted quantitative thresholds that can be used to determine significance of these estimated emissions. However, as indicated by the above comparison of the Master Plan's GHG emissions relative to statewide and regional emissions, an individual project of this size would be too small by itself to influence climate change. Plan-related GHG emissions would, however, contribute to cumulative increases in GHG emissions that could collectively influence climate change. Accordingly, the significance of Plan-related emissions is evaluated qualitatively by comparing the Master Plan's consistency with adopted regulations and policies (see Table 4.10-2) as well as recommended measures that are being applied statewide, and this discussion is provided as follows.

OPR's guidance (SB 97) 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". And, "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." Finally, if the lead agency determines that the GHG emissions from the project as proposed are potentially significant, it must investigate and implement ways to avoid, reduce, or otherwise mitigate the impacts of those emissions.

⁴ The Bay Area Air Quality Management District (2008) reported regional Bay Area GHGs emissions in 2007 at approximately 102.6 MMTCO₂E (95.5 MMTCO₂E were emitted within the Bay Area Air District and 7.1 MMTCO₂E were indirect emissions from imported electricity. Bay Area 2007 GHG emissions are used as the baseline for determining whether a project's contributions are significant as this is the most recent emissions inventory for the Bay Area.

Pursuant to this guidance, the significance of the proposed Master Plan's GHG emissions is evaluated in the context of statewide regulations, policies, and guidelines that are intended to address the cumulative impacts of statewide GHG emissions on climate change. These planning efforts are intended to reduce GHG emissions pursuant to the California Global Warming Solutions Act of 2006. Therefore, consistency with statewide GHG reduction regulations, policies, and guidelines related to land use development would indicate whether GHG emissions associated with implementation of the Master Plan is significant (as stated under Significance Criteria above). Consistency of the Master Plan with statewide GHG reduction regulations, policies, and guidelines is presented in **Table 4.10-2**. As indicated in this table, implementation of proposed Master Plan policies and mitigation measures required elsewhere in this EIR (to address other identified impacts) would help to reduce the Master Plan's incremental GHG contributions. In addition, policies and regulations that have been and will be adopted pursuant to AB 32 (developing cleaner energy while reducing GHG emissions associated with transportation and solid waste) will achieve additional major reductions in GHG emissions statewide. Therefore, additional reductions in GHG emissions are expected to occur at the Mission College campus because specific building projects developed on campus over the next 16 years will be required to comply with these existing and future regulations and policies. Based on the combination of these factors, the Master Plan would not generate sufficient GHG emissions to contribute considerably to the cumulative effects of GHG emissions such that it would impair the state's goal of reducing GHG emissions in California to 1990 levels by 2020 (pursuant to AB 32). With above-mentioned mitigation measures required elsewhere in this EIR and required compliance with existing and future regulations and policies pursuant to AB 32, Plan-related GHG emissions would be *less than significant*.

Mitigation Measure 4.10-1: None required.

**TABLE 4.10-2
PLAN CONSISTENCY WITH STATEWIDE CLIMATE CHANGE REGULATIONS, POLICIES, AND MEASURES**

Category	Pertinent GHG Reduction Regulations, Policies, and Measures	Plan Consistency
Transportation and Smart Growth	<ul style="list-style-type: none"> ▪ Implement land use strategies that encourage use of alternatives to the single occupant vehicle or that optimize the efficiency of the existing transportation system. (OPR, 2008) ▪ Reduce vehicle miles traveled through use of multi-occupant vehicles (OPR, 2008) ▪ Align regional transportation, housing, and land use plans and prepare a "sustainable communities strategy" to reduce the amount of vehicle miles traveled in their respective regions and demonstrate the region's ability to attain its greenhouse gas reduction targets (SB 375) ▪ Provide incentives for creating attractive, walkable and sustainable communities and revitalizing existing communities (SB 375) ▪ Include mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods (State of California, 2008) ▪ Encourage use of alternative modes of transportation (including transit, walking, and bicycling) and Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets (CARB, 2008; CAPCOA, 2008) 	<p>Although the proposed Plan is expected to increase vehicle miles traveled (and GHG emissions) due to projected increases in student enrollments (Impact 4.5-4), implementation of traffic control measures (Mitigation Measure 4.5-5) would help reduce GHG emissions by encouraging transit use, carpooling, etc., which would be consistent with these GHG reduction strategies. In addition, since Mission College serves the local area, additional future increases in VMT could be minimized if the college is able to accommodate local student growth and needs. Without expanded or renovated facilities at Mission College, local students might have to travel farther to other community colleges to find required classes or available space.</p> <p>The Master Plan also includes provisions for future community partnership opportunities (Sequence 5) to develop a mixed-use development (possibly including faculty housing) in the southern portion of the campus property, which would help reduce VMT.</p> <p>Master Plan policies include passive and active solar design principles including:</p> <ul style="list-style-type: none"> ▪ Proper orientation of buildings to maximize solar exposure ▪ Maximizing south-facing glazing with sun screens to reduce solar heat gain while increasing natural light in building interiors ▪ Use of photovoltaics in shade structures, glazing screens, parking lots, and building rooftops to achieve the college's long-term goal of energy independence
Green Building	<p>Incorporate urban forestry into project designs to reduce heating/cooling loads and to sequester carbon (OPR, 2008)</p>	<p>Master Plan goals include planting redwoods and oaks south of the existing Main Building and providing shade along pedestrian paths. Urban forestry practices will need to be balanced with the availability of recycled water for landscape irrigation.</p>

**TABLE 4.10-2 (CONT'D)
PLAN CONSISTENCY WITH STATEWIDE CLIMATE CHANGE REGULATIONS, POLICIES, AND MEASURES**

Category	Pertinent GHG Reduction Regulations, Policies, and Measures	Plan Consistency
Energy Efficiency and Energy Conservation	<ul style="list-style-type: none"> ▪ Implement energy conservation programs in building design and promote alternative energy sources (OPR, 2008). ▪ Incorporate energy conservation measures into building/development designs and expand/strengthen existing energy efficiency programs (CARB, 2008; CAPCOA, 2008). ▪ Promote energy efficiency in building design, use renewable energy, implement water conservation and efficiency, minimize solid waste, encourage mixed-use, infill, and higher density development projects, and minimize transportation emissions (State of California, 2008). ▪ Meet California Energy Efficiency Standards for Residential and Nonresidential Buildings as required in Title 24, Part 6, of the California Code of Regulations. ▪ All new commercial construction in California will be zero net energy (ZNE) by 2030 and Heating, Ventilation and Air Conditioning (HVAC) will be transformed to ensure that its energy performance is optimal for California’s climate. The following goals were adopted to achieve ZNE (CPUC, 2008): <ul style="list-style-type: none"> ▪ New construction will increasingly embrace zero net energy performance (including clean, distributed generation), reaching 100 percent penetration of new starts in 2030. ▪ 50% of existing buildings will be retrofit to zero net energy by 2030 through achievement of deep levels of energy efficiency and with the addition of clean distributed generation. ▪ Transform the commercial lighting market through technological advancement and innovative utility initiatives. ▪ Green Building Action Plan for facilities owned, funded or leased by the state, pursuant to Governor’s Green Building Executive Order (S-20-04). 	<p>Implementation of the proposed Plan would result in potentially significant increases in energy demand. However, new facility construction at Mission College will be required to meet Energy Efficiency Standards for Residential and Nonresidential Buildings, as specified in Title 24, Part 6, of the California Code of Regulations. In addition, energy efficiency measures such as designing facilities to “LEED Silver” or higher standards or an equivalent standard (Mitigation Measure 4.8-2) will be required pursuant to the Governor’s Green Building Executive Order (S-20-04). Planned interior remodeling projects under the Master Plan would retrofit existing buildings with more energy efficient equipment. Therefore, increased energy efficiency of existing and planned buildings under the Master Plan and implementation mitigation measures will help to offset potential increases in energy demand associated with the expansion of campus facilities proposed under the Master Plan.</p> <p>The above passive and active solar design principles in the Master Plan would encourage use of renewable energy and help achieve state ZNE goals. In addition, implementation of the Master Plan’s sustainable water management policies (rainwater collection and re-use, low-flow and high efficiency plumbing fixtures, drought tolerant landscaping) as well as additional water conservation measures (Mitigation Measure 4.8-2) would be consistent with these GHG reduction strategies. Implementation of traffic control measures (Mitigation Measure 4.5-5) would help reduce transportation-related GHG emissions by encouraging transit use, carpooling, etc.</p>

**TABLE 4.10-2 (CONT'D)
PLAN CONSISTENCY WITH STATEWIDE CLIMATE CHANGE REGULATIONS, POLICIES, AND MEASURES**

Category	Pertinent GHG Reduction Regulations, Policies, and Measures	Plan Consistency
Re-use and Recycling	<ul style="list-style-type: none"> ▪ Reduce solid waste generation and improve recycling rates (OPR, 2008) ▪ Reuse and recycle construction and demolition waste (State of California, 2008). 	<p>Although implementation of the Master Plan would increase solid waste generation on campus, required implementation of the College’s existing re-use and recycling program (pursuant to AB 939) for construction and demolition waste generated by implementation of the Master Plan (Mitigation Measure 4.8-4) would help minimize potential increases in solid waste.</p> <p>Sustainability principles contained in the Master Plan include: (1) use of sustainable materials (recycled and recyclable materials or certified green products); (2) re-use of on-site soils if feasible, use of natural and sustainably sourced ameliorants for soil treatment; (3) establish landscapes that require low water use and can accept recycled water; (4) collect and treat surface runoff from the campus for re-use; (5) select plants for reduced demand for water, fertilizers, pesticides, and maintenance. In addition, Master Plan policies include sustainable construction practices such as implementation of a construction waste management plan and resource-efficient construction practices to reduce construction waste and encourage recycling of construction and demolition.</p>

REFERENCES – CLIMATE CHANGE

- BAAQMD, 2008. *Source Inventory of Bay Area Greenhouse Gas Emissions*. December. Available on the internet at: http://www.baaqmd.gov/pln/documents/regionalinventory2007_003_000_000_000.pdf.
- California Air Pollution Control Officers Association, 2008. *CEQA and Climate Change*. January.
- California Air Resources Board (CARB), 2008. *Climate Change Proposed Scoping Plan*. October.
- _____, 2006. Climate Change website (Accessed March 24, 2007):
(<http://www.arb.ca.gov/cc/120106workshop/intropres12106.pdf>).
- California Climate Action Registry, 2007. *California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 2.2*. March.
- California Energy Commission (CEC), 2007. *Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 - Final Staff Report*. Publication # CEC-600-2006-013-SF, December 22, 2006; and January 23, 2007 update to that report. Available on the internet at (accessed on November 4, 2008): <http://www.energy.ca.gov/2006publications/CEC-600-2006-013/CEC-600-2006-013-SF.PDF> and http://www.energy.ca.gov/2006publications/CEC-600-2006-013/2007-01-23_GHG_INVENTORY_REVISIONS.PDF.
- California Public Utilities Commission (CPUC), 2008. *Long Term Energy Efficiency Strategic Plan*. September 18. Information provided through the CPUC website (accessed on November 3, 2008):
(<http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Efficiency>).
- Governor's Office of Planning and Research (OPR), 2008. *Technical Advisory- CEQA and Climate Change: Addressing Climate Change to the California Environmental Quality Act (CEQA) Review*. June 19, 2008. Available on the internet at (accessed on November 4, 2008):
<http://www.opr.ca.gov/index.php?a=ceqa/index.html>
- Yacobucci, Brent D. and Larry Parker, Resources, Science and Industry Division, 2006. *CRS Report for Congress, Climate Change: Federal Laws and Policies Related to Greenhouse Gas Reductions*. Updated February 22, 2006.
- State of California, Department of Justice, "The California Environmental Quality Act: Addressing Global Warming Impacts at the Local Agency Level." Updated March 11, 2008. Available on the internet at (accessed on November 4, 2008):
http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf.