

IV.B.2 Global Climate Change

1.0 INTRODUCTION

This section describes the current state of the regulations and programs that have been implemented to address greenhouse gas (GHG) emissions and global climate change in California. This section also identifies the plans and policies developed by federal, state, and local authorities to reduce GHG emissions. Inventories of GHG emissions associated with implementation of the Proposed Project are identified and discussed. Potential global climate change impacts associated with the Proposed Project are evaluated and mitigation measures are identified to reduce potential impacts. GHG emission calculations prepared for the Proposed Project are provided in **Appendix IV.B.2**.

2.0 REGULATORY SETTING

2.1 International Activities

2.1.1 Kyoto Protocol

The original Kyoto Protocol (Protocol) was negotiated in December 1997 and came into force on February 16, 2005. For the Protocol to have entered into force, no less than 55 countries must have ratified the treaty and these minimum of 55 needed to together account for at least 55 percent of the total carbon dioxide emissions from 1990 of industrialized countries referred to as Annex I countries. Participating nations are separated into Annex 1 (i.e., industrialized) and Non-Annex 1 (i.e., developing) countries, each with differing requirements for GHG reductions. The United States has not ratified the Protocol.

The goal of the Protocol is to achieve overall emissions reduction targets for six primary GHGs by the period 2008 to 2012: carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, HFCs, and PFCs. Each nation has an emissions reduction target according to which they must reduce GHG emissions by a certain percentage below levels that occurred in 1990 (e.g., 8 percent reduction for the European Union; 6 percent reduction for Japan). The average reduction target for nations participating in the Kyoto Protocol is approximately 5 percent below 1990 levels.¹ Although the United States has not ratified the Protocol, it is aiming to reduce its GHG emissions intensity by 18 percent by 2012.² Greenhouse gas intensity is the ratio of GHG emissions to economic output (i.e., gross domestic product). In addition, on July 8, 2008,

¹ Pew Center on Global Climate Change, "Bush Policy vs. Kyoto," http://www.pewclimate.org/what_s_being_done/in_the_world/bush_intensity_targe_2.cfm. n.d.

² The White House, "Addressing Global Climate Change," <http://www.whitehouse.gov/ceq/global-change.html>. n.d.

President Bush and other members of the Group of 8 (i.e., Japan, Germany, Britain, France, Italy, Canada and Russia) pledged to cut GHG emissions in half by 2050.

2.1.2 Intergovernmental Panel on Climate Change

The World Meteorological Organization and United Nations Environmental Program established the Intergovernmental Panel on Climate Change in 1988. The goal of the Intergovernmental Panel on Climate Change is to scientifically evaluate the risk of climate change caused by human activities. Rather than performing research or monitoring climate, the Intergovernmental Panel on Climate Change relies on peer-reviewed and published scientific literature to make its assessment. The Intergovernmental Panel on Climate Change assesses information (i.e., scientific literature) regarding human-induced climate change, impacts of human-induced climate change, and options for adaptation and mitigation of climate change. The Intergovernmental Panel on Climate Change reports its evaluations in special reports called “assessment reports.” The latest assessment report (i.e., Fourth Assessment Report, consisting of three working group reports and a synthesis report based on the first three reports) was published in 2007.³ In its 2007 report, the Intergovernmental Panel on Climate Change stated that global temperature increases since the mid-20th century was “very likely” attributable to man-made activities (greater than 90 percent certainty).⁴

2.2 Federal Regulation

In *Massachusetts v. EPA* (2007), the U.S. Supreme Court held that US EPA has the statutory authority under Section 202 of the Clean Air Act (CAA) to regulate GHGs from new motor vehicles. The Court did not hold that the US Environmental Protection Agency (EPA) was required to regulate GHG emissions; however, it indicated that the agency must decide whether GHGs from motor vehicles cause or contribute to air pollution that is reasonably anticipated to endanger public health or welfare. Upon the final decision, President Bush signed Executive Order 13432 on May 14, 2007, directing the US EPA, along with the Departments of Transportation, Energy, and Agriculture, to initiate a regulatory process that responds to the Supreme Court’s decision. The order requires the US EPA to coordinate closely with other federal agencies and to consider the president’s Twenty-in-Ten plan in this process, which would establish a new alternative fuel standard that would require the use of 35 billion gallons of alternative and renewable fuels by 2017. The US EPA will be working closely with the Department of Transportation in developing new automotive efficiency standards.

³ World Meteorological Organization and United Nations Environmental Program, Intergovernmental Panel on Climate Change, “Fourth Assessment Report”, <http://www.ipcc.ch/>. 2007.

⁴ World Meteorological Organization and United Nations Environmental Program, Intergovernmental Panel on Climate Change, “Fourth Assessment Report.”

In December 2007, President Bush signed the Energy Independence and Security Act of 2007, which sets a mandatory Renewable Fuel Standard requiring fuel producers to use at least 36 billion gallons of biofuel in 2022 and sets a national fuel economy standard of 35 miles per gallon (mpg) by 2020. The Act also contains provisions for energy efficiency in lighting and appliances and for the implementation of green building technologies in Federal buildings. The Act is positioned as a response to President Bush's Twenty-in-Ten plan.

On July 11, 2008, the US EPA issued an Advance Notice of Proposed Rulemaking on regulating GHGs under the Clean Air Act. The Advance Notice of Proposed Rulemaking reviews the various Clean Air Act provisions that may be applicable to the regulation of GHGs and presents potential regulatory approaches and technologies for reducing GHG emissions. In the Advance Notice of Proposed Rulemaking, the US EPA seeks further public comment on the regulation of GHG emissions under the Clean Air Act.⁵

The US EPA proposed a mandatory GHG reporting rule on March 10, 2009. The rule would require suppliers of fossil fuels or industrial greenhouse gases, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions submit annual reports to the US EPA beginning in 2011 (covering the 2010 calendar year emission). Vehicle and engine manufacturers would begin reporting for model year 2011.

On May 19, 2009, the Obama Administration announced a new national policy intended to reduce fuel consumption and GHG emissions. The proposed standards cover model years 2012 through 2016 and will require an average fuel economy standard of 35.5 mpg in 2016 (39 mpg for cars, 30 mpg for trucks), or approximately 250 grams of CO₂ per mile. This policy is in contrast to the Corporate Average Fuel Economy (CAFE) standards established under 2007 legislation, which specified a minimum of 35 mpg by 2020. Both the US EPA and the National Highway Traffic Safety Administration (NHTSA) issued a Notice of Upcoming Joint Rulemaking to Establish Vehicle GHG Emissions and CAFE Standards the same day as the announcement in order to establish a consistent national policy pursuant to the separate statutory frameworks under which US EPA and Department of Transportation (DOT) operate (NHTSA is a division of DOT).

2.3 State Activities

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

⁵ US Environmental Protection Agency, "Advance Notice of Proposed Rulemaking: Regulating Greenhouse Gas Emissions under the Clean Air Act," <http://www.epa.gov/climatechange/anpr.html>. 2008.

2.3.1 Title 24 Building Standards Code

The California Energy Commission first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the state. Although not originally intended to reduce GHG emissions, increased energy efficiency, and reduced consumption of electricity, natural gas, and other fuels would result in fewer GHG emissions from residential and nonresidential buildings subject to the standard. The standards are updated periodically to allow for the consideration and inclusion of new energy efficiency technologies and methods. The latest revisions were adopted in 2008 and became effective on January 1, 2010.

2.3.2 Assembly Bill 1493

In response to the transportation sector's contribution of more than half of California's CO₂ emissions, Assembly Bill 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 requires the California Air Resources Board (CARB) to set GHG emission standards for model year 2009 and later passenger vehicles, light-duty trucks, and other vehicles whose primary use is noncommercial personal transportation. CARB adopted the standards in September 2004. The new standards would phase in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in a reduction of about 22 percent in greenhouse gas emissions compared to the emissions from the 2002 fleet, while the mid-term (2013–2016) standards will result in a reduction of about 30 percent.⁶

These regulations were challenged in federal court by automobile manufacturers, who claimed, among other things, that the law improperly regulated vehicle fuel economy, a duty assigned to the federal government. However, before these regulations may go into effect, the US EPA must grant California a waiver under the federal Clean Air Act, which ordinarily preempts state regulation of motor vehicle emission standards. On December 19, 2007, the US EPA denied the California waiver request, citing the need for a national approach to reducing greenhouse gas emissions, the lack of a "need to meet compelling and extraordinary conditions," and the benefits to be achieved through the Energy Independence and Security Act of 2007⁷. The California Attorney General filed suit in January 2008 to overturn the administrator's decision. Most recently, the Obama Administration has issued an executive order requiring the US EPA to reconsider granting the waiver. In light of the May 19, 2009 announcement by the Obama Administration establishing a target of 35.5 mpg by 2016, California—and states adopting

⁶ California Air Resources Board, "Fact Sheets: Climate Change Emissions Control Regulations," <http://www.arb.ca.gov/cc/ccms/ccms.htm>. 2004.

⁷ Letter to Governor Arnold Schwarzenegger from Stephen L. Johnson, December 19, 2007.

California emissions standards—have agreed to defer to the proposed national standard through model year 2016 if granted a waiver by the US EPA to implement the Pavley standards. The agreement also included automobile manufacturers who agreed to drop all lawsuits against California’s standards in exchange for a single national standard through model year 2016. The 2016 endpoint of the two standards is nearly identical, although the national standard ramps up slightly more slowly than required under the California standard. The Pavley standards require additional reductions in CO₂ emissions beyond model year 2016. On June 30, 2009, the US EPA formally approved California’s waiver request. Nonetheless, California and other states adopting the California standards will not toughen standards beyond the proposed national standard until at least the 2017 model year.

2.3.3 Executive Order S-3-05

In June 2005, Governor Schwarzenegger established California’s GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The Secretary of the California Environmental Protection Agency (CalEPA) is required to coordinate efforts of various agencies in order to collectively and efficiently reduce GHGs. Some of the agency representatives involved in the GHG reduction plan include the Secretary of the Business, Transportation and Housing Agency, the Secretary of the Department of Food and Agriculture, the Secretary of the Resources Agency, the Chairperson of CARB, the Chairperson of the California Energy Commission, and the President of the Public Utilities Commission. Representatives from these agencies comprise the Climate Action Team.

2.3.3.1 Climate Action Team

The Climate Action Team is responsible for implementing global warming emissions reduction programs. The CalEPA secretary is required to submit a biannual progress report from the Climate Action Team to the governor and state legislature disclosing the progress made toward GHG emission reduction targets and the impacts of global warming on California’s water supply, public health, agriculture, the coastline, and forestry, and reporting possible mitigation and adaptation plans to combat these impacts. The Climate Action Team has fulfilled both of these report requirements through its March 2006 Climate Action Team Report to Governor Schwarzenegger and the Legislature (2006 CAT Report).⁸

⁸ California Environmental Protection Agency, Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*, (2006).

2.3.3.2 Climate Action Team Report

The 2006 CAT Report identified key measures that will help ensure that California will meet the GHG reduction goals established under the Governor's Executive Order S-3-05 (1990 levels by 2020 and 80 percent below 1990 levels by 2050). These key measures include establishing a market-based carbon trading system, mandatory GHG reporting for large emitters, production of alternative transportation fuels, energy efficiency and renewable portfolio standards for utilities, emission reporting protocols for local governments, establishing a public goods charge for transportation that funds key strategies to reduce climate change emissions, and leveraging California's universities to train the next generation of workers needed to service new technologies.

Some strategies currently being implemented by state agencies include CARB introducing vehicle climate change standards and diesel anti-idling measures, the Energy Commission implementing building and appliance efficiency standards, and the CalEPA implementing its green building initiative. The Climate Action Team also recommends future emission reduction strategies, such as using only low-Global Warming Potential refrigerants in new vehicles, developing ethanol as an alternative fuel, reforestation, solar power initiatives for homes and businesses, and investor-owned utility energy efficiency programs. According to the report, implementation of current and future emission reduction strategies have the potential to achieve the goals set forth in Executive Order S-3-05. The report also describes potential impacts, as listed later under **Subsection 3.1, Global Climate Change Background**. Minor changes to some of these strategies were issued by the Climate Action Team in the *Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report* (2007 Update).⁹

2.3.4 Senate Bill 1078 and 107

In 2002, Senate Bill 1078 (SB 1078, Sher) established California's Renewable Portfolio Standard which requires investor-owned utilities, such as Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric, to increase energy production from renewable source 1 percent per year up to a minimum of 20 percent of total energy generation by 2017. SB 107 (Simitian), signed by the Governor on September 26, 2008, accelerated the Renewable Portfolio Standard by requiring investor-owned utilities to meet the 20 percent target by 2010.

⁹ California Climate Action Team, *Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report*, (2007).

2.3.5 Assembly Bill 32

In furtherance of the goals established in Executive Order S-3-05, the Legislature enacted Assembly Bill 32 (AB 32, Nuñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries with penalties for noncompliance.

2.3.5.1 CARB Early Action Measures

CARB is responsible for carrying out and developing the programs and requirements necessary to achieve the goals of AB 32—the reduction of California’s GHG emissions to 1990 levels by 2020. The first action under AB 32 resulted in CARB’s adoption of a report listing three specific early action greenhouse gas emission reduction measures on June 21, 2007. On October 25, 2007, CARB approved an additional six early action GHG reduction measures under AB 32. These early action GHG reduction measures are to be adopted and enforced before January 1, 2010, along with 32 other climate-protecting measures CARB is developing between now and 2011. The early action measures are divided into three categories:

- Group 1 - GHG rules for immediate adoption and implementation
- Group 2 - Several additional GHG measures under development
- Group 3 - Air pollution controls with potential climate co-benefits

The original three adopted early action regulations meeting the narrow legal definition of “discrete early action GHG reduction measures” include:

- A low-carbon fuel standard to reduce the “carbon intensity” of California fuels;
- Reduction of refrigerant losses from motor vehicle air conditioning system maintenance and to restrict the sale of “do-it-yourself” automotive refrigerants; and
- Increased methane capture from landfills by requiring broader use of state-of-the-art methane capture technologies.

The additional six early action regulations adopted on October 25, 2007, also meeting the narrow legal definition of “discrete early action GHG reduction measures,” include:

- Reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology;
- Reduction of auxiliary engine emissions of docked ships by requiring port electrification;
- Reduction of perfluorocarbons from the semiconductor industry;

- Reduction of propellants in consumer products (e.g., aerosols, tire inflators, and dust removal products);
- Require that all tune-up, smog check and oil change mechanics ensure proper tire inflation as part of overall service in order to maintain fuel efficiency; and
- Restriction on the use of sulfur hexafluoride (SF₆) from non-electricity sectors if viable alternatives are available.

2.3.5.2 State of California 1990 Greenhouse Gas Inventory

As required under AB 32, on December 6, 2007, CARB approved the 1990 greenhouse gas emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 million metric tons of carbon dioxide equivalents (MMTCO_{2e}).¹⁰ The inventory revealed that in 1990, transportation, with 35 percent of the state's total emissions, was the largest single sector generating carbon dioxide; followed by industrial emissions, 24 percent; imported electricity, 14 percent; in-state electricity generation, 11 percent; residential use, 7 percent; agriculture, 5 percent; and commercial uses, 3 percent. (These figures represent the 1990 values.) AB 32 does not require individual sectors to meet their individual 1990 GHG emissions inventory; the total statewide emissions are required to meet the 1990 threshold by 2020.

2.3.5.3 CARB Mandatory Reporting Requirements

In addition to the 1990 emissions inventory, CARB also adopted regulations requiring the mandatory reporting of GHG emissions for large facilities on December 6, 2007. The mandatory reporting regulations require annual reporting from the largest facilities in the state, which account for approximately 94 percent of greenhouse gas emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 tons of carbon dioxide each year from on-site stationary combustion sources. Transportation sources, which account for 38 percent of California's total greenhouse gas emissions as of the 2002-2004 GHG inventory conducted by CARB¹¹, are not covered by these regulations but will continue to be tracked through existing means. Affected facilities will begin tracking their emissions in 2008, to be reported beginning in 2009 with a phase-in process to allow facilities to develop reporting systems and train personnel in data collection. Emissions for 2008 may be based on best available emission data. Beginning in 2010, however, emissions reporting

¹⁰ The term "carbon dioxide equivalents" is explained in **Subsection 3.1, Global Climate Change Background**.

¹¹ California Air Resources Board, "Greenhouse Gas Inventory Data – 2020 Forecast," <http://www.arb.ca.gov/cc/inventory/data/forecast.htm>. 2009.

requirements will be more rigorous and will be subject to third-party verification. Verification will take place annually or every three years, depending on the type of facility.

2.3.5.4 AB 32 Climate Change Scoping Plan

As indicated above, AB 32 requires CARB to adopt a scoping plan indicating how reductions in significant GHG sources will be achieved through regulations, market mechanisms, and other actions. CARB released the *Climate Change Proposed Scoping Plan* in October 2008, which contains an outline of the proposed State strategies to achieve the 2020 greenhouse gas emission limits. The CARB Governing Board approved the *Climate Change Scoping Plan* on December 11, 2008. The *Climate Change Scoping Plan* indicates how emission reductions will be achieved from significant sources of GHGs via regulations, market mechanism, and other actions. The *Climate Change Scoping Plan* identifies 18 recommended measures the state should implement to achieve AB 32. Throughout 2009 and 2010, CARB will draft rule language and conduct a series of public workshops and rulemakings based on the scoping plan recommendations.

Key elements of the Scoping Plan include the following recommendations:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related greenhouse gas emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

Under the Scoping Plan, approximately 85 percent of the State's emissions are subject to a cap-and-trade program where covered sectors are placed under a declining emissions cap. The emissions cap incorporates a margin of safety whereby the 2020 emissions limit will still be achieved even in the event that uncapped sectors do not fully meet their anticipated emission reductions. Emissions reductions will be achieved through regulatory requirements and the option to reduce emissions further or purchase

allowances to cover compliance obligations. It is expected that emission reduction from this cap-and-trade program will account for a large portion of the reductions required by AB 32.

Table IV.B.2-1, AB 32 Scoping Plan Measures, lists CARB’s preliminary recommendations for achieving greenhouse gas reductions under AB 32 along with a brief description of the reduction strategies.

**Table IV.B.2-1
AB 32 Scoping Plan Measures**

Scoping Plan Measure	Description
SPM-1: California Cap-and-Trade Program linked to Western Climate Initiative	Implement a broad-based cap-and-trade program that links with other Western Climate Initiative Partner programs to create a regional market system. Ensure California’s program meets all applicable AB 32 requirements for market-based mechanisms. Capped sectors include transportation, electricity, natural gas, and industry. Projected 2020 business-as-usual emissions are estimated at 512 MMTCO _{2e} ; preliminary 2020 emissions limit under cap-and-trade program are estimated at 365 MMTCO _{2e} (29 percent reduction).
SPM-2: California Light-Duty Vehicle GHG Standards	Implement adopted Pavley standards and planned second phase of the program. AB 32 states that if the Pavley standards (AB 1493) do not remain in effect, CARB shall implement equivalent or greater alternative regulations to control mobile sources.
SPM-3: Energy Efficiency	Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts. The Scoping Plan considers green building standards as a framework to achieve reductions in other sectors, such as electricity.
SPM-4: Renewables Portfolio Standard	Achieve 33 percent Renewable Portfolio Standard by both investor-owned and publicly owned utilities.
SPM-5: Low Carbon Fuel Standard	CARB identified the Low Carbon Fuel Standard as a Discrete Early Action item and the final regulation was adopted on April 23, 2009. In January 2007, Governor Schwarzenegger issued Executive Order S-1-07, which called the reduction of the carbon intensity of California’s transportation fuels by at least 10 percent by 2020.
SPM-6: Regional Transportation-Related Greenhouse Gas Targets	Develop regional greenhouse gas emissions reduction targets for passenger vehicles. SB 375 requires CARB to develop, in consultation with metropolitan planning organizations, passenger vehicle greenhouse gas emissions reduction targets for 2020 and 2035 by September 30, 2010. SB 375 requires metropolitan planning organizations to prepare a sustainable communities strategy to reach the regional target provided by CARB.
SPM-7: Vehicle Efficiency Measures	Implement light-duty vehicle efficiency measures. CARB is pursuing fuel-efficient tire standards and measures to ensure properly inflated tires during vehicle servicing.

Scoping Plan Measure	Description
SPM-8: Goods Movement	Implement adopted regulations for port drayage trucks and the use of shore power for ships at berth. Improve efficiency in goods movement operations.
SPM-9: Million Solar Roofs Program	Install 3,000 megawatts of solar-electric capacity under California's existing solar programs.
SPM-10: Heavy/Medium-Duty Vehicles	Adopt heavy- and medium-duty vehicle and engine measures. Measures targeting aerodynamic efficiency, vehicle hybridization, and engine efficiency are recommended.
SPM-11: Industrial Emissions	Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.
SPM-12: High Speed Rail	Support implementation of a high-speed rail system. This measure supports implementation of plans to construct and operate a high-speed rail system between Northern and Southern California serving major metropolitan centers.
SPM-13: Green Building Strategy	Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.
SPM-14: High Global Warming Potential Gases	Adopt measures to reduce high global warming potential gases. The Scoping Plan contains 6 measures to reduce high global warming potential gases from mobile sources, consumer products, stationary sources, and semiconductor manufacturing.
SPM-15: Recycling and Waste	Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.
SPM-16: Sustainable Forests	Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation. The federal government and California's Board of Forestry and Fire Protection has the regulatory authority to implement the Forest Practice Act to provide for sustainable management practices. This measure is expected to play a greater role in the 2050 goals.
SPM-17: Water	Continue efficiency programs and use cleaner energy sources to move water. California will also establish a public goods charge for funding investments in water efficiency that will lead to as yet undetermined reductions in greenhouse gases.
SPM-18: Agriculture	In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020. Increase efficiency and encourage use of agricultural biomass for sustainable energy production. CARB has begun research on nitrogen fertilizers and will explore opportunities for emission reductions.

Source: California Air Resources Board, *Climate Change Scoping Plan*, (2008).

2.3.6 Senate Bill 1368

Two days after signing AB 32, Governor Schwarzenegger signed Senate Bill 1368 (SB 1368, Perata) into law. SB 1368 required the California Energy Commission and the California Public Utilities Commission to develop and adopt regulations for GHG emissions performance standards for the long-term procurement of electricity by local publicly owned utilities. The California Energy Commission adopted its standard on May 23, 2007 and the California Public Utilities Commission adopted its standard on January 25, 2007. SB 1368 includes measures that protect energy customers from financial risks by allowing new capital investments in power plants with GHG emissions that are as low as or lower than new combined-cycle natural gas plants, requiring imported electricity from out-of-state to meet GHG performance standards in California, and requiring that the standards be developed and adopted in a public process.¹²

2.3.7 Executive Order S-1-07

On January 18, 2007, California set a new Low Carbon Fuel Standard for transportation fuels sold within the state. Executive Order S-1-07 sets a declining standard for GHG emissions measured in CO₂-equivalent gram per unit of fuel energy sold in California. The target of the Low Carbon Fuel Standard is to reduce the carbon intensity of California passenger vehicle fuels by at least 10 percent by 2020. The Low Carbon Fuel Standard will apply to refiners, blenders, producers, and importers of transportation fuels and will use market-based mechanisms to allow these providers to choose how they reduce emissions during the “fuel cycle” using the most economically feasible methods. CARB identified the Low Carbon Fuel Standard as an early action item under AB 32 and the final regulation was adopted on April 23, 2009.

2.3.8 Senate Bill 97

In August 2007 the legislature enacted SB 97 (Dutton), which directs the Governor’s Office of Planning and Research (OPR) to develop guidelines under CEQA for the mitigation of greenhouse gas emissions by July 1, 2009. The Natural Resources Agency was directed to adopt the guidelines by January 1, 2010. On December 31, 2009, the Natural Resources Agency delivered its rulemaking package to the Office of Administrative Law for their review pursuant to the Administrative Procedure Act. The Adopted Amendments will not become effective until after the Office of Administrative Law completes its review

¹² The adopted SB 1368 regulations are available on the California Energy Commission's website at: http://www.energy.ca.gov/emission_standards/regulations/index.html.

of the Adopted Amendments and rulemaking file, and transmits the Adopted Amendments to the Secretary of State for inclusion in the California Code of Regulations.¹³

2.3.8.1 OPR's CEQA and Climate Change Technical Advisory

On June 19, 2008, OPR issued a CEQA and Climate Change technical advisory as interim guidance regarding the analysis of GHG emissions in CEQA documents.¹⁴ The advisory indicated that a project's GHG emissions, 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. Instead, OPR requested that CARB recommend a method for setting thresholds that lead agencies may adopt.¹⁵

2.3.8.2 OPR and CARB Working To Formulate CEQA Guideline Amendments

On October 24, 2008, CARB staff released draft *Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*.¹⁶ In its work to formulate CEQA Guideline Amendments for GHG emissions, OPR submitted the *Proposed Draft CEQA Guideline Amendments for Greenhouse Gas Emissions* to the Secretary for Natural Resources on April 13, 2009. The Natural Resources Agency conducted formal rulemaking in 2009. OPR's draft CEQA and Climate Change technical advisory reiterates that OPR has requested that CARB recommend a statewide method for setting thresholds of significance. CARB is working to formulate the requested guidance.

2.3.9 Senate Bill 375

The California Legislature passed SB 375 (Steinberg) on September 1, 2008, which requires CARB to set regional GHG reduction targets after consultation with local governments. The target must then be incorporated within that region's Regional Transportation Plan, which is used for long-term transportation planning, in a Sustainable Communities Strategy. SB 375 also requires each region's Regional Housing Needs Assessment to be adjusted based on the Sustainable Communities Strategy in its

¹³ <http://ceres.ca.gov/ceqa/guidelines/>

¹⁴ Governor's Office of Planning and Research, *Technical Advisory – CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*, (2008).

¹⁵ Office of Planning and Research, *Proposed Draft CEQA Guideline Amendments for Greenhouse Gas Emissions*, (2009) 4.

¹⁶ California Air Resources Board, *Preliminary Staff Draft Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*, (2008) 7.

Regional Transportation Plan. Additionally, SB 375 reforms the environmental review process to create incentives to implement the strategy, especially transit priority projects. The Governor signed SB 375 into law on September 30, 2008. CARB is not expected to issue any SB 375-mandated regional GHG reduction targets until 2010.

2.3.10 California Climate Action Registry

The California Climate Action Registry is a private non-profit organization formed by the State of California and serves as a voluntary GHG registry to protect and promote early actions to reduce GHG emissions by organizations. The California Climate Action Registry was formally established by law through SB 1771 (Sher, 2000) and SB 527 (Sher, 2001). The California Climate Action Registry began with 23 Charter Members and currently has over 300 corporations, universities, cities and counties, government agencies and environment organizations voluntarily measuring, monitoring, and publicly reporting their GHG emissions using the California Climate Action Registry protocols. The California Climate Action Registry has published a General Reporting Protocol, as well as project- and industry-specific protocols for landfill activities, livestock activities, the cement sector, the power/utility sector, and the forest sector. The protocols provide the principles, approach, methodology, and procedures required for participation in the California Climate Action Registry.

2.3.11 Attorney General's Measures

The California Attorney General's Office has published a document titled *The California Environmental Quality Act: Addressing Global Warming Impacts at the Local Agency Level*.¹⁷ The document acknowledges that lead agencies can play an important role in "moving the State away from 'business as usual' and toward a low-carbon future." The document is intended to provide information to lead agencies that may be helpful in carrying out their duties under CEQA with respect to greenhouse gases and climate change impacts. Provided in the document are measures that can be included as project design features, required changes to the project, or mitigation measures at the project level and at the general plan level. The measures are not intended to be exhaustive and may not be appropriate for every project or general plan. The Attorney General's Office affirms that "the decision of whether to approve a project – as proposed or with required changes or mitigation – is for the local agency, exercising its informed judgment in compliance with the law and balancing a variety of public objectives."

¹⁷ Department of Justice, "The California Environmental Quality Act – Addressing Global Warming Impacts at the Local Agency Level," http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf. 2008.

2.4 Local Activities

2.4.1 City of Los Angeles

In May 2007, the City of Los Angeles published “Green LA, An Action Plan to Lead the Nation in Fighting Global Warming” (*LA Green Plan*), outlining the goals and actions the City has established to reduce the generation and emission of GHGs from both public and private activities. The *LA Green Plan* is designed to reduce greenhouse gas emissions 35 percent below 1990 levels by 2030. To achieve this, the City will:

- Increase the generation of renewable energy;
- Improve energy conservation and efficiency; and
- Change transportation and land use patterns to reduce dependence on automobiles.

In order to achieve the goals laid out in the *LA Green Plan*, the City Council approved the Green Building Program Ordinance, which the Mayor signed into law on April 22, 2008. The Green Building Program establishes three main components. The Standards of Sustainability component requires non-residential and high-rise residential projects with at least 50,000 square feet of floor area and low-rise residential projects with at least 50 units or 50,000 square feet of floor area meet at a minimum the US Green Building Council’s (USGBC) Leadership in Energy and Environmental Design® (LEED®) Certified level. Redevelopment projects that exceed 50 percent of the valuation of the existing building’s replacement cost are also subject to this requirement. Projects must also include a LEED® Accredited Professional on the project team and must demonstrate compliance with the intent of the LEED® Certified level.

The Standard of Sustainable Excellence component establishes incentives for projects that register with the USGBC’s LEED® program and complies with the Standards of Sustainability component at the LEED® Silver or higher level. The incentives include expedited services within several City departments including the Department of City Planning, Department of Building Safety, Department of Water and Power, and the Bureau of Engineering.

The Green Building Team component acts as a working group that oversees the Standards of Sustainability and Sustainable Excellence. The function of the Green Building Team is to provide a public forum for addressing technical issues associated with the ordinance, to educate City staff, to develop an educational public outreach program, and to provide an annual report to the City Council. The Green Building Team also reviews and suggests modifications to the Los Angeles Municipal Code to facilitate the City’s green building objectives.

2.4.2 South Coast Air Quality Management District

In April 1990, the South Coast Air Quality Management District (SCAQMD) adopted a “Policy on Global Warming and Stratospheric Ozone Depletion.” The policy commits the SCAQMD to consider global warming impacts in rulemaking procedures and Air Quality Management Plans. In March 1992, the SCAQMD adopted amendments to the policy, which included the following directives:

- Phase out the use and corresponding emissions of chlorofluorocarbons (CFCs), methyl chloroform (1,1,1-trichloroethane or TCA), carbon tetrachloride, and halons by December 1995;
- Phase out the large quantity use and corresponding emissions of hydrochlorofluorocarbons (HCFCs) by the year 2000;
- Develop recycling regulations for HCFCs (e.g., SCAQMD Rules 1411 and 1415);
- Develop an emissions inventory and control strategy for methyl bromide; and
- Support the adoption of a California GHG emission reduction goal.

The SCAQMD convened a GHG CEQA Significance Threshold Working Group with the goal of developing CEQA significance thresholds for GHG emissions that may be utilized at the discretion of lead agencies. In December 2008, the SCAQMD Governing Board adopted thresholds for industrial projects where the SCAQMD is the lead agency. To date, no thresholds have been adopted for residential or commercial projects.

3.0 EXISTING CONDITIONS

3.1 Global Climate Change Background

Global climate change refers to any significant change in climate measurements, such as temperature, precipitation, or wind, lasting for an extended period (i.e., decades or longer).¹⁸ Climate change may result from:

- Natural factors, such as changes in the sun’s intensity or slow changes in the Earth’s orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation, reduction in sunlight from the addition of GHG and other gases to the atmosphere from volcanic eruptions); and

¹⁸ United States Environmental Protection Agency, “Glossary of Climate Change Terms,” <http://www.epa.gov/climatechange/glossary.html>. 2008.

- Human activities that change the atmosphere’s composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, desertification).

The primary effect of global climate change has been a rise in the average global troposphere temperature of 0.2° Celsius per decade, determined from meteorological measurements world-wide between 1990 and 2005.¹⁹ Climate change modeling using 2000 emission rates shows that further warming is likely to occur, which would induce further changes in the global climate system during the current century.²⁰ Changes to the global climate system and ecosystems and to California could include:

- Declining sea ice and mountain snowpack levels, thereby increasing sea levels and sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere’s ability to hold more water vapor at higher temperatures;²¹
- Rising average global sea levels primarily due to thermal expansion and the melting of glaciers, ice caps, and the Greenland and Antarctic ice sheets;²²
- Changing weather patterns, including changes to precipitation, ocean salinity, and wind patterns, and more energetic aspects of extreme weather including droughts, heavy precipitation, heat waves, extreme cold, and the intensity of tropical cyclones;²³
- Declining Sierra snowpack levels, which account for approximately half of the surface water storage in California, by 70 percent to as much as 90 percent over the next 100 years;²⁴
- Increasing the number of days conducive to ozone formation by 25 to 85 percent (depending on the future temperature scenario) in high ozone areas located in Southern California and the San Joaquin Valley by the end of the 21st century;²⁵

19 Intergovernmental Panel on Climate Change, “Climate Change 2007: The Physical Science Basis, Summary for Policymakers,” http://ipcc-wg1.ucar.edu/wg1/docs/WG1AR4_SPM_PlenaryApproved.pdf. 2007.

20 Intergovernmental Panel on Climate Change, “Climate Change 2007: The Physical Science Basis, Summary for Policymakers”.

21 Intergovernmental Panel on Climate Change, “Climate Change 2007: The Physical Science Basis, Summary for Policymakers”.

22 Intergovernmental Panel on Climate Change, “Climate Change 2007: The Physical Science Basis, Summary for Policymakers”.

23 Intergovernmental Panel on Climate Change, “Climate Change 2007: The Physical Science Basis, Summary for Policymakers”.

24 California Environmental Protection Agency, Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*, (2006).

25 California Environmental Protection Agency, Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*.

- Increasing the potential for erosion of California’s coastlines and sea water intrusion into the Sacramento and San Joaquin Delta and associated levee systems due to the rise in sea level;²⁶
- Increasing pest infestation making California more susceptible to forest fires;²⁷ and
- Increasing the demand for electricity by 1 to 3 percent by 2020 due to rising temperatures resulting in hundreds of millions of dollars in extra expenditures.²⁸

The natural process through which heat is retained in the troposphere²⁹ is called the “greenhouse effect.” The greenhouse effect traps heat in the troposphere through a three-fold process as follows: (1) short-wave radiation in the form of visible light emitted by the Sun is absorbed by the Earth as heat; (2) long-wave radiation re-emitted by the Earth; and (3) GHGs in the upper atmosphere absorbing or trapping the long-wave radiation and re-emitting it back towards the Earth and into space. This third process is the focus of current climate change actions.

While water vapor and CO₂ are the most abundant GHGs, other trace GHGs have a greater ability to absorb and re-radiate long-wave radiation; To gauge the potency of GHGs, scientists have established a Global Warming Potential for each GHG based on its ability to absorb and re-emit long-wave radiation over a specific period. The Global Warming Potential of a gas is determined using CO₂ as the reference gas with a Global Warming Potential of 1 over 100 years.³⁰ For example, a gas with a Global Warming Potential of 10 is 10 times more potent than CO₂ over 100 years. The use of Global Warming Potential allows GHG emissions to be reported using CO₂ as a baseline. The sum of each GHG multiplied by its associated Global Warming Potential is referred to as carbon dioxide equivalents (CO₂e). This essentially means that 1 metric ton of a GHG with a Global Warming Potential of 10 has the same climate change impacts as 10 metric tons of CO₂.

²⁶ California Environmental Protection Agency, Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*.

²⁷ California Environmental Protection Agency, Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*.

²⁸ California Environmental Protection Agency, Climate Action Team, *Climate Action Team Report to Governor Schwarzenegger and the Legislature*.

²⁹ The troposphere is the bottom layer of the atmosphere, which varies in height from the Earth’s surface to 10 to 12 kilometers).

³⁰ Intergovernmental Panel on Climate Change, *Climate Change 1995: The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change*, (1996). All Global Warming Potentials are given as 100-year values.

3.2 Greenhouse Gases

State law defines GHGs to include the following compounds:³¹

- *Carbon Dioxide (CO₂)*. Carbon dioxide primarily is generated by fossil fuel combustion from stationary and mobile sources. Due to the emergence of industrial facilities and mobile sources over the past 250 years, the concentration of carbon dioxide in the atmosphere has increased 35 percent.³² Carbon dioxide is the most widely emitted GHG and is the reference gas (Global Warming Potential of 1) for determining the Global Warming Potentials of other GHGs. In 2004, 82.8 percent of California's GHG emissions were carbon dioxide.³³
- *Methane (CH₄)*. Methane is emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. In the United States, the top three sources of methane are landfills, natural gas systems, and enteric fermentation.³⁴ Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The Global Warming Potential of methane is 21.
- *Nitrous Oxide (N₂O)*. Nitrous oxide is produced by natural and human-related sources. Primary human-related sources include agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. The Global Warming Potential of nitrous oxide is 310.

³¹ Black carbon is not regulated as a GHG in any state law. Black carbon is a form of particulate air pollution that is most often produced from the burning of biomass, cooking with solid fuels, and diesel exhaust. Some studies have implicated black carbon as a source of global climate change; however, the potential impact of black carbon on climate change is currently under substantial dispute.

Black carbon is not assessed in this Global Climate Change section for four key reasons. First, no regulatory authority has classified black carbon as a greenhouse gas and it is not regulated under AB 32 or any other law implemented to address global climate change. Second, none of the guidance on global climate change analysis suggests the analysis should include black carbon. Even the Center for Biological Diversity's white paper on CEQA and global warming does not mention black carbon as a greenhouse gas that should be addressed under CEQA. California Environmental Quality Act – On the Front Lines of California's Fight Against Global Warming, (CBD 2007). Third, the tools are not available to quantify black carbon emissions at this time. Emissions factors for black carbon have not been published by the California Air Resources Board, the U.S. Environmental Protection Agency, or other reputable bodies. Finally, no guidance on the importance, evaluation, or mitigation of black carbon has been provided by the agencies leading regulation of the climate change issue. Therefore, while the Proposed Project will generate some black carbon, the quantities are indeterminable at this time. The potential impact of the black carbon emissions on climate change is also unknown at this time, however, it is anticipated that the Proposed Project would have a very small impact on climate change based on its size relative to the global nature of this issue.

³² United States Environmental Protection Agency, "Inventory of US Greenhouse Gas Emissions and Sinks 1990-2006," <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>. 2008.

³³ California Energy Commission, "Revisions to the 1990-2004 Greenhouse Gas Emissions Inventory Report, Published in December 2006," http://www.energy.ca.gov/2006publications/CEC-600-2006-013/2007-01-23_GHG_INVENTORY_REVISIONS.PDF. 2007.

³⁴ United States Environmental Protection Agency, "Methane: Sources and Emissions," <http://www.epa.gov/methane/sources.html>. n.d.

- *Hydrofluorocarbons (HFCs)*. HFCs typically are used as refrigerants in both stationary refrigeration and mobile air conditioning. The use of HFCs for cooling and foam-blowing is growing particularly as the continued phase-out of chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) gains momentum. The Global Warming Potential of HFCs ranges from 140 for HFC-152a to 6,300 for HFC-236fa.
- *Nitrogen Trifluoride (NF₃)*. Nitrogen trifluoride is one of several gases used during the manufacture of liquid crystal flat-panel displays, thin-film solar cells, and microcircuits. The Global Warming Potential of NF₃ is 17,200.
- *Perfluorocarbons (PFCs)*. Perfluorocarbons are compounds consisting of carbon and fluorine. They are primarily created as a byproduct of aluminum production and semiconductor manufacturing. Perfluorocarbons are potent GHGs with a Global Warming Potential several thousand times that of carbon dioxide, depending on the specific PFC. Another area of concern regarding PFCs is their long atmospheric lifetime (up to 50,000 years).³⁵ The Global Warming Potentials of PFCs range from 5,700 to 11,900.
- *Sulfur Hexafluoride (SF₆)*. Sulfur hexafluoride is a colorless, odorless, nontoxic, nonflammable gas. It is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride is the most potent GHG that has been evaluated by the Intergovernmental Panel on Climate Change, with a Global Warming Potential of 23,900. However, its global warming contribution is not as high as the Global Warming Potential would indicate due to its low mixing ratio, as compared to carbon dioxide (4 parts per trillion [ppt] in 1990 versus 365 parts per million [ppm] of CO₂).³⁶

3.3 Contributions to Greenhouse Gas Emissions

3.3.1 Global

Worldwide anthropogenic (man-made) GHG emissions as of 2005 (i.e., the latest year for which data are available for Annex I countries) totaled approximately 37,408 million metric tons of CO₂e (MMTCO₂e).³⁷ The top five countries and the European Union accounted for approximately 52 percent of the total global GHG emissions in 2005 (See **Table IV.B.2-2, Top Five GHG Producer Countries and the European Union, 2005**). The GHG emissions in more recent years may differ from the inventories presented in **Table IV.B.2-2**; however, the data is representative of currently available global inventory data.

³⁵ Energy Information Administration, "Other Gases: Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride," http://www.eia.doe.gov/oiaf/1605/ggrpt/other_gases.html. n.d.

³⁶ United States Environmental Protection Agency, "High GWP Gases and Climate Change," http://www.eia.doe.gov/oiaf/1605/ggrpt/summary/other_gases.html. n.d.

³⁷ World Resources Institute, "Climate Analysis Indicators Tool (CAIT)," <http://cait.wri.org/>. 2009. Excludes emissions and removals from land use, land-use change and forestry (LULUCF).

Table IV.B.2-2
Top Five GHG Producer Countries and the European Union, 2005

Emitting Countries	GHG Emissions (MMTCO₂e)
China	7,250
United States	7,098
European Union (EU), 27 Member States	5,342
Russian Federation	1,992
India	1,863
Japan	1,383
Total	24,928

Source: World Resources Institute, "Climate Analysis Indicators Tool (CAIT)," <http://cait.wri.org/>. 2009.
 Excludes emissions and removals from land use, land-use change and forestry (LULUCF).

3.3.2 United States

As noted in **Table IV.B.2-2**, the United States was the number two producer of global greenhouse gas emissions as of 2005. The primary greenhouse gas emitted by human activities in the United States was CO₂, representing approximately 84 percent of total greenhouse gas emissions.³⁸ Carbon dioxide from fossil fuel combustion, the largest source of US greenhouse gas emissions, accounted for approximately 80 percent of US GHG emissions.³⁹

3.3.3 State of California

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based upon the 2006 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2006 GHG emissions inventory, California emitted 484 MMTCO₂e *including* emissions resulting from imported electrical power in 2006.⁴⁰ Based on the CARB inventory and GHG inventories for countries contributing to the worldwide GHG emissions inventory compiled by the World Resources Institute for 2005, California's total GHG emissions rank second in the United States (Texas is number one) with

³⁸ United States Environmental Protection Agency, "Inventory of US Greenhouse Gas Emissions and Sinks 1990-2006," <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>. 2008.

³⁹ United States Environmental Protection Agency, "Inventory of US Greenhouse Gas Emissions and Sinks 1990-2006."

⁴⁰ California Air Resources Board, *California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit*, (2007).

emissions of 434 MMTCO₂e *excluding* emissions related to imported power.⁴¹ However, as of 2005, California had a low per capita GHG emission rate — approximately 11.6 MTCO₂e, which ranks as the 48th in the nation (only New York, Rhode Island, and the District of Columbia had lower per capita rates).⁴²

A California Energy Commission emissions inventory report placed CO₂ produced by fossil fuel combustion in California as the largest source of California’s GHG emissions in 2004, accounting for 80 percent of the total GHG emissions.⁴³ Emissions of CO₂ from other sources contributed 3.1 percent of the total GHG emissions; methane emissions 6.4 percent; nitrous oxide emissions 7.6 percent; and the remaining 3.2 percent was composed of emissions of high-Global Warming Potential gases.⁴⁴ These high Global Warming Potential gases are largely composed of refrigerants, with small contributions of SF₆ used in connection with insulating materials for electricity transmission and distribution.

The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which include commercial and residential activities. **Table IV.B.2-3, GHG Emissions in California**, provides a summary of GHG emissions reported in California in 1990 and 2006 separated by categories defined by the Intergovernmental Panel on Climate Change.

Between 1990 and 2006, the population of California grew by approximately 7.3 million (from 29.8 to 37.1 million).⁴⁵ This represents an increase of 24.5 percent from 1990 population levels. In addition the California economy, measured as gross state product, grew from \$788 billion in 1990 to \$1.7 trillion in 2006 representing an increase of approximately 116 percent (over twice the 1990 gross state product).⁴⁶ Despite the population and economic growth, California’s net GHG emissions only grew by 12 percent.

⁴¹ United Nations Framework Convention on Climate Change, “Annex I Parties – GHG total without LULUCF,” http://unfccc.int/ghg_emissions_data/ghg_data_from_unfccc/time_series_annex_i/items/3841.php.

⁴² World Resources Institute, “Climate Analysis Indicators Tool (CAIT),” <http://cait.wri.org/>. 2009. Excludes emissions and removals from land use, land-use change and forestry (LULUCF).

⁴³ California Energy Commission, “Revisions to the 1990-2004 Greenhouse Gas Emissions Inventory Report, Published in December 2006,” http://www.energy.ca.gov/2006publications/CEC-600-2006-013/2007-01-23_GHG_INVENTORY_REVISIONS.PDF. 2007.

⁴⁴ California Energy Commission, “Revisions to the 1990-2004 Greenhouse Gas Emissions Inventory Report, Published in December 2006.”

⁴⁵ U.S. Census Bureau, “Data Finders,” <http://www.census.gov/>. 2009; California Department of Finance, “E-5 City/County Population and Housing Estimates, 2008, Revised 2001-2007, with 2000 Benchmark,” http://www.dof.ca.gov/research/demographic/reports/estimates/e-5_2001-06/. 2008.

⁴⁶ California Department of Finance, “Financial & Economic Data: Gross Domestic Product, California,” http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_Misc.htm. 2009. Amounts are based on current dollars as of the data of the report (June 2, 2009).

The California Energy Commission attributes the slow rate of growth to the success of California's renewable energy programs and its commitment to clean air and clean energy.⁴⁷

**Table IV.B.2-3
GHG Emissions in California**

Source Category	1990 (MMTCO ₂ e)	Percent of Total	2006 (MMTCO ₂ e)	Percent of Total
ENERGY	386.41	89.2%	419.32	86.7%
Energy Industries	157.33	36.3%	160.82	33.2%
Manufacturing Industries & Construction	24.24	5.6%	19.03	3.9%
Transport	150.02	34.6%	184.78	38.2%
Other (Residential/Commercial/Institutional)	48.19	11.1%	48.36	10.0%
Non-Specified	1.38	0.3%	0.00	0.0%
Fugitive Emissions from Oil & Natural Gas	2.94	0.7%	3.25	0.7%
Fugitive Emissions from Other Energy Production	2.31	0.5%	2.03	0.4%
INDUSTRIAL PROCESSES & PRODUCT USE	18.34	4.2%	30.22	6.2%
Mineral Industry	4.85	1.1%	5.92	1.2%
Chemical Industry	2.34	0.5%	0.37	0.1%
Non-Energy Products from Fuels & Solvent Use	2.29	0.5%	1.85	0.4%
Electronics Industry	0.59	0.1%	0.77	0.2%
Substitutes for Ozone Depleting Substances	0.04	0.0%	13.38	2.8%
Other Product Manufacture and Use	3.18	0.7%	1.67	0.3%
Other	5.05	1.2%	6.25	1.3%
AGRICULTURE, FORESTRY, & OTHER LAND USE	19.11	4.4%	25.10	5.2%
Livestock	11.67	2.7%	15.68	3.2%
Land	0.19	0.0%	0.19	0.0%
Aggregate Sources & Non-CO ₂ Sources on Land	7.26	1.7%	9.24	1.9%
WASTE	9.42	2.2%	9.23	1.9%
Solid Waste Disposal	6.26	1.4%	6.31	1.3%
Wastewater Treatment & Discharge	3.17	0.7%	2.92	0.6%

EMISSIONS SUMMARY

Gross California Emissions	433.29	483.87
Sinks from Forests and Rangelands	-6.69	-4.07
Net California Emissions	426.60	479.80

Sources:

¹ California Air Resources Board, "California Greenhouse Gas 1990-2004 Inventory by IPCC Category - Summary," <http://www.arb.ca.gov/cc/inventory/archive/archive.htm>. 2007.

² California Air Resources Board, "California Greenhouse Gas 2000-2006 Inventory by IPCC Category - Summary," <http://www.arb.ca.gov/cc/inventory/data/data.htm>. 2009.

⁴⁷ California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004*, (2006).

3.4 Global Ambient CO₂ Concentrations

Air trapped by ice has been extracted from core samples taken from polar ice sheets to determine the global atmospheric variation of carbon dioxide, methane, and nitrous oxide from before the start of the industrialization, around 1750, to over 650,000 years ago. For that period, it was found that carbon dioxide concentrations ranged from 180 ppm to 300 ppm. For the period from around 1750 to the present, global carbon dioxide concentrations increased from a pre-industrialization period concentration of 280 ppm to 379 ppm in 2005, with the 2005 value far exceeding the upper end of the pre-industrial period range.⁴⁸ Global methane and nitrous oxide concentrations show similar increases for the same period (see **Table IV.B.2-4, Comparison of Global Pre-Industrial and Current GHG Concentrations**).

**Table IV.B.2-4
Comparison of Global Pre-Industrial and Current GHG Concentrations**

Greenhouse Gas	Early Industrial Period Concentrations (ppm)	Natural Range for Last 650,000 Years (ppm)	2005 Concentrations (ppm)
Carbon Monoxide (CO)	280	180 to 300	379
Methane (CH ₄)	715	320 to 790	1774
Nitrous Oxide (N ₂ O)	270	NA	319

Source: Intergovernmental Panel on Climate Change, Climate Change 2007: The Physical Science Basis, Summary for Policymakers, (2007).

4.0 ENVIRONMENTAL IMPACTS

Through the Proposed Project, Loyola Marymount University (LMU) seeks to improve its facilities over a 20-year period in order to meet evolving educational needs. Approximately 28 percent of the campus building stock is deemed to be in need of replacement. The Proposed Project proposes the development of approximately 1,131,000 gross square feet (gsf) of new academic, administrative, and indoor athletic facilities (536,000 gsf net new) and approximately 846,000 gsf of new student residential facilities (476,000 gsf net new). The Proposed Project would also reconfigure inadequate campus recreational facilities and open space amenities, roadways, parking facilities, and pedestrian circulation accommodations, and implement infrastructure upgrades as needed. Construction of the Proposed Project would be implemented in four major phases, each anticipated to be five to six years in duration, beginning in 2010.

⁴⁸ California Energy Commission, *Inventories of California Greenhouse Gas Emissions and Sinks 1990 to 2004*.

4.1 Methodology

As there is yet no uniform approach to analyzing global climate change impacts, lead agencies must develop their own approaches for analyzing GHG emissions. OPR, in its June 19, 2008 CEQA and Climate Change technical advisory, recognizes that CEQA Guidelines have not been adopted to provide guidance as to how climate change is to be addressed under CEQA. OPR also notes that it is continuing to consult with CARB technical staff regarding appropriate thresholds of significance to use for climate change analysis, but that such guidance is not yet available. OPR has provided the following “informal guidance” regarding the following steps for addressing climate change impacts under CEQA:

1. Identify and quantify the GHG emissions;
2. Assess the significance of the impact on climate change; and
3. If significant, identify alternatives and/or mitigation measures that will reduce impacts below significance.⁴⁹

Sources consulted for this analysis include the US Environmental Protection Agency (US EPA), the US Energy Information Administration, the California Energy Commission, the California Climate Action Registry, the City of Los Angeles Green Building Program Ordinance, the South Coast Air Quality Management District (SCAQMD) *California Environmental Quality Act (CEQA) Air Quality Handbook*, and other GHG and global climate change data. Emission calculations conducted for the Proposed Project are contained within **Appendix IV.B.2, Global Climate Change Technical Data**.

4.1.1 Identify and Quantify GHG Emissions

The following general factors should be considered when identifying and quantifying GHG emissions: good faith effort to calculate, model, or estimate the amount of CO₂ and other GHG emissions, including emissions associated with vehicular traffic, energy consumption, water usage, and construction activities; and use of OPR modeling tools to quantify GHG emissions.⁵⁰

4.1.2 Methodology for Quantifying GHG Emissions

Although no numerical thresholds of significance have been developed, the California Climate Action Registry has prepared a protocol for calculating and reporting GHG emissions from a number of general

⁴⁹ Governor’s Office of Planning and Research, *Technical Advisory – CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*, (2008) 5.

⁵⁰ Governor’s Office of Planning and Research, *Technical Advisory – CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*.

and industry-specific activities.⁵¹ This guidance has been used to address GHG emissions from the Proposed Project. However, it is important to note that there is no specific guidance defining the extent to which direct and indirect emissions resulting from a single proposed development project should be addressed and analyzed as part of the CEQA assessment process. Nevertheless, reporting indirect GHG emissions is a requirement of the voluntary California Climate Action Registry reporting program and CARB staff has considered extensively the value of indirect emissions in a mandatory reporting program. CARB believes that indirect energy usage provides a more complete picture of the emissions footprint of a facility: “As facilities consider changes that would affect their emissions – addition of a cogeneration unit to boost overall efficiency even as it increases direct emissions, for example – the relative impact on total (direct plus indirect) emissions by the facility should be monitored. Annually reported indirect energy usage also aids the conservation awareness of the facility and provides information” to CARB to be considered for future strategies by the industrial sector. For these reasons, CARB has proposed requiring the calculation of direct and indirect GHG emissions as part of the AB 32 reporting requirements, and this analysis does so.⁵²

As explained by the California Air Pollution Control Officers Association, the information needed to characterize GHG emissions from manufacture, transport, and end-of-life of construction materials would be speculative at the CEQA analysis level.⁵³ Therefore, the construction analysis does not assess such GHG emissions.

The tools used to evaluate the GHG impacts associated with construction and operation of the Proposed Project include the URBEMIS2007 Environmental Management Software,⁵⁴ and information provided in the *Software User’s Guide [for] URBEMIS2007 for Windows*⁵⁵ and calculation algorithms supported by the sources listed above. The URBEMIS2007 model utilizes the EMFAC2007 emissions factor model for on-road motor vehicle sources and the OFFROAD2007 emissions factor model for off-road equipment.

⁵¹ California Climate Action Registry, *General Reporting Protocol*, Version 2.2, (2007).

⁵² California Air Resources Board, *Initial Statement of Reasons for Rulemaking, Proposed Regulation for Mandatory Reporting of Greenhouse Gas Emissions Pursuant to the California Global Warming Solutions Act of 2006* (Assembly Bill 32), (2007).

⁵³ California Air Pollution Control Officers Association, *CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act*, (2008) 65.

⁵⁴ Rimpo and Associates, “URBEMIS2007 for Windows,” <http://www.urbemis.com>. 2008.

⁵⁵ Rimpo and Associates, “URBEMIS2007 for Windows.”

4.1.3 Threshold for Determining Significance

At the time that this section was being prepared, no agency had yet established project-level significance thresholds for GHG emissions relevant to the Proposed Project.⁵⁶ Accordingly, while GHG emissions can be quantified, there is no significance threshold relevant to the Proposed Project that has been adopted by any federal, state, or local agency to evaluate the significance of the Proposed Project under CEQA. “The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data.”⁵⁷ CEQA grants agencies with the general authority to adopt criteria for determining whether a given impact is “significant.”⁵⁸ When no guidance exists under CEQA, the agency may look to and assess general compliance with comparable regulatory schemes.⁵⁹ Currently, there are four existing potentially applicable regulatory schemes to evaluate the significance of a proposed project’s GHG emissions: (1) AB 32 and associated guidance, (2) 2006 CAT Report and 2007 Update, (3) OPR’s CEQA and Climate Change technical advisory, and (4) the *LA Green Plan*. The California Attorney General also has been active, issuing comment letters and other documents concerning proposed development projects and encouraging the use of certain mitigation measures for those projects to reduce GHG emissions.⁶⁰ Although the Attorney General’s measures are not a part of a regulatory scheme at this time, they provide another tool to assess general compliance with the standards of AB 32.

The regulations required to meet the goal under AB 32 of reducing emissions to 1990 levels by 2020 have yet to be implemented – the early action measures are scheduled to be implemented no later than January 1, 2010. The list of discrete early action measures that can be adopted and implemented before January 1, 2010, was adopted by the CARB in June 2007. The early action measures focus on major State-wide contributing sources and industries, not on individual development projects or practices. Of the nine early action measures, regulations for the following measures have been adopted: (1) Low Carbon Fuel

⁵⁶ SCAQMD’s guidance adopted on December 5, 2008 does not apply to this Proposed Project as it is only applicable to industrial projects where SCAQMD is the lead agency. In addition, no guidance has been adopted by the Natural Resources Agency, OPR, CARB, or the City of Los Angeles.

⁵⁷ *CEQA Guidelines* § 15064(b).

⁵⁸ See *Cal. Pub. Resources Code* § 21082.

⁵⁹ See *Protect Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal. App. 4th 1099, 1107 [“[A] lead agency’s use of existing environmental standards in determining the significance of a project’s environmental impacts is an effective means of promoting consistency in significance determinations and integrating CEQA environmental review activities with other environmental program planning and resolution.”]. Lead agencies can, and often do, use regulatory agencies’ performance standards. A project’s compliance with these standards usually is presumed to provide an adequate level of protection for environmental resources. See, e.g., *Cadiz Land Co. v. Rail Cycle* (2000) 83 Cal.App.4th 74, 106-09 (upholding use of regulatory agency performance standard).

⁶⁰ California Attorney General, *The California Environmental Quality Act, Addressing Global Warming Impacts At The Local Agency Level*, available at http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf.

Standard; (2) refrigerant losses from motor vehicle air conditioning system maintenance and restrictions on the sale of “do-it-yourself” automotive refrigerants; (3) reduction of aerodynamic drag, and thereby fuel consumption, from existing trucks and trailers through retrofit technology; and (4) shore power for ocean-going vessels. Regulations for the following measures are in the process of being adopted: (1) landfill methane capture; (2) reductions of perfluorocarbons from the semiconductor industry; (3) reductions of sulfur hexafluoride from non-electric and non-semiconductor applications; (4) reductions from high Global Warming Potential consumer products; and (5) tire pressure program. At this time, there is no single relevant criterion by which the implementation of the Proposed Project can be judged to support or hinder attainment of the State’s goals.

Neither federal, state, nor local authorities have yet formally established project-level significance thresholds for GHG emissions. OPR has issued the following guidelines to consider in determining significance:

- Lead agencies must describe the existing environmental conditions or setting, without the project, which normally constitutes the baseline physical conditions for determining whether a project’s impacts are significant;
- Lead agencies’ determination of significant impacts must be consistent with available guidance and current CEQA practice;
- Although global 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.⁶¹

The State of California, through its governor and its legislature, has established a comprehensive framework for the substantial reduction of GHG emissions over the next 40+ years. This will occur primarily through the implementation of AB 32 and Executive Order S-3-05, which will address GHG emissions on a statewide cumulative basis. In addition, the Secretary of California EPA created the Climate Action Team, which, in March 2006, published the Climate Action Team Report to Governor Schwarzenegger and the Legislature. The 2006 CAT Report identifies a recommended list of strategies that the state could pursue to reduce climate change GHG emissions. Minor changes to some of these strategies were issued by the Climate Action Team in the 2007 Update.⁶²

The *LA Green Plan* also does not establish any thresholds for determining significance of GHG emissions. Instead, as discussed above, the *LA Green Plan* details various broad goals and actions, focusing on

⁶¹ Governor’s Office of Planning and Research, *Technical Advisory – CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*, (2008).

⁶² California Climate Action Team, *Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report*, (2007).

promoting renewable energy, improving energy conservation and efficiency, and generally changing transportation and land use patterns to reduce traffic trips.

In the absence of any adopted thresholds, this analysis applies a threshold of significance where the Proposed Project would be found to not have a significant impact on global climate change if the Proposed Project is consistent with the goals, strategies, and control measures established under the AB 32 and associated guidance, 2006 CAT Report and 2007 Update, OPR's CEQA and Climate Change technical advisory, and the *LA Green Plan*. These goals, strategies, and control measures represent the current state and local efforts (and regulatory scheme) to mitigate and reduce the City of Los Angeles and the State of California's impacts on global climate change. Therefore, the Proposed Project would be considered to have a significant impact with regards to global climate change, either on a project-specific basis or with respect to its contribution to a cumulative impact on global climate change if:

GCC-1 The Proposed Project is inconsistent with the goals, strategies, and control measures established under AB 32, the 2006 CAT Report and 2007 Update, OPR's CEQA and Climate Change technical advisory, and the *LA Green Plan*.

The Natural Resources Agency is in the process of amending the CEQA Guidelines based on recommended changes from OPR with regard to GHG emissions. These amendments were prepared by OPR pursuant to SB 97, transmitted to the Natural Resource Agency on April 13, 2009, and issued for public comment on July 3, 2009.⁶³ Based on these comments, the proposed amendments were revised, and issued for public comment again on October 23, 2009.⁶⁴ On December 31, 2009, the Natural Resources Agency delivered its rulemaking package to the Office of Administrative Law for their review pursuant to the Administrative Procedure Act. The Adopted Amendments will not become effective until after the Office of Administrative Law completes its review of the Adopted Amendments and rulemaking file, and transmits the Adopted Amendments to the Secretary of State for inclusion in the California Code of Regulations. At the time of preparation of this EIR section, no amendments to the CEQA Guidelines have yet been formally adopted.

The amendments to the CEQA Guidelines delivered by the Resources Agency to the Office of Administrative Law affirm the City's discretion to adopt its own significance threshold to determine impacts on global climate change. The proposed CEQA Guidelines Section 15064.4 states that "the determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead

⁶³ <http://ceres.ca.gov/ceqa/guidelines/> (accessed December 21, 2009).

⁶⁴ *Ibid.*

agency consistent with the provisions in Section 15064.”⁶⁵ Existing CEQA Guidelines Section 15064(b) (which is not proposed to be modified by the Resources Agency) confirms that the selection of a significance threshold calls for “careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting.” In light of this discretion, proposed CEQA Guidelines Section 15064.4(a)(1) and (2) provide that the “lead agency shall have discretion to determine, in the context of a particular project, whether to: (1) use a model or methodology to quantify greenhouse gas emissions resulting from a project” or “rely on a qualitative analysis or performance based standards.”⁶⁶ Therefore, the City is well within its authority to adopt threshold GCC-1, above, to determine whether the Proposed Project will generate any significant impacts with regard to global climate change.

Furthermore, the significance threshold used by the City in this section, and the analysis provided in this EIR section below, is consistent with the proposed amendments to the CEQA Guidelines. Proposed CEQA Guidelines Section 15064.4(a) provides that a lead agency has the discretion to either quantify the GHG emissions resulting from a project, or rely on a qualitative analysis or performance based standards. Proposed CEQA Guidelines Section 15064.4(b) states that when assessing the significance of impacts from GHG emissions, a lead agency should consider: “(1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting; (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project” and “(3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions.” The global climate change impact analysis provided below conforms to this proposed methodology. This EIR section both provides a quantitative analysis of the GHG emissions resulting from the proposed project and the potential to increase or reduce GHG emissions compared to the existing environmental setting, and provides a qualitative analysis of the proposed project’s compliance with existing regulations and plans adopted to reduce GHG emissions.

Additionally, the significance threshold used in this analysis contemplates the proposed Appendix G factors to evaluate impacts to global climate change. Appendix G of the CEQA Guidelines includes sample questions for an agency’s Environmental Checklist Form. The amendments currently proposed

⁶⁵ Natural Resources Agency, Revised Text of Proposed Guidelines Amendments, Section 15064.4(a), available at <http://ceres.ca.gov/ceqa/guidelines/>; see also California Natural Resources Agency, Initial Statement of Reasons for Regulatory Action (July 2009) (Initial Statement).

⁶⁶ Natural Resources Agency, Revised Text of Proposed Guidelines Amendments.

would add Section VII Greenhouse Gas Emissions to this checklist, and evaluate a project's potential for significant impacts based on whether a project would:

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

The significance threshold used by the City in this EIR section contemplates and assesses these proposed checklist questions.

4.2 Project Design Features

4.2.1 Transportation

A transportation demand management (TDM) plan is also proposed as part of the Proposed Project to reduce single occupancy vehicle trips to and from campus. As discussed in **Section IV.K, Transportation and Circulation**, currently, approximately 60 percent of FTE undergraduate students live in campus housing. The percentage of FTE undergraduate students living in campus housing is projected to increase to approximately 75 percent at Proposed Project buildout. Because on-campus residents are much less likely to travel during the morning and afternoon peak hours than campus commuters, increasing the campus residential population would lower the overall campus trip generation rate, acting as a TDM measure that would reduce net new Project trips.

In addition to increasing student housing, sample TDM programs that could reduce faculty/staff trips include, but are not limited to, the following: providing a transportation coordinator, a transportation information center, flextime/telecommuting, online classes, online library research services, carpool/vanpool matching, a guaranteed ride home, vanpool subsidies, pedestrian facility improvements, bicycle facility improvements, and shuttle service improvement.

4.2.2 Energy

Although not required by the City nor other regulatory agency, LMU has committed to several measures that would reduce energy consumption on campus. These measures would meet or exceed minimum efficiency criteria for the State's most current Energy Conservation Standards for New Residential and Nonresidential Buildings (Title 24, part 6, California Administrative Code). The measures include the following:

- Central Plant motors shall include variable frequency drivers to adjust electrical motor speed based on demand;
- Major building renovations and additions shall be integrated into the Campus Energy Management System, which is a set of computer-aided tools used to monitor, control, and optimize the performance of building HVAC and lighting systems;
- Future cooling loads shall be met using thermal energy storage, or an additional energy efficient chiller, or other comparable storage technologies;
- New and replacement buildings with flat roofs shall use white reflective material or comparable heat rejecting material on the building roofs;
- New appliances shall meet or exceed the minimum efficiency levels mandated in the California Code of Regulations;
- All irrigation shall use reclaimed water by Proposed Project buildout;
- All irrigation shall use automatic irrigation timers and at least 50 percent of the campus's non-turf areas shall include drought-tolerant or native plantings;
- All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet aerators;
- All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better;
- Buildings shall be well sealed to prevent outside air from infiltrating and increasing interior space-conditioning loads;
- Buildings shall incorporate thermal insulation in walls and ceilings;
- Window systems shall be designed to reduce thermal gain and loss, thus, reducing cooling loads during warm weather and heating loads during cool weather; and
- High-intensity-discharge (HID) lamps, light-emitting diode (LED), or other energy efficient lighting shall be installed for all outdoor lighting to reduce electricity consumption.

4.2.3 Water

LMU has committed to water conservation measures that would reduce water consumption on campus, thereby resulting in reduced electricity and natural gas GHG emissions. These measures include:

University and Dorm Features

- Bathroom faucet – 1.5 gallons per minute (private), 0.5 gallon per minute (public)
- Self-closing faucets in public restrooms

- Kitchen faucets – 1.5 gallons per minute
- Pre-rinse kitchen spray head
- Showerheads: no more than 1 showerhead per stall
 - Low-flow showerheads – 2.0 gallons per minute
- High efficiency clothes washers – water savings factor of 5.0 or less (residential) or 7.5 or less (commercial)
- High efficiency toilets – 1.28 gallons per flush or less, or dual flush
- High efficiency/ultra low urinals – 0.125 to 0.5 gallon per flush
- Energy Star dishwashers
- Domestic water heating system located in close proximity to point(s) of use
- Tankless and on-demand water heaters
- Cooling tower conductivity controllers or cooling tower pH conductivity controllers
 - Cooling towers to operate at a minimum of 5.5 cycles of concentration

Irrigation/Landscaping/Recreational Features

- Rotating sprinkler nozzles – 0.5 gallon per minute
- Micro-spray nozzles
- Drip/subsurface irrigation (micro-irrigation) and bubbler irrigation
- Weather-based irrigation controller
- Hydro-zoning plantings (i.e., groups plants with similar water requirements together)
- Zoned irrigation
- Landscaping contouring to minimize precipitation runoff
- Drought-tolerant plants – 75 percent of total new landscape plantings
- Artificial turf (cost permitting)
- Infiltration planters (i.e., notched curb to allow runoff to flow into planted areas)
- Stormwater capture and infiltration in on-campus sump
- Water-saving pool filter

Reclaimed Water Features

- Reclaimed water system for irrigation
- On-site hydrogen peroxide reclaimed water treatment
- Convert cooling towers to 100 percent reclaimed water use, as permitted by law

4.3 Project Impacts

The Proposed Project proposes the development of over approximately 508,000 net new gross square feet (gsf) of academic, student support, and administrative facilities; approximately 28,000 net new gsf of indoor athletic facilities; and approximately 476,000 net new gsf of student residential and residential support facilities. As described in Section II, Project Description, the Proposed Project includes the following key sustainability objectives:

- S-1. Honor the university's pledge as a signatory of the American College and University President's Climate Commitment to create a sustainable campus environment by incorporating green building and landscaping practices, reducing the production of GHG emissions and solid waste, and reducing consumption of water, electricity, natural gas, and energy.
- S-2. Move more undergraduate students into campus housing (increasing the percentage of undergraduate residential students from approximately 60 percent of FTE students to approximately 75 percent) to reduce traffic trips and vehicle miles traveled to and from the LMU campus.

In the absence of an adopted significance threshold, the following shall be used to determine the Proposed Project's significance on global climate change.

- GCC-1 Would the Project be inconsistent or conflict with the goals, strategies, and control measures established under AB 32, the 2006 CAT Report and 2007 Update, OPR's CEQA and Climate Change technical advisory, and the *LA Green Plan*?

4.3.1 Construction Emissions

The Proposed Project would result in short-term emissions of GHGs during construction. These emissions, primarily CO₂, CH₄, and N₂O, are the result of fuel combustion by construction equipment and motor vehicles. The other primary GHGs (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) are typically associated with specific industrial sources and are not expected to be emitted by the Proposed Project. The one-time emissions of CO₂, the primary greenhouse gas associated with construction of the Proposed Project, were estimated using URBEMIS2007. URBEMIS2007 only calculates CO₂ emissions and does not provide estimates of other GHGs associated with combustion, namely CH₄

and N₂O. Therefore, in order to account for emissions of these compounds, the following adjustments were made to the URBEMIS2007 emission calculations:

- *Construction diesel trucks and equipment:* The CO₂ emissions associated with off-road and on-road equipment were multiplied by a factor based on the assumption that CO₂ represents approximately 99.4 and 99.0 percent, respectively, of the CO_{2e} emissions. These assumptions were derived from the California Climate Action Registry⁶⁷ and the California Energy Commission.⁶⁸
- *Motor vehicles:* The CO₂ emissions associated with project-generated trips were multiplied by a factor based on the assumption that CO₂ represents 95 percent of the CO_{2e} emissions associated with passenger vehicles, which account for most of the Proposed Project-related trips.⁶⁹

Construction activity was modeled based on a start date of mid-2010 and ending date of mid-2030 in four phases with URBEMIS2007 default values, which represent conservative SCAQMD-approved assumptions. Construction subphases include demolition, site preparation (i.e., clearing and grading), pavement and asphalt installation, architectural coating, and construction of academic buildings, campus support services, housing, and indoor athletic facilities.

As shown in **Table II.1, Summary of Existing and Proposed LMU Campus Facilities**, in **Section II, Project Description**, the Proposed Project proposes to demolish approximately 595,000 gsf of academic, administrative, and indoor athletic facilities and 370,000 gsf of residential facilities. In addition to building demolition, hard surfaces, such as roads, tennis courts, and parking lots, would also be demolished. Demolition of these hard surfaces was estimated to generate approximately 5,176 cubic yards of debris. Proposed new construction includes approximately 1,131,000 gsf feet of academic, administrative, and indoor athletic facilities (for a net new total of 536,000 gsf) and 846,000 gsf of residential facilities (for a net new total of 476,000 gsf). **Table IV.B.2-5, Construction Subphase Assumptions**, describes the assumptions as well as the level of construction activity during each of the four phases (see **Section IV.B, Air Quality** for additional details regarding construction assumptions):

⁶⁷ California Climate Action Registry, *General Reporting Protocol: Reporting Entity-Wide Greenhouse as Emissions Version 3.0*, (2008) 95-96.

⁶⁸ California Energy Commission, *Diesel Use in California*, Remarks by Commissioner James D. Boyd, (2002).

⁶⁹ US Environmental Protection Agency, Office of Transportation and Air Quality, *Greenhouse Gas Emissions from a Typical Passenger Vehicle (EPA420-F-05-004)*, (2005) 4.

**Table IV.B.2-5
Construction Subphase Assumptions**

Phase/Subphase	Level of Activity
Phase 1: July 2010 – June 2016	
Demolition	Building space demolished (estimated at 200,800 gsf); hard surface demolition based on 30 percent of the total hard surfaces to be demolished under the Proposed Project;
Grading	Total disturbed area equal to 30 percent of campus area; Daily disturbed area equal to 5 acres;
Asphalt Paving	Area paved equal to 25 percent of the total disturbed area;
Building Construction	New construction equal to 30 percent of the total building construction under the Proposed Project (estimated at 593,100 gsf);
Architectural Coating	Based on SCAQMD coating rules.
Phase 2: July 2016 – June 2021	
Demolition	Building space demolished (estimated at 299,200 gsf); hard surface demolition based on 25 percent of the total hard surfaces to be demolished under the Proposed Project;
Grading	Total disturbed area equal to 25 percent of campus area; Daily disturbed area equal to 5 acres;
Asphalt Paving	Area paved equal to 25 percent of the total disturbed area;
Building Construction	New construction equal to 25 percent of the total building construction under the Proposed Project (estimated at 494,250 gsf);
Architectural Coating	Based on SCAQMD coating rules.
Phase 3: July 2021 – June 2026	
Demolition	Building space demolished (estimated at 207,900 gsf); hard surface demolition based on 25 percent of the total hard surfaces to be demolished under the Proposed Project;
Grading	Total disturbed area equal to 25 percent of campus area; Daily disturbed area equal to 5 acres;
Asphalt Paving	Area paved equal to 25 percent of the total disturbed area;
Building Construction	New construction equal to 25 percent of the total building construction under the Proposed Project (estimated at 494,250 gsf);
Architectural Coating	Based on SCAQMD coating rules.

Phase/Subphase	Level of Activity
Phase 4: July 2026 – June 2030	
Demolition	Building space demolished (estimated at 303,600 gsf); hard surface demolition based on 20 percent of the total hard surfaces to be demolished under the Proposed Project;
Grading	Total disturbed area equal to 20 percent of campus area; Daily disturbed area equal to 5 acres;
Asphalt Paving	Area paved equal to 25 percent of disturbed area;
Building Construction	New construction equal to 20 percent of the total building construction under the Proposed Project (estimated at 395,400 gsf);
Architectural Coating	Based on SCAQMD coating rules.

Based on the information described above, **Table IV.B.2-6, Estimated Construction GHG Emissions**, lists the estimated GHG emissions associated with construction of the Proposed Project. Annualized construction emissions are presented in the table below so that any discussion of GHG comparisons, impacts, and reduction measures will address construction GHG emissions as part of the Proposed Project's overall operational GHG emissions. The annualized construction emissions are determined by dividing the total construction emissions by the estimated Proposed Project's lifetime. The buildings scheduled to be replaced were largely built in the 1950s, 1960s, and 1970s with largely out-of-date building methods. Therefore, a conservative estimate of the Proposed Project lifetime of 50 years was used in this analysis.

4.3.2 Operational Emissions

At full buildout, the Proposed Project would result in direct annual emissions of GHGs during operation. These emissions, primarily CO₂, CH₄, and N₂O, are the result of fuel combustion from building heating systems and motor vehicles. Building and motor vehicle air conditioning systems may use HFCs (and HCFCs and CFCs to the extent that they have not been completely phased out at later dates); however, they are not quantified since emissions would only occur through accidental leaks.

**Table IV.B.2-6
Estimated Construction Greenhouse Gas Emissions**

Construction Phase	Emissions (Metric Tons CO₂/year)	CO₂ to CO_{2e} Ratio¹	Emissions (Metric Tons CO_{2e}/year)
Phase 1			
Off-Road Equipment	2,851.50	0.994	2,602.23
On-Road Equipment	518.91	0.990	475.53
Vendors ²	158.56	0.990	145.30
Workers/Automobiles ²	763.80	0.950	729.38
Phase 2			
Off-Road Equipment	2,302.47	0.994	2,101.20
On-Road Equipment	477.97	0.990	438.01
Vendors ²	132.09	0.990	121.05
Workers/Automobiles ²	698.49	0.950	667.01
Phase 3			
Off-Road Equipment	2,301.09	0.994	2,099.94
On-Road Equipment	446.70	0.990	409.35
Vendors ²	131.99	0.990	120.95
Workers/Automobiles ²	697.76	0.950	666.31
Phase 4			
Off-Road Equipment	1,976.11	0.994	1,803.36
On-Road Equipment	405.69	0.990	371.77
Vendors ²	105.64	0.990	96.81
Workers/Automobiles ²	545.55	0.950	520.96
Total Construction GHG Emissions:			13,369.16
Total Annualized GHG Emissions³:			267.38

Source: Impact Sciences, Inc., (2009). Emissions calculations are provided in **Appendix IV.B.2**.

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

¹ CO₂ to CO_{2e} ratios is based on data from the following sources: [Off-road] California Climate Action Registry, General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions Version 3.0, (2008) 94-96; [On-road and vendor] California Energy Commission, Diesel Use in California, Remarks by Commissioner James D. Boyd, (2002); and [Workers/Automobiles] US Environmental Protection Agency, Office of Transportation and Air Quality, Emission Facts - Greenhouse Gas Emissions from a Typical Passenger Vehicle (EPA420-F-05-004), (2005) 4.

² Worker and vendor trip emissions during the building construction phase were adjusted due to a calculation error present in URBEMIS2007. The trips are based on the amount of building square footage and the number of residential units under construction. URBEMIS2007 does not adjust the trips to account for the fact that only a portion of the total building square footage and residential units would be constructed in a given year. Therefore, the worker and vendor trip emissions during the building construction phase were divided by the number of building construction years during each phase.

³ Annualized CO₂ Emissions are calculated by dividing the Total Construction GHG Emissions over a conservative estimated Project lifetime of 50 years.

Direct emissions of CO₂, the primary greenhouse gas generated from operation of the Proposed Project, are primarily due to natural gas consumption and mobile source emissions. Natural gas consumption rates were based on data provided by LMU. Emission factors for GHGs due to natural gas consumption were obtained from CARB's *Local Government Operating Protocol*, which contains GHG emission factors for natural gas.⁷⁰ Mobile source emissions were calculated using URBEMIS2007, based on trip generation rates provided by the traffic study for the Proposed Project. URBEMIS2007 allows for an adjustment in mobile source emissions based on the implementation of TDM measures. LMU currently has some TDM measures in place including preferential parking for carpools and vanpools, bicycle parking facilities, and non-traditional work schedules. The TDM measures previously discussed were taken into account in the URBEMIS2007 model for GHG emissions. URBEMIS2007 provides only CO₂ emissions; therefore, to account for other GHGs associated with fossil fuel combustion, the CO₂ emissions associated with Project-generated trips were multiplied by a factor based on an US EPA assumption that CO₂ represents 95 percent of the CO₂e emissions associated with passenger vehicles, which account for most of the Proposed Project-related trips.⁷¹

The Proposed Project would also result in indirect GHG emissions due to the electricity demands of the Proposed Project. Emission factors for GHGs due to electrical demand were obtained from CARB's *Local Government Operating Protocol*, which contains GHG emission factors from utility providers in California.⁷² The cited factors in the CARB report are based on data collected by the California Climate Action Registry, which is a private non-profit organization formed by the State of California and serves as a voluntary GHG registry to protect and promote early actions to reduce GHG emissions by organizations. California Climate Action Registry members voluntarily measure, verify, and publicly report their GHG emissions. The emission factors take into account the current mix of energy sources used to generate electricity and the relative carbon intensities of these sources, and includes natural gas, coal, nuclear, large hydroelectric, and other renewable sources of energy.

In addition to electrical demand, operation of the Proposed Project would result in indirect GHG emissions due to water demand. GHG emissions from water demand are due to the electricity needed to convey, treat, and distribute potable water. The annual electrical demand factor for water demand⁷³ was obtained from the California Energy Commission. The Proposed Project would also result in increased use of reclaimed water, primarily for outdoor landscaping. The existing campus currently uses reclaimed

⁷⁰ California Air Resources Board, *Local Government Operating Protocol*, Version 1.0, (2008) 170-172.

⁷¹ US Environmental Protection Agency, Office of Transportation and Air Quality, *Greenhouse Gas Emissions from a Typical Passenger Vehicle (EPA420-F-05-004)*, (2005) 4.

⁷² California Air Resources Board, *Local Government Operating Protocol*, Version 1.0, (2008) 174.

⁷³ California Energy Commission, *Refining Estimates of Water-Related Energy Use in California, PIER Final Project Report (CEC-500-2006-118)*, (2006) 22.

water on approximately 60 percent of existing outdoor areas. The Proposed Project would increase the use of reclaimed water to 100 percent of the outdoor areas at Proposed Project buildout. Reclaimed water uses much less energy to produce and distribute compared to potable water.⁷⁴ Therefore, the increased use of reclaimed water on campus reduces the overall carbon footprint associated with water demand on a per gallon basis.

The annual GHG emissions associated with operation of the existing campus are provided below in Table IV.B.2-7, Estimated Greenhouse Gas Emissions for the Existing Campus and Campus After Proposed Project Buildout from Operations and Construction. The emissions are based on data provided by Loyola Marymount University, such as electricity, natural gas, and potable water consumption, as well the methodologies described above. Detailed calculations are provided in **Appendix IV.B.2**.

The annual GHG emissions associated with the campus upon completion of the Proposed Project are also provided below in Table IV.B.2-7, Estimated Greenhouse Gas Emissions for the Existing Campus and Campus After Proposed Project Buildout from Operations and Construction. The emissions are based on data provided by LMU, such as electricity, natural gas, and water consumption, as well the methodologies described above. Future consumption rates for electricity, natural gas, and water at Proposed Project buildout were projected by multiplying the existing consumption rates by the percentage increase in gross square footage of the campus buildings at Proposed Project buildout (excluding outdoor facilities) relative to the gross square footage of the existing campus buildings. Future electricity and natural gas consumption rates associated with new construction were then adjusted to account for efficiencies gained from compliance with more recent California Title 24 building code standards. The California Energy Commission is required to periodically update Title 24 standards. In 2005 and again in 2008, the California Energy Commission revised the standards and issued *Impact Analysis* reports that assessed the energy savings from the 2005 and 2008 revisions to Title 24.⁷⁵ Data from these reports were used to adjust the future Proposed Project energy consumption rates at buildout. Detailed calculations are provided in **Appendix IV.B.2**.

⁷⁴ R. C. Wilkinson, et. al, California Department of Water Resources, *Water Sources "Powering" Southern California*. n.d.

⁷⁵ California Energy Commission, *Impact Analysis: 2005 and 2008 Update to the California Energy Efficiency Standards*, (June 2003 and November 2007).

**Table IV.B.2-7
Estimated Greenhouse Gas Emissions for the Existing Campus and Campus
After Proposed Project Buildout from Operations and Construction**

GHG Emissions Source	Existing Campus		Campus after Proposed Project Buildout		Increase After Proposed Project Buildout		
	(Metric Tons CO ₂ e/yr)	(Million Metric Tons CO ₂ e/yr)	(Metric Tons CO ₂ e/yr)	(Million Metric Tons CO ₂ e/yr)	(Metric Tons CO ₂ e/yr)	(Million Metric Tons CO ₂ e/yr)	Percent Change
Motor Vehicles	24,889.82	0.0249	27,650.23	0.0277	2,760.41	0.0028	11.1%
Natural Gas Consumption	3,330.11	0.0033	4,085.70	0.0041	755.59	0.0008	22.7%
Electricity Consumption	15,609.45	0.0156	18,190.07	0.0182	2,580.62	0.0026	16.5%
Water Use	751.10	0.0008	838.23	0.0008	87.13	0.0000	11.6%
Total Operations	44,580.48	0.0446	50,764.23	0.0508	6,183.75	0.0062	13.9%
Total Annualized Construction	0.00	0.0000	267.38	0.0003	267.38	0.0003	0.0%
Total Oper. & Constr.	44,580.48	0.0446	51,031.61	0.0510	6,451.13	0.0064	14.5%

Source: Impact Sciences, Inc., (2009). Emissions calculations are provided in Appendix IV.B.2.

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

The net change in GHG emissions between the existing campus and the campus after the Proposed Project buildout on a per gross million square feet basis are presented below in **Table IV.B.2-8, Comparison of Annual GHG Emissions Per Million Gross Square Feet (GSF) On Existing Campus and On Campus after Proposed Project Buildout**. While the Proposed Project would increase total GHG emissions on a mass-basis, the Proposed Project's GHG intensity would decrease by 16.1 percent per gross square foot. This reduction in GHG intensity is attributed to the energy efficiencies and sustainable Project design features, as previously discussed, associated with the Proposed Project. Detailed calculations are provided in **Appendix IV.B.2**.

**Table IV.B.2-8
Comparison of Annual GHG Emissions Per Million Gross Square Feet (GSF)
On Existing Campus and On Campus After Proposed Project Buildout**

GHG Emissions Source	Emissions Per Million GSF (Metric Tons CO₂e/year)	Emissions Per Million GSF (Million Metric Tons CO₂e/year)	Percent Change
Existing Campus	16,047.69	0.0160	
Campus after Proposed Project Buildout	13,464.80	0.0135	
Net Change	-2,582.89	- 0.0025	-16.1%

Source: Impact Sciences, Inc., (2009). Emissions calculations are provided in Appendix IV.B.2.

The net change in GHG emissions between the existing campus and the campus after the Proposed Project buildout on a per FTE student, faculty, and staff basis are presented below in **Table IV.B.2-9, Comparison of Annual GHG Emissions Per Full-Time Equivalent (FTE) Students, Faculty, and Staff Before and After Proposed Project Buildout**. The comparison is meant to provide context for the Proposed Project's GHG emissions.

**Table IV.B.2-9
Comparison of Annual GHG Emissions Per Full Time Equivalent (FTE) Students, Faculty, and Staff
Before and After Proposed Project Buildout**

GHG Emissions Source	Emissions Per thousand FTE (Metric Tons CO₂e/year)	Emissions Per thousand FTE (Million Metric Tons CO₂e/year)	Percent Change
Existing Campus	5,337.70	0.00534	
Campus after Proposed Plan Project Buildout	5,315.79	0.00532	
Net Change	- 21.91	- 0.00002	-0.4%

Source: Impact Sciences, Inc., (2009). Emissions calculations are provided in Appendix IV.B.2.

As previously discussed, California emitted approximately 484 MMTCO₂e in 2004, based on CARB's inventory data. While the Proposed Project would result in increased campus emissions of GHGs, the campus after Proposed Project buildout would result in a very small fraction of the State's GHG

emissions, as presented in **Table IV.B.2-10, Comparison of GHG Emissions between the Campus after Proposed Project Buildout and California**. The comparison shown below provides context for the Proposed Project's GHG emissions and demonstrates that the level of GHG emissions does not represent a large proportion of the State's total GHG emissions.

Table IV.B.2-10
Comparison of GHG Emissions between the Campus
after Proposed Project Buildout and California

Emitting Entity	GHG Emissions (MMTCO ₂ E)
Campus after Proposed Project	0.0510
California (with imported electricity)	484.40
Percent of State Emissions	0.0105%

Source: Impact Sciences, Inc., 2009.

The emissions associated with the campus after the Proposed Project buildout likely represents a conservative assessment of the actual GHG emissions that would result from development of the Proposed Project. The construction emissions were based on the assumption that equipment would operate continuously throughout an 8-hour work-day. In reality, construction equipment tends to operate cyclically for only a portion of the work day. In addition, as noted in CARB's AB 32 *Climate Change Scoping Plan*, reductions in GHG emissions from construction equipment are expected to occur upon implementation of the low carbon fuel standard (Scoping Plan Measure 5) and vehicle hybridization and energy efficiency standards adopted for medium- and heavy-duty vehicles (Scoping Plan Measure 10). These additional reductions were not quantified in this analysis resulting in conservatively estimated construction GHG emissions.

As shown in **Table IV.B.2-7**, GHG emissions from motor vehicles represent over half of the total emissions associated with the campus after Proposed Project buildout. Neither the state nor the federal government currently regulates tailpipe GHG emissions. However, several proposed regulatory actions have taken place at the federal and state level that would reduce GHG emissions from motor vehicles once adopted, and these reductions were not accounted for in the model.

This assessment also is conservative because it does not account for improvements in fuel economy standards for cars, light trucks, and sport utility vehicles. In 2007, the President signed the Energy Independence and Security Act, which set a goal of achieving a Corporate Average Fuel Economy (CAFE) standard of 35 miles per gallon by 2020 for new cars, light trucks, and sport utility vehicles.

Additionally, as mentioned above, California has adopted the Low Carbon Fuel Standard. Under CARB's *Climate Change Scoping Plan*, fuel-efficient tire standards are being pursued (Scoping Plan Measure 7). Also, as previously discussed, AB 1493 would set GHG emission standards for motor vehicles in California; however, the State has not received a waiver from the US EPA to implement the standards. Additionally, to the extent technology continues to improve and CAFE standards become more stringent, this analysis provides a conservative estimate of motor vehicle emissions based on current technology and CAFE standards, which are not accounted for in the air quality models.

Similarly, the GHG emissions associated with electricity, natural gas, and water consumption represent conservative estimates since the effect of many of the Proposed Project design features are not included in the emission calculations. As an initial matter, the GHG emissions of the existing campus and the Proposed Project due to electrical demand were obtained using GHG emission factors from the Los Angeles Department of Water and Power (LADWP), as reported by LADWP to the California Climate Action Registry. This assessment is conservative since LMU uses a different mix of sources of electricity sources. As of Fall 2008, Loyola Marymount University used sustainable energy sources to supply a total of 9 percent of its electricity consumption. By 2009, LMU began using 12 percent sustainable energy sources, including a total of 6 percent supplied by three photovoltaic systems located on the rooftops of University Hall, Gersten Pavilion, and Van der Ahe Library (which use a total of 5,065 solar panels to convert sunlight directly into approximately 1,826,100 kWh of electricity per year) and 6 percent purchased via renewable energy credits. The Proposed Project would increase the percentage of sustainable energy further. The additional elements of the Proposed Project, discussed previously, would also reduce GHG emissions; however, quantifying the reduction is not possible at this planning stage. Furthermore, as building code standards require even more energy efficiency measures in the future and as mandates to decrease the carbon footprint of electricity in California are adopted, the assessment will be even more conservative. For these reasons, the GHG emissions associated with electricity, natural gas, and water consumption represent conservative estimates.

Nonetheless, based on the conservatively estimated GHG emissions, the campus after Proposed Project buildout would result in a 16 percent reduction in GHG emissions on a per square foot basis and a 0.4 percent reduction per campus FTE student, faculty, and staff. If the anticipated reductions from construction, transportation, and energy were to be taken into account, the campus would achieve an even greater reduction in GHG intensity.

4.3.3 Consistency with AB 32, OPR's CEQA and Climate Change Technical Advisory, 2006 CAT Report and 2007 Update, and LA Green Plan

The Proposed Project would result in significant greenhouse gas and/or global climate change impacts from if the following would occur:

GCC-1 The Proposed Project is inconsistent with the goals, strategies, and control measures established under AB 32, the 2006 CAT Report and 2007 Update, OPR's CEQA and Climate Change technical advisory, and the *LA Green Plan*.

4.3.3.1 Consistency with AB 32

The goal of AB 32 is to reduce statewide GHG emissions to 1990 levels by 2020. In December 2008, CARB adopted a *Climate Change Scoping Plan* detailing strategies to meet that goal. The Scoping Plan discusses local governments establishing sustainable community strategies to reduce GHG emissions associated with transportation, energy, and water. Planning efforts that lead to reduced vehicle trips while preserving personal mobility should be undertaken in addition to programs such as employee transit incentives, telework programs, car sharing, parking policies, public education programs and other strategies that enhance and complement land use and transit strategies. The *Climate Change Scoping Plan* also recommends energy efficiency measures in buildings such as maximizing the use of energy efficient appliances and solar water heating as well as complying with green building standards that result in decreased energy consumption compared to Title 24 building codes. In addition, the *Climate Change Scoping Plan* encourages the use of solar photovoltaic panels to provide clean energy and reduce fossil-fuel based energy.

The Proposed Project's consistency with the implementing programs and regulations to achieve the statewide GHG emission reduction goals established under AB 32 is evaluated below in **Table IV.B.2-11, Consistency of Sustainable Strategies with Relevant AB 32 Scoping Plan Measures**. The sustainable policies, Project design features, and mitigation measures included in the Proposed Project are evaluated relative to the key measures included in CARB's *Climate Change Scoping Plan*. As shown in the table below, the Proposed Project would comply with the applicable Scoping Plan measures.

**Table IV.B.2-11
Consistency of Sustainable Strategies with Relevant AB 32 Scoping Plan Measures**

Scoping Plan Measure	Proposed Project Feature/Mitigation Measure
SPM-2: California Light-Duty Vehicle GHG Standards	<p>Project is Generally Consistent:</p> <p>The Proposed Project would comply with this measure to the extent that motor vehicles used by the Proposed Project and its occupants would meet the standards that are in effect at the time of purchase.</p>
SPM-3: Energy Efficiency	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Central Plant motors shall include variable frequency drivers to adjust electrical motor speed based on demand. • Major building renovations and additions shall be integrated into the Campus Energy Management System, which is a set of computer-aided tools used to monitor, control, and optimize the performance of building HVAC and lighting systems. • Future cooling loads shall be met using thermal energy storage, or an additional energy efficient chiller, or other comparable storage technologies. • New and replacement buildings with flat roofs shall use white reflective material or comparable heat rejecting material on the building roofs. • All irrigation shall use reclaimed water by Project buildout. • All irrigation shall use automatic irrigation timers and at least 50 percent of the campus's non turf areas shall include drought-tolerant or native plantings. • All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet aerators. • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. • Buildings shall be well sealed to prevent outside air from infiltrating and increasing interior space-conditioning loads. • Buildings shall incorporate thermal insulation in walls and ceilings. • Window systems shall be designed to reduce thermal gain and loss, thus, reducing cooling loads during warm weather and heating loads during cool weather. • High-intensity-discharge (HID) lamps, light-emitting diode (LED), or other energy efficient lighting shall be installed for all outdoor lighting to reduce electricity consumption.
SPM-5: Low Carbon Fuel Standard	<p>Project is Generally Consistent:</p> <p>The Proposed Project would comply with this measure to the extent that fuels used by the Proposed Project and its occupants would comply with the standard.</p>

Scoping Plan Measure	Proposed Project Feature/Mitigation Measure
<p>SPM-6: Regional Transportation-Related Greenhouse Gas Targets</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The Proposed Project would move more undergraduate students into campus housing (increasing the percentage of undergraduate residential students from approximately 60 percent of FTES to approximately 75 percent) to reduce traffic trips and vehicle miles traveled to and from the LMU campus. • The Proposed Project would support the Metro Green Line light rail extension by providing a location for a local station on campus near the intersection of LMU Drive and Lincoln Boulevard, to encourage the use of public transportation for travel to and from campus. • The Proposed Project would build upon its existing TDM program, and may include, but not be limited to the following measures: <ul style="list-style-type: none"> – Provide financial incentives for ridesharing; – Establish carpool, buspool, or vanpool programs; – Partially or fully subsidize parking costs for ridesharing employees; – Partially or fully subsidize carpools, vanpools, buspools, shuttles, or use of public transit; – Preferential parking for vehicles using ridesharing; – Facility improvements that provide preferential access for ridesharing employees; – Facility improvements to encourage use of bicycles; – Active use of computerized rideshare matching service; – Flexible work hours; – Telecommuting opportunities; and – Transit connection improvements.
<p>SPM-7: Vehicle Efficiency Measures</p>	<p>Project is Consistent: See measures discussed above in SPM-2.</p>
<p>SPM-9: Million Solar Roofs Program</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Solar panels have been installed on the roofs of some buildings on campus. Solar thermal and photovoltaic systems will be augmented where economically feasible.
<p>SPM-10: Heavy/Medium-Duty Vehicles</p>	<p>Project is Generally Consistent: The Proposed Project would comply with this measure to the extent that medium- and heavy-duty vehicles used by the Proposed Project during construction and operation would comply with the standards.</p>
<p>SPM-13: Green Building Strategy</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. • Would achieve 12% clean energy from renewable energy credits. The campus would seek to increase the credits to 15% by further implementing the use of clean energy from renewable energy sources. • Comply with the applicable requirements of the <i>LA Green Plan</i>. <p>See additional measures discussed above in SPM-3.</p>

Scoping Plan Measure	Proposed Project Feature/Mitigation Measure
<p>SPM-15: Recycling and Waste</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Continue to achieve a campus-wide waste diversion rate of at least 58.6 percent through recycling activities. • The demolition and construction process would include efforts to separate debris and recycle a minimum of 50 percent of the basic building materials, pursuant to AB 939. • The campus would continue to improve waste diversion efforts to comply with the diversion goals of the County’s Source Reduction and Recycling Element, which is to achieve the State’s mandates of 50, 60, and 75 percent waste disposal reductions for the years 2000, 2015, and 2020, respectively, and the City of Los Angeles Solid Waste Management Policy Plan, which has goals of 50 percent diversion by 2000 and 70 percent diversion by 2020. • The campus shall achieve a minimum of 10 percent recycled content on Division 2-10 construction materials for all new buildings.
<p>SPM-17: Water</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • New appliances shall meet or exceed the minimum efficiency levels mandated in the California Code of Regulations; • All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet aerators; • Bathroom faucet – 1.5 gallons per minute (private), 0.5 gallon per minute (public); • Kitchen faucet – 1.5 gallons per minute; • Showerheads: no more than 1 showerhead per stall (low flow showerheads – 2.0 gallons per minute); • High efficiency clothes washers (residential) – water savings factor of 5.0 or less; • Install solar thermal systems for domestic hot water and heating hot water, which will reduce the load on the Central Plant boilers (natural gas fired); • High efficiency toilets – 1.28 gallons per flush or less, or dual flush; • High efficiency/ultra low water urinals – 0.125 to 0.5 gallon per flush; • Rotating sprinkler nozzles for landscape irrigation – 0.5 gallon per minute; • Weather based irrigation controller; • Drip/subsurface irrigation (micro-irrigation); • Micro-spray; • Bubbler irrigation; • Proper hydro-zoning (i.e., groups plants with similar water requirements together); • Zoned irrigation; • Landscaping contouring to minimize precipitation runoff; • Artificial turf (cost permitting); • Drought-tolerant plants – 75% of total new landscape plantings; • Energy Star dishwashers;

Scoping Plan Measure	Proposed Project Feature/Mitigation Measure
	<ul style="list-style-type: none"> • High efficiency clothes washers (commercial) – water savings factor of 7.5 or less; • Pre-rinse kitchen spray head; • Public restroom self-closing faucets; • Domestic water heating system located in close proximity to point(s) of use; • Tankless and on-demand water heaters; • Cooling tower conductivity controllers or cooling tower pH conductivity controllers (cooling towers to operate at minimum of 5.5 cycles of concentration); • Water-saving pool filter; • Infiltration planters (i.e., notched curb to allow runoff to flow into planted areas); • Stormwater capture and infiltration in on-campus sump; • Reclaimed water systems for irrigation; • On-site hydrogen peroxide reclaimed water treatment; • Convert cooling towers to use reclaimed water to the extent permitted by law.

Source: Impact Sciences, Inc., (2009).

In addition, as CARB and the SCAQMD develop additional control measures and regulations for direct and indirect GHG emissions (e.g., indirect source rule), LMU and/or Project occupants may be required to comply with any newly adopted measures and regulations.

4.3.3.2 Consistency with 2006 CAT Report and 2007 Update

The 2006 CAT report and 2007 Update contains recommendations and strategies to reduce emissions of GHGs and associated impacts. As previously discussed, some strategies are currently being developed and/or implemented by state agencies such as the CalEPA and the Resources Agency. As listed below in **Table IV.B.2-12, Consistency with the Relevant 2006 CAT Report and 2007 Update Greenhouse Gas Emission Reduction Strategies**, the Proposed Project would be consistent with the applicable recommended measures.

Table IV.B.2-12
Consistency with the Relevant 2006 CAT Report and 2007 Update Greenhouse Gas Emission Reduction Strategies

ID	Strategy	Proposed Project Feature/Mitigation Measure
Implementing Agency: CalEPA/California Air Resources Board		
CAT-1	<p>Vehicle Climate Change Standards:</p> <p>With the passage of AB 1493, Pavley, Chapter 200, Statutes of 2002, California moved to the forefront of reducing vehicle climate change emissions. This bill required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks.</p>	<p>Project is Generally Consistent:</p> <p>The on-road vehicles that travel to and from the Proposed Project site would be in compliance with applicable CARB and/or US EPA emission standards that are in effect at the time of purchase.</p>
CAT-2	<p>Diesel Anti-Idling:</p> <p>In July 2004 the ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.</p>	<p>Project is Generally Consistent:</p> <p>The Proposed Project would be in compliance with current State law, which restricts diesel truck idling to 5 minutes or less.</p>
CAT-3	<p>Other New Light Duty Vehicle Technology Improvements:</p> <p>New standards would be adopted to phase in beginning in the 2017 model year (following up on the existing mid-term standards that reach maximum stringency in 2016).</p>	<p>Project is Generally Consistent:</p> <p>The on-road vehicles that travel to and from the Proposed Project site would be in compliance with applicable CARB and/or US EPA emission standards that are in effect at the time of purchase.</p>
CAT-4	<p>HFC Reduction Strategies:</p> <p>CARB staff has identified five possible measures to reduce HFC emissions from vehicular and commercial refrigeration systems.</p> <ol style="list-style-type: none"> 1. Reduce emissions of HFC-134a from non-professional servicing of motor vehicle air conditioning systems. 2. Require that only low-GWP refrigerants be used in new mobile air conditioning systems. 3. Reduce direct and indirect GHG emissions from stationary refrigeration and air conditioning sources. 4. Add refrigerant leak-tightness to the “pass” criteria for vehicular Inspection and Maintenance programs for all vehicles with air conditioning systems. 5. Enforce federal ban on releasing HFCs during servicing and dismantling of motor vehicle air conditioning systems. 	<p>Project is Generally Consistent:</p> <p>This strategy applies to vehicular and commercial refrigeration systems. The systems used by the Proposed Project and its occupants would be in compliance with the applicable measures that are in effect at the time of manufacture.</p>

ID	Strategy	Proposed Project Feature/Mitigation Measure
CAT-5	Transport Refrigeration Units (on and off road).	Project is Generally Consistent: Transportation refrigerator units and off-road engines used by the Proposed Project and its occupants would be in compliance with the applicable measures that are in effect.
CAT-9	Alternative Fuels: Biodiesel Blends. ⁷⁶ CARB would develop regulations to require the use of 1 to 4 percent biodiesel displacement of California diesel fuel.	Project is Generally Consistent: Diesel-fueled engines used by the Proposed Project and its occupants would be in compliance with the applicable measures that are in effect.
CAT-10	Alternative Fuels: Ethanol. ⁷⁷ Increase use of E-85 fuel.	Project is Generally Consistent: Flex-fuel capable vehicles used by the Proposed Project and its occupants would be purchased to the extent required under this strategy.
CAT-11	Heavy-Duty Vehicle Emission Reduction Measures: Climate change emissions can be reduced with improved aerodynamics, climate engine-based improved efficiency, vehicle weight reduction, and rolling and inertia resistance improvements.	Project is Generally Consistent: The medium- and heavy-duty vehicles used during construction and operation of the Proposed Project would comply with applicable standards.
CAT-12	Reduced Venting and Leaks in Oil and Gas Systems: A model rule would be developed to be considered for adoption by the Air Pollution Control Districts.	Project is Generally Consistent: The on-road vehicles that travel to and from the Proposed Project site would be in compliance with applicable standards that are in effect at the time of purchase.
CAT-13	Hydrogen Highway: The California Hydrogen Highway Network (CA H2 Net) is a State initiative to promote the use of hydrogen as a means of diversifying the sources of transportation energy in order achieve a secure energy future, address environmental, public health, and economic challenges, and work in partnership with other State programs to advance energy efficiency and renewable energy. The CA H2 Net mission is to assure that hydrogen infrastructure is in place as fuel cells and other hydrogen technologies reach commercial readiness.	Project is Generally Consistent: Hydrogen fuel-cell vehicles used by the Proposed Project and its occupants would be purchased and used to the extent required under this strategy.

⁷⁶ Although there were no changes to the 'Alternative Fuels: Biodiesel Blends' strategy in the 2007 CAT Report update, the biodiesel blend strategy was superseded by the Low Carbon Fuel Standard, approved by the Air Resources Board as a discrete early action measure. See Attachment A to the 2007 CAT Report update, available at http://www.climatechange.ca.gov/events/2007-09-14_workshop/final_report/2007-10-15_ATTACHMENT_A.PDF.

⁷⁷ Although there were no changes to the 'Alternative Fuels: Ethanol' strategy in the 2007 CAT Report update, the ethanol strategy was superseded by the Low Carbon Fuel Standard, approved by the Air Resources Board as a discrete early action measure. *See id.*

ID	Strategy	Proposed Project Feature/Mitigation Measure
Implementing Agency: CalEPA/Integrated Waste Management Board		
CAT-14	<p>Achieve 50% Statewide Recycling Goal:</p> <p>Achieving the State’s 50 percent waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The campus would continue to improve waste diversion efforts to comply with the diversion goals of the County’s Source Reduction and Recycling Element, which is to achieve the State’s mandates of 50, 60, and 75 percent waste disposal reductions for the years 2000, 2015, and 2020, respectively, and the City of Los Angeles Solid Waste Management Policy Plan, which has goals of 50 percent diversion by 2000 and 70 percent diversion by 2020. • LMU is actively investigating the use of in-vessel composting systems for food waste and green waste generated on campus.
CAT-16	<p>Zero Waste—High Recycling:</p> <p>Additional recovery of recyclable materials from landfills will reduce the climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. Transforming organics/biomass and plastic waste into marketable products will also reduce the amount of material going to landfill, and therefore will further reduce climate change emissions.</p>	<p>Project is Consistent:</p> <p>See measures discussed above in CAT-14.</p>
Implementing Agency: Resources Agency/Department of Forestry		
CAT-20	<p>Urban Forestry:</p> <p>This strategy would expand the State Urban Forestry Program. A new state-wide goal of planting 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Incorporate sustainable landscape management principles, such as drought-tolerant landscape materials, a diverse tree canopy, and water conservation features, into future landscape improvements.
Implementing Agency: Resources Agency/Department of Water Resources		
CAT-22	<p>Water Use Efficiency:</p> <p>Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Saving water saves energy. Saving water that gets treated as wastewater saves more energy. Saving water that gets heated or additionally pressurized saves still more.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • New appliances shall meet or exceed the minimum efficiency levels mandated in the California Code of Regulations; • All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet aerators; • Bathroom faucet – 1.5 gallons per minute (private), 0.5 gallon per minute (public); • Self-closing faucets in public restroom;

ID	Strategy	Proposed Project Feature/Mitigation Measure
		<ul style="list-style-type: none"> • Kitchen faucet – 1.5 gallons per minute; • Pre-rinse kitchen spray head; • Showerheads: no more than 1 showerhead per stall (low flow showerheads – 2.0 gallons per minute); • High efficiency clothes washers: water savings factor of 5.0 or less (residential) or 7.5 or less (commercial); • High efficiency toilets – 1.28 gallons per flush or less, or dual flush; • High efficiency/ultra low water urinals – 0.125 to 0.5 gallon per flush; • Energy Star dishwashers; • Domestic water heating system located in close proximity to point(s) of use; • Tankless and on-demand water heaters; • Cooling tower conductivity controllers or cooling tower pH conductivity controllers (cooling towers to operate at minimum of 5.5 cycles of concentration); • Rotating sprinkler nozzles for landscape irrigation – 0.5 gallon per minute; • Weather-based irrigation controller; • Micro-spray nozzles; • Drip/subsurface irrigation (micro-irrigation) and bubbler irrigation; • Hydro-zoning plants (i.e., group plants with similar water requirements together); • Zoned irrigation; • Landscaping contouring to minimize precipitation runoff; • Drought-tolerant plants – 75% of total new landscape plantings; • Artificial turf (cost permitting); • Infiltration planters (i.e., notched curb to allow runoff to flow into planted areas); • Stormwater capture and infiltration in on-campus sump; • Water-saving pool filter; • Reclaimed water systems for irrigation; • On-site hydrogen peroxide reclaimed water treatment; • Convert cooling towers to 100 percent

ID	Strategy	Proposed Project Feature/Mitigation Measure
		reclaimed water use, as permitted by law.
Implementing Agency: Resources Agency/Energy Commission		
CAT-23/26	<p>Building Energy Efficiency Standards in Place and in Progress:</p> <p>The Energy Action Plan and the Integrated Energy Policy Report both call for ongoing updating of the standards, including meeting energy efficiency goals, addressing demand response and promoting the combination of solar photovoltaics and high-energy efficiency buildings.</p> <p>As part of the process of updating the Building Energy Efficiency Standards, the Energy Commission evaluates new and emerging technology for possible inclusion in the standards.</p>	<p>Project is Generally Consistent:</p> <p>The Proposed Project would be required to be constructed in compliance with the applicable standards of Title 24 that are in effect at the time of development.</p>
CAT-24/27	<p>Appliance Energy Efficiency Standards in Place and in Progress:</p> <p>The Energy Commission adopts new standards for a variety of appliances.</p> <p>As part of the process of updating the Appliance Energy Efficiency Standards, the CEC evaluates new and emerging technology for increasing the energy efficiency of appliances and equipment for possible inclusion in the standards.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Central Plant motors shall include variable frequency drivers to adjust electrical motor speed based on demand. • Major building renovations and additions shall be integrated into the Campus Energy Management System, which is a set of computer-aided tools used to monitor, control, and optimize the performance of building HVAC and lighting systems. • Future cooling loads shall be met using an additional energy efficient chiller, thermal energy storage, or other comparable storage technologies. • New and replacement buildings with flat roofs shall use white reflective material or comparable heat rejecting material on the building roofs. • New appliances shall meet or exceed the minimum efficiency levels mandated in the California Code of Regulations. • All irrigation shall use reclaimed water by Project buildout. • Weather based irrigation controllers shall be used and 75 percent of all new landscape plantings shall include drought-tolerant plants • All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet

ID	Strategy	Proposed Project Feature/Mitigation Measure
		<p>aerators.</p> <ul style="list-style-type: none"> • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. • Buildings shall be well sealed to prevent outside air from infiltrating and increasing interior space-conditioning loads. • Buildings shall incorporate thermal insulation in walls and ceilings. • Window systems shall be designed to reduce thermal gain and loss, thus, reducing cooling loads during warm weather and heating loads during cool weather.
CAT-25	<p>Fuel-Efficient Replacement Tires & Inflation Programs:</p> <p>State legislation established a statewide program to encourage the production and use of more efficient tires.</p>	<p>Project is Generally Consistent:</p> <p>The vehicles that travel to and from the Proposed Project site would be in compliance with applicable tire standards that are in effect.</p>
CAT-30	<p>Alternative Fuels: Non-Petroleum Fuels:</p> <p>This strategy involves increasing the use of non-petroleum fuels in California’s transportation sector.</p>	<p>Project is Generally Consistent:</p> <p>The Proposed Project and its occupants would utilize non-petroleum fuels for transportation to the extent required under this strategy.</p>
Implementing Agency: Business, Transportation, and Housing Agency		
CAT-31	<p>Measures to Improve Transportation Energy Efficiency:</p> <p>This strategy builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools and information that advance cleaner transportation and reduce climate change emissions.</p> <p>Smart Land Use and Intelligent Transportation:</p> <p>Strategies include: Promoting jobs and housing proximity and transit-oriented development; Encouraging high density residential/commercial development along transit/rail corridor; Valuing and congestion pricing; Implementing intelligent transportation systems, traveler information/traffic control, incident management; Accelerating the development of broadband infrastructure; and Comprehensive, integrated, multimodal/intermodal transportation planning.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The Proposed Project would move more undergraduate students into campus housing (increasing the percentage of undergraduate residential students from approximately 60 percent of FTES to approximately 75 percent) to reduce traffic trips and vehicle miles traveled to and from the LMU campus. • The Proposed Project would support the Metro Green Line light rail extension by providing a location for a local station on campus near the intersection of LMU Drive and Lincoln Boulevard, to encourage the use of public transportation for travel to and from campus. • The Proposed Project would build upon its existing TDM program, and may include, but not be limited to the following measures: <ul style="list-style-type: none"> – Provide financial incentives for ridesharing; – Establish carpool, buspool, or vanpool programs; – Partially or fully subsidize parking costs for ridesharing employees;

ID	Strategy	Proposed Project Feature/Mitigation Measure
		<ul style="list-style-type: none"> - Partially or fully subsidize carpools, vanpools, buspools, shuttles, or use of public transit;- Preferential parking for vehicles using ridesharing; - Facility improvements that provide preferential access for ridesharing employees; - Facility improvements to encourage use of bicycles; - Active use of computerized rideshare matching service; - Flexible work hours; - Telecommuting opportunities; and - Transit connection improvements. • Centrally locate academic, administrative, and athletic uses on campus to promote more straightforward and logical wayfinding for pedestrians. • Create pedestrian links between the entire campus, in particular between University Hall and the academic core on the eastern portion of campus. • Improve pedestrian safety through the reduction of vehicular-pedestrian interaction. • Increase the number of pedestrian routes through campus and clearly articulate their presence. • Enhance pedestrian approaches to, and permeability of, campus facilities.
Implementing Agency: State and Consumer Services Agency		
CAT-34	<p>Green Buildings Initiative: Executive Order, S-20-04, sets an ambitious goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. • Would achieve 12% clean energy from renewable energy credits. The campus would seek to increase the credits to 15% by further implementing the use of clean energy from renewable energy sources. • Comply with the applicable requirements of the <i>LA Green Plan</i>. <p>See additional measures discussed above in CAT-24/27.</p>

ID	Strategy	Proposed Project Feature/Mitigation Measure
Implementing Agency: Public Utilities Commission		
CAT-37	California Solar Initiative: The solar initiative includes installation of 1 million solar roofs or an equivalent 3,000 MW by 2017 on homes and businesses.	Project is Consistent: <ul style="list-style-type: none"> • LMU has installed solar panels are currently installed on the roofs of some buildings on campus. Solar thermal and photovoltaic systems will be augmented where economically feasible.

Sources:

California Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the Legislature, (2006).

California Climate Action Team, Updated Macroeconomic Analysis of Climate Strategies Presented in the March 2006 Climate Action Team Report, (2007).

4.3.3.3 Consistency with OPR’s CEQA and Climate Change Technical Advisory

The OPR CEQA and Climate Change technical advisory recommended that the lead agency determine significance of the impacts and impose mitigation measures that are necessary to reduce GHG emissions to a less than significant level. Similar to the Attorney General’s list of measures, the technical advisory provides a recommended list of measures Lead Agencies may incorporate in projects to reduce GHG emissions. As listed below in **Table IV.B.2-13, Consistency with Relevant Office of Planning and Research Suggested Measures**, the Proposed Project would be consistent with OPR’s applicable recommended measures.

Table IV.B.2-13
Consistency with Relevant Office of Planning and Research Suggested Measures

ID	Measures	Proposed Project Feature/Mitigation Measure
Land Use and Transportation		
OPR-1	Implement land use strategies to encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density development along transit corridors. Encourage compact, mixed-use projects, forming urban villages designed to maximize affordable housing and encourage walking, bicycling and the use of public transit systems.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Move more undergraduate students into campus housing (increasing the percentage of undergraduate residential students from approximately 60 percent of FTES to approximately 75 percent) to reduce traffic trips and vehicle miles traveled to and from the LMU campus. • Establish the LMU campus as a primarily pedestrian-oriented environment. • Centrally locate academic, administrative, and athletic uses on campus to promote more straightforward and logical wayfinding for pedestrians. • Create pedestrian links between the entire campus, in particular between University Hall and the academic core on the eastern portion of campus. • Improve pedestrian safety through the reduction of vehicular-pedestrian interaction. • Increase the number of pedestrian routes through campus and clearly articulate their presence. • Enhance pedestrian approaches to, and permeability of, campus facilities.
OPR-2	Encourage infill, redevelopment, and higher density development, whether in incorporated or unincorporated settings.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-1.</p>
OPR-3	Encourage new developments to integrate housing, civic and retail amenities (jobs, schools, parks, shopping opportunities) to help reduce VMT resulting from discretionary automobile trips.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-1.</p>
OPR-4	Apply advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The Proposed Project would support the Metro Green Line light rail extension by providing a location for a local station on campus near the intersection of LMU Drive and Lincoln Boulevard, to encourage the use of public transportation for travel to and from campus.

ID	Measures	Proposed Project Feature/Mitigation Measure
		<ul style="list-style-type: none"> • The Proposed Project would build upon its existing TDM program, and may include, but not be limited to the following measures: <ul style="list-style-type: none"> – Provide financial incentives for ridesharing; – Establish carpool, buspool, or vanpool programs; – Partially or fully subsidize parking costs for ridesharing employees; – Partially or fully subsidize carpools, vanpools, buspools, shuttles, or use of public transit; – Preferential parking for vehicles using ridesharing; – Facility improvements that provide preferential access for ridesharing employees; – Facility improvements to encourage use of bicycles; – Active use of computerized rideshare matching service; – Flexible work hours; – Telecommuting opportunities; and – Transit connection improvements.
OPR-5	<p>Incorporate features into project design that would accommodate the supply of frequent, reliable and convenient public transit.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Lincoln Boulevard is currently on the route of several local bus lines and has been identified as a potential location of the future Green Line of the Los Angeles Metro. If the Green Line is extended down Lincoln Boulevard, LMU will offer to provide locations for a station near the LMU entrance on Lincoln Boulevard, to encourage the use of public transportation for travel to and from campus.

ID	Measures	Proposed Project Feature/Mitigation Measure
OPR-6	Implement street improvements that are designed to relieve pressure on a region's most congested roadways and intersections.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Continue to emphasize use of LMU Drive from Lincoln Boulevard as the primary campus entrance, with a defined secondary gated entrance at Loyola Boulevard and W. 80th Street. • Clarify vehicular circulation routes, in particular the connections between the campus academic core, William H. Hannon Library, and University Hall. • Direct and calm the traffic entering and traversing campus, to improve vehicular and pedestrian circulation.
OPR-7	Limit idling time for commercial vehicles, including delivery and construction vehicles.	<p>Project is Consistent:</p> <p>The Proposed Project would be in compliance with current State law, which restricts diesel truck idling to 5 minutes or less.</p>
Urban Forestry		
OPR-8	Plant trees and vegetation near structures to shade buildings and reduce energy requirements for heating/cooling.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Central Plant motors shall include variable frequency drivers to adjust electrical motor speed based on demand. • Major building renovations and additions shall be integrated into the Campus Energy Management System, which is a set of computer-aided tools used to monitor, control, and optimize the performance of building HVAC and lighting systems. • Future cooling loads shall be met using thermal energy storage, or an additional energy efficient chiller, or other comparable storage technologies. • New and replacement buildings with flat roofs shall use white reflective material or comparable heat rejecting material on the building roofs. • New appliances shall meet or exceed the minimum efficiency levels mandated in the California Code of Regulations. • All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet aerators. • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent

ID	Measures	Proposed Project Feature/Mitigation Measure
		<p>criteria) or better.</p> <ul style="list-style-type: none"> Buildings shall be well sealed to prevent outside air from infiltrating and increasing interior space-conditioning loads. Buildings shall incorporate thermal insulation in walls and ceilings. Window systems shall be designed to reduce thermal gain and loss, thus, reducing cooling loads during warm weather and heating loads during cool weather.
OPR-9	Preserve or replace on-site trees (that are removed due to development) as a means of providing carbon storage.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> Incorporate sustainable landscape management principles, such as drought-tolerant landscape materials, a diverse tree canopy, and water conservation features, into future landscape improvements.
Green Buildings		
OPR-10	Encourage public and private construction of LEED (Leadership in Energy and Environmental Design) certified (or equivalent) buildings.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. Would achieve 12% clean energy from renewable energy credits. The campus would seek to increase this to 15%. Comply with the applicable requirements of the <i>LA Green Plan</i>. <p>See additional measures discussed above in OPR-8.</p>
Energy Conservation Policies and Actions		
OPR-11	Recognize and promote energy saving measures beyond Title 24 requirements for residential and commercial projects.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-8.</p>
OPR-12	Where feasible, include in new buildings facilities to support the use of low/zero carbon-fueled vehicles, such as the charging of electric vehicles from green electricity sources.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-1, -4, -5, -6, and -8.</p>
OPR-13	Educate the public, schools, other jurisdictions, professional associations, business and industry about reducing GHG emissions.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> The campus would continue to utilize its “green” website to educate students, faculty, staff, and the public about campus efforts to reduce GHG emissions and reduce waste. The website may be viewed at the following address: http://www.lmu.edu/green.

ID	Measures	Proposed Project Feature/Mitigation Measure
OPR-14	Replace traffic lights, streetlights, and other electrical uses to energy efficient bulbs and appliances.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> High-intensity-discharge (HID) lamps, light-emitting diode (LED), or other energy efficient lighting shall be installed for all outdoor lighting to reduce electricity consumption.
OPR-15	Purchase Energy Star equipment and appliances for public agency use.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-8.</p>
OPR-16	Incorporate on-site renewable energy production, including installation of photovoltaic cells or other solar options.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> Solar thermal and photovoltaic systems will be installed where economically feasible; solar panels are currently installed on the roofs of some buildings on campus.
OPR-17	Execute an Energy Savings Performance Contract with a private entity to retrofit public buildings. This type of contract allows the private entity to fund all energy improvements in exchange for a share of the energy savings over a period of time.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-8.</p>
OPR-21	Purchase government vehicles and buses that use alternatives fuels or technology, such as electric hybrids, biodiesel, and ethanol. Where feasible, require fleet vehicles to be low emission vehicles. Promote the use of these vehicles in the general community.	<p>Project is Consistent:</p> <p>The on-road vehicles that travel to and from the Proposed Project site would be in compliance with applicable CARB and/or US EPA emission standards that in effect at the time of purchase.</p>
OPR-24	Create bicycle lanes and walking paths directed to the location of schools, parks and other destination points.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> Create pedestrian links between the entire campus, in particular between University Hall and the academic core on the eastern portion of campus. Increase the number of pedestrian routes through campus and clearly articulate their presence. Enhance pedestrian approaches to, and permeability of, campus facilities.
Programs to Reduce Vehicle Miles Traveled		
OPR-25	Offer government employees financial incentives to carpool, use public transportation, or use other modes of travel for daily commutes.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-4.</p>
OPR-26	Encourage large businesses to develop commute trip reduction plans that encourage employees who commute alone to consider alternative transportation modes.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-4.</p>
OPR-27	Develop shuttle systems around business district parking garages to reduce congestion and create shorter commutes.	<p>Project is Consistent:</p> <p>See measures discussed above in OPR-4.</p>

ID	Measures	Proposed Project Feature/Mitigation Measure
OPR-28	Create an online ridesharing program that matches potential carpoolers immediately through email.	Project is Consistent: See measures discussed above in OPR-4.
OPR-29	Develop a Safe Routes to School program that allows and promotes bicycling and walking to school.	Project is Consistent: <ul style="list-style-type: none"> • Improve pedestrian safety through the reduction of vehicular-pedestrian interaction. • Enhance pedestrian approaches to, and permeability of, campus facilities.
Programs to Reduce Solid Waste		
OPR-30	Create incentives to increase recycling and reduce generation of solid waste by residential users.	Project is Consistent: <ul style="list-style-type: none"> • The campus would continue to improve waste diversion efforts to comply with the diversion goals of the County's Source Reduction and Recycling Element, which is to achieve the State's mandates of 50, 60, and 75 percent waste disposal reductions for the years 2000, 2015, and 2020, respectively, and the City of Los Angeles Solid Waste Management Policy Plan, which has goals of 50 percent diversion by 2000 and 70 percent diversion by 2020.
OPR-31	Implement a Construction and Demolition Waste Recycling Ordinance to reduce the solid waste created by new development.	Project is Consistent: <ul style="list-style-type: none"> • The demolition and construction process would include efforts to separate debris and recycle a minimum of 50 percent of the basic building materials, pursuant to AB 939.
OPR-32	Add residential/commercial food waste collection to existing greenwaste collection programs.	Project is Generally Consistent: <ul style="list-style-type: none"> • LMU is actively investigating the use of in-vessel composting systems for food waste and green waste generated on campus.

Source: Office of Planning and Research, "CEQA and Climate Change: Addressing Climate Change Through CEQA Review," <http://www.opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf>, 2008.

4.3.3.4 Consistency with the LA Green Plan

The *LA Green Plan* seeks to reduce greenhouse gas emissions 35 percent below 1990 levels by 2030 by increasing the generation of renewable energy, improving energy conservation and efficiency, and changing transportation and land use patterns to reduce dependence on automobiles. As part of the *LA Green Plan*, the City Council approved the Green Building Program Ordinance, which requires non-residential and high-rise residential projects with at least 50,000 square feet of floor area and low-rise residential projects with at least 50 units or 50,000 square feet of floor area to meet at a minimum the

USGBC’s LEED® Certified level. Redevelopment projects that exceed 50 percent of the valuation of the existing building’s replacement cost are also subject to this requirement.

The Proposed Project is consistent with the *LA Green Plan* as it includes numerous resource conservation and energy efficiency measures, includes provisions to increase renewable energy use, and includes features designed to house more students on the campus and increase pedestrian activity on campus and in the neighboring community thereby reducing dependency on automobiles. The previously discussed, the Proposed Project would replace many of its oldest and most energy inefficient buildings with new buildings that meet or exceed building code standards. The Proposed Project would reduce LMU’s GHG intensity by a minimum of 16 percent, not including the effects of the numerous GHG reduction measures listed in the preceding tables. Therefore, upon development of the Proposed Project, it is reasonable to expect that the reduction in GHG intensity would actually be substantially greater than 16 percent.

In May 2007, the City of Los Angeles published an action plan to meet the goals of the *LA Green Plan*. The action plan included a series of actions in areas of energy, water, transportation, waste, and open space and greening to achieve reductions in citywide GHG emissions. As listed below in **Table IV.B.2-14, Consistency with the LA Green Plan**, the Proposed Project would be consistent with the applicable recommended actions.

**Table IV.B.2-14
Consistency with the LA Green Plan**

ID	Action	Proposed Project Policy/Project Feature/Mitigation Measure
Energy		
LA-1	Green the Power From the Largest Municipal Utility in the United States: <ul style="list-style-type: none"> • Meet the goal to increase renewable energy from solar, wind, biomass, and geothermal sources to 20% by 2010. • Increase use of renewable energy to 35% by 2020. 	Project is Generally Consistent: The Proposed Project would be consistent with this action by procuring and supporting renewable energy production from LADWP. In addition, the Proposed Project would install solar thermal and photovoltaic systems where economically feasible. The campus currently operates three solar photovoltaic systems on campus.

ID	Action	Proposed Project Policy/Project Feature/Mitigation Measure
LA-2	<p>Make Los Angeles a Worldwide Leader In Green Buildings.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. • Would achieve 12% clean energy from renewable energy credits. The campus would seek to increase the credits to 15% by further implementing the use of clean energy from renewable energy sources. • Comply with the applicable requirements of the <i>LA Green Plan</i>.
LA-3	<p>Transform Los Angeles Into the Model Of an Energy Efficient City:</p> <ul style="list-style-type: none"> • Reduce energy use by all city departments to the maximum extent feasible. • Complete energy efficiency retrofits of all city-owned buildings to meet a 20% or more reduction in energy consumption. • Install the equivalent of 50 “cool roofs” per year by 2010 on new or remodeled city buildings. • Install solar heating for all city-owned swimming pools. • Improve energy efficiency at drinking water treatment and distribution facilities. • Maximize energy efficiency of wastewater treatment equipment. 	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Central Plant motors shall include variable frequency drivers to adjust electrical motor speed based on demand. • Major building renovations and additions shall be integrated into the Campus Energy Management System, which is a set of computer-aided tools used to monitor, control, and optimize the performance of building HVAC and lighting systems. • Future cooling loads shall be met using thermal energy storage, or an additional energy efficient chiller, or other comparable storage technologies. • New and replacement buildings with flat roofs shall use white reflective material or comparable heat rejecting material on the building roofs. • New appliances shall meet or exceed the minimum efficiency levels mandated in the California Code of Regulations. • All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet aerators. • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. • Buildings shall be well sealed to prevent outside air from infiltrating and increasing interior space-conditioning loads. • Buildings shall incorporate thermal insulation in walls and ceilings. • Window systems shall be designed to reduce

ID	Action	Proposed Project Policy/Project Feature/Mitigation Measure
		thermal gain and loss, thus, reducing cooling loads during warm weather and heating loads during cool weather.
LA-4	<p>Help Angelenos Be “Energy Misers”:</p> <ul style="list-style-type: none"> • Distribute two compact fluorescent light (CFL) bulbs to each of the 1.4 million households in the city. • Increase the level and types of customer rebates for energy efficient appliances, windows, lighting, and heating and cooling systems. • Increase the distribution of energy efficient refrigerators to qualified customers. • Create a fund to “acquire” energy savings as a resource from LADWP customers. 	<p>Project is Consistent: See measures discussed above in LA-3.</p>
Water		
LA-5	<p>Decrease Per Capita Water Use:</p> <ul style="list-style-type: none"> • Meet all additional demand for water resulting from growth through water conservation and recycling. • Reduce per capita water consumption by 20 percent. • Implement the city’s innovative water and wastewater integrated resources plan that will increase conservation, and maximize use of recycled water, including capture and reuse of stormwater. 	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • All irrigation shall use reclaimed water by the Proposed Project buildout. • All irrigation shall use automatic irrigation timers and at least 50 percent of the campus’s non-turf areas shall include drought-tolerant or native plantings. • All new and renovated buildings shall incorporate water conservation measures such as ultra low flush water closets and urinals, low flow shower heads, and low flow faucet aerators.
Transportation		
LA-6	<p>Lower the Environmental Impact And Carbon Intensity of Transportation.</p>	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Support the Metro Green Line light rail extension by providing a location for a local station on campus near the intersection of LMU Drive and Lincoln Boulevard, to encourage the use of public transportation for travel to and from campus. • The Proposed Project would build upon its existing TDM program, and may include, but not be limited to the following measures: <ul style="list-style-type: none"> – Provide financial incentives for ridesharing; – Establish carpool, buspool, or vanpool programs; – Partially or fully subsidize parking costs for ridesharing employees; – Partially or fully subsidize carpools,

ID	Action	Proposed Project Policy/Project Feature/Mitigation Measure
		<p>vanpools, buspools, shuttles, or use of public transit;</p> <ul style="list-style-type: none"> - Preferential parking for vehicles using ridesharing; - Facility improvements that provide preferential access for ridesharing employees; - Facility improvements to encourage use of bicycles; - Active use of computerized rideshare matching service; - Flexible work hours; - Telecommuting opportunities; and - Transit connection improvements. <p>The Proposed Project would also be consistent with this action by complying with applicable CARB and/or US EPA emission standards and low carbon fuel standards for on-road vehicles that travel to and from the Proposed Project site.</p>
LA-7	Focus on Mobility for People, Not Cars.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Centrally locate academic, administrative, and athletic uses on campus to promote more straightforward and logical wayfinding for pedestrians. • Create pedestrian links between the entire campus, in particular between University Hall and the academic core on the eastern portion of campus. • Improve pedestrian safety through the reduction of vehicular-pedestrian interaction. • Increase the number of pedestrian routes through campus and clearly articulate their presence. • Enhance pedestrian approaches to, and permeability of, campus facilities.
LA-8	<p>Create a More Livable City:</p> <ul style="list-style-type: none"> • Promote high-density housing close to major transportation arteries. • Promote and implement transit-oriented development (TOD). 	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The Proposed Project would move more undergraduate students into campus housing (increasing the percentage of undergraduate residential students from approximately 60 percent of FTES to approximately 75 percent) to reduce traffic trips and vehicle miles traveled to and from the LMU campus. <p>See additional measures discussed above in LA-6 and LA-7.</p>

ID	Action	Proposed Project Policy/Project Feature/Mitigation Measure
Waste		
LA-9	Shift From Waste Disposal to Resource Recovery: <ul style="list-style-type: none"> Recycle 70% of trash by 2015. 	Project is Consistent: <ul style="list-style-type: none"> The campus would continue to improve waste diversion efforts to comply with the diversion goals of the County’s Source Reduction and Recycling Element, which is to achieve the State’s mandates of 50, 60, and 75 percent waste disposal reductions for the years 2000, 2015, and 2020, respectively, and the City of Los Angeles Solid Waste Management Policy Plan, which has goals of 50 percent diversion by 2000 and 70 percent diversion by 2020. LMU is actively investigating the use of in-vessel composting systems for food waste and green waste generated on campus.
Open Space and Greening		
LA-10	Unpave Paradise/Create New Paradises.	Project is Consistent: <ul style="list-style-type: none"> Incorporate sustainable landscape management principles, such as drought-tolerant landscape materials, a diverse tree canopy, and water conservation features, into future landscape improvements.

Source: City of Los Angeles, Green LA: An Action Plan to Lead the Nation in Fighting Global Warming, (2007).

4.3.4 Consistency Summary

As illustrated in the preceding sections, the Proposed Project is consistent with the relevant goals, strategies, and control measures established under AB 32, the 2006 CAT Report and 2007 Update, OPR’s CEQA and Climate Change technical advisory, and the *LA Green Plan*. Furthermore, the campus after the Proposed Project buildout would result in a substantial reduction in GHG intensity per square foot and per FTE student, faculty, and staff on campus. As such, the Proposed Project, by itself, will have a less than significant impact on global climate change.

As previously discussed, the Attorney General has published a list of GHG reduction measures that can be included as project design features, required changes to the project, or mitigation measures. The measures are intended to provide recommendations to lead agencies that may be helpful in carrying out their duties under CEQA with respect to greenhouse gases and climate change impacts. As listed below in **Table IV.B.2-15, Consistency with Relevant Attorney General’s Recommended “Project Level” Measures**, the Proposed Project would be consistent with the Attorney General’s applicable recommended measures.

**Table IV.B.2-15
Consistency with Relevant Attorney General’s Recommended “Project Level” Measures**

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
Energy Efficiency		
AG-1	Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Central Plant motors shall include variable frequency drivers to adjust electrical motor speed based on demand. • Major building renovations and additions shall be integrated into the Campus Energy Management System, which is a set of computer-aided tools used to monitor, control, and optimize the performance of building HVAC and lighting systems. • Future cooling loads shall be met using thermal energy storage, or an additional energy efficient chiller, or other comparable storage technologies. • New and replacement buildings with flat roofs shall use white reflective material or comparable heat rejecting material on the building roofs. • New appliances shall meet or exceed the minimum efficiency levels mandated in the California Code of Regulations. • All irrigation shall use reclaimed water by the Proposed Project buildout. • All irrigation shall use automatic irrigation timers and at least 50 percent of the campus’s non-turf areas shall include drought-tolerant or native plantings. • All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet aerators. • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. • Buildings shall be well sealed to prevent outside air from infiltrating and increasing interior space-conditioning loads. • Buildings shall incorporate thermal insulation in walls and ceilings.

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
		<ul style="list-style-type: none"> Window systems shall be designed to reduce thermal gain and loss, thus, reducing cooling loads during warm weather and heating loads during cool weather.
AG-2	Install efficient lighting and lighting control systems. Use daylight as an integral part of lighting systems in buildings.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> High-intensity-discharge (HID) lamps, light-emitting diode (LED), or other energy efficient lighting shall be installed for all outdoor lighting to reduce electricity consumption.
AG-3	Install light colored "cool" roofs, cool pavements, and strategically placed shade trees.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-1.</p>
AG-4	Provide information on energy management services for large energy users.	<p><i>Not Applicable:</i> This is beyond the scope of the proposed Project, and beyond the control of the Proposed Project Applicant.</p>
AG-5	Install energy efficient heating and cooling systems, appliances and equipment, and control systems.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-1.</p>
AG-6	Install light emitting diodes (LEDs) for traffic, street and other outdoor lighting.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-2.</p>
AG-7	Limit the hours of operation of outdoor lighting.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-1 and -2.</p>
AG-8	Use solar heating, automatic covers, and efficient pumps and motors for pools and spas.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> Solar thermal and photovoltaic systems will be installed where economically feasible; solar panels are currently installed on the roofs of some buildings on campus.
AG-9	Provide education on energy efficiency.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> The campus would continue to utilize its "green" website to educate students, faculty, staff, and the public about campus efforts to reduce GHG emissions and reduce waste. The website may be viewed at the following address: http://www.lmu.edu/green.
Renewable Energy		
AG-10	Install solar and wind power systems, solar and tankless hot water heaters, and energy-efficient heating ventilation and air conditioning. Educate consumers about existing incentives.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-8.</p>
AG-11	Install solar panels on carports and over parking areas.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-8.</p>

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
AG-12	Use combined heat and power in appropriate applications.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • Future cooling loads shall be met using an additional energy efficient chiller, thermal energy storage, or other comparable storage technologies.
Water Conservation and Efficiency		
AG-13	Create water-efficient landscapes.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • New appliances shall meet or exceed the minimum efficiency levels mandated in the California Code of Regulations; • All new and renovated buildings shall incorporate water conservation measures such as ultra-low-flush water closets and urinals, low-flow shower heads, and low-flow faucet aerators; • Rotating sprinkler nozzles for landscape irrigation – 0.5 gallon per minute; • Weather based irrigation controller; • Drip/subsurface irrigation (micro-irrigation); • Micro-spray; • Bubbler irrigation; • Proper hydro-zoning (i.e., groups plants with similar water requirements together); • Zoned irrigation; • Landscaping contouring to minimize precipitation runoff; • Artificial turf (cost permitting); • Drought-tolerant plants – 75% of total new landscape plantings; • Infiltration planters (i.e., notched curb to allow runoff to flow into planted areas); • Stormwater capture and infiltration in on-campus sump; • Reclaimed water systems for irrigation;
AG-14	Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-13.</p>
AG-15	Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-13.</p>

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
AG-16	Design buildings to be water-efficient. Install water-efficient fixtures and appliances.	Project is Consistent: See measures discussed above in AG-13.
AG-17	Use graywater. (Graywater is untreated household wastewater from bathtubs, showers, bathroom washbasins, and water from clothes washing machines.) For example, install dual plumbing in all new development allowing graywater to be used for landscape irrigation.	Project is Consistent: See measures discussed above in AG-13.
AG-18	Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.	Project is Consistent: See measures discussed above in AG-1 and -13.
AG-19	Restrict the use of water for cleaning outdoor surfaces and vehicles.	Project is Consistent: See measures discussed above in AG-1 and -13.
AG-20	Implement low-impact development practices that maintain the existing hydrologic character of the site to manage storm water and protect the environment. (Retaining stormwater runoff on site can drastically reduce the need for energy-intensive imported water at the site.)	Project is Consistent: <ul style="list-style-type: none"> • All new construction shall be designed to the 2008 LEED Certified criteria (or an equivalent criteria) or better. • Comply with the applicable requirements of the <i>LA Green Plan</i>. See additional measures discussed above in AG-13.
AG-21	Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate to the specific project.	Project is Consistent: See measures discussed above in AG-13 and AG-20, and below in AG-22.
AG-22	Provide education about water conservation and available programs and incentives.	Project is Consistent: <ul style="list-style-type: none"> • The campus would continue to utilize its “green” website to educate students, faculty, staff, and the public about campus efforts to reduce GHG emissions and reduce waste. The website may be viewed at the following address: http://www.lmu.edu/green.
Solid Waste Measures		
AG-23	Reuse and recycle construction and demolition waste (including, but not limited to soil, vegetation, concrete, lumber, metal, and cardboard).	Project is Consistent: <ul style="list-style-type: none"> • The demolition and construction process would include efforts to separate debris and recycle a minimum of 50 percent of the basic building materials, pursuant to AB 939.

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
AG-24	Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The campus would continue to improve waste diversion efforts to comply with the diversion goals of the County’s Source Reduction and Recycling Element, which is to achieve the State’s mandates of 50, 60, and 75 percent waste disposal reductions for the years 2000, 2015, and 2020, respectively, and the City of Los Angeles Solid Waste Management Policy Plan, which has goals of 50 percent diversion by 2000 and 70 percent diversion by 2020. • LMU is actively investigating the use of in-vessel composting systems for food waste and green waste generated on campus.
AG-26	Provide education and publicity about reducing waste and available recycling services.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The campus would continue to utilize its “green” website to educate students, faculty, staff, and the public about campus efforts to reduce GHG emissions and reduce waste. The website may be viewed at the following address: http://www.lmu.edu/green.
Land Use Measures		
AG-27	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.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The Proposed Project would move more undergraduate students into campus housing (increasing the percentage of undergraduate residential students from approximately 60 percent of FTES to approximately 75 percent) to reduce traffic trips and vehicle miles traveled to and from the LMU campus. • Support the Metro Green Line light rail extension by providing a location for a local station on campus near the intersection of LMU Drive and Lincoln Boulevard, to encourage the use of public transportation for travel to and from campus. • The Proposed Project would build upon its existing TDM program, and may include, but not be limited to the following measures: <ul style="list-style-type: none"> – Provide financial incentives for ridesharing; – Establish carpool, buspool, or vanpool programs; – Partially or fully subsidize parking costs for ridesharing employees; – Partially or fully subsidize carpools, vanpools, buspools, shuttles, or use of public transit;

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
		<ul style="list-style-type: none"> - Preferential parking for vehicles using ridesharing; - Facility improvements that provide preferential access for ridesharing employees; - Facility improvements to encourage use of bicycles; - Active use of computerized rideshare matching service; - Flexible work hours; - Telecommuting opportunities; and - Transit connection improvements.
AG-28	Educate the public about the benefits of well-designed, higher density development.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The campus would continue to utilize its “green” website to educate students, faculty, staff, and the public about campus efforts to reduce GHG emissions and reduce waste. The website may be viewed at the following address: http://www.lmu.edu/green.
AG-29	Incorporate public transit into project design.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-27.</p>

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
AG-30	Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • LMU’s campus contains at least 25 acres of open space, in the form of both active and passive open space. • The Proposed Project will provide appropriate facilities for instructional athletics, intramural and intercollegiate athletics, and informal recreation. • The Proposed Project will help LMU to fulfill its commitment to meeting National Collegiate Athletic Association (NCAA) standards for collegiate athletic facilities. • The Proposed Project will enable LMU student-athletes to maintain the academic standards required for participation in athletic programs by expanding, increasing access to, and appropriately illuminating LMU’s athletic facilities. These improvements will allow LMU to meet the high demand for these facilities while reducing conflicts between LMU student-athlete’s practice and competition schedules and their daytime classes. • The Proposed Project will enable more efficient use of intercollegiate and intramural athletic facilities by making them available for varsity practices, clinics, clubs, and camp during day- and nighttime hours. • The Proposed Project will enable compliance with Title IX Equal Opportunity in Education Act requirements for the provision of access to educational programs, including athletics, regardless of sex. • The Proposed Project will retain and add to existing landscaped open space on campus. • The Proposed Project will utilize open space as a means of promoting greater circulation throughout campus. • The Proposed Project will provide sufficient athletic facilities for students, faculty, and staff.

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
AG-32	Include pedestrian and bicycle-only streets and plazas within developments. Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling or walking.	<p>Project is Consistent:</p> <ul style="list-style-type: none"> • The Proposed Project will establish the LMU campus as a primarily pedestrian-oriented environment. • The Proposed Project will centrally locate academic, administrative, and athletic uses on campus to promote more straightforward and logical wayfinding for pedestrians. • The Proposed Project will create pedestrian links between the entire campus, in particular between University Hall and the academic core on the eastern portion of campus. • The Proposed Project will improve pedestrian safety through the reduction of vehicular-pedestrian interaction. • The Proposed Project will increase the number of pedestrian routes through campus and clearly articulate their presence. • The Proposed Project will enhance pedestrian approaches to, and permeability of, campus facilities.
Transportation and Motor Vehicles		
AG-33	Limit idling time for commercial vehicles, including delivery and construction vehicles.	<p>Project is Generally Consistent:</p> <p>The Proposed Project would be in compliance with current State law, which restricts diesel truck idling to 5 minutes or less.</p>
AG-34	Use low or zero-emission vehicles, including construction vehicles.	<p>Project is Generally Consistent:</p> <p>The medium- and heavy-duty vehicles used during construction and operation of the Proposed Project would comply with applicable CARB and/or US EPA emission standards. Similarly, the on-road vehicles that travel to and from the Proposed Project site would be in compliance with applicable CARB and/or US EPA emission standards that in effect at the time of purchase.</p>
AG-35	Promote ride sharing programs e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides.	<p>Project is Consistent:</p> <p>See measures discussed above in AG-27.</p>

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
AG-36	Create car-sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.	Project is Consistent: See measures discussed above in AG-27.
AG-37	Create local “light vehicle” networks, such as neighborhood electric vehicle (NEV) systems.	Project is Consistent: See measures discussed above in AG-27.
AG-38	Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations).	Project is Consistent: See measures discussed above in AG-27.
AG-39	Increase the cost of driving and parking private vehicles by, e.g., imposing tolls and parking fees.	Project is Consistent: See measures discussed above in AG-27.
AG-40	Build or fund a transportation center where various public transportation modes intersect.	Project is Consistent: <ul style="list-style-type: none"> • The Proposed Project would support the Metro Green Line light rail extension by providing a location for a local station on campus near the intersection of LMU Drive and Lincoln Boulevard, to encourage the use of public transportation for travel to and from campus.
AG-41	Provide shuttle service to public transit.	Project is Consistent: See measures discussed above in AG-27.
AG-42	Provide public transit incentives such as free or low-cost monthly transit passes.	Project is Consistent: See measures discussed above in AG-27.
AG-43	Promote “least polluting” ways to connect people and goods to their destinations.	Project is Consistent: See measures discussed above in AG-32.
AG-44	Incorporate bicycle lanes and routes into street systems, new subdivisions, and large developments.	Project is Consistent: See measures discussed above in AG-32.
AG-45	Incorporate bicycle-friendly intersections into street design.	Project is Consistent: See measures discussed above in AG-32.
AG-46	For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. For large employers, provide facilities that encourage bicycle commuting, including, e.g., locked bicycle storage or covered or indoor bicycle parking.	Project is Consistent: See measures discussed above in AG-32.
AG-47	Create bicycle lanes and walking paths directed to the location of schools, parks and other destination points.	Project is Consistent: See measures discussed above in AG-32.

ID	Measure	Proposed Project Policy/Project Feature/Mitigation Measure
AG-50	Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation.	Project is Consistent: See measures discussed above in AG-27 and -32.

Source: Department of Justice, "The California Environmental Quality Act – Addressing Global Warming Impacts at the Local Agency Level," http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf. 2008.

4.4 Project Design Features and Mitigation Measures

The Proposed Project would implement a number of Project Design Features discussed in detail in **Subsection 4.2** above, which would reduce the GHG emissions of the Proposed Project and reduce potential impacts on global climate change to less than significant levels. For a complete list of these Project Design Features, see **Section IV.K, Traffic, Section IV.L.4, Energy, and Section IV.L.1, Water Supply.**

The Proposed Project would not have a significant impact on global climate change and therefore mitigation measures are not required.

4.5 Level of Impact After Mitigation

While the Proposed Project would result in emissions of GHGs, no guidance exists to indicate what level of GHG emissions would be considered substantial enough to result in a significant adverse impact on global climate for the Proposed Project. In the absence of adopted quantitative thresholds, the analysis uses consistency with adopted programs and policies that reduce GHG emissions to evaluate the significance of the Proposed Project. Many of the strategies in the adopted programs and policies discussed in this section are preliminary or under development. Thus, consistency may only be determined in a general manner.

The Proposed Project would reduce GHG emissions per square foot on campus by at least 16 percent. The Proposed Project also is consistent with the applicable goals, strategies, and control measures established under the four frameworks: AB 32, the 2006 CAT Report and 2007 Update, OPR's CEQA and Climate Change technical advisory, and the *LA Green Plan*. In addition, the Proposed Project includes numerous resource conservation and energy efficiency measures, green building standards, and would reduce dependency on automobiles by encouraging public transportation and pedestrian activity. As a result, although the Proposed Project would emit GHGs, it would not have a significant adverse effect on global climate change on a project or cumulative basis.

4.6 Cumulative Impacts

Global climate change is by definition a cumulative impact as GHG emissions do not have a localized impact; they impact the globe as a whole. All the emission reduction strategies detailed in the 2006 CAT Report and 2007 Update, the *LA Green Plan*, OPR's CEQA and Climate Change technical advisory, and the AB 32 Scoping Plan involve strategies to assist in the reduction of GHG emissions. As such, any analysis of the Proposed Project's impacts on global climate change is by definition a cumulative analysis. Since no numeric thresholds exist to assess the impacts of GHG emissions from the Proposed Project, the quantitative analysis does not indicate a significant impact. As indicated above, the Proposed Project is consistent with the goals, strategies, and control measures established under AB 32, the 2006 CAT Report and 2007 Update, OPR's CEQA and Climate Change technical advisory, and the *LA Green Plan*. Since these reports, plans, and policies are intended to facilitate the reduction of GHG emissions in California to meet the GHG emissions reduction targets detailed in AB 32, the potential impact on global warming resulting from implementation of the Proposed Project would not be cumulatively significant.