

UCSB



CLIMATE ACTION PLAN

2009

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

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PREPARED BY THE CHANCELLOR'S CLIMATE ACTION TEAM

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UCSB

Budget and Planning

- Terry Macy, Senior Facilities Planner

College of Letters and Science

- David Davis, Buildings Manager

Department of Geography

- Mo Lovegreen, Executive Officer
- Joel Michaelsen, Professor

Design and Construction Services

- Tye Simpson, Campus Planning & Design Director
- Mark Peppers, Project Manager, Design and Construction Services

Environmental Health and Safety

- Bruce Carter, Hazardous Waste Program Coordinator

Department of Exercise and Sports Studies

- Taggart Malone, Sport Club Coordinator

Housing and Residential Services

- Mark Rousseau, Environmental & Energy Manager
- Barry Colwell, Resource Planning Coordinator

Department of Ecology, Evolution, and Marine Biology

- Cathi Arnold, Management Services Officer

Department of Economics & Bren School of Environmental Science and Management

- Charles Kolstad, Professor – Environmental Economics

Office of Sustainability

- Ron Cortez, Associate Vice Chancellor, Administrative Services
- Jill Richardson, Campus Sustainability Coordinator

Physical Facilities

- David McHale, Associate Director of Energy and Utilities
- Mary Ann Hopkins, Recycling & IPM Manager
- Lena Kirk, Customer Service Representative

Transportation and Parking Services

- John Behlman, Computer Systems Coordinator
- James Wagner, Transportation Alternatives Coordinator
- Arjun Sarkar, Automotive Technician

West Coast Environmental and Engineering

- Carolyn Casavan, CEO & Senior Principal Engineer
- Scott Cohen, Senior Managing Engineer

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Executive Summary

EXECUTIVE SUMMARY

University of California, Santa Barbara (UCSB) has long been a leader in the advancement of environmental issues, education, and research. This document presents the 2009 Climate Action Plan (CAP or “Plan”) for UCSB. The purpose of the CAP is to provide a guideline to achieve greenhouse gas (GHG) reductions as prescribed by the State of California, the University of California, and the American College and University Presidents Climate Commitment. This CAP is a living document that has been prepared with data that was available at the time of preparation and includes plans for refinement over the next few years. The goals of the CAP are to achieve the following:

GHG Emissions Targets

- 2000 emissions by 2014;
- 1990 emissions by 2020; and
- Carbon neutral by 2050.

UCSB’s recent and current emissions have been reported by UCSB to the California Climate Action Registry (CCAR) for the years 2004 through 2007. The 2007 campus emissions reported to CCAR utilizing default factors were 58,683 metric tons of carbon dioxide equivalent (MTCO_{2e}). These emissions have been adjusted in the CAP for the Southern California Edison specific emission factor resulting in 2007 emissions of 49,135 MTCO_{2e}. For comparison, the 1990 and 2000 campus emissions levels (i.e. 2020 and 2014 targets) are estimated to be 33,672 MTCO_{2e} and 39,736 MTCO_{2e}, respectively.

The trajectory of future emissions depends on the growth of the campus and the effectiveness of actions that are taken to reduce emissions. Many existing UCSB documents incorporate policies and mitigations that will reduce GHG emissions. These include the Strategic Energy Partnership (SEP) Project List, the Campus Sustainability Plan, the Long Range Development Plan (LRDP) and the LRDP Draft Environmental Impact Report. The CAP assesses the growth projections in the LRDP and existing mitigations and provides a forecast of future GHG emissions.

The 2014 and 2020 emissions targets are achievable with implementation of the currently planned measures identified in the CAP. In the future, additional emission reduction approaches including implementation of new technologies and the possible use of offsets, will need to be adopted to maintain the 2020 target and to achieve carbon neutrality by 2050; however, offsets will be obtained as a last step to achieve neutrality and the offsets will be generated locally or regionally to the greatest extent possible. Since the price of offsets has the potential to be highly variable, several approaches are identified to protect against unexpected increases in offset costs, such as investing in offset projects, partnering in long term renewable energy projects in excess of University energy demand, investing in GHG emission reduction projects in low income communities and purchasing offsets ahead of time to maintain a bank of offsets.

Introduction

I. INTRODUCTION

In 1969, Santa Barbara experienced an oil spill in the Santa Barbara Channel that forever changed the University California, Santa Barbara (UCSB) campus and local community. The UCSB campus was within sight and smell of the littered channel and its beaches. Until that point, the world of academia had not yet realized it was neglecting a very important aspect of educating students: how to care for, respect, and protect our fragile world. These insights led to the establishment of the UCSB Environmental Studies Program in 1970, an undergraduate curriculum designed to address these important issues.

In 1990, then-Chancellor Barbara Uehling was one of the first chancellors in the US to sign the Talloires Declaration. This document, originally signed by 22 university presidents, declares that institutions of higher learning will be world leaders in developing, creating, supporting, and maintaining sustainability on their campuses. As a result of this declaration, the School of Environmental Science and Management was created on the UCSB campus in 1994 to provide Master's and Ph.D. students with training in research and assessment of environmental issues and the skills to implement changes within political structures.

In the late 1990s, the campus Energy Team began implementing aggressive energy efficiency measures, such as de-lamping, HVAC upgrades, lighting retrofits, metering, building commissioning, and installation of chilled water loops. As a result, UCSB reduced its per square foot electricity use by 25% over the last decade. Additionally, in 2002, Bren Hall was the first laboratory building in the US to achieve Platinum-level certification in Leadership in Energy and Environmental Design (LEED) for New Construction (NC), a rating system developed by the US Green Building Council. And in 2004, UCSB was the first UC campus to achieve a LEED for Existing Buildings (EB) Silver-level certification for Girvetz Hall. These awards paved the way for UCSB's leadership in the green building arena in the years since.

Resulting from the above green building accomplishments, Chancellor Henry T. Yang was the first Chancellor in the UC system to implement LEED-NC Silver minimum standard for all new construction starting in 2004. That same year the Central Campus Sustainability Committee began work on assessing UCSB's environmental performance. This work provided baseline measurements for our impact in energy use, the built environment, landscape, transportation, water, waste, and procurement. While the indicator work was underway, students from the Donald Bren School of Environmental Science and Management began a Master's Group Project to assess what the campus could do to attain carbon neutrality.

Introduction

In September 2006, Governor Arnold Schwarzenegger signed into law AB 32 – the Global Warming Solutions Act of 2006. In March 2007, the UC President Robert Dynes, approved the Policy on Sustainable Practices – guidelines for the UC system to minimize its impact on the environment and decrease its dependence on non-renewable energy. Within this policy is a section on Climate Protection Practices that mandates each campus to develop, by December 2008, a long-term plan for (1) meeting 2000 emissions levels by 2014, (2) meeting 1990 levels by 2020, and (3) eventual climate neutrality.

UCSB partnered with the USGBC in 2007 to pilot the LEED Portfolio Program, which includes certifying 25 existing buildings within five years. This same year, the University of California president, Robert Dynes, signed the American College and University Presidents Climate Commitment (ACUPCC), and UCSB Chancellor Henry T. Yang was appointed to the ACUPCC advisory board.

In October 2008, Chancellor Yang appointed a very high-level campus-wide sustainability committee. This committee reviews and prioritizes sustainability projects, and submits recommendations to the Chancellor for project funding. A timeline of events and a list of existing documents and commitments are provided in Appendix A.

A. Purpose

This document presents the 2009 Climate Action Plan (CAP or “Plan”) for UCSB. The goals of the CAP are to achieve the following GHG emission targets.

GHG Emission Targets:

- **2000 emission levels by 2014.**
- **1990 emission levels by 2020.**
- **GHG neutrality by 2050.**

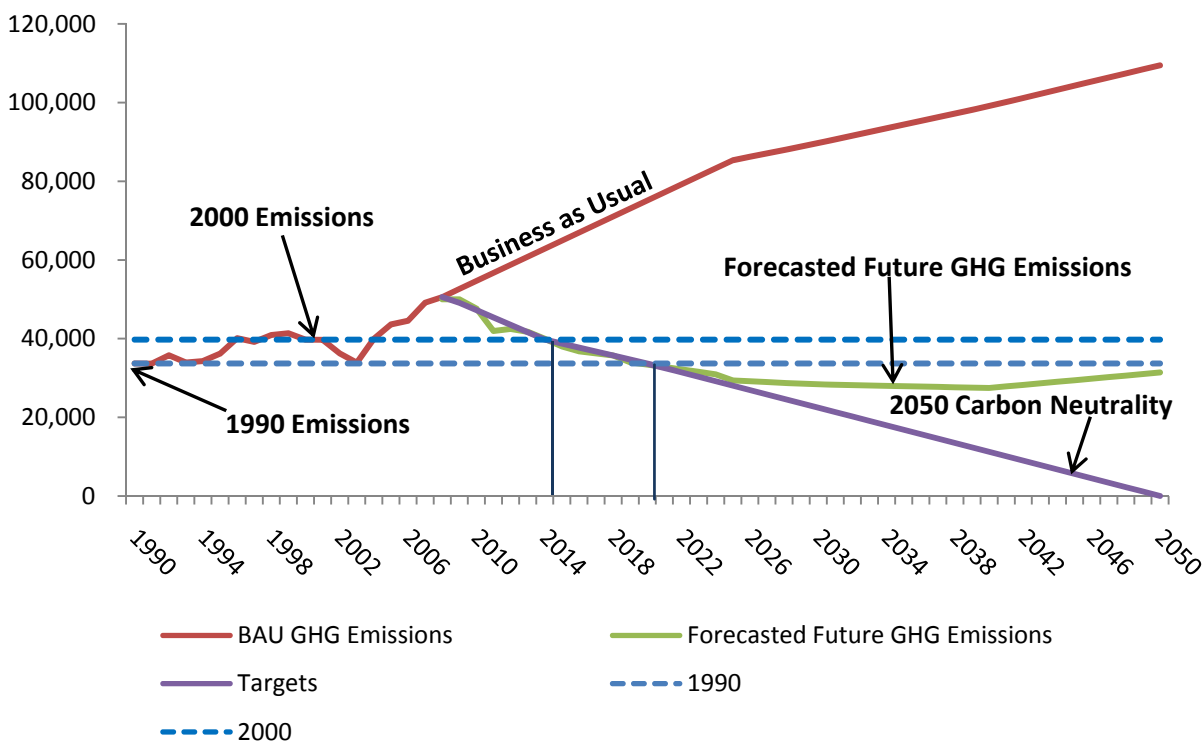
This CAP is a living document that will change considerably within the next two years, as identified in Section VII. The CAP has been prepared with data that was available at the time of preparation.

Campus Emissions

II. CAMPUS EMISSIONS

Greenhouse gas emissions from the University result from both on-campus and off-campus activities. GHG emissions sources include residential buildings, non-residential buildings, on-site and off-site transportation, and marine vessels. Historical, business as usual (BAU), forecasted future GHG emissions with mitigations, and emissions targets are presented in Figure 1. Forecasted future emissions and carbon neutrality are discussed in Section III.

Figure 1. Campus Emissions Trend



A. Current Emissions – Calendar Year 2007

In 2005, UCSB began its participation with the California Climate Action Registry (CCAR). To date, emissions inventories have been submitted and verified for calendar years (CY) 2004 through 2007. In the first three years, the inventory was prepared specifically for CO₂ emissions, but the CY 2007 inventory included all six of the Kyoto Protocol gases, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).

Campus Emissions

The 2007 UCSB emissions for all six Kyoto Protocol gases were verified by a third party on September 15, 2008 and accepted by the California Climate Action Registry on October 15, 2008. The emissions for each of the six gases (Table 1) does not include commuter or air travel emissions, which the University will begin capturing in the 2010 calendar year. Calendar year 2007 emissions (Figure 2) identify the primary source of emissions for the campus, which are stationary combustion of natural gas and indirect emissions from electricity usage. Fugitive emissions are very low and are included in the deminimus category.

Table 1. 2007 Emissions Reported to CCAR (MTCO_{2e})

	CO ₂ e	CO ₂	CH ₄	N ₂ O	HFC	PFC	SF ₆
Mobile Combustion	1,359	1,350	0.20	0.02	0	0	0
Stationary Combustion	19,858	19,800	2.20	0.04	0	0	0
Process Emissions							
Fugitive Emissions							
DIRECT EMISSIONS	21,217	21,150	2.40	0.05	0	0	0
INDIRECT EMISSIONS	37,454	37,399	0.29	0.16	0	0	0
TOTAL DEMINIMUS	12	0	0	0	0.01	0	0
Total	58,683	58,550	2.69	0.21	0.01	0	0

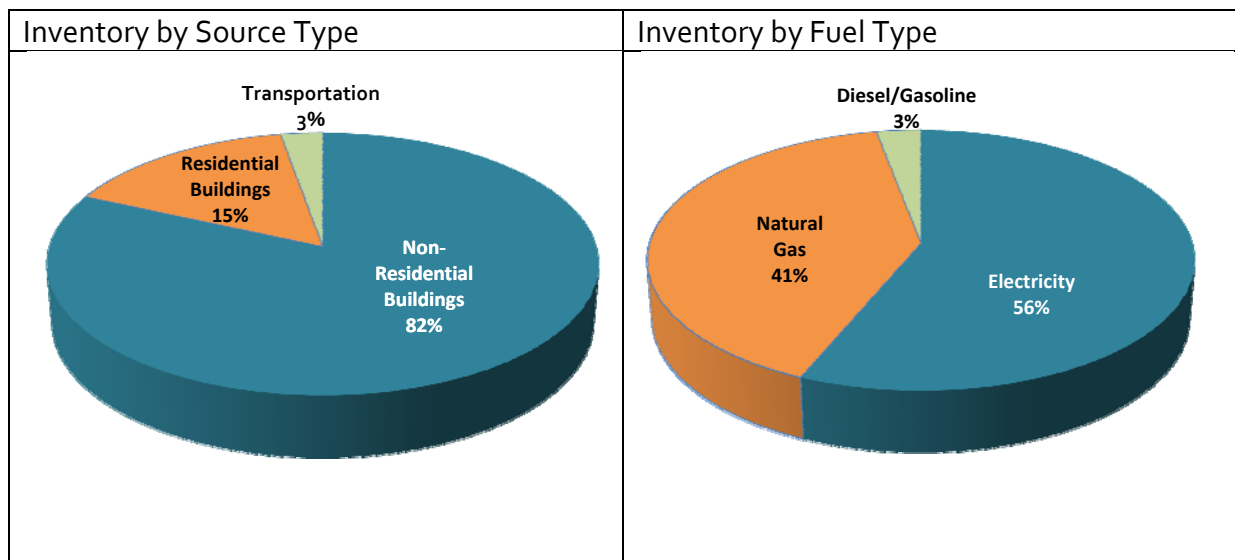
Energy related emissions are calculated by multiplying usage obtained from meters and bills, times emission factors. The emission factors for gasoline, diesel, and natural gas are relatively constant based on current fuels. Future introduction of biofuels and low carbon fuels will reduce these factors. Emission factors for electricity are dependent on the fuel mix and renewable portfolio of the electricity provider.

Electricity emissions reported to CCAR were calculated using the eGRID CMX emission factor (878 lb/MWh, CCAR GRP3.0). The eGRID factor is an average factor for electricity delivered in California, which includes electricity produced from coal, natural gas, nuclear, wind, solar, biomass, and hydroelectricity. UCSB obtains its electricity from Southern California Edison (SCE). The SCE portfolio for 2007 included 50% natural gas, 21% nuclear, 16% renewables, 8% coal, and 5% large hydroelectricity. Thus, only 58% of the current SCE portfolio has associated GHG emissions. In future years as the renewable percentage increases, the emissions factor reported by SCE will be adjusted accordingly.

The 2007 SCE emission factor for delivered electricity was 630.89 lb/MWh. The average factor for 2004-2007 was 654.19 lb/MWh. (App. B, Table B-3) For the purposes of this CAP, current, historical and projected business-as-usual (BAU) emissions have been calculated using the average SCE factor for 2004-2007. Adjusting the 2007 emissions for the SCE factor results in indirect emissions of 27,898 MTCO_{2e} and total emissions of 49,135 MTCO_{2e}. (App. B, Table B-4) The general breakdown of emissions by type based on these calculations is shown in Figure 2.

Campus Emissions

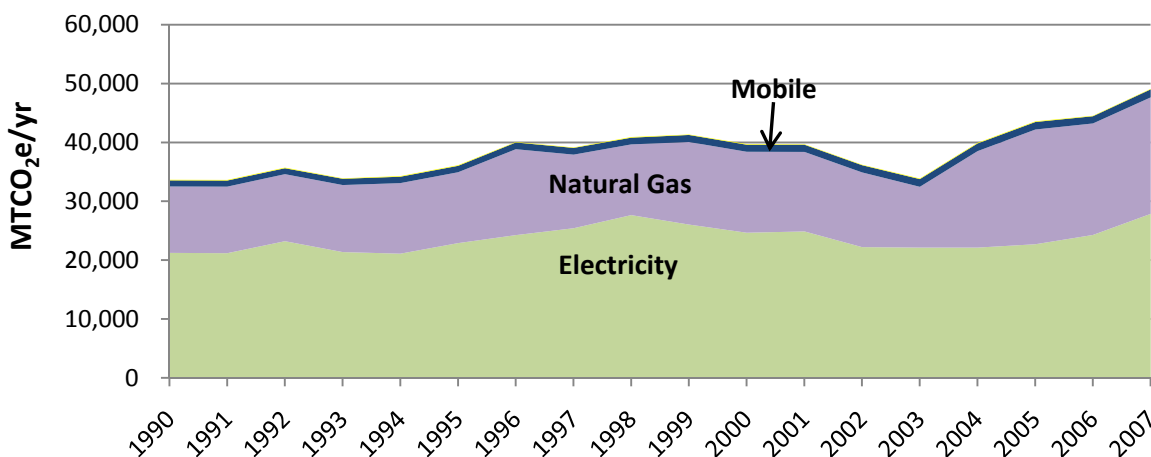
Figure 2. 2007 Emissions by Type



B. Historical Emissions

UCSB began operations in 1944. The campus moved to its current location on a former US Marine Air Base in 1953. Some of the buildings on its current campus date back to 1942 and many were constructed in the 1960s and early 1970s. Appendix B provides historical information for the University for the period of 1990-2007. Figure 3 below shows the change in emissions for this period based on actual electricity usage, a mix of actual and estimated natural gas usage, estimated mobile usage, and a constant for fugitive and miscellaneous sources.

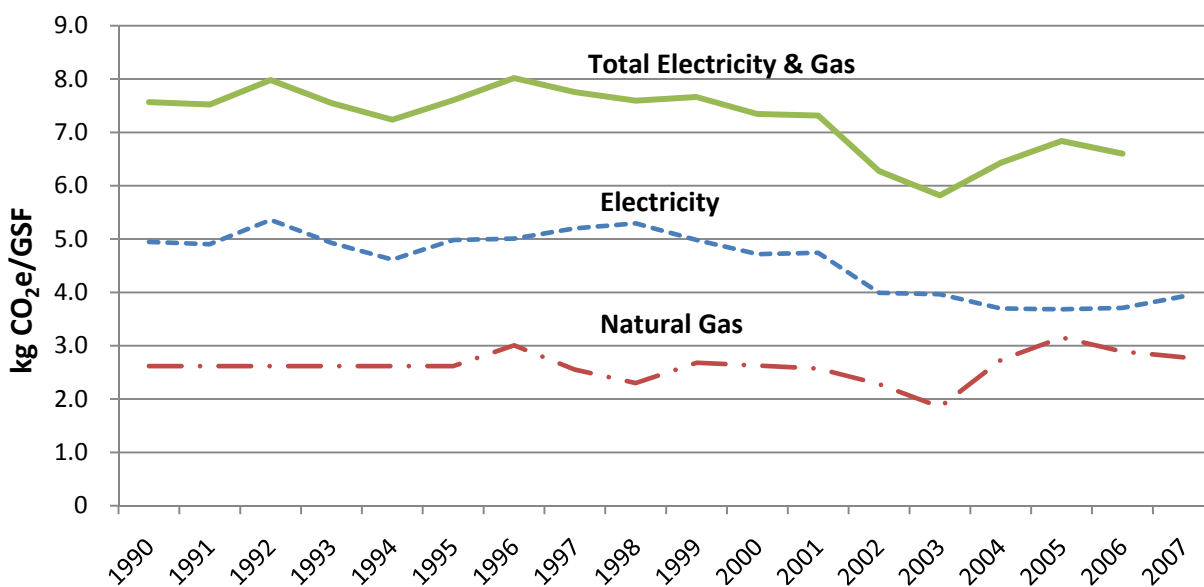
Figure 3. Historical GHG Emissions – 1990 to 2007



Campus Emissions

Emissions increased relatively steadily from 1990 to 1999 followed by a decline in emissions from 1999 to 2003 and an increase in emissions from 2003 to 2007. The decrease in emissions from 1998 to 2003 was due to the implementation of a number of energy efficiency projects which reduced electricity usage per gross square foot (GSF) of building space, while the increase from 2003 to 2007 is due to the increase in square footage resulting partly from new building construction and partly from an increase in natural gas usage per GSF. Examination of the GHG intensity factors for electricity and natural gas based on GSF show that electricity related GHG emissions per GSF have decreased from 1998 through 2006. The natural gas intensity factor has fluctuated over the years, which is partly due to winter weather conditions. Although the natural gas factor appears to have increased in recent years, it is still within the range of variability.

Figure 4. Historical Electricity and Natural Gas GHG Intensity – 1990 to 2007



During the period of 1990 to 2007 the total student, faculty, and staff counts have increased from 22,136 to 26,015 for an increase of 18% (App. B, Table B-1 and B-12), and building GSF has increased from 4,298,957 to 7,104,281 for an increase of 65%. (App. B, Table B-5) The increase in students, faculty, and staff has been fairly steady, while GSF increased more rapidly from 2004 to 2007 resulting in a recent increase in GSF per capita.

Campus Emissions

C. Projected Emissions

In March 2008, UCSB published the draft document, "Vision 2025 – UCSB Long Range Development Plan" (LRDP), which describes future campus growth. The LRDP uses 2007 as a baseline year and describes campus growth from 2008 through 2025. The draft LRDP contains the following factors that are likely to influence future conditions:

- Increase in student population 1% per year for a total of approximately 25,000 in 2025.
- Increase in faculty and staff population to a total of 6,431 in 2025.
- Add sufficient housing to accommodate each new student, faculty member, and staff person. This CAP estimates addition of 5,313,495 gross square feet (GSF) of housing based on 500 GSF/bed; 1,000 GSF/apartment; 1,200 GSF/townhouse; and 1,600 GSF/single-family residence. (App. C, Table C-5) These assumptions may be revised with actual campus housing densities in future versions of this CAP.
- Add an estimated 3,540,240 GSF for general uses. (App. C, Table C-5)

The draft LRDP implements principles of sustainability in urban planning. Specifically, the LRDP adds housing for each new individual without increasing the footprint of the campus. Thus, development that will occur is considered in-fill and many new trips that would otherwise have been in a vehicle will be made by alternative means (e.g. cycling, walking, and public transit).

The Recirculated Draft Environmental Impact Report (February 2009) that has been prepared for the draft LRDP estimates that building LRDP housing will avoid 40,187 MTCO₂e/yr in 2025 from private vehicles at full buildout (30,140 MTCO₂e/yr at 75% buildout). Although private vehicle trips are outside the ACUPCC inventory scope, this savings in avoided GHG emissions is substantial especially when compared to the estimated 16,200 MTCO₂e/yr increase in GHG emissions related to LRDP residential development.

Thus, the LRDP increases UCSB reported emissions but it decreases GHG emissions overall because the increased residential emissions would otherwise have been attributed to individuals living in buildings elsewhere and additional emissions would have occurred from offsite commutes.

D. Business as Usual

This CAP relies on the draft LRDP to predict future conditions because housing each new individual is assumed to require development of the maximum square footage that could be necessary. However, actual growth is expected to be less than the LRDP and therefore this CAP assumes that LRDP buildings will be 75% operational in the build-out year of 2025.

Campus Emissions

BAU emissions for future years, 2008 through 2025, are estimated based on conditions described in the draft LRDP and the GHG energy intensities calculated for the baseline year, 2007. (App. C, Table C-2) Emissions beyond 2025 assume an average annual campus growth rate of 1%. Intermediate year emissions are interpolated assuming linear growth. While convenient, this method does not reflect the fact that energy use will increase stepwise as each new building is commissioned. Future versions of this CAP may schedule emissions from each new development to phase in as planned rather than at a constant rate of growth.

Energy Use in Buildings

During the analysis for the CAP, it was noted that utility usage for residential buildings differed substantially from utility usage for non-residential buildings. (App. B, Table B-8 and B-9) For this reason new development is assigned to two categories of building, non-residential or residential, as used in the All Buildings List. Residential building emissions are estimated based on residential utility usage rates and residential GSF while non-residential building emissions are estimated based on non-residential utility usage and non-residential GSF.

For consistency, this CAP estimates both past and future GHG emissions related to electricity using the average SCE factor for 2004-2007 (655 lb/MWh). This approach was chosen based on the information available. Future versions of this CAP may use emissions factors and/or renewable percentages provided by the utility for historical years (e.g. 1990 and 2000); and as determined for the campus electricity portfolio in future years, to estimate emissions more precisely.

Other Sources

BAU emissions from UCSB's fleet of mobile sources (i.e. on-road and marine fleets) are estimated by scaling the 2007 mobile source emissions by the increase in faculty/staff. Backup generator, gas cylinder, and refrigerant emissions are each scaled by the increase in square footage of the main campus buildings.

E. Forecasted Future GHG Emissions

Forecasted future GHG emissions take into account campus growth, currently planned mitigations, and projected changes in SCE percent renewables. These estimates are discussed in more detail in Section III.

F. Emission Reduction Targets (2014, 2020 and 2050)

The interim emission reduction goals are Calendar Year (CY) 2000 emissions levels by 2014 and CY 1990 emissions by 2020. Emissions for 1990 and 2000 have been estimated based on current and historical information and are presented in Table 2. The Executive Order emissions

Campus Emissions

target of 80% below 1990 is also presented. For comparison, 2007 emissions and projected BAU emissions for each of the target years are presented in Table 3.

UCSB has committed to being carbon neutral by 2050. In order to reach neutrality, the campus must mitigate and offset all emissions produced by sources that are within the scope of the ACUPCC inventory. The first step in achieving this will be avoiding and reducing emissions as much as possible using mitigation strategies described in Section III. The second step will be to provide offsets for any remaining emissions, as covered in Section IV.

Table 4 presents the average annual rate of emissions reduction required to meet the 2014, 2020, and 2050 targets.

Table 2. Emission Reduction Targets (MTCO₂e)

	Direct	Indirect	Total
1990 Emission Levels	12,406	21,266	33,672
2000 Emission Levels	15,054	24,682	39,736
80% Below 1990 Levels	2,481	4,253	6,734

Table 3. Projected Business as Usual Emissions (MTCO₂e)

	Direct	Indirect	Total
2007	21,236	27,898	49,135
2014 Business as Usual	28,599	34,251	62,850
2020 Business as Usual	34,957	40,167	75,125
2050 Business as Usual	51,626	57,834	109,460

Table 4. Average Rate of Reduction (MTCO₂e/Year)

	Direct	Indirect	Total
2009-2014	781	1,026	1,807
2014-2020	460	551	1,011
2020-2050	522	600	1,122

Mitigation Strategies

III. MITIGATION STRATEGIES

The overall mitigation strategy for the campus is to avoid emissions where possible through improved planning and changing the way things are done; to reduce emissions through improved efficiency of what will continue to be done; and to replace high-carbon energy sources with lower carbon sources. These strategies will be implemented through changes in new construction, retrofitting of existing sources, changes in policy and practices, and education and outreach.

The campus has already adopted several documents and plans which include measures that will reduce GHG emissions both directly and indirectly. In addition, the State of California has adopted measures that will result in GHG emissions reductions as a result of external factors. Finally, additional potential mitigation measures were identified as part of the preparation of the CAP.

The objective of the 2009 CAP is to identify a broad range of potential measures, some of which have been quantified but many of which will be assessed in the next iteration of the CAP with regard to technical feasibility, cost, ease of implementation, and estimated reduction in emissions. Additional measures may also be adopted in future plans. Thus, the list of mitigation measures will evolve with time. Commitments to specific measures will be noted in each annual CAP as applicable.

A. Mitigations in Existing UCSB Documents

UCSB selected six tangible actions per the ACUPCC Implementation Guide:

ACUPCC Tangible Actions

- Establish a policy that all new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent.
- Adopt an energy-efficient appliance purchasing policy requiring purchase of ENERGY STAR certified products in all areas for which such ratings exist.
- Establish a policy of offsetting all GHG emissions generated by air travel paid for by UCSB.
- Encourage use of and provide access to public transportation for all faculty, staff, students and visitors.
- Within one year of signing the ACUPCC (i.e. March 2008), purchase or produce at least 15% of electricity consumption from renewable sources.
- Participate in the Waste Minimization component of the national RecycleMania competition, and adopt three (3) or more associated measures to reduce waste.

Mitigation Strategies

Existing UCSB documents which contain measures that can reduce GHG emissions include the Strategic Energy Partnership (SEP) Project List, the Campus Sustainability Plan, the LRDP and the LRDP Draft Environmental Impact Report. The complete list of SEP projects along with a summary is presented in Appendix D, Tables D-1 and D-2. A condensed list of measures from all of these documents is presented in Table D-3. The measures in Table D-3 have been compiled and grouped into categories for ease of review and understanding.

Buildings

Buildings encompass a large portion of the campus energy use and GHG emissions. Operations and activities in buildings span multiple areas considered in this CAP. For the most part, building measures in the CAP are a result of sustainability efforts that may or may not reduce GHG emissions while energy efficiency projects that can be quantified are considered energy measures. The Campus Sustainability Plan seeks to “create superior places to study, work, and live that enhance the health and performance of building occupants through sustainable planning, design, construction, operations, retrofits, and biomimicry.” Many of the sustainability principles that are applied under this category will result in avoidance or reduction of GHG emissions, but the amount of reductions is not known. Nevertheless, sustainable buildings initiatives will be important in minimizing campus impacts on the environment. Building mitigation measures include: development of strategic plans for energy efficiency in existing buildings and operation of buildings at LEED-EB level; certification of 25 buildings through LEED-EB by 2012; surpassing Title 24 by at least 30% on new buildings; and increased energy efficiency requirements for new buildings under the LRDP.

Energy

Energy is an area that is discussed in this CAP and the Campus Sustainability Plan. The Sustainability Plan considered energy and climate change in the same section while this CAP draws a distinction between the two. The Sustainability Plan seeks to “create a net zero Green House Gas emissions (GHG) campus through energy efficiency, conservation, on-site generation, and strategic procurement of clean and renewable energy.” GHG related policies have been given their own heading in this CAP (see below). Measures that are considered energy measures in this CAP include: energy efficiency projects (e.g. SEP), renewable energy targets, implementation of a portfolio approach to electricity purchasing, alternative fuels, and purchase of ENERGY STAR © products.

The energy conservation program has been in existence at UCOP since 2004. Two program periods have passed (2004 – 2005 and 2006 – 2008) in which energy efficiency projects were completed at each campus. Since its inception, UC has implemented \$46 million worth of energy projects. Utility companies have provided \$23.5 million of incentive grants for these

Mitigation Strategies

projects and the energy savings are estimated to be approximately \$5 million per year. In March 2009 the SEP partnership agreement between the Independently Owned Utilities, the California State University, and UC was approved. According to UCOP, this partnership “provides substantial energy and cost savings, reduces UC’s greenhouse gas emissions, and helps UC meet its sustainability goals. The current phase of the SEP will provide an estimated \$220 million to help fund energy efficiency projects for 2009-11, which are expected to reduce The University’s annual utility costs by \$36 million.” UCSB’s portion is \$16.9 million and affords a more rapid rate of progress towards reducing energy use and related GHG emissions than in years past.

Operational

Operations measures focus on operational improvements such as improved data collection, monitoring, and reporting to reduce emissions. This category also includes behavioral changes such as expanding video conferencing and other electronic alternatives to travel.

Policy / Climate

This category includes policy based measures as well as measures related to climate change programs. Examples of policy measures include creating an institutional culture of sustainability, partnering with the Environmental Protection Agency ENERGY STAR © program to press the market for greater energy efficiency in products used, and adding sustainability language to new and renewing tenant contracts. Preparation of this CAP is an example of a climate measure.

Procurement

Procurement measures cover a wide range of practices and policies related to purchasing goods and services for the campus. Measures include purchasing computer equipment that has Bronze registration, utilizing the Electronic Product Environmental Assessment Tool (EPEAT), minimizing or eliminating packaging, and purchasing locally grown produce.

Transportation

Measures to reduce transportation related emissions focus on targets to increase the fleet’s percentage of alternative fuel vehicles and ultra efficient vehicles, reducing vehicle miles traveled, encouraging the use of alternative transportation for faculty, staff, and students, and reducing and offsetting air travel emissions. Examples include 75% of campus fleet purchases being alternative fuel or ultra-efficient vehicles by 2011; 95% of the campus light-duty fleet purchases by 2016; work with others to promote biodiesel and other alternative fuel sources; and implement a pre-tax transit pass program.

Mitigation Strategies

Waste Reduction and Water Conservation

These measures have the potential to reduce GHG emissions indirectly by reducing the energy involved in the production and processing of water and waste. Waste measures include recycling 95% of used cooking oil into biodiesel, siting a composting vessel on campus, and implementing the findings of the waste co-generation feasibility study. Water measures include reducing potable water use, increasing reclaimed water use, and 20% reduction in water intensive plantings by 2015.

B. Government Regulations and Programs

State and local governments are currently developing programs that will result in GHG emissions reductions related to external sources. These reductions will flow through to UCSB indirectly. These include:

- 20% renewables by 2010 for Independently Owned Utilities (IOU) – California Renewable Portfolio Standard (RPS), SB 1078 and SB 107, in effect.
- 33% renewables by 2020 for IOUs – AB 32 Scoping Plan, under development.
- Low carbon fuel standard to reduce the carbon content of transportation fuels by 10% by 2020 – AB 32 Scoping Plan and SB 1007, under development.
- California Clean Car Law estimated to reduce emissions from passenger vehicles by 18% by 2020 and 27% by 2030 – AB 1493 Vehicular Emissions; Greenhouse Gases (Pavley), under development.

When analyzing the effect of increasing renewables on emissions reduction for the campus, it is necessary to take into account that electricity supplied by SCE currently includes from 16% to 18% renewables and approximately 26% non-GHG emitting sources. Therefore only the incremental change may be counted.

C. Other Measures

Additional measures were identified as part of preparing the CAP and include:

- Continue research of methane capture from oil seeps in Santa Barbara Channel being conducted by Leifer, Boles, Luyendyk and Clark of UCSB's Marine Science Institute and Earth Science Department, with the ultimate goal of potential replacement of natural gas usage on campus as well as generating excess methane that can be used to reduce GHG emissions in the local community. Converting methane to CO₂ through use as a fuel reduces the global warming potential of the gas from 21 to 1, resulting in a net reduction in CO₂e. This technology has the mid- to long-term potential to replace commercial natural gas usage, a source that will

Mitigation Strategies

likely cost more to replace or offset than other sources in the emissions inventory (i.e. electricity use).

- Assess potential purchase of renewable energy from a wood-fired power plant either through a power purchase agreement or through a UC system-wide program. A 25 to 50 MW power plant could be sufficient to provide power to the entire UC system, assuming average energy efficiency improvements of 50% or greater. When implemented with a strong sustainable forestry plan, a wood-fired power plant has several co-benefits, including reducing pollutants from open burning of forest wastes, improved forest habitat and carbon sequestration, reduced intensity of forest fires, economic investment in a depressed rural area, and provision of base load renewable power.
- On-site wind from small turbines such as those supplied by AeroVironment.
- On-site solar through the installation of roof-top or garage-top photovoltaics, thermal solar and solar hot water heating.
- On-site installation of one or more fuel cells providing both electricity and heat.
- Analysis of future residential unit design to reduce GHG emissions and to enable upgrades for carbon neutrality.
- Off-site wind or solar through a joint project with others, a dedicated UCSB project or purchase of renewable energy credits (RECs).
- Support of additional research into wave and tide energy recovery.

D. Projected Future Emissions and Reductions

Future emissions are estimated by subtracting emissions reductions predicted for the mitigations discussed in Appendix D from BAU emissions described in Section II above. Figure 5 shows the forecasted emissions trend. (See App. C, Table C-4 for data) The trend contains several intervals:

- 2007 – 2008. This period has already passed. 2007 is a baseline from which future emissions are calculated and 2008 emissions which are forecasted in this CAP will be known soon. This CAP conservatively assumes no emissions reductions from SEP energy efficiency projects in 2008, though the effects of those projects will nevertheless manifest as reductions in energy use and GHG emissions for that year.
- 2009 – 2014. SEP listed projects are scheduled to be completed during this period. Emissions reductions from behavioral changes, institutional changes, vehicle purchasing policies, and use of biofuels start in 2010 and phase in over a number of years.
- 2015 – 2020. Future SEP projects, a quarter of which have been identified, are assumed to reduce emissions 2,100 MTCO_{2e} each year for a total of 10,500 MTCO_{2e}/yr in 2020. Other mitigations, energy projects, or increasing renewables in

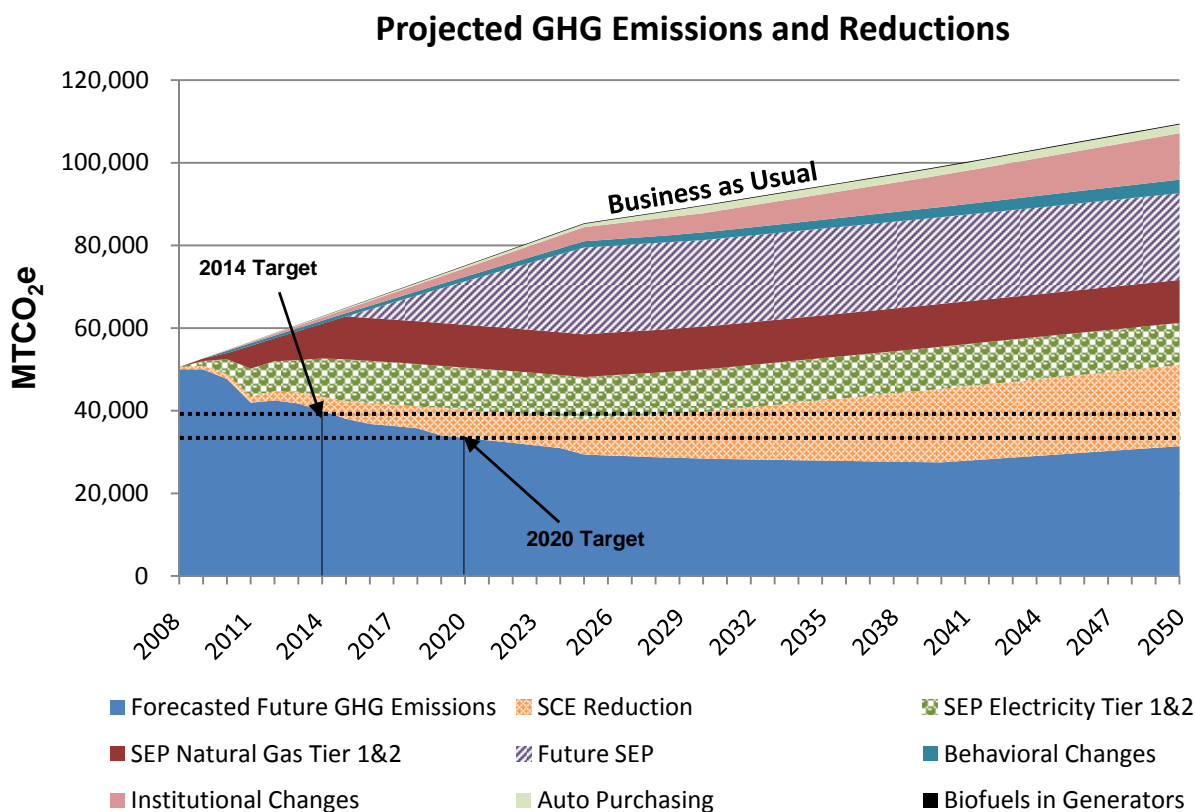
Mitigation Strategies

the portfolio may also be used to achieve this reduction if it is not feasible to reduce emissions by this amount through energy efficiency projects.

- 2021 – 2025. The campus is forecasted to grow according to the LRDP through 2025. Future SEP projects, beyond those currently planned, are assumed to continue to reduce emissions by 2,100 MTCO₂e/year for an additional reduction of 10,500 MTCO₂e.
- 2025 – 2050. Campus growth beyond 2025 has been estimated at 1.0% annually. No additional emission reduction measures are assumed. Thus, for this period the chart shows the magnitude of the reductions that will be needed to achieve GHG neutrality by 2050.

As shown in Figure 5, UCSB is on a trajectory to meet the 2014 and 2020 targets. However, additional measures will be needed in order for the campus to achieve GHG neutrality by 2050.

Figure 5. Projected GHG Emissions and Reductions



Mitigation Strategies

E. Further Emissions Reductions or Offsets Required

Emissions Reductions can be achieved by energy efficiency measures. However, they cannot be reduced to zero by efficiency. At some point, emissions have to be further reduced by increasing the use of renewable energy or obtaining offsets.

Emissions from electricity can be eliminated with the purchase of 100% renewable energy. Emissions from natural gas combustion could be reduced by a ratio of 20:1, if methane capture from the Santa Barbara seep becomes viable. Emissions that may require offsets include emissions from natural gas usage that cannot be eliminated or replaced, air travel, and commutes.

Offsets

IV. OFFSETS

The University's approach to offsets is that they may be used to:

- Offset those portions of the University's emissions that cannot be eliminated by other means (e.g. emissions from air travel paid for by the University).
- Achieve carbon neutrality at an earlier date.
- Support advances in carbon neutral technology.

An alternative to purchasing offsets is to set up an internal Carbon Fund to which the equivalent cost of the offsets would be contributed and would be restricted for use in implementing GHG emission reduction projects that would otherwise be uneconomical.

A. Offset Criteria

Projects that generate offsets and purchased offsets should have the following characteristics and one or more co-benefits:

Offset Criteria

- Account for leakage and not be double counted.
- High quality – emissions reductions must be real, tangible, additional, transparent, measurable, permanent, verified, synchronous, registered and retired.
- Advance the education and research missions of the campus.
- Have environmental co-benefits.
- Have social co-benefits.
- Advance technology.

As offset projects or options are identified they will be checked against these criteria and the ACUPCC criteria to determine acceptability. The offset portion of reductions shown in this CAP will be clearly identified to ensure that people understand how much neutrality is being achieved by reduction and how much by offsets.

Renewable Energy Credits (RECs) are not the same as offsets. Currently most projects that generate RECs would not meet the criteria to be a valid offset under the ACUPCC Protocol. However, if a developer builds a grid-connected renewable energy project with the intent of generating offsets, and demonstrates it is additional, it results in a measurable reduction in GHG emissions that will not be double counted, and it meets the rest of the criteria which are necessary for a "high quality" offset, then a renewable energy project could generate offsets. A dedicated renewable energy project that exceeds the University's electrical demand could meet these criteria.

Offsets

RECs can still play an important role in the CAP as a way to account for electricity use emissions. Because a REC represents a unique and exclusive proof that one MWh of electricity has been generated from a renewable resource, purchasing RECs can give the University a way to obtain zero-emissions electricity, even if it is not generated in the area.

B. Offset Costs

In the United States, carbon credits are currently trading in the range of \$1 to \$2 per metric ton and were trading in the range of \$5 to \$5.50 per metric ton in March of 2008 (Chicago Carbon Exchange, Mar. 24, 2009). In Europe, where cap and trade has been established, carbon credits are trading in the range of €10 to €13 per metric ton (Point Carbon, Mar. 24, 2009). Projections from various sources estimate that offsets in the U.S. may increase to up to \$30 per metric ton by 2020 and higher after that.

The price for Renewable Energy Certificates (REC) is currently in the range of \$2 to \$4 per MWh on the wholesale and commercial market. This works out to a cost of about \$10 per metric ton CO₂e based on the SCE emissions rate of 0.297 MTCO₂e/MWh.

A comparison of credit prices is presented in Table 5. The cost to purchase credits to offset the remaining forecasted future GHG emissions after mitigation at the various prices for future years is presented in Table 6.

The future cost of offsets is highly variable. Prices may remain relatively stable while supply is adequate to meet demand. However, if supplies become scarce, then the cost of offsets could increase quickly allowing purchasers little time to adjust to the new market conditions. Also, in a situation where there is a statewide or national cap on emissions, credits may become exorbitantly high priced or unavailable. This has happened in the South Coast Air Quality Management District with NO_x emission credits.

Table 5. Comparison of Credit Prices

Item	Range	Units	\$/kwh	\$/MWh	\$/MTCO ₂ e
Renewable Energy Certificates 2009	2-4	\$/MWh	0.003	3.00	10.10
Chicago Climate Exchange 2009	1.55-1.60	\$/MTCO ₂ e	0.0005	0.47	1.60
European Climate Exchange 2009	10-13	€/MTCO ₂ e	0.0045	4.56	15.33
Chicago Climate Exchange 2008	5.15-5.45	\$/MTCO ₂ e	0.0016	1.62	5.45

Offsets

Table 6. Comparison of Cost to Offset Forecasted Future GHG Emissions

	2007	2014	2020	2030
Future Forecasted GHG Emissions	49,135	39,968	33,417	28,371
Renewable Energy Certificates 2009	\$496,136	\$403,577	\$337,425	\$286,469
Chicago Climate Exchange 2009	\$ 78,616	\$ 63,949	\$ 53,467	\$ 45,393
Chicago Climate Exchange 2008	\$267,786	\$217,827	\$182,123	\$154,619

In order to protect against unexpected increases in offset costs, the University is considering the following approaches:

- Investing in offset projects.
- Participating in long term renewable energy projects in excess of University energy demand.
- Investing in GHG emission reduction projects in low income communities.
- Purchasing offsets ahead of time and maintaining a bank of offsets.

Education, Research & Community Outreach Efforts

V. EDUCATION, RESEARCH, & COMMUNITY OUTREACH EFFORTS

A. Curriculum

UCSB started one of the Country's first Environmental Studies programs in the early 1970s and was home to the first multidisciplinary environmental graduate school on the west coast. Environmental curriculum has been an important component of UCSB's academic planning for over three decades.

The Academic Senate Work Group on Sustainability is developing a program of proposals intended to serve as the academics and research arm of the Campus Sustainability Plan. Components of the program include four initiatives in undergraduate education: an Environment and Sustainability General Education (GE) requirement, a Freshman Seminar in Sustainability, The Chancellor's Sustainability Internship (CSI) – a capstone internship program, and a set of supporting initiatives from Instructional Development to help faculty infuse sustainability in the curriculum. The program also includes a Campus Faculty Champion in Sustainability that will highlight exceptional faculty research and two graduate initiatives for an interdisciplinary PhD emphasis and a full interdisciplinary PhD in Environment and Sustainability. Additional proposals include one in Communication and Outreach and a Manual of Good Research Practices. See Appendix E.

The strategy is to integrate sustainability throughout the academic structure of UCSB, including faculty, graduate, and undergraduate education, to enhance both educational programs and directed activities. The operational approach is through initiatives that are each independent and focused on a specific level, but which will interact with each other to create an overall network of activity. For example, the Champion is focused on the faculty, and the CSI is focused on undergraduates; they will work together. The graduate program will provide Teachers Assistants (TAs) to support the GE program, and will bring faculty more closely into sustainability education at all levels. The Tactics (specific implementation) have been worked out on some (the Champion and the CSI initiatives), but are still being worked out on others (graduate program and the GE).

B. Community Outreach

With the start of the Sustainability Communications Committee in the spring of 2008, it is a goal of the campus to communicate and collaborate with the Goleta and Santa Barbara communities on a more regular basis with regard to sustainability.

Below is a list of some successful community outreach programs the campus has undertaken in the area of the environment and sustainability:

Education, Research & Community Outreach Efforts

- Composting pilot program – staff involved in waste management on campus have been collaborating with the local trash hauler to pilot a post-consumer composting program that will take food waste from the De La Guerra Dining Commons, compost it, and return some of the compost to the campus to use on the grounds. Our hope is to eventually bring the composting system to the campus so we may truly close the food waste loop and reduce the fossil fuel required to transport the waste off-site.
- Renewable energy exploration – in order to come closer to carbon neutrality, we will need to explore our renewable energy options, including solar and wind. The Office of Sustainability, along with the Institute for Energy Efficiency, is collaborating with the local Community Environmental Council (CEC) and a local wind power company to explore potential options for the campus' renewable energy needs. The CEC's main campaign right now is Fossil Free by '33, so they are very focused on renewable energy in the Santa Barbara area.
- Sustainable Food Consortium – the staff of the Housing and Residential Dining Services created a consortium of campus staff, students, and faculty; community farmers/growers; and local non-profit groups to discuss bringing more local and organic foods to the campus and the surrounding community. It is the largest gathering of its kind in the area.
- Earth Day Celebrations – The past few Earth Day Celebrations in downtown Santa Barbara have been a collaboration between the Community Environmental Council and the Bren School of Environmental Science and Management. In addition, UCSB has several booths to educate to local community on the sustainability programs and student research going on around the UCSB campus.
- Natural Reserves – UCSB has four natural reserve systems: Carpinteria Salt Marsh, Coal Oil Point, Sedgwick Ranch, and Valentine Eastern Sierra Reserves. All of these natural reserves offer public tours, educational programs, and volunteer opportunities for the community.
- CCBER – The Cheadle Center for Biodiversity and Ecological Restoration provides public tours of the animal, plant, and special collections and the restored natural areas they manage on the UCSB campus. The Campus Flora Project was created out of former Chancellor Vernon Cheadle's wish to develop the campus environment into an outdoor classroom. Walking tours and online maps are available for anyone to experience the living collection of hundreds of plant families from six different continents.

Education, Research & Community Outreach Efforts

- Kids in Nature – is a program overseen by CCBER designed to enrich the learning experiences of underrepresented and underserved youth in the Santa Barbara community by taking them out of the urban setting, introducing them to the natural environment, and teaching them how to preserve our ecosystems.
- Greenhouse and Garden Project – is a community garden located on the UCSB campus. The garden is organic, which means they do not allow pesticides or any other harmful chemicals. The garden links the community to locally grown, organic produce.
- Environmental Media Initiative – the Carsey Wolf Center for Film, Television, and News Media created this program to join UCSB’s exceptional strengths in media/communication studies and environmental science to create an interdisciplinary program unique to the UC system and the nation. The EMI brings together environmental scientists with film and media scholars – drawn from the humanities, arts, and social sciences – to collaborate on teaching, research, and public programming. The EMI explores all of the ways media and the environment influence, structure, and inhabit each other: the environment in media, media in the environment. Interdisciplinary research projects include DigitalOcean and Sampling the Sea. Teaching includes the BLUE HORIZONS Summer Program for Environmental Media and the GreenScreen Environmental Media Program. Public programs range from a Conference on Media and the Environment to panels at the Santa Barbara International Film Festival on the greening of film and television production practices.
- OCTOS – the Marine Science Institute runs an educational program called the Outreach Center for Teaching Ocean Science that provides research lesson plans and projects for elementary and secondary school teachers. In addition, they provide touch tank tours and opportunities to get up close and personal with marine life. OCTOS will be housed in the new Ocean Science Education Center, an anticipated LEED-NC Gold building shared with the National Oceanic and Atmospheric Administration and the Channel Islands National Marine Sanctuary offices.
- Colloquia Series – the Bren School of Environmental Science and Management brings in world-renowned speakers from all facets of the environmental field. The colloquia are held in the evening, and the public is invited to attend.

Education, Research & Community Outreach Efforts

- Energy Leadership Lecture Series – The Institute for Energy Efficiency brings in world-renowned speakers who are leaders in the field of energy management and efficiency. The events are held in partnership with the Arts & Lectures department and are open to the public.
- Interdisciplinary Humanities Center – The IHC encourages interdisciplinary scholarship and instruction by supporting research projects, lectures, seminars, and conferences. In addition, the IHC seeks to broaden the traditional definition of humanistic endeavors by sponsoring activities in the performing and visual arts. By hosting a wide array of interdisciplinary programs and activities, the IHC also serves as a vital link between the campus and the community. For example, the 2008-2009 IHC lecture series theme was Food Matters, with topics that included food production and consumption, food as a commodity, the global food crisis, environmental aspects of food production, slow food, gardens, sustainability, farmers markets, diet and the cultural history of food.

Financing

VI. FINANCING

UCSB currently does not have a specified budget for sustainability and GHG emission reduction actions. In addition, due to the current economic state of the UC system, we will have limited funds and a probable staff shortage over the next several years. Therefore, the majority of the funds for mitigation projects will likely come from extramural sources and/or creative financing/partnerships. The following sources of funding are available, or are being considered for financing these actions.

- a. Strategic Energy Partnership – This is a UCOP partnership program with Southern California Edison (SCE) and Sempra Energy, the local investor owned utilities for the UCSB campus. This program provides for funding through UCOP and rebate funding by SCE for SEP projects. The current incentive for electricity savings is \$0.24/kWh for first year kWhs saved up to 80% of project value. The Southern California Gas incentive is \$1/therm saved up to 80% of the project value.

The UCOP has committed \$220 million over the next three years for SEP projects, and UCSB has identified \$16.9 million in potential energy projects on the SEP list.
- b. UC Funding – UC financing can be secured with energy cost savings or other income sources. There is a minimum project return requirement for University borrowed funds and Department of Finance approval is needed to allow for capital debt service to be paid with energy cost savings.
- c. The Green Initiative Fund - Smaller projects may be funded by The Green Initiative Fund (TGIF), a student fee-generated grant program that receives approximately \$150,000 annually. Students pay \$2.60 per quarter towards TGIF. Any student, staff, or faculty member of the University community can submit a project proposal to the TGIF Grants Making Committee. Projects funded to date include solar power projects, natural gas meters, an on-campus hourly rental ZipCar, and waterless urinals.
- d. Power Purchase Agreements – Power Purchase Agreements (PPAs) will be examined for installation of more photovoltaic arrays and Energy Service Companies (ESCOs) approached for various campus-wide energy reduction projects, including behavioral change programs – both of which provide initial capital for the University and are paid off with energy savings over time. An added advantage of these agreements is that, as a private enterprise, the third party provider is eligible for tax rebates that the University is not.
- e. Private Donors – It is anticipated that private donors will be interested in funding energy efficiency, renewable energy, and other GHG emissions reducing projects.

Financing

- f. California Programs – State agencies that have programs which already do or are expected to provide energy efficiency and climate action funding include the following:
- California Air Resources Board (CARB) – The final AB 32 Implementation Program is expected to collect revenues from GHG emissions producers through either a carbon fee or a cap and trade program. The use of these revenues has not been determined. UCSB recommends that the UCOP submit a recommendation to CARB to allocate a portion of revenues to energy efficiency projects in state funded buildings including the UC and state college campuses. Such an allocation will reduce GHG emissions as well as provide ongoing operating cost savings for the University, freeing up money for additional projects and education.
 - California Energy Commission (CEC) – The CEC provides funding through research grants and energy efficiency programs. The CEC will also be administering the American Recovery and Reinvestment Act funds for energy efficiency.
- g. Federal Programs – Federal government programs that can be used to provide funding for projects include:
- Federal Tax Credits – The federal government provides tax credits for solar energy systems, wind energy systems, fuel cells, and energy-efficient commercial buildings. These credits cannot be received by the University but can be received by a private sector third party owner.
 - Department of Energy – Research grants.
- h. New Construction – Several mitigations are related to standards for new buildings. These measures will be incorporated into the building design and the cost will be covered within the capital budget for each project.
- i. Capital Plan – Energy efficiency and GHG emission reduction projects can be included in the Capital Plan. This is a rolling five-year plan that addresses capital improvements for the campus. Projects can be moved into the plan depending on priority.
- j. Department budgets – Measures taken by individual departments can be funded within their department budgets.
- k. UCSB research projects – U.S. Department of Energy and other research grants may be sought to advance the technology for measures of a research nature, such as methane capture from coastal seeps.

Financing

- I. Account for cost of carbon – The cost of carbon will be assessed and included in the financial analysis of all projects with energy components. This will enhance the implementation of projects that reduce GHG.

Tracking Progress

VII. TRACKING PROGRESS

UCSB has established an Office of Sustainability and a Campus Sustainability Committee that direct and track progress on the Campus Sustainability Plan and this CAP. The Office of Sustainability is currently staffed by a Sustainability Coordinator who works under the Associate Vice Chancellor for Administrative Services. The Office produces a website (sustainability.ucsb.edu) and has overall responsibility for implementation of this CAP.

The Campus Sustainability Committee advises the Chancellor and campus administrators on matters of campus sustainability, makes recommendations on sustainability initiatives, helps prioritize and monitor the execution and progress of the Campus Sustainability Plan toward campus goals, makes recommendations on allocations of available funding resources, and provides guidance in the creation and fostering of alliances. The Committee will conduct an ongoing and thorough consultative process to solicit campus input in developing the vision to enhance the University's international leadership in this critically important area. These efforts will use the Campus Sustainability Plan and this CAP as blueprints for the campus's sustainability efforts.

In August 2010 and then annually thereafter, UCSB will report progress in implementing this CAP. This report will include an assessment of:

- Campus performance for the previous year including total GHG emissions, progress toward targets and GHG emissions metrics.
- Record of mitigations implemented, effectiveness of all mitigations and explanation of mitigations that were not implemented.
- Campus growth and operational changes that occurred in the reporting year.
- Proposed changes in the CAP to improve performance or respond to policy changes.

In August 2011 and then biennially thereafter, UCSB will submit a narrative progress report.

In addition, UCSB will continue to report GHG emissions information and planned reductions to the Association for Advancement of Sustainability in Higher Education (AASHE) through their website and an annual GHG emissions inventory to the California Climate Action Registry or The Climate Registry.

Several recommendations for improvements in data collection and management arose during the course of the preparation of the CAP:

Tracking Progress

- Implement a comprehensive submetering program to optimize the granularity of the collected data, enabling enhanced analysis of metrics, and mitigation effectiveness.
- Implement a GHG emissions database to manage GHG emissions data and enable multiple internal reporting formats.
- Develop an internal data management program to streamline data collection and enhance data quality.
- Perform an annual mode split transportation survey in order to track commuter emissions.
- Work with the Accounting Department to capture campus-related travel information in order to track Scope 3 emissions.

Conclusions and Recommendations

VIII. CONCLUSIONS AND RECOMMENDATIONS

The campus is on track to meet the 2014 and 2020 targets with implementation of currently planned energy efficiency and emission reduction measures. Current and anticipated economic conditions of the UC system will affect funding for implementation of many planned projects, which could in turn slow progress toward achieving the near-term targets. Additional unidentified measures will be needed to achieve carbon neutrality by 2050 and offsets may be required to meet this final target.

Even with current economic constraints, there are a number of no-cost and low cost measures that can be pursued. These include:

- Install energy efficiency technology with a payback of 1 year or less, such as motion sensors in classrooms and window film on select buildings.
- Develop and implement a campus-wide campaign to encourage behavioral changes to reduce energy usage, GHG emissions and costs to the university.
- Implement larger projects through performance contracts with private energy service companies (ESCO), whereby the ESCO provides the capital for a renewable energy or energy efficiency project and UCSB contracts to purchase power for a set period of time at a set price. These types of contracts enable the private third party to take advantage of tax savings and can be designed to allow for early buyout at a future date when capital may be more readily available to the university.
- Investigate external funding opportunities for energy efficiency, renewable energy and GHG emission reduction research and academic projects.

This CAP includes a very long list of potential emission reduction measures and new technology and opportunities are emerging daily. Clearly not all of these measures can or should be implemented. The following recommendations are made for future CAPs:

- Develop a set of criteria for assessing and ranking potential measures according to cost, effectiveness, feasibility and other factors. Use these criteria to categorize the measures in the CAP in terms of priority and benefit and include the results in the 2010 and future CAPs.

Conclusions and Recommendations

- Monitor developing and emerging technology through the collection of information from the internet, news sources, vendors and conferences. Review this information annually and assess applicability when preparing SEP and CAP updates.

Economic conditions will continue to cycle and new solutions will continue to emerge. It is essential that the university maintain a consistent effort with the flexibility to adjust to changing conditions in order to achieve the ultimate target of GHG neutrality by 2050.

Appendix A

UCSB Plans and Commitments

- Chronology of Events
- Related Campus Plans and Commitments

Chronology of Events

A brief timeline of sustainability at UCSB includes:

- 1970 Environmental Studies Program began
- 1986 Campus-wide building recycling program commenced.
- 1988 First campus Recycling Committee was formed by Vice Chancellor David Sheldon.
- 1990 Talloires Declaration signed
- 1994 School of Environmental Science & Management founded
- 1998 UCSB Energy Team efficiency measures began
- 2002 First LEED NC Platinum Award for Bren Hall (USGBC pilot)
- 2002 Central Campus Sustainability Committee formed
- 2002 Chancellor Henry T. Yang implemented USGBC LEED Silver for New Construction
- 2005 Baseline Campus Indicators created
- 2005 Joined the California Climate Action Registry
- 2006 Bren School Group Project – Changing the Campus Climate: Strategies for UCSB to Reduce Greenhouse Gas Emissions
- 2006 AB 32 – Global Warming Solutions Act of California
- 2006 LEED EB Silver Award for Girvetz Hall
- 2007 LEED NC Certified Marine Science Research Building
- 2007 Joined APUPCC
- 2007 UCOP Climate Protection Practices
- 2007 Pilot LEED Portfolio Program
- 2008 Campus Sustainability Plan approved by Chancellor
- 2008 Associate Vice Chancellor for Sustainability Hired
- 2008 Chancellor's Campus Sustainability Committee appointed
- 2008 LEED EB Silver Award for Recreation Center
- 2008 LEED NC Silver Award for Student Resources Building
- 2009 LEED NC Gold Award for San Clemente Villages Graduate Housing

Table A-1 Related Campus Plans and Commitments as of March 2009

Plan	Description	Latest Version
Campus Sustainability Plan	A dynamic document intended to provide a roadmap for major steps toward achieving sustainability over the next 20 years.	April, 2008, Working Document (http://sustainability.ucsb.edu/plan/)
Long Range Development Plan, Vision 2025	Encompasses the physical development, land use, transportation systems, open space areas, and infrastructure needed to achieve the academic goals of the campus through year 2025.	2008 Draft EIR. (http://www.ucsbvision2025.com)
Long Range Development Plan, Draft EIR	Evaluates and discloses environmental impacts of the LRDP as required by the California Environmental Quality Act. Includes mitigation measures that will reduce GHG emissions	Recirculated Draft EIR, Vol. 2 dated February 2009. (http://www.ucsbvision2025.com)
Strategic Academic Plan 2007 – 2025	The SAP guides the LRDP for the next phase in UCSB's development and identifies strengths and opportunities as well as broad challenges that the campus faces. Once the LRDP is approved, then implementation of the broad goals of the SAP will be driven by the creative and entrepreneurial skills of the faculty and enabled by the administration.	This document is not dated. (http://evc.ucsb.edu/strategic.academic.plan/Academic_Plan_2007-2025.pdf)
Ellwood-Devereux Coast Open Space and Habitat Management Plan and EIRs	Collaboration between City of Goleta, UCSB, and County of Santa Barbara to comprehensively plan the land use of the Ellwood-Devereux Coast to reduce the amount of residential development, relocate development to inland locations away from sensitive coastal resources, and establish a 652—acre contiguous area along the coast that includes open space and natural reserves managed for public access and natural resource protection.	<ul style="list-style-type: none"> • Draft Plan dated March 2004. • Comstock Homes Development and Ellwood Mesa Open Space Plan Final EIR (NOD dated 8/8/06) • Faculty and Family Student Housing, Open Space Plan and LRDP Amendment Final EIR (most recent relevant NOD is dated 9/19/07) • Ocean Meadows Residences and Open Space Plan Final EIR (10/7/05) (http://facilities.ucsb.edu/departments/campus_planning_irdp/ellwood/reports/default.asp)

Plan	Description	Latest Version
AB32 Global Warming Solutions Act of 2006	In response to Governor Schwarzenegger's Executive Order (S-3-05), the California Global Warming Solutions Act (Assembly Bill 32) was adopted in 2006. The law requires the CARB to adopt rules and regulations that would reduce greenhouse gas emissions statewide to 1990 levels by the year 2020.	AB-32 approved on September 27, 2006. (http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf) The climate change section of the UC Policy on Sustainable Practices (March 2007) is consistent with AB-32.
AB 32 Scoping Plan	The AB 32 Scoping Plan contains the main strategies California will use to reduce greenhouse gases (GHG) that cause climate change. The Scoping Plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an administration fee to fund the program.	These measures have been introduced through four workshops between November 30, 2007 and April 17, 2008. A draft Scoping Plan was released for public review and comment on June 26, 2008 followed by more workshops in July and August, 2008. The Proposed Scoping Plan was released on October 15, 2008 and approved at the Board hearing on December 12, 2008. (http://www.arb.ca.gov/cc/scopingplan/scopingplan.htm)
American College & University Presidents Climate Commitment (ACUPCC)	The ACUPCC is a high-visibility effort by college and university presidents to address global warming. Signatories commit to eventually neutralize their institution's greenhouse gas emissions, and to help accelerate the research and educational efforts of higher education to equip society to re-stabilize the Earth's climate.	UC signed the ACUPCC on March 15, 2007. (http://www.presidentsclimatecommitment.org/)
Sustainability Tracking, Assessment & Rating System (STARS)	STARS is a collaborative effort to develop a formal classification system for campus sustainability, with guidelines by which institutions may measure themselves and qualify for different levels of recognition of accomplishment. The Association for the Advancement of Sustainability in Higher Education (AASHE) operates the STARS program and, in partnership with Second Nature and ecoAmerica, is providing implementation and administrative support for the ACUPCC initiative as well.	UCSB participated in STARS pilot program between February and December 2008. (http://www.aashe.org/)

Plan	Description	Latest Version
California Climate Action Registry (CCAR)	CCAR is a private non-profit organization originally formed by the State of California. The CCAR has served as a voluntary greenhouse gas (GHG) registry to protect and promote early actions to reduce GHG emissions by organizations. CCAR has been a leader in developing and promoting credible, accurate, and consistent GHG reporting standards and tools for organizations to measure, monitor, third-party verify and reduce their GHG emissions consistently across industry sectors and geographical borders. They are in the process of transferring all GHG inventory reporting and verification to the Climate Registry.	UCSB has reported GHG emissions to CCAR annually since 2004.
The Climate Registry (TCR)	The Climate Registry is a nonprofit collaboration among North American states, provinces, territories and Native Sovereign Nations that sets consistent and transparent standards to calculate, verify and publicly report greenhouse gas emissions into a single registry.	UCSB can begin reporting GHG emissions to TCR with the 2008 reporting year.
Association for the Advancement of Sustainability in Higher Education (AASHE)	The Association for the Advancement of Sustainability in Higher Education (AASHE) operates the STARS program and, in partnership with Second Nature and ecoAmerica, is providing implementation and administrative support for the ACUPCC initiative as well.	(http://www.aashe.org/)
U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED)	LEED is a third-party certification program and the nationally accepted benchmark for the design, construction and operation of high performance green buildings.	<ul style="list-style-type: none"> • Bren Hall (2002) was first laboratory building in US to achieve NC-Platinum certification. • Grivetz Hall (2004) was first building in the UC to achieve EB-Silver certification. • UCSB implemented NC-Silver as a minimum standard in 2004. (http://www.usgbc.org) • MSRB certification, 2007. • SRB, Silver 2008. • Recreation Center, Silver 2008. • San Clemente, Gold 2009.

Plan	Description	Latest Version
Talloires Declaration	Composed in 1990 at an international conference in Talloires, France, this is the first official statement made by university administrators of a commitment to environmental sustainability in higher education. The Talloires Declaration (TD) is a ten-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities. It has been signed by over 350 university presidents and chancellors in over 40 countries.	Signed by UCSB chancellor in 1990. (http://www.ulsf.org/programs_talloires.html)

Appendix B

Campus Emissions Data & Information

- Historical Data Charts
- Historical Data Spreadsheet
- Estimated Greenhouse Gas Emissions for 1990 and 2000
- Data from All Buildings List and Historical Electricity and Gas
- Main Campus Residential and Non-Residential Electricity Usage per GSF
- Main Campus Residential and Storke GSF Data
- UCSB Personnel Headcounts 1990-2007
- UCSB Student Headcount by Level and Location
- UCSB Annual Emissions Report

Appendix B - Historical Data

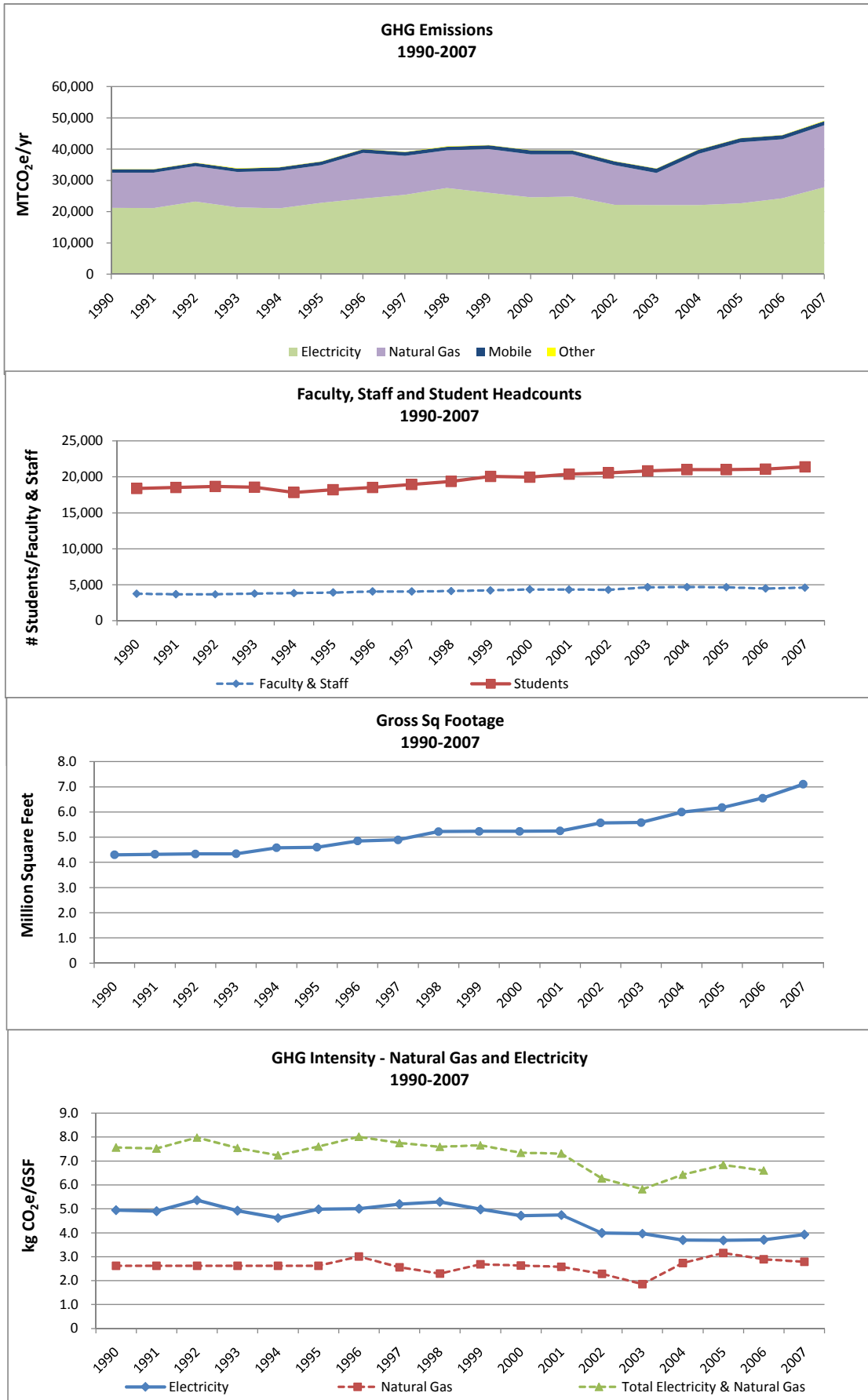


Table B-1 Historical Data

Year	HISTORICAL ACTIVITY						Intensities per GSF				Emissions (MTCO ₂ e/yr)				
	Faculty & Staff	Students	Faculty, Staff and Students	Gross Sq Footage	Electricity (kWh)	Natural Gas (Therms)	kWh / GSF	Therms / GSF	Electricity CO ₂ e/GSF	Natural Gas kg CO ₂ e/GSF	Electricity	Natural Gas	Mobile	Other	Total
1990	3,745	18,391	22,136	4,298,957	71,525,517	2,116,054	16.6	0.492	4.95	2.62	21,266	11,261	1,051	95	33,672
1991	3,674	18,519	22,193	4,322,558	71,279,815	2,127,671	16.5	0.492	4.90	2.62	21,193	11,322	1,031	95	33,641
1992	3,670	18,655	22,325	4,338,163	78,208,858	2,135,352	18.0	0.492	5.36	2.62	23,253	11,363	1,030	95	35,741
1993	3,777	18,581	22,358	4,342,776	71,979,948	2,137,623	16.6	0.492	4.93	2.62	21,401	11,375	1,060	95	33,931
1994	3,842	17,834	21,676	4,577,702	71,061,519	2,253,260	15.5	0.492	4.62	2.62	21,128	11,991	1,078	95	34,292
1995	3,922	18,224	22,146	4,597,975	77,046,876	2,263,238	16.8	0.492	4.98	2.62	22,908	12,044	1,100	95	36,147
1996	4,075	18,531	22,606	4,847,068	81,647,697	2,739,636	16.8	0.565	5.01	3.01	24,276	14,579	1,143	95	40,093
1997	4,070	18,940	23,010	4,893,283	85,575,170	2,347,808	17.5	0.480	5.20	2.55	25,443	12,494	1,142	95	39,174
1998	4,124	19,363	23,487	5,225,527	93,022,010	2,258,103	17.8	0.432	5.29	2.30	27,657	12,016	1,157	95	40,926
1999	4,219	20,056	24,275	5,232,207	87,665,808	2,635,561	16.8	0.504	4.98	2.68	26,065	14,025	1,184	95	41,369
2000	4,341	19,962	24,303	5,232,207	83,014,664	2,582,109	15.9	0.494	4.72	2.63	24,682	13,741	1,218	95	39,736
2001	4,321	20,373	24,694	5,249,717	83,727,783	2,538,643	15.9	0.484	4.74	2.57	24,894	13,509	1,212	95	39,711
2002	4,300	20,559	24,859	5,569,405	74,795,185	2,385,464	13.4	0.428	3.99	2.28	22,238	12,694	1,207	95	36,234
2003	4,658	20,847	25,505	5,584,529	74,485,993	1,942,212	13.3	0.348	3.97	1.85	22,146	10,335	1,307	95	33,884
2004	4,685	21,026	25,711	5,994,850	74,539,854	3,077,999	12.4	0.513	3.70	2.73	22,162	16,380	1,311	95	39,948
2005	4,659	21,016	25,675	6,173,389	76,471,456	3,659,474	12.4	0.593	3.68	3.15	22,737	19,474	1,289	95	43,594
2006	4,489	21,082	25,571	6,551,064	81,719,113	3,559,711	12.5	0.543	3.71	2.89	24,297	18,943	1,220	95	44,555
2007	4,605	21,410	26,015	7,104,281	93,831,933	3,715,920	13.2	0.523	3.93	2.78	27,898	19,774	1,355	95	49,122
Percent increase (1990 to 2007):			18%	65%		Average	15.4	0.492			4,253	2,252	210	19	6,734
						St Dev	13%	13%		80% Below 1990					

*1990-1995 Natural Gas Usage was estimated

Table B-2 Emission Factors

Item	Natural Gas kg/MMBtu	Electricity lbs/MWh eGRID	Electricity lbs/MWh SCE
CH ₄	0.0059	0.0067	0.0067
N ₂ O	0.0001	0.0037	0.0037
CO ₂	53.06	878.71	654.19
CH ₄ GWP	21	21	21
N ₂ O	310	310	310
CO ₂ e	5.32	0.880	0.655
	kg/therm	lbs/kWh	lbs/kWh
Therms/MMBtu	10		
kWh/MWh		1000	1000
kg/Btu	5.32E-05		
Source	CCAR GRP 3.1	CCAR GRP 3.0	SCE CCAR 2004-2007

Table B-3 Average SCE CO₂ Emission Factor

SCE	CCAR Factor lbs/MWh	CCAR Factor MT/MWh	% less than eGRID
2004	678.88	0.308	23%
2005	665.72	0.302	24%
2006	641.26	0.291	27%
2007	630.89	0.286	28%
Average	654.19	0.297	
Std Dev.	3.36%	3.36%	

*eGRID 878.71

Mobile source emissions intensity:
0.281 MTCO₂e per faculty and staff
headcount (Based on 2004-2007 data)

Table B-4 Estimated Greenhouse Gas Emissions for 1990 and 2000

Source	Estimated		Calculated	MTCO ₂ e Change		% Change	
	1990	2000	2007	1990-2007	2000-2007	1990-2007	2000-2007
Mobile Combustion	1,051	1,218	1,355	304	137	29%	11%
Stationary Combustion	11,261	13,741	19,774	8,514	6,034	76%	44%
Other Direct Emissions	95	95	95				
Direct Emissions Subtotal (Scope 1)	12,406	15,054	21,224	8,818	6,170	71%	41%
Indirect Electricity (Scope 2)	21,266	24,682	27,898	6,632	3,216	31%	13%
Air Travel and Commutes (Scope 3)	NR	NR	NR				
De Minimis Emissions	NR	NR	12				
TOTAL GHG EMISSIONS	33,672	39,736	49,135	15,462	9,399	46%	24%

*NR=Not Reported

Basis for 1990 and 2000 estimates:

- Electricity - Actual usage and SCE CCAR factor for 2007.
- Natural Gas - Estimated usage based on avg therms/GSF for 1995-2007 and CCAR GRP 3.1 emission factors.
- Mobile Combustion - Estimated based on actual Faculty and Staff and avg Tons GHG/Faculty and Staff for 2004-2007.

Basis for 2007 Emissions:

- Electricity - Actual usage and SCE CCAR factor for 2007.

Other direct emissions include:

- Stationary diesel and fugitive sources.

Table B-5 Data From All Buildings List and Historical Electricity and Gas

Year	Gross Area (GSF)	Cumulative GSF	Natural Gas (Therms)	Electricity (kWh)	Natural Gas (CO ₂ e) Mt	Electricity (CO ₂ e)	Total CO ₂ e (Mt)	Natural Gas GHG/sf	Electricity GHG/sf	Total GHG/sf
1990	4,298,957	4,298,957		71,525,517	11,261	21,266	32,527	0.00262	0.00495	0.00757
1991	23,601	4,322,558		71,279,815	11,322	21,193	32,515	0.00262	0.00490	0.00752
1992	15,605	4,338,163		78,208,858	11,363	23,253	34,616	0.00262	0.00536	0.00798
1993	4,613	4,342,776		71,979,948	11,375	21,401	32,777	0.00262	0.00493	0.00755
1994	234,926	4,577,702		71,061,519	11,991	21,128	33,119	0.00262	0.00462	0.00723
1995	20,273	4,597,975		77,046,876	12,044	22,908	34,952	0.00262	0.00498	0.00760
1996	249,093	4,847,068	2,739,636	81,647,697	14,579	24,276	38,855	0.00301	0.00501	0.00802
1997	46,215	4,893,283	2,347,808	85,575,170	12,494	25,443	37,937	0.00255	0.00520	0.00775
1998	332,244	5,225,527	2,258,103	93,022,010	12,016	27,657	39,674	0.00230	0.00529	0.00759
1999	6,680	5,232,207	2,635,561	87,665,808	14,025	26,065	40,090	0.00268	0.00498	0.00766
2000	6,680	5,232,207	2,582,109	83,014,664	13,741	24,682	38,423	0.00263	0.00472	0.00734
2001	17,510	5,249,717	2,538,643	83,727,783	13,509	24,894	38,403	0.00257	0.00474	0.00732
2002	319,688	5,569,405	2,385,464	74,795,185	12,694	22,238	34,932	0.00228	0.00399	0.00627
2003	15,124	5,584,529	1,942,212	74,485,993	10,335	22,146	32,482	0.00185	0.00397	0.00582
2004	410,321	5,994,850	3,077,999	74,539,854	16,380	22,162	38,542	0.00273	0.00370	0.00643
2005	178,539	6,173,389	3,659,474	76,471,456	19,474	22,737	42,210	0.00315	0.00368	0.00684
2006	377,675	6,551,064	3,559,711	81,719,113	18,943	24,297	43,240	0.00289	0.00371	0.00660
2007	553,217	7,104,281	3,715,920	93,831,933	19,774	27,898	47,672	0.00278	0.00393	0.00671

*1990-1995 Natural Gas Usage was estimated

Table B-6 Emission Factors

Item	kg/MMBtu	Electricity lbs/MWh SCE
CH ₄	0.0059	0.0067
N ₂ O	0.0001	0.0037
CO ₂	53.06	654.19
CH ₄ GWP	21	21
N ₂ O GWP	310	310
CO₂e	5.32	0.655
	kg/therm	lbs/kWh
Therms/MMBtu	10	
kWh/MWh		1000
kg/Btu	5.32E-05	

Table B-7 Statistical Analysis of GHG Intensities

Item	Natural Gas GHG/sf	Electricity GHG/sf	Total GHG/sf
Avg	0.00262	0.00459	0.00721
StDev	0.00035	0.00063	0.00068
StDev/Avg	13%	14%	9%

Table B-8 Main Campus Residential and Non Residential Electricity & Natural Gas Usage per GSF

Year	Electricity			Natural Gas			Total Electricity &
	kWh/yr	kWh/GSF	kg/GSF	Therms/yr	Therms/GSF	kg/GSF	kg/GSF
1996	6,768,980	4.25	1.263	No Data	No Data	No Data	No Data
1997	6,952,970	4.36	1.297	325,707	0.204	1.087	2.384
1998	7,010,480	4.40	1.308	315,510	0.198	1.053	2.361
1999	6,931,200	4.35	1.293	392,019	0.246	1.308	2.601
2000	7,124,800	4.47	1.329	383,439	0.241	1.280	2.609
2001	6,821,640	4.28	1.272	445,625	0.280	1.487	2.760
2002	7,560,966	4.74	1.410	410,256	0.257	1.369	2.780
2003	8,308,755	5.21	1.550	464,276	0.291	1.550	3.099
	Average	4.51	1.340	Average	0.245	1.305	2.656

Residential GSF Total 1,593,982

Table B-9 Non-Residential Energy Use Main and Storke

Year	Electricity				Natural Gas				Total Electricity &
	kWh/yr	GSF	kwh/GSF	kg/GSF	Therms	GSF	Therms/GSF	kg/GSF	kg/GSF
1996	73,472,022								
1997	77,124,432				2,408,870				
1998	84,523,121				2,329,064				
1999	79,297,761				2,702,561				
2000	74,257,065				2,696,273				
2001	75,308,365				2,632,578				
2002	65,926,745				2,468,543				
2003	64,926,628	3,690,993	17.59	5.23	2,023,887	3,690,993	0.55	2.92	8.14
2007	80,921,691	4,874,375	16.60	4.93	2,910,000	4,874,375	0.60	3.18	8.11
		Average	17.10	5.08		Average	0.573	3.047	8.13

Table B-10 Main Campus Residential and Storke GSF Data

Bldg Code	Bldg Name	Campus Region	Bldg Category (G = General) (R = Residential)	Date Built	Date Occupied	Date	Floor Count	Calif Gross Area	Assignable Area	Residential (GSF)	Residential (ASF)	General (GSF)	General (ASF)
553	SAN MIGUEL	MAIN	R	1/1/1962	51963	4/19/1963	10	86,990	50,192	86,990	50,192		
527	SANTA ROSA	MAIN	R	1/1/1954	101955	10/19/1955	2	86,334	55,038	86,334	55,038		
561	SAN NICOLAS	MAIN	R	1/1/1964	101965	10/19/1965	10	85,474	50,625	85,474	50,625		
548	SANTA CRUZ	MAIN	R	1/1/1958	121959	12/19/1959	2	79,005	50,476	79,005	50,476		
547	ANACAPA	MAIN	R	1/1/1958	91959	9/19/1959	2	79,004	53,509	79,004	53,509		
586	SAN RAFAEL W	MAIN	R	1/1/1967	11969	1/19/1969	9	68,296	41,831	68,296	41,831		
587	SAN RAFAEL M	MAIN	R	1/1/1967	11969	1/19/1969	3	54,097	40,282	54,097	40,282		
549	DE LA GUERRA	MAIN	R	1/1/1958	21960	2/19/1960	2	34,082	27,526	34,082	27,526		
542	ORTEGA	MAIN	R	1/1/1956	121957	12/19/1957	2	25,230	19,580	25,230	19,580		
562	CARRILLO COM	MAIN	R	1/1/1967	11969	1/19/1969	3	24,495	16,657	24,495	16,657		
878	CIENEGA	MAIN	R	8/4/2002	92002	9/20/2002	4	14,926	9,249	14,926	9,249		
881	MIRANDA	MAIN	R	8/4/2002	92002	9/20/2002	3	14,224	11,310	14,224	11,310		
891	CUYAMA	MAIN	R	8/4/2002	92002	9/20/2002	4	13,992	11,690	13,992	11,690		
890	PENDOLA	MAIN	R	8/4/2002	92002	9/20/2002	4	13,206	9,815	13,206	9,815		
880	ARGUELLO	MAIN	R	8/4/2002	92002	9/20/2002	4	11,884	9,151	11,884	9,151		
884	LA CUMBRE	MAIN	R	8/4/2002	92002	9/20/2002	4	11,801	8,827	11,801	8,827		
879	JALAMA	MAIN	R	8/4/2002	92002	9/20/2002	4	11,439	9,181	11,439	9,181		
889	CAMUESA	MAIN	R	8/4/2002	92002	9/20/2002	3	11,391	9,075	11,391	9,075		
886	TEPUSQUET	MAIN	R	8/4/2002	92002	9/20/2002	3	11,074	8,848	11,074	8,848		
892	MADULCE	MAIN	R	8/4/2002	92002	9/20/2002	3	10,869	8,522	10,869	8,522		
875	DE ANZA	MAIN	R	8/4/2002	92002	9/20/2002	3	10,821	6,862	10,821	6,862		
883	CONDOR	MAIN	R	8/4/2002	92002	9/20/2002	3	10,646	8,443	10,646	8,443		
877	TECOWOTE	MAIN	R	8/10/2002	92002	9/20/2002	3	10,462	6,592	10,462	6,592		
888	ZACA	MAIN	R	8/4/2002	92002	9/20/2002	3	10,314	8,622	10,314	8,622		
882	GAVIOTA	MAIN	R	8/4/2002	92002	9/20/2002	3	10,211	8,467	10,211	8,467		
885	MONTECITO	MAIN	R	8/8/2002	92002	9/20/2002	3	10,197	8,527	10,197	8,527		
887	RINCON	MAIN	R	8/4/2002	92002	9/20/2002	3	10,183	8,449	10,183	8,449		
893	FIGUEROA	MAIN	R	8/4/2002	92002	9/20/2002	3	10,157	8,467	10,157	8,467		
543	UNIV HOUSE	MAIN	R	1/1/1964	91964	9/19/1964	1	5,980	4,655	5,980	4,655		
530	CENTEN HSE	MAIN	R	1/1/1968	11969	1/19/1969	1	1,084	812	1,084	812		
860	SANTA CATALINA	MAIN	R	1/1/1971	71971	7/19/1971	1	428	334	428	334		
827	SY APT 827	STORKE	R	12/30/1966	92004	9/20/2004	10	251,624	200,880	251,624	200,880		
825	SY APTS 825	STORKE	R	1/1/1980	81980	8/19/1980	2	12,349	10,204	12,349	10,204		
821	SY APTS 821	STORKE	R	1/1/1980	81980	8/19/1980	2	12,281	10,160	12,281	10,160		
797	STK APT 797	STORKE	R	1/1/1980	81980	8/19/1980	2	11,644	9,588	11,644	9,588		
819	SY APTS 819	STORKE	R	1/1/1980	81980	8/19/1980	2	11,644	9,588	11,644	9,588		
820	SY APTS 820	STORKE	R	1/1/1980	81980	8/19/1980	2	11,644	9,588	11,644	9,588		
761	STK APT 761	STORKE	R	1/1/1972	81972	8/19/1972	3	10,489	8,774	10,489	8,774		
767	STK APT 767	STORKE	R	1/1/1972	81972	8/19/1972	3	10,240	9,028	10,240	9,028		
769	STK APT 769	STORKE	R	1/1/1972	81972	8/19/1972	3	10,227	9,000	10,227	9,000		
768	STK APT 768	STORKE	R	1/1/1972	81972	8/19/1972	3	10,227	9,000	10,227	9,000		
770	STK APT 770	STORKE	R	1/1/1972	81972	8/19/1972	3	10,227	9,000	10,227	9,000		
766	STK APT 766	STORKE	R	1/1/1972	81972	8/19/1972	3	10,198	9,020	10,198	9,020		
812	SY APTS 812	STORKE	R	1/1/1980	81980	8/19/1980	2	10,183	8,449	10,183	8,449		
828	SY APT 828	STORKE	R	1/1/1986	71986	7/19/1986	2	11,644	9,588	11,644	9,588		
784	STK APT 784	STORKE	R	1/1/1972	81972	8/19/1972	3	11,245	9,168	11,245	9,168		
780	STK APT 780	STORKE	R	1/1/1972	81972	8/19/1972	3	9,385	8,268	9,385	8,268		
781	STK APT 781	STORKE	R	1/1/1972	81972	8/19/1972	3	9,385	8,268	9,385	8,268		
759	STK APT 759	STORKE	R	1/1/1972	81972	8/19/1972	3	9,382	8,260	9,382	8,260		
816	SY APTS 816	STORKE	R	1/1/1980	81980	8/19/1980	2	8,690	7,184	8,690	7,184		
762	STK APT 762	STORKE	R	1/1/1972	81972	8/19/1972	3	8,542	7,500	8,542	7,500		
763	STK APT 763	STORKE	R	1/1/1972	81972	8/19/1972	3	8,542	7,500	8,542	7,500		
764	STK APT 764	STORKE	R	1/1/1972	81972	8/19/1972	3	8,542	7,500	8,542	7,500		
777	STK APT 777	STORKE	R	1/1/1972	81972	8/19/1972	3	8,528	7,510	8,528	7,510		
765	STK APT 765	STORKE	R	1/1/1972	81972	8/19/1972	3	8,527	7,510	8,527	7,510		
787	STK APT 787	STORKE	R	1/1/1972	81972	8/19/1972	3	8,527	7,510	8,527	7,510		
806	SY APTS 806	STORKE	R	1/1/1980	81980	8/19/1980	2	8,468	7,008	8,468	7,008		
813	SY APTS 813	STORKE	R	1/1/1980	81980	8/19/1980	2	8,399	6,962	8,399	6,962		
814	SY APTS 814	STORKE	R	1/1/1980	81980	8/19/1980	2	8,413	6,954	8,413	6,954		
805	SY APTS 805	STORKE	R	1/1/1980	81980	8/19/1980	2	7,763	6,392	7,763	6,392		
807	SY APTS 807	STORKE	R	1/1/1980	81980	8/19/1980	2	7,763	6,392	7,763	6,392		
826	SY APT 826	STORKE	R	1/1/1986	71986	7/19/1986	2	7,763	6,392	7,763	6,392		
771	STK APT 771	STORKE	R	1/1/1972	81972	8/19/1972	3	7,705	6,750	7,705	6,750		
773	STK APT 773	STORKE	R	1/1/1972	81972	8/19/1972	3	7,705	6,750	7,705	6,750		
775	STK APT 775	STORKE	R	1/1/1972	81972	8/19/1972	3	7,688	6,750	7,688	6,750		
785	STK APT 785	STORKE	R	1/1/1972	81972	8/19/1972	3	7,688	6,750	7,688	6,750		
782	STK APT 782	STORKE	R	1/1/1972	81972	8/19/1972	3	7,677	6,768	7,677	6,768		
783	STK APT 783	STORKE	R	1/1/1972	81972	8/19/1972	3	7,677	6,768	7,677	6,768		
794	STK APT 794	STORKE	R	1/1/1982	11982	1/19/1982	2	7,559	6,148	7,559	6,148		
795	STK APT 795	STORKE	R	1/1/1982	11982	1/19/1982	2	7,559	6,148	7,559	6,148		
798	STK APT 798	STORKE	R	1/1/1982	11982	1/19/1982	2	7,559	6,148	7,559	6,148		
792	STK APT 792	STORKE	R	1/1/1972	81972	8/19/1972	3	6,865	6,010	6,865	6,010		
760	STK APT 760	STORKE	R	1/1/1972	81972	8/19/1972	3	6,843	6,010	6,843	6,010		
779	STK APT 779	STORKE	R	1/1/1972	81972	8/19/1972	3	6,819	6,010	6,819	6,010		
788	STK APT 788	STORKE	R	1/1/1972	81972	8/19/1972	3	6,819	6,010	6,819	6,010		
789	STK APT 789	STORKE	R	1/1/1972	81972	8/19/1972	3	6,819	6,010	6,819	6,010		
811	SY APTS 811	STORKE	R	1/1/1980	81980	8/19/1980	2	6,607	5,578	6,607	5,578		
830	SY APT 830	STORKE	R	1/1/1986	71986	7/19/1986	2	6,607	5,578	6,607	5,578		
822	SY APTS 822	STORKE	R	1/1/1980	81980	8/19/1980	2	5,971	5,006	5,971	5,006		
796	STK APT 796	STORKE	R	1/1/1982	11982	1/19/1982	2	5,641	4,638	5,641	4,638		
758	STK APT 758	STORKE	R	1/1/1972	81972	8/19/1972	2	4,255	3,750	4,255	3,750		
776	STK APT 776	STORKE	R	1/1/1972	81972	8/19/1972	2	4,255	3,750	4,255	3,750		
793	STK APT 793	STORKE	R	1/1/1972	81972	8/19/1972	3	4,233	3,760	4,233	3,760		
774	STK APT 774	STORKE	R	1/1/1972	81972	8/19/1972	2	3,401	3,010	3,401	3,010		
790	STK APT 790	STORKE	R	1/1/1972	81972	8/19/1972	2	3,401	3,010	3,401	3,010		
791	STK APT 791	STORKE	R	1/1/1972	81972	8/19/1972	2	3,401	3,010	3,401	3,010		
832	SY SHOP832	STORKE	R	1/1/1986	71986	7/19/1986	1	3,299	2,932	3,299	2,932		
818	SY OFF SHOP	STORKE	R	1/1/1980	81980	8/19/1980	1	2,890	2,366	2,890	2,366		
809	SY APTS 809	STORKE	R	1/1/1980	81980	8/19/1980	1	2,726	2,382	2,726	2,382		
772	STK APT 772	STORKE	R	1/1/1972	81972	8/19/1972	2	2,562	2,250	2,562	2,250		
817	SY LAUNDRY	STORKE	R	1/1/1980	81980	8/19/1980	1	2,085	1,709	2,085	1,709		
786	STK SERV 786	STORKE	R	1/1/1972	81972	8/19/1972	1	1,438	1,335	1,438	1,335		
808	SY ACTIV 808	STORKE	R	1/1/1980	81980	8/19/1980	1	1,205	1,058	1,205	1,058		
815	SY ACTIV 815	STORKE	R	1/1/1980	81980	8/19/1980	1	1,205	1,058	1,205	1,058		
823	SY ACTIV 823	STORKE	R	1/1/1980									

Table B-11 UCSB Personnel Headcounts 1990-2007

Year	Faculty	Other Academic Staff	SMG/ MSP Staff	PSS Staff (excluding students)	Total (excluding students)
1990*	825	400	127	2,393	3,745
1991*	786	382	135	2,371	3,674
1992*	782	379	146	2,363	3,670
1993*	850	368	157	2,402	3,777
1994*	829	395	158	2,460	3,842
1995	849	423	161	2,489	3,922
1996	861	449	164	2,601	4,075
1997	901	463	163	2,543	4,070
1998	938	444	179	2,563	4,124
1999	933	531	192	2,563	4,219
2000	963	527	184	2,667	4,341
2001	997	556	204	2,564	4,321
2002	1,036	614	233	2,417	4,300
2003	1,035	637	251	2,735	4,658
2004	1,054	626	270	2,735	4,685
2005	1,066	623	284	2,686	4,659
2006	1,080	637	317	2,455	4,489
2007	1,084	664	343	2,514	4,605

* Non-student staff counts for 1990 through 1995 are estimates. Count data in UCOP reports on the time do not differentiate between non-student and student staff in those years. Estimates of non-student staff were derived based on actual observed data in 1995-96 and 1996-97.

Table B-12 UCSB Student Headcount by Level and Location

Fall Quarter	On-Campus			Off-Campus ¹			Total Campus		
	Undergraduate	Graduate	Total	Undergraduate	Graduate	Total	Undergraduate	Graduate	Total
1990	15,747	2,380	18,127	228	36	264	15,975	2,416	18,391
1991	15,941	2,305	18,246	235	38	273	16,176	2,343	18,519
1992	16,007	2,348	18,355	270	30	300	16,277	2,378	18,655
1993	16,067	2,220	18,287	264	30	294	16,331	2,250	18,581
1994	15,337	2,278	17,615	188	31	219	15,525	2,309	17,834
1995	15,728	2,259	17,987	206	31	237	15,934	2,290	18,224
1996	16,087	2,234	18,321	194	16	210	16,281	2,250	18,531
1997	16,468	2,206	18,674	236	30	266	16,704	2,236	18,940
1998	16,777	2,282	19,059	282	22	304	17,059	2,304	19,363
1999	17,365	2,335	19,700	334	22	356	17,699	2,357	20,056
2000	17,164	2,408	19,572	374	16	390	17,538	2,424	19,962
2001	17,262	2,628	19,890	462	21	483	17,724	2,649	20,373
2002	17,250	2,822	20,072	464	23	487	17,714	2,845	20,559
2003	17,274	2,998	20,272	570	5	575	17,844	3,003	20,847
2004	17,553	2,891	20,444	568	14	582	18,121	2,905	21,026
2005	17,454	2,928	20,382	623	11	634	18,077	2,939	21,016
2006	17,581	2,862	20,443	631	8	639	18,212	2,870	21,082
2007	17,746	2,980	20,726	669	15	684	18,415	2,995	21,410
2008	18,283	2,967	21,250	609	9	618	18,892	2,976	21,868

¹ Includes students enrolled in Education Abroad, Ventura Center, UCDC and Intercampus Exchange.

Annual Emissions Report

University of California, Santa Barbara

(Emissions from California operations)



Report Generated On: 03/11/2009 12:31 pm PT

Santa Barbara, CA 93106 United States

sustainability.ucsb.edu

805-893-8367

jill.richardson@vcadmin.ucsb.edu

Contact: Jill Richardson

Industry Type: Education - University

NAIC Code:

SIC Code:

Description: University of California Santa Barbara is a 1,055 acre campus with many types of buildings such as administration, light and heavy research, as well as campus housing, residence halls, and off-campus reserves.

Primary Calculation

Methodologies:

Organizational

structure disclosure:

Legend	
Blue	= required
Orange	= optional

VERIFIED EMISSIONS INFORMATION

Reporting Year: **2007**
 Reporting Scope: **CA**
 Reporting Protocol: General Reporting Protocol, Version 3.0, (April 2008)
 Reporting Boundaries: Management Control - Operational Criteria
 Baseline Year (Direct Emissions):
 Baseline Year (Indirect Emissions):

Direct Emissions	CO2e	CO2	CH4	N2O	HFCs*	PFCs*	SF6	Unit
Mobile Combustion	1,359.26	1,350.36	0.20	0.02	0.00	0.00	0.00	metric ton
Stationary Combustion	19,858.05	19,799.99	2.20	0.04	0.00	0.00	0.00	metric ton
Process Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
Fugitive Emissions	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
TOTAL DIRECT	21,217.31	21,150.35	2.40	0.05	0.00	0.00	0.00	metric ton

* HFCs and PFCs are classes of greenhouse gases that include many compounds. These columns may reflect the total emissions of multiple HFC and PFC compounds, each of which has a unique Global Warming Potential (GWP). Emissions of each gas are first multiplied by their respective GWP and then summed in the total CO2-equivalent column.

Indirect Emissions	CO2e	CO2	CH4	N2O	Unit
Purchased Electricity	37,454.18	37,399.37	0.29	0.16	metric ton
Purchased Steam	0.00	0.00	0.00	0.00	-
Purchased Heating and Cooling	0.00	0.00	0.00	0.00	-
TOTAL INDIRECT	37,454.18	37,399.37	0.29	0.16	metric ton

De Minimis Emissions	CO2e	CO2	CH4	N2O	HFCs*	PFCs*	SF6	Unit
TOTAL DEMINIMIS	12.18	0.00	0.00	0.00	0.01	0.00	0.00	metric ton

Percentage of Total Inventory: 0.02 %

Annual Emissions Report

University of California, Santa Barbara

(Emissions from California operations)



Report Generated On: 03/11/2009 12:31 pm PT

VERIFICATION INFORMATION

Verification Body: Ryerson, Master & Associates, Inc.

Basis of Verification Opinion: University of California, Santa Barbara (UCSB) submitted their Year 2007 Greenhouse Gas Emission Inventory Report to Ryerson, Master and Associates, Inc. (RMA) for review and verification against the Registry's General Reporting Protocol, Version 3.0. RMA followed the procedures outlined in the Registry's General Verification Protocol, Version 3.0 to complete the verification process. The verification activities were conducted during the period July through September 2008.

On September 11, 2008, RMA issued a Verification Report to UCSB documenting the verification activities and the material and immaterial misstatements in the UCSB inventory. UCSB revised the emission inventory in CARROT, and RMA re-verified the inventory in September, 2008. A Verification Opinion was provided to UCSB, and RMA completed the verification in CARROT on September 15, 2007.

Date Submitted: 9/15/08 2:34 pm

OPTIONAL INFORMATION

Information in this section is voluntarily provided by the participant for public information, but is not required and thus, not verified under California Registry protocols.

Optional Emissions	CO2e	CO2	CH4	N2O	HFCs*	PFCs*	SF6	Unit
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-
TOTAL OPTIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-

Emissions Efficiency metric: Laboratory Cylinders

Emissions Management Programs: Various laboratories around campus use cylinders of compressed gas for experiments, etc. The gases found in the cylinders are: CO2, CH4, N2O, and SF6. The use of these gases can vary on a daily, weekly, monthly basis, so there is no real way to collect accurate information on the fugitive emissions for the cylinders. It could be zero to the entire amount for any given year. In addition, these gases are measured by volume (cubic feet), not weight, which is not an option on the fugitive gas section of CARROT. Thus, we are reporting the gases in the optional section.

The amount of each gas cylinder is:
 CO2 = 29,501 cf
 CH4 = 2,707 cf
 N2O = 1,244 cf
 SF6 = 6,550 gallons (closed system - no emissions)

All the cylinders on campus are monitored on a regular basis by our Environmental Health & Safety department for gas amounts and integrity of the cylinders.

Emissions Reduction Projects: EH&S requires laboratory safety training for all individuals who work in labs covering proper use of the cylinders to decrease the amount of unintentional releases into the atmosphere.

Emissions Reduction Goals: Since these gas cylinders are used in faculty research, there is no way, at this point in time, to reduce the amount of gas they purchase/use in their laboratories.

Annual Emissions Report

University of California, Santa Barbara

(Emissions from California operations)



Report Generated On: 03/11/2009 12:31 pm PT

REFERENCE DOCUMENTS

Title	Author	Document Status	Publish Date
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Appendix C

Projected Future and Reductions

- Projected Future Emissions and Reductions from Mitigation
- Summary of Development Under the 2025 LRDP
- 2008 All Buildings List – Subtotaled by Location and Type
- All Buildings List – Subtotaled by Year Occupied

PROJECTED FUTURE EMISSIONS AND REDUCTIONS FROM MITIGATION

Table C-1 Activity Assumptions

Calendar Year	Students	Faculty and Staff (excluding students)	Total GSF	Residential GSF	Non-Residential GSF	Laboratory NSF	Residential Electricity kWh/GSF	Non-Residential Electricity kWh/GSF	Residential Electricity kWh	Non-Residential Electricity kWh	Total Electricity kWh
2007	21,410	4,605	7,104,281	1,849,466	5,254,815	738,530	4.5	16.6	8,322,597	87,229,929	95,552,526
2008	21,624	4,706	7,473,187	2,070,862	5,402,325	759,262	4.5	16.6	9,318,877	89,678,595	98,997,472
2009	21,840	4,808	7,842,092	2,292,257	5,549,835	779,993	4.5	16.6	10,315,158	92,127,261	102,442,419
2010	22,059	4,909	8,210,998	2,513,653	5,697,345	800,725	4.5	16.6	11,311,438	94,575,927	105,887,365
2011	22,279	5,011	8,579,904	2,735,049	5,844,855	821,456	4.5	16.6	12,307,718	97,024,593	109,332,311
2012	22,502	5,112	8,948,809	2,956,444	5,992,365	842,188	4.5	16.6	13,303,999	99,473,259	112,777,258
2013	22,727	5,214	9,317,715	3,177,840	6,139,875	862,919	4.5	16.6	14,300,279	101,921,925	116,222,204
2014	22,954	5,315	9,686,620	3,399,235	6,287,385	883,651	4.5	16.6	15,296,559	104,370,591	119,667,150
2015	23,184	5,417	10,055,526	3,620,631	6,434,895	904,383	4.5	16.6	16,292,840	106,819,257	123,112,097
2016	23,416	5,518	10,424,432	3,842,027	6,582,405	925,114	4.5	16.6	17,289,120	109,267,923	126,557,043
2017	23,650	5,619	10,793,337	4,063,422	6,729,915	945,846	4.5	16.6	18,285,400	111,716,589	130,001,989
2018	23,886	5,721	11,162,243	4,284,818	6,877,425	966,577	4.5	16.6	19,281,681	114,165,255	133,446,936
2019	24,125	5,822	11,531,149	4,506,214	7,024,935	987,309	4.5	16.6	20,277,961	116,613,921	136,891,882
2020	24,367	5,924	11,900,054	4,727,609	7,172,445	1,008,040	4.5	16.6	21,274,241	119,062,587	140,336,828
2021	24,610	6,025	12,268,960	4,949,005	7,319,955	1,028,772	4.5	16.6	22,270,522	121,511,253	143,781,775
2022	24,856	6,127	12,637,865	5,170,400	7,467,465	1,049,504	4.5	16.6	23,266,802	123,959,919	147,226,721
2023	25,105	6,228	13,006,771	5,391,796	7,614,975	1,070,235	4.5	16.6	24,263,082	126,408,585	150,671,667
2024	25,356	6,330	13,375,677	5,613,192	7,762,485	1,090,967	4.5	16.6	25,259,363	128,857,251	154,116,614
2025	25,610	6,431	13,744,582	5,834,587	7,909,995	1,111,698	4.5	16.6	26,255,643	131,305,917	157,561,560
2030	26,916	6,759	14,445,694	6,132,210	8,313,484	1,168,406	4.5	16.6	27,594,945	138,003,838	165,598,783
2040	29,732	7,466	15,957,033	6,773,775	9,183,259	1,290,647	4.5	16.6	30,481,987	152,442,093	182,924,080
2050	32,842	8,247	17,626,492	7,482,462	10,144,031	1,425,677	4.5	16.6	33,671,077	168,390,909	202,061,986

1% Student population growth rate (Draft LRDP Table A.1)

75% LRDP percent occupancy by 2025

PROJECTED FUTURE EMISSIONS AND REDUCTIONS FROM MITIGATION

Table C-2 GHG Emissions Business As Usual (BAU) Forecast (MTCO2e)

Calendar Year	Non-Res. Electricity	Res. Electricity	Non-Res. Natural Gas	Res. Natural Gas	Marine Vessels	Transportation - Diesel Fuel	Transportation - Gasoline Fuel	Backup Generators	Gas Cylinders - Labs	Refrigerants	Projected BAU GHG Emissions
2007	24,967	2,382	14,593	5,136	120	45	1,190	84	1	11	48,529
2008	25,668	2,667	15,003	5,751	123	46	1,216	88	1	12	50,575
2009	26,369	2,952	15,413	6,366	126	47	1,242	93	1	12	52,621
2010	27,069	3,238	15,822	6,981	130	48	1,268	97	1	12	54,667
2011	27,770	3,523	16,232	7,596	133	49	1,295	101	1	12	56,713
2012	28,471	3,808	16,642	8,210	137	50	1,321	106	1	13	58,758
2013	29,172	4,093	17,051	8,825	140	51	1,347	110	1	13	60,804
2014	29,873	4,378	17,461	9,440	143	52	1,373	114	1	13	62,850
2015	30,574	4,663	17,871	10,055	147	53	1,399	119	1	14	64,896
2016	31,275	4,948	18,280	10,670	150	54	1,426	123	1	14	66,941
2017	31,975	5,234	18,690	11,285	153	55	1,452	127	1	14	68,987
2018	32,676	5,519	19,100	11,899	157	57	1,478	132	1	15	71,033
2019	33,377	5,804	19,509	12,514	160	58	1,504	136	1	15	73,079
2020	34,078	6,089	19,919	13,129	163	59	1,530	140	1	15	75,125
2021	34,779	6,374	20,328	13,744	167	60	1,557	145	1	16	77,170
2022	35,480	6,659	20,738	14,359	170	61	1,583	149	1	16	79,216
2023	36,181	6,945	21,148	14,974	173	62	1,609	153	1	16	81,262
2024	36,881	7,230	21,557	15,589	177	63	1,635	158	1	17	83,308
2025	37,582	7,515	21,967	16,203	180	64	1,661	162	1	17	85,353
2030	39,499	7,898	23,088	17,030	189	67	1,746	170	1	18	89,707
2040	43,632	8,725	25,503	18,812	209	74	1,929	188	2	20	99,093
2050	48,197	9,637	28,171	20,780	231	81	2,131	208	2	22	109,460

Scalars	Non-Res. GSF	Res. GSF	Non-Res. GSF	Res. GSF	Non-Res. GSF	Faculty/Staff	Faculty/Staff	Total GSF	Non-Res. GSF	Non-Res. GSF
	Natural Gas Intensity		0.523	Therms/GSF (2007 Calculated in B.2.2)						
1	CO2 GWP		0.631	lb/kWh (2007 SCE Factor)						
21	CH4 GWP		5.31	kg/therm (2007 CCAR report)						
310	N2O GWP		2204.6	lb/MT						
			1000	kg/MT						
								Residential Increase		16,200

PROJECTED FUTURE EMISSIONS AND REDUCTIONS FROM MITIGATION

Table C-3 GHG Emissions Reduction Factors

Calendar Year	SCE Renewables	SEP Electricity kWh	SEP Natural Gas Therms	Future SEP	Behavioral Changes	Institutional Changes	Auto Purchasing	Biofuels in Generators
2007	16%	0	0		0%	0%	0%	0%
2008	18%	0	0		0%	0%	0%	0%
2009	19%	4,056,058	117,688		0%	0%	0%	0%
2010	20%	9,000,490	160,403		1.00%	0.25%	3%	10%
2011	21%	11,266,455	770,967		1.05%	0.50%	6%	20%
2012	23%	2,052,537	0		1.10%	0.75%	9%	30%
2013	24%	2,347,783	281,429		1.15%	1.00%	12%	40%
2014	26%	5,407,154	257,726		1.20%	1.25%	15%	50%
2015	28%	3,865,296	360,422		1.25%	1.50%	18%	60%
2016	30%			2,100	1.30%	1.75%	21%	70%
2017	30%			2,100	1.35%	2.00%	24%	80%
2018	30%			2,100	1.40%	2.25%	27%	90%
2019	33%			2,100	1.45%	2.50%	30%	100%
2020	33%			2,100	1.50%	2.75%	33%	100%
2021	33%			2,100	1.55%	3.00%	36%	100%
2022	33%			2,100	1.60%	3.25%	39%	100%
2023	33%			2,100	1.65%	3.50%	42%	100%
2024	33%			2,100	1.70%	3.75%	45%	100%
2025	35%			2,100	1.75%	4.00%	48%	100%
2030	40%				2.00%	5.25%	100%	100%
2040	50%				2.50%	7.75%	100%	100%
2050	50%				3.00%	10.25%	100%	100%

PROJECTED FUTURE EMISSIONS AND REDUCTIONS FROM MITIGATION

Table C-4 GHG Emissions Reduction (MTCO2e)

Calendar Year	SCE Reduction	SEP Electricity Tier 1&2	SEP Natural Gas Tier 1&2	Future SEP	Behavioral Changes	Institutional Changes	Auto Purchasing	Biofuels in Generators	Total GHG Emissions Reduction	BAU GHG Emissions	Forecasted Future GHG Emissions	GHG Emissions Targets
2007	0	0	0		0	0	0	0	0	48,529	48,529	-
2008	(567)	0	0		0	0	0	0	(567)	50,575	50,009	-
2009	(880)	(1,126)	(625)		0	0	0	0	(2,631)	52,621	49,990	-
2010	(1,212)	(3,599)	(1,477)		(547)	(137)	(38)	(10)	(7,019)	54,667	47,648	-
2011	(1,565)	(6,663)	(5,570)		(595)	(284)	(78)	(20)	(14,775)	56,713	41,938	-
2012	(2,260)	(7,209)	(5,570)		(646)	(441)	(119)	(32)	(16,277)	58,758	42,482	-
2013	(2,661)	(7,827)	(7,065)		(699)	(608)	(162)	(44)	(19,066)	60,804	41,738	-
2014	(3,425)	(9,220)	(8,433)		(754)	(786)	(206)	(57)	(22,882)	62,850	39,968	39,736
2015	(4,228)	(10,194)	(10,347)		(811)	(973)	(252)	(71)	(26,877)	64,896	38,019	-
2016	(5,071)	(10,194)	(10,347)	(2,100)	(870)	(1,171)	(299)	(86)	(30,139)	66,941	36,802	-
2017	(5,209)	(10,194)	(10,347)	(4,200)	(931)	(1,380)	(348)	(102)	(32,712)	68,987	36,276	-
2018	(5,347)	(10,194)	(10,347)	(6,300)	(994)	(1,598)	(399)	(119)	(35,298)	71,033	35,734	-
2019	(6,661)	(10,194)	(10,347)	(8,400)	(1,060)	(1,827)	(451)	(136)	(39,076)	73,079	34,003	-
2020	(6,828)	(10,194)	(10,347)	(10,500)	(1,127)	(2,066)	(505)	(140)	(41,708)	75,125	33,417	33,672
2021	(6,996)	(10,194)	(10,347)	(12,600)	(1,196)	(2,315)	(560)	(145)	(44,353)	77,170	32,817	-
2022	(7,164)	(10,194)	(10,347)	(14,700)	(1,267)	(2,575)	(617)	(149)	(47,013)	79,216	32,203	-
2023	(7,331)	(10,194)	(10,347)	(16,800)	(1,341)	(2,844)	(676)	(153)	(49,686)	81,262	31,575	-
2024	(7,499)	(10,194)	(10,347)	(18,900)	(1,416)	(3,124)	(736)	(158)	(52,374)	83,308	30,934	-
2025	(8,568)	(10,194)	(10,347)	(21,000)	(1,494)	(3,414)	(798)	(162)	(55,977)	85,353	29,377	-
2030	(11,375)	(10,194)	(10,347)	(21,000)	(1,794)	(4,710)	(1,746)	(170)	(61,337)	89,707	28,371	-
2040	(17,801)	(10,194)	(10,347)	(21,000)	(2,477)	(7,680)	(1,929)	(188)	(71,616)	99,093	27,476	-
2050	(19,664)	(10,194)	(10,347)	(21,000)	(3,284)	(11,220)	(2,131)	(208)	(78,047)	109,460	31,413	-

SUMMARY OF DEVELOPMENT UNDER THE 2025 LRDP

Table C-5 LRDP Gross Square Footage (GSF)

Item	GSF
Increase in Residential	5,313,495
Increase in Non-Residential	3,540,240
Total Increase	8,853,735

Table C-6 Main Campus Development Under the 2025 LRDP

Area	ASF by 2025	GSF by 2025
Instruction and Research	930,000	not given
Organized Research Units	305,000	not given
Library	120,000	not given
Public Services	115,000	not given
Academic Support	110,000	not given
Institutional Services	85,000	not given
TOTALS	1,665,000	3,080,250

Table C-7 Off Campus Housing and Other Off Campus Building Changes Under the 2025 LRDP

Location	Units	Number of Students (dorm beds)	Number of Apartments	Number of Townhouses	Number of Single Family Homes	Non-Residential Space (GSF)	Academic & Support Space (ASF)	Academic & Support Space (GSF)
Ocean Road Housing	543	-	477	66	-	26,000	54,400	100,640
Eastside Residential Hall Additions	783	2,554	-	-	-	51,100	33,400	61,790
San Muguel/San Nicolas Additions	246	934	-	-	-	-	-	-
Facilities Management	598	1,238	398	200	-	21,000	93,600	173,160
Storke Apartments	731	-	444	250	37	8,300	-	-
Santa Ynez Apartments	580	-	360	220	-	3,000	-	-
Santa Catalina (FT) Addition	168	600	168	-	-	12,000	-	-
San Clemente Addition	39	121	39	-	-	-	-	-
West Campus Apartments	481	-	304	166	11	3,000	-	-
West Campus Mesa	45	-	-	-	45	-	-	-
Devereux	125	-	2	43	80	-	-	-
CONSTRUCTION SUBTOTAL	4,339	5,447	2,192	945	173	124,400	181,400	335,590
East Campus	(259)	(845)	-	-	-	-	-	-
Stork Family Housing	(342)	-	-	(342)	-	-	-	-
Santa Ynez	(180)	-	(180)	-	-	-	-	-
DEMOLITION SUBTOTAL	(781)	(845)	(180)	(342)	-	-	-	-
TOTAL CHANGE IN HOUSING	3,558	4,602	2,012	603	173	124,400	181,400	335,590
Housing Square Foot Assumptions (GSF/unit)		500	1,000	1,200	1,600	1		1
Area to be Developed (GSF)		2,301,095	2,012,000	723,600	276,800	124,400	-	335,590

Citations: LRDP Table D.2 and Section D - Land Use and Development

Ratio of GSF/ASF = 1.85 (based on all buildings list)

Table C-8 2008 All Buildings List - Subtotaled by Location and Type (G=General, R=Residential)						
	Sum of Calif Gross Area	Sum of Assignable Area	Sum of Residential (GSF)	Sum of General (GSF)	Sum of Residential - Main (GSF)	Sum of Residential - Off Campus (GSF)
IV						
G	25,269	15,031	-	25,269	-	-
R	71,500	57,374	71,500	-	-	71,500
IV Total	96,769	72,405	71,500	25,269	-	71,500
MAIN						
G	4,874,375	2,547,033	-	4,874,375	-	-
R	838,296	571,614	838,296	-	838,296	-
MAIN Total	5,712,671	3,118,647	838,296	4,874,375	838,296	-
NATRES						
G	27,797	24,892	-	27,797	-	-
NATRES Total	27,797	24,892	-	27,797	-	-
NORTH						
R	176,731	135,066	176,731	-	-	176,731
NORTH Total	176,731	135,066	176,731	-	-	176,731
OFFSITE						
G	134,334	119,494	-	134,334	-	-
OFFSITE Total	134,334	119,494	-	134,334	-	-
STORKE						
G	78,508	56,078	-	78,508	-	-
R	755,686	632,773	755,686	-	-	755,686
STORKE Total	834,194	688,851	755,686	78,508	-	755,686
WEST						
G	43,089	33,321	-	43,089	-	-
R	5,471	4,598	5,471	-	-	5,471
WEST Total	48,560	37,919	5,471	43,089	-	5,471
WESTDEV						
G	71,443	44,370	-	71,443	-	-
R	1,782	1,549	1,782	-	-	1,782
WESTDEV Total	73,225	45,919	1,782	71,443	-	1,782
Grand Total	7,104,281	4,243,193	1,849,466	5,254,815	838,296	1,011,170

Table C-9 All Buildings List - Subtotaled by Year Occupied

	Sum of Residential (GSF)	Sum of General (GSF)	Sum of Residential - Main (GSF)	Sum of Residential - Off Campus (GSF)	Sum of Calif Gross Area (GSF)
1990	1,388,263	2,910,694	630,499	757,764	4,298,957
1991					
ENG TLR 697	-	727	-	-	727
ENG TLR 698	-	1,343	-	-	1,343
ENG TLR 699	-	1,432	-	-	1,432
NEXXUS	-	17,969	-	-	17,969
PARK SERV 2	-	2,130	-	-	2,130
1991 Total	-	23,601	-	-	23,601
1992					
ENV HLTH& SA	-	15,605	-	-	15,605
1992 Total	-	15,605	-	-	15,605
1993					
AVIARY	-	1,649	-	-	1,649
COMM TRAILER	-	1,440	-	-	1,440
MSI TRAILER	-	1,524	-	-	1,524
1993 Total	-	4,613	-	-	4,613
1994					
FM STOR 348	-	319	-	-	319
FM STOR 349	-	319	-	-	319
FM TRLR	-	3,033	-	-	3,033
KOHN HALL	-	39,660	-	-	39,660
PSB NORTH	-	98,723	-	-	98,723
PSB SOUTH	-	24,423	-	-	24,423
RECCEN	-	68,449	-	-	68,449
1994 Total	-	234,926	-	-	234,926
1995					
BALBOA BLDG	-	16,018	-	-	16,018
COMM TRLR 2	-	1,440	-	-	1,440
FM TLR 370	-	2,815	-	-	2,815
1995 Total	-	20,273	-	-	20,273
1996					
CORAL TREE	-	2,463	-	-	2,463
HSSB	-	159,403	-	-	159,403
SAASB	-	87,227	-	-	87,227
1996 Total	-	249,093	-	-	249,093
1997					
FM STOR 347	-	319	-	-	319
MRL	-	40,033	-	-	40,033
SNARL HDQT	-	3,063	-	-	3,063
TRLR 940	-	2,800	-	-	2,800
1997 Total	-	46,215	-	-	46,215

Table C-9 All Buildings List - Subtotaled by Year Occupied

	Sum of Residential (GSF)	Sum of General (GSF)	Sum of Residential - Main (GSF)	Sum of Residential - Off Campus (GSF)	Sum of Calif Gross Area (GSF)
1998					
COP STF TLR	-	1,350	-	-	1,350
MESA PARKING	-	326,092	-	-	326,092
MOD CLASSRM	-	3,368	-	-	3,368
RELOC 322	-	1,434	-	-	1,434
1998 Total	-	332,244	-	-	332,244
1999					
ENG TRLR 930	-	1,440	-	-	1,440
ENG TRLR 931	-	1,440	-	-	1,440
ENG TRLR 932	-	1,440	-	-	1,440
SNARL GARAGE	-	2,360	-	-	2,360
1999 Total	-	6,680	-	-	6,680
2001					
ENG TRL 935	-	1,440	-	-	1,440
ENG TRL 936	-	1,440	-	-	1,440
POLICE TRL	-	919	-	-	919
STORKE-HOLL	-	10,111	-	-	10,111
TRLR 937	-	2,160	-	-	2,160
TRLR 942	-	1,440	-	-	1,440
2001 Total	-	17,510	-	-	17,510
2002					
ARGUELLO	11,884	-	11,884	-	11,884
BREN	-	88,387	-	-	88,387
CALLE REAL BLDG	-	3,192	-	-	3,192
CAMUESA	11,391	-	11,391	-	11,391
CIENEGA	14,926	-	14,926	-	14,926
CONDOR	10,646	-	10,646	-	10,646
CUYAMA	13,992	-	13,992	-	13,992
DE ANZA	10,821	-	10,821	-	10,821
EKWILL STREET	-	11,200	-	-	11,200
FIGUEROA	10,157	-	10,157	-	10,157
FILTER	-	4,118	-	-	4,118
GAVIOTA	10,211	-	10,211	-	10,211
JALAMA	11,439	-	11,439	-	11,439
LA CUMBRE	11,801	-	11,801	-	11,801
MADULCE	10,869	-	10,869	-	10,869
MIRANDA	14,224	-	14,224	-	14,224
MONTECITO	10,197	-	10,197	-	10,197
PENDOLA	13,206	-	13,206	-	13,206
RINCON	10,183	-	10,183	-	10,183
STD RES TLR	-	1,800	-	-	1,800
TECOLOTE	10,462	-	10,462	-	10,462
TEPUSQUET	11,074	-	11,074	-	11,074
THE REEF	-	1,034	-	-	1,034
TRLR 939	-	2,160	-	-	2,160
ZACA	10,314	-	10,314	-	10,314
2002 Total	207,797	111,891	207,797	-	319,688

Table C-9 All Buildings List - Subtotaled by Year Occupied

	Sum of Residential (GSF)	Sum of General (GSF)	Sum of Residential - Main (GSF)	Sum of Residential - Off Campus (GSF)	Sum of Calif Gross Area (GSF)
2003					
BLDG 232	-	2,160	-	-	2,160
EMBARCADERO HALL	-	12,964	-	-	12,964
2003 Total	-	15,124	-	-	15,124
2004					
BLDG 202	-	1,380	-	-	1,380
ENG SCI	-	84,960	-	-	84,960
HARDER OFFICE	-	11,521	-	-	11,521
MAR SCI BLDG	-	60,836	-	-	60,836
SANTA CATALINA	251,624	-	-	251,624	251,624
2004 Total	251,624	158,697	-	251,624	410,321
2005					
ENG TLR 384	-	1,434	-	-	1,434
ICA	-	43,770	-	-	43,770
LIFESCI	-	80,138	-	-	80,138
MAC	-	53,197	-	-	53,197
2005 Total	-	178,539	-	-	178,539
2006					
ARBOR	-	4,827	-	-	4,827
ELINGS HALL	-	117,600	-	-	117,600
PARKING II	-	222,678	-	-	222,678
PSYCH EAST	-	32,570	-	-	32,570
2006 Total	-	377,675	-	-	377,675
2007					
DEV7015	-	1,385	-	-	1,385
DEV7020	-	9,336	-	-	9,336
DEV7050	-	3,731	-	-	3,731
DEV7055	-	25,173	-	-	25,173
DEV7095	-	4,633	-	-	4,633
DEV7097	-	4,633	-	-	4,633
DEV7940	1,782	-	-	1,782	1,782
DEV7961	-	13,936	-	-	13,936
DEV7965	-	4,308	-	-	4,308
DEV7966	-	4,308	-	-	4,308
MOSHER ALUMNI	-	24,013	-	-	24,013
PARKING III	-	348,539	-	-	348,539
SRB	-	70,981	-	-	70,981
THTR DNCE WEST	-	36,459	-	-	36,459
2007 Total	1,782	551,435	-	1,782	553,217
Grand Total	1,849,466	5,254,815	838,296	1,011,170	7,104,281

Appendix D

Mitigations

- GHG Emissions Reductions from Strategic Energy Partnership Projects
- Strategic Energy Partnership (SEP) Projects by Completion Date (2009-2014)
- Mitigations from Existing Documents by Category

Table D-1 GHG Emissions Reductions From Strategic Energy Partnership Projects

Year	Electric Annual Savings (kWh/yr)	Cumulative Annual Savings (kWh/yr)	Gas Annual Savings (therms)	Percent Renewables	Electricity Use CO ₂ Emissions Factor (lb/kWh)	Cumulative Reduction in Emissions from Electricity Savings (MTCO ₂ /yr)	Cumulative Reduction in Emissions from Natural Gas Savings (MTCO ₂ /yr)	Cumulative Emissions Reductions from SEP Projects (MTCO ₂ /yr)
2009	4,056,058	4,056,058	117,688	19	0.51	940	626	1,566
2010	9,000,490	13,056,548	160,403	20	0.50	2,990	1,479	4,469
2011	11,266,455	24,323,003	770,967	22	0.49	5,430	5,581	11,011
2012	2,052,537	26,375,540	-	24	0.48	5,737	5,581	11,318
2013	2,347,783	28,723,323	281,429	26	0.47	6,084	7,078	13,162
2014	5,407,154	34,130,477	257,726	27	0.46	7,131	8,449	15,581
2015+	3,865,296	37,995,773	360,422	28	0.45	7,830	10,367	18,197
TOTAL	37,995,773	37,995,773	1,948,635	-	-	7,830	10,367	18,197

0.631 lb/kWh (E-grid factor used in 2007 report to CCAR)

5.32 kg/therm (2007 CCAR report)

2204.6 lb/MT

1000 kg/MT

Table D-2 Strategic Energy Partnership (SEP) Projects By Completion Date (2009-2014)

Building Key	Project Type	System Type	SEP ID#	Building Name	Project Name	Fund Source	Project Tier	Final Completion	Electric Annual Savings (kWh/yr)	Gas Annual Savings (therms)
08CNEW1	RET	HVAC	H1025	STUDENT RESOURCES BLDG (BLDG 221)	AH 3 - SP Reset	OTHER	Tier 1	12/15/2009	889	-
08C8526	RET	LIGHT	H3131	WEBB HALL	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 2	12/15/2009	69,879	-
08C8528	RET	LIGHT	H3133	SOUTH HALL	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2009	237,879	-
08C8564	RET	LIGHT	H3153	GIRVETZ HALL	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2009	85,097	-
08C8533	RET	LIGHT	H3135	ROBERTSN GYM	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2009	142,378	-
08CWISE	RET	LIGHT	H3086	CAMPUSWIDE	Phase 2: Replace 200 additional stairwell light fixtures with bi-level stairwell fixtures with occupancy sensors in campus buildings	STATE	Tier 1	12/15/2009	70,000	-
08CWISE	RET	LIGHT	H3087	CAMPUSWIDE	Phase 3: Replace 50 additional stairwell light fixtures with bi-level stairwell fixtures with occupancy sensors in campus buildings	STATE	Tier 1	12/15/2009	17,500	-
08C8568	RET	LIGHT	H3155	SAASB	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Tier 1	12/15/2009	230,307	-
08C8535	RET	LIGHT	H3137	NORTH HALL	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Tier 1	12/15/2009	180,175	-
08C8554	RET	LIGHT	H3145	SNIDECOR HLL	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Tier 1	12/15/2009	91,554	-
08C8580	RET	LIGHT	H3158	HARDER STAD	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Tier 1	12/15/2009	78,364	-
08C8591	RET	LIGHT	H3162	KERR HALL	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Tier 1	12/15/2009	100,070	-
08C8555	RET	LIGHT	H3146	MAR BIO LAB	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	OTHER	Tier 1	12/15/2009	85,720	-
08C8558	RET	LIGHT	H3149	UNIV CENTER	Replace Gen1 T8 and T12 mix w/ T8 dimmables; + Occupancy Sensors	STUDENT UNION	Tier 1	12/15/2009	345,830	-
08CWISE	RET	OTHER	H3015	CAMPUSWIDE	Pool Covers - Campus Pool	RECREATION	Tier 1	12/15/2009	-	53,425
08CWISE	RET	OTHER	H3193	CAMPUSWIDE	Server Virtualization & LCD Monitors - Campus IT Department Ge	STATE	Tier 1	12/15/2009	268,855	-
08CWISE	RET	OTHER	H3194	CAMPUSWIDE	Server Virtualization & LCD Monitors - Campus IT Department Ge	STATE	Tier 2	12/15/2009	268,855	-
08CWISE	RET	HVAC	H3191	CAMPUSWIDE	Low Pressure Drop Filters	STATE	Tier 1	12/15/2009	1,155,706	-
08CWISE	MBCx	HVAC	H3195	CAMPUSWIDE	Chilled Water Loop Optimization & Additional Chiller	STATE	Tier 1	12/15/2009	627,000	-
08CWISE	RET	HVAC	H3192	CAMPUSWIDE	Boiler and Heat Reclaim Projects	STATE	Tier 1	12/15/2009	-	64,263
08CWISE	RET	OTHER	H3171	CAMPUSWIDE	Lab Freezers Phase 1 of 2: 20 Lab Freezer Replacements	STATE	Tier 1	12/15/2010	77,280	-
08C8515	RET	HVAC	H1023	HSSB	FH Exhaust - add VFD & Autosash Closers	STATE	Tier 1	12/15/2010	26,208	1,756
08C8565	MBCx	HVAC	H3066	ENV HLTH& SA	Monitoring Based Commissioning	STATE	Tier 1	12/15/2010	10,880	1,484
08C8571	RET	LIGHT	H3156	BIOLOGY 2	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2010	183,963	-
08C8557	RET	LIGHT	H3148	CHEMISTRY	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 2	12/15/2010	142,590	-
08C8525	RET	LIGHT	H3130	DAVIDSON LIB (Main)	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2010	528,122	-
08CWide	SBD-DM & CR	BLDG	H3098	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2012	STATE	Tier 2	12/15/2010	454,550	-
08CWISE	RET	HVAC	H3020	CAMPUSWIDE	V-belt to Direct Drive Fan Energy Saving Calculations	STATE	Tier 1	12/15/2010	1,393,288	-
08C8243	NC	BLDG	H3021	ICA	SBD, New/Renov - Intercollegiate Aquatics Center	ATHLETICS	Tier 1	12/15/2010	151,265	7,208
08CWISEH	RET	LIGHT	H3111	CAMPUSWIDE - HOUSING	Phase 1: Replace 100 stairwell light fixtures with bi-level stairwell fixtures with occupancy sensors in residential buildings	HOUSING	Tier 1	12/15/2010	35,000	-

Table D-2 Strategic Energy Partnership (SEP) Projects By Completion Date (2009-2014)

Building Key	Project Type	System Type	SEP ID#	Building Name	Project Name	Fund Source	Project Tier	Final Completion	Electric Annual Savings (kWh/yr)	Gas Annual Savings (therms)
08CWIDEH	RET	LIGHT	H3112	CAMPUSWIDE - HOUSING	Phase 2: Replace 100 additional stairwell light fixtures with bi-level stairwell fixtures with occupancy sensors in residential buildings	HOUSING	Tier 1	12/15/2010	35,000	-
08C8243	RET	LIGHT	H3001	ICA	Replace existing HID fixtures with new fluorescent fixtures/sensors	ATHLETICS	Tier 1	12/15/2010	16,593	-
08C8516	RET	LIGHT	H3127	RECCEN	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	RECREATION	Tier 1	12/15/2010	190,314	-
08C8520	RET	LIGHT	H3128	MAR SCI BLDG	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	OTHER	Tier 1	12/15/2010	154,771	-
08C8945	RET	LIGHT	H3167	ELDORADO APT	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	104,706	-
08C8586	RET	LIGHT	H3159	SAN RAFAEL W	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	151,963	-
08C8947	RET	LIGHT	H3168	WESTGATE APT	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	64,308	-
08C8549	RET	LIGHT	H3141	DE LA GUERRA	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	78,753	-
08C8587	RET	LIGHT	H3160	SAN RAFAEL M	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	117,496	-
08C8511	RET	LIGHT	H3002	MAC	Replace existing gym and exercise area HID's with fluorescent "high bays" with occupancy sensors	RECREATION	Tier 1	12/15/2010	86,684	-
08CWIDE	RET	HVAC	H3008	CAMPUSWIDE	Fume Hood Sash Closers	STATE	Tier 1	12/15/2010	976,601	55,785
08C8505	RET	LIGHT	H3124	EVENTS CNTR	Replace Gen1 T8 and T12 mix w/ T8 dimmables; + Occupancy Sensors	OTHER	Tier 1	12/15/2010	161,630	-
08C8250	RET	LIGHT	H3003	MESA PARKING	Replace existing HID with fluorescent/sensors	PARKING	Tier 1	12/15/2010	191,226	-
08C8561	RET	LIGHT	H3151	SAN NICOLAS	Replace Gen1 T8 and T12 mix w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	193,703	-
08C8527	RET	LIGHT	H3132	SANTA ROSA	Replace Gen1 T8 and T12 mix w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	192,212	-
08C8547	RET	LIGHT	H3139	ANACAPA	Replace Gen1 T8 and T12 mix w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	177,625	-
08C8553	RET	LIGHT	H3144	SAN MIGUEL	Replace Gen1 T8 and T12 mix w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	194,094	-
08C8548	RET	LIGHT	H3140	SANTA CRUZ	Replace Gen1 T8 and T12 mix w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	177,186	-
08CWIDE	RET	LIGHT	H3004	CAMPUSWIDE	Replace existing gym HID's with fluorescent "high bays" with sensors (Pavilion Gym)	RECREATION	Tier 1	12/15/2010	85,675	-
08C8860	RET	LIGHT	H3165	FRANCISCO TO	Replace Gen1 T8 and T12 mix w/ T8 dimmables; + Occupancy Sensors	HOUSING	Tier 1	12/15/2010	561,606	-
08C8534	MBCx	HVAC	H3041	ARTS	Monitoring Based Commissioning	STATE	Tier 1	12/15/2010	149,595	16,068
08CWIDE	RET	HVAC	H3012	CAMPUSWIDE	Variable Speed Circulation Pump - Rec Center Pool Pump 2	RECREATION	Tier 1	12/15/2010	61,268	-
08CWIDE	RET	HVAC	H3011	CAMPUSWIDE	Variable Speed Circulation Pump - Rec Center Pool Pump 1	RECREATION	Tier 1	12/15/2010	61,268	-
08CWIDE	RET	LIGHT	H3005	CAMPUSWIDE	Replace existing gym HID's with fluorescent high bays with sensors (Thunderdome Gym)	OTHER	Tier 1	12/15/2010	324,249	-
08C8511	RET	HVAC	H4007	MAC	VFD on Exhaust Fans	RECREATION	Tier 1	12/15/2010	12,248	-
08CWIDE	RET	OTHER	H3173	CAMPUSWIDE	Refrigerators Phase 1 of 3: 100 Energy Star Refrigerator Replacements	STATE	Tier 1	12/15/2010	224,300	-

Table D-2 Strategic Energy Partnership (SEP) Projects By Completion Date (2009-2014)

Building Key	Project Type	System Type	SEP ID#	Building Name	Project Name	Fund Source	Project Tier	Final Completion	Electric Annual Savings (kWh/yr)	Gas Annual Savings (therms)
08CWIDE	RET	OTHER	H3179	CAMPUSWIDE	LCD Phase 1 of 5: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	STATE	Tier 1	12/15/2010	213,796	-
08CWIDE	RET	OTHER	H3016	CAMPUSWIDE	Install controller on vending machine (e.g. Vending Miser)	HOUSING	Tier 1	12/15/2010	23,547	-
08C8235	RET	HVAC	H1014	LIFESCI	AHU 3 - TOD Controls (w/o Spot Cooling) & Economizer	STATE	Tier 1	12/15/2010	26,732	3,100
08C8266	RET	HVAC	H4018	CNSI	clean room humidity control seperation	STATE	Tier 1	12/15/2010	330,429	46,748
08C8568	RET	HVAC	H4014	SAASB	EE Motors	STATE	Tier 1	12/15/2010	2,879	-
08C8535	RET	HVAC	H4010	NORTH HALL	EE Motors	STATE	Tier 1	12/15/2010	1,121	-
08C8507	MBCx	HVAC	H3031	RCVG STG FAC	Monitoring Based Commissioning	STATE	Tier 1	12/15/2010	16,113	2,197
08C8505	RET	HVAC	H4004	EVENTS CNTR	EE Motors	OTHER	Tier 1	12/15/2010	2,395	-
08C8572	RET	HVAC	H1009	BROIDA HALL (Physics)	FH - convert CAV to VAV - (2) Exh Fans & General EF	STATE	Tier 1	12/15/2010	74,950	12,937
08CWIDE	NC	LIGHT	H3117	CAMPUSWIDE - OTHER	SBD, New/Renov - Storke Field Artificial Turf and Lighting	RECREATION	Tier 1	12/15/2010	14,086	1,320
08C8657	RET	HVAC	H4011	PSB NORTH	EE Motors	STATE	Tier 1	12/15/2010	32,572	-
08C8520	RET	HVAC	H4008	MAR SCI BLDG	EE Motors	OTHER	Tier 1	12/15/2010	7,466	-
08C8552	RET	HVAC	H4002	CHEADLE HALL	EE Motors	STATE	Tier 1	12/15/2010	8,218	-
08C8557	RET	HVAC	H4003	CHEMISTRY	EE Motors	STATE	Tier 1	12/15/2010	30,020	-
08C8531	RET	HVAC	H4009	MUSIC	EE Motors	STATE	Tier 1	12/15/2010	12,425	-
08C8551	RET	HVAC	H1017	PSYCHOLOGY	S3 - CAV to VAV for Exhaust Fan	STATE	Tier 1	12/15/2010	2,469	800
08C8533	RET	HVAC	H4013	ROBERTSN GYM	EE Motors	STATE	Tier 1	12/15/2010	10,111	-
08C8556	RET	HVAC	H4006	HAROLD FRANK	EE Motors	STATE	Tier 1	12/15/2010	15,349	-
08CWIDE	RET	OTHER	H3180	CAMPUSWIDE	LCD Phase 2 of 5: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	STATE	Tier 1	12/15/2010	213,796	-
08CWIDE	RET	OTHER	H3181	CAMPUSWIDE	LCD Phase 3 of 5: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	STATE	Tier 1	12/15/2010	213,796	-
08CWIDEH	RET	OTHER	H3189	CAMPUSWIDE - HOU	Housing Pool Covers	HOUSING	Tier 1	12/15/2010	-	11,000
08CWide	SBD-DM & CR	BLDG	H3088	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2009	STATE	Tier 1	12/1/2011	454,550	-
08CWide	SBD-DM & CR	BLDG	H3089	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2009	STATE	Tier 1	12/1/2011	454,550	-
08CWIDE	RET	OTHER	H3172	CAMPUSWIDE	Lab Freezers Phase 2 of 2: 17 Lab Freezer Replacements	STATE	Tier 2	12/15/2011	65,688	-
08C8557	RET	HVAC	H1013	CHEMISTRY	4th Floor FH Exhaust - add VFD	STATE	Tier 2	12/15/2011	37,927	8,592
08C8571	RET	HVAC	H3187	BIOLOGY 2	Bio2 Heating System Upgrade	STATE	Tier 1	12/15/2011	-	33,379
08C8225	RET	HVAC	H3007	ENG SCI	New gas Cabinet Exhaust System	STATE	Tier 1	12/15/2011	99,100	-
08C8521	RET	LIGHT	H3129	BREN	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2011	108,773	-
08C8562	MBCx	HVAC	H3063	CARRILLO COM	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	17,976	2,451
08C8542	MBCx	HVAC	H3045	ORTEGA	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	18,030	2,459
08C8534	RET	LIGHT	H3136	ARTS	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2011	119,131	-
08C8549	MBCx	HVAC	H3051	DE LA GUERRA	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	24,661	3,363
08C8542	NC	BLDG	H3047	ORTEGA	SBD, New/Renov - Dining Commons Seismic Corrections and Renovation, Phase 2: Ortega	HOUSING	Tier 1	12/15/2011	138,668	12,992

Table D-2 Strategic Energy Partnership (SEP) Projects By Completion Date (2009-2014)

Building Key	Project Type	System Type	SEP ID#	Building Name	Project Name	Fund Source	Project Tier	Final Completion	Electric Annual Savings (kWh/yr)	Gas Annual Savings (therms)
08C8534	NC	BLDG	H3042	ARTS	SBD, New/Renov - Arts Building Seismic Corrections and Renewal	STATE	Tier 1	12/15/2011	298,967	28,011
08C8503	NC	BLDG	H3028	ENGR 2	SBD, New/Renov - Engineering II Life Safety Improvements and Addition	STATE	Tier 1	12/15/2011	204,181	9,729
08C8535	NC	BLDG	H3044	NORTH HALL	SBD, New/Renov - North Hall Computer Center Renovations	STATE	Tier 1	12/15/2011	53,640	2,556
08C8571	NC	BLDG	H3070	BIOLOGY 2	SBD, New/Renov - Biological Science II Lab Infrastructure Improvements	STATE	Tier 1	12/15/2011	68,659	3,272
08C8571	NC	BLDG	H3071	BIOLOGY 2	SBD, New/Renov - Biological Science II Lab Renovations/Stem Cell	STATE	Tier 1	12/15/2011	134,100	6,390
08C8535	RET	HVAC	H3018	NORTH HALL	UCSB DATA Center Ventilation Project	STATE	Tier 1	12/15/2011	288,536	-
08C8558	MBCx	HVAC	H3059	UNIV CENTER	Monitoring Based Commissioning	STUDENT UNION	Tier 1	12/15/2011	37,455	15,638
08C8549	RET	HVAC	H3052	DE LA GUERRA	UCSB De La Guerre Kitchen Hood Controls	HOUSING	Tier 1	12/15/2011	103,952	983
08C8542	RET	HVAC	H3046	ORTEGA	UCSB Ortega Kitchen Hood Controls	HOUSING	Tier 1	12/15/2011	78,130	1,298
08C8549	RET	HVAC	H3053	DE LA GUERRA	UCSB Portola (S. Catalina) Kitchen Hood Controls	HOUSING	Tier 1	12/15/2011	78,130	1,298
08C8657	MBCx	HVAC	H3078	PSB NORTH	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	204,983	3,733
08C8860	RET	AC/R	H4016	FRANCISCO TO	Refrigeration Compressors	HOUSING	Tier 1	12/15/2011	17,520	-
08CWIDE	RET	HVAC	H3009	CAMPUSWIDE	Housing Boiler Replacements & lockout	HOUSING	Tier 1	12/15/2011	-	103,335
08C8527	MBCx	HVAC	H3037	SANTA ROSA	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	65,061	8,872
08C8547	MBCx	HVAC	H3049	ANACAPA	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	60,147	8,202
08C8548	MBCx	HVAC	H3050	SANTA CRUZ	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	60,148	8,202
08C8553	MBCx	HVAC	H3056	SAN MIGUEL	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	65,769	8,968
08C8561	MBCx	HVAC	H3062	SAN NICOLAS	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	65,412	8,920
08C8586	MBCx	HVAC	H3076	SAN RAFAEL W	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	47,334	6,455
08C8860	MBCx	HVAC	H3080	FRANCISCO TO	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	193,347	26,366
08C8879	MBCx	HVAC	H3081	JALAMA	Monitoring Based Commissioning	HOUSING	Tier 1	12/15/2011	65,450	8,925
08C8505	MBCx	HVAC	H3030	EVENTS CNTR	Monitoring Based Commissioning	OTHER	Tier 1	12/15/2011	49,485	6,748
08C8571	MBCx	HVAC	H3069	BIOLOGY 2	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	253,223	22,716
08C8551	RET	HVAC	H1018	PSYCHOLOGY	S4 - CAV to VAV	STATE	Tier 1	12/15/2011	30,565	3,296
08C8557	MBCx	HVAC	H3058	CHEMISTRY	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	235,817	13,112
08C8516	MBCx	HVAC	H3034	RECCEN	Monitoring Based Commissioning	RECREATION	Tier 1	12/15/2011	99,040	24,517
08C8860	RET	HVAC	H4005	FRANCISCO TO	EE Motors	HOUSING	Tier 1	12/15/2011	4,368	-
08C8531	RET	HVAC	H1021	MUSIC	1-S1 - CAV to VAV	STATE	Tier 1	12/15/2011	28,394	6,402
08C8266	MBCx	HVAC	H3023	CNSI	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	362,050	4,450
08C8535	RET	HVAC	H1007	NORTH HALL	S 4 - CAV to VAV	STATE	Tier 1	12/15/2011	5,433	3,621
08C8556	RET	HVAC	H1003	HAROLD FRANK	S-2 - CAV to VAV & Upgrade to DDC	STATE	Tier 1	12/15/2011	53,694	8,000
08C8556	RET	HVAC	H1005	HAROLD FRANK	HV 2 - CAV to VAV & Upgrade to DDC	STATE	Tier 1	12/15/2011	43,156	10,357
08C8941	MBCx	HVAC	H3083	EMBARCADERO	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	9,020	1,230
08C8556	RET	HVAC	H1004	HAROLD FRANK	HV 1 - CAV to VAV & Upgrade to DDC	STATE	Tier 1	12/15/2011	47,258	11,884
08C8927	MBCx	HVAC	H3082	STORKE-HOLL	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	12,040	1,642

Table D-2 Strategic Energy Partnership (SEP) Projects By Completion Date (2009-2014)

Building Key	Project Type	System Type	SEP ID#	Building Name	Project Name	Fund Source	Project Tier	Final Completion	Electric Annual Savings (kWh/yr)	Gas Annual Savings (therms)
08CWide	SBD-DM & CR	BLDG	H3090	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	RECREATION	Tier 1	12/15/2011	-	28,409
08CWide	SBD-DM & CR	BLDG	H3091	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2010	STATE	Tier 1	12/15/2011	454,550	-
08CWide	SBD-DM & CR	BLDG	H3092	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2010	STATE	Tier 1	12/15/2011	454,550	-
08CWide	SBD-DM & CR	BLDG	H3094	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2011	STATE	Tier 1	12/15/2011	454,550	-
08CWide	SBD-DM & CR	BLDG	H3095	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2011	STATE	Tier 1	12/15/2011	454,550	-
08C8556	RET	HVAC	H1002	HAROLD FRANK	AC 1 - CAV to VAV & Upgrade to DDC	STATE	Tier 1	12/15/2011	121,580	20,788
08C8503	RET	HVAC	H1026	ENGR 2	convert CAV to VAV - (7) AHUs and FH EF - S-1 thru S-7	STATE	Tier 1	12/15/2011	1,449,523	87,638
08CWide	RET	OTHER	H3184	CAMPUSWIDE	Server Virtualization Phase 1 of 3: 10 VM Installations	STATE	Tier 1	12/15/2011	280,000	-
08C8515	MBCx	HVAC	H3033	HSSB	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	131,301	3,601
08C8535	MBCx	HVAC	H3043	NORTH HALL	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	47,821	3,630
08C8531	MBCx	HVAC	H3039	MUSIC	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	36,727	8,240
08C8571	RET	HVAC	H1010	BIOLOGY 2	AHU SB1, SB2, SB3 - CAV to VAV retrofit	STATE	Tier 1	12/15/2011	1,187,659	158,462
08C8560	MBCx	HVAC	H3060	PHELPS HALL	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	101,300	13,814
08C8551	MBCx	HVAC	H3054	PSYCHOLOGY	Monitoring Based Commissioning	STATE	Tier 1	12/15/2011	49,870	3,492
08CWide	RET	OTHER	H3174	CAMPUSWIDE	Refrigerators Phase 2 of 3: 100 Energy Star Refrigerator Replacements	STATE	Tier 1	12/15/2011	224,300	-
08CWide	RET	OTHER	H3175	CAMPUSWIDE	Refrigerators Phase 3 of 3: 61 Energy Star Refrigerator Replacements	STATE	Tier 1	12/15/2011	136,823	-
08CWide	RET	OTHER	H3177	CAMPUSWIDE	Refrigerators Phase 2 of 3: 100 Energy Star Refrigerator Replacements	STATE	Tier 1	12/15/2011	224,300	-
08CWide	RET	OTHER	H3178	CAMPUSWIDE	Refrigerators Phase 3 of 3: 34 Energy Star Refrigerator Replacements	STATE	Tier 1	12/15/2011	76,262	-
08C8615	MBCx	HVAC	H3077	MRL	Monitoring Based Commissioning	OTHER	Tier 1	12/15/2011	117,271	529
08C8505	RET	HVAC	H3188	EVENTS CNTR	Chilled Water Loop Extension	OTHER	Tier 2	12/15/2011	300,000	-
08CWide	RET	LIGHT	H3010	CAMPUSWIDE	Replace HPS Street Lights with LED Street Lights	STATE	Tier 1	12/15/2012	188,467	-
08C8266	RET	LIGHT	H3122	CNSI	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 2	12/15/2012	147,478	-
08C8235	RET	LIGHT	H3119	LIFESCI	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 2	12/15/2012	98,322	-
08C8225	RET	LIGHT	H3118	ENG SCI	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 2	12/15/2012	113,705	-
08C8572	RET	LIGHT	H3157	BROIDA HALL (Physics)	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 2	12/15/2012	201,858	-
08C8551	RET	LIGHT	H3142	PSYCHOLOGY	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 2	12/15/2012	72,996	-
08C8531	RET	LIGHT	H3134	MUSIC	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 2	12/15/2012	127,113	-
08C8563	RET	LIGHT	H3152	ELLISON HALL	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2012	190,765	-
08C8515	RET	LIGHT	H3126	HSSB	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2012	254,695	-
08C8552	RET	LIGHT	H3143	CHEADLE HALL	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Tier 1	12/15/2012	128,696	-
08C8251	RET	LIGHT	H3121	PSYCH ADDITI	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Tier 1	12/15/2012	66,484	-

Table D-2 Strategic Energy Partnership (SEP) Projects By Completion Date (2009-2014)

Building Key	Project Type	System Type	SEP ID#	Building Name	Project Name	Fund Source	Project Tier	Final Completion	Electric Annual Savings (kWh/yr)	Gas Annual Savings (therms)
08C8560	RET	LIGHT	H3150	PHELPS HALL	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Tier 1	12/15/2012	357,121	-
08C8544	RET	LIGHT	H3138	NOBLE HALL	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Tier 1	12/15/2012	104,837	-
08C8657	RET	HVAC	H1011	PSB NORTH	AHU 1, 2, 3, 3B - CAV to VAV retrofit and AutoSash Closure	STATE	Tier 2	12/15/2013	2,347,783	281,429
08CWide	SBD-DM & CR	BLDG	H3100	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2013	STATE	Tier 2	12/1/2014	454,550	-
08C8581	MBCx	HVAC	H3075	FACULTY CLUB	Monitoring Based Commissioning	OTHER	Tier 2	12/15/2014	10,381	1,416
08CNEW1	RET	LIGHT	H3170	STUDENT RESOURCES BLDG (BLDG 221)	Replace Gen2 T8 w/ T8 dimmables	OTHER	Tier 2	12/15/2014	93,384	-
08C8525	MBCx	HVAC	H3035	DAVIDSON LIB (Main)	Monitoring Based Commissioning	STATE	Tier 1	12/15/2014	160,632	3,074
08C8567	RET	LIGHT	H3154	KOHN HALL	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	OTHER	Tier 2	12/15/2014	61,659	-
08C8511	RET	LIGHT	H3125	MAC	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	RECREATION	Tier 1	12/15/2014	97,717	-
08C8243	RET	LIGHT	H3120	ICA	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	ATHLETICS	Tier 1	12/15/2014	95,457	-
08CWIDE	RET	HVAC	H4001	CAMPUSWIDE	VSD on (55) CHW, HW & CW Pumps	STATE	Tier 1	12/15/2014	293,784	-
08C8615	RET	LIGHT	H3163	MRL	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	OTHER	Tier 1	12/15/2014	94,820	-
08CNEW1	MBCx	HVAC	H3085	STUDENT RESOURCES BLDG (BLDG 221)	Monitoring Based Commissioning	OTHER	Tier 1	12/15/2014	48,504	563
08C8533	MBCx	HVAC	H3040	ROBERTSN GYM	Monitoring Based Commissioning	STATE	Tier 1	12/15/2014	58,917	8,034
08C8556	MBCx	HVAC	H3057	HAROLD FRANK	Monitoring Based Commissioning	STATE	Tier 1	12/15/2014	189,096	20,310
08CWIDE	RET	OTHER	H3176	CAMPUSWIDE	Refrigerators Phase 1 of 3: 100 Energy Star Refrigerator Replacements	STATE	Tier 1	12/15/2014	224,300	-
08C8563	MBCx	HVAC	H3064	ELLISON HALL	Monitoring Based Commissioning	STATE	Tier 1	12/15/2014	87,177	11,888
08C8525	RET	HVAC	H1020	DAVIDSON LIB (Main)	L4 - S1, S2 - CAV to VAV for RF only	STATE	Tier 1	12/15/2014	163,921	-
08C8557	RET	HVAC	H1012	CHEMISTRY	AHU S4, S5 - CAV to VAV retrofit	STATE	Tier 1	12/15/2014	594,604	51,865
08CWide	SBD-DM & CR	BLDG	H3097	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2012	STATE	Tier 2	12/15/2014	454,550	-
08CWide	SBD-DM & CR	BLDG	H3101	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2013	STATE	Tier 2	12/15/2014	454,550	-
08CWide	SBD-DM & CR	BLDG	H3103	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2014	STATE	Tier 2	12/15/2014	454,550	-
08CWIDE	RET	OTHER	H3013	CAMPUSWIDE	Solar Pool Water Heater - Rec Center Pools	RECREATION	Tier 2	12/15/2014	-	40,326
08CWIDE	RET	OTHER	H3014	CAMPUSWIDE	Solar Pool Water Heater - Campus Pool	STATE	Tier 2	12/15/2014	-	23,849
08C8560	NC	BLDG	H3061	PHELPS HALL	SBD, New/Renov - Phelps Hall Renovation	STATE	Tier 2	12/15/2014	213,786	20,030
08C8563	NC	BLDG	H3065	ELLISON HALL	SBD, New/Renov - Ellison Hall Renovation	STATE	Tier 2	12/15/2014	272,228	25,506
08CWIDE	NC	BLDG	H3106	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	STATE	Tier 2	12/15/2014	16,903	1,584
08CWIDE	NC	BLDG	H3107	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	STATE	Tier 2	12/15/2014	16,903	1,584

Table D-2 Strategic Energy Partnership (SEP) Projects By Completion Date (2009-2014)

Building Key	Project Type	System Type	SEP ID#	Building Name	Project Name	Fund Source	Project Tier	Final Completion	Electric Annual Savings (kWh/yr)	Gas Annual Savings (therms)
08CWIDE	NC	BLDG	H3108	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	STATE	Tier 2	12/15/2014	16,903	1,584
08CWIDE	NC	BLDG	H3109	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	STATE	Tier 2	12/15/2014	16,903	1,584
08CWIDE	NC	BLDG	H3110	CAMPUSWIDE	SBD, New/Renov - Devereux/West Campus Building Renovations	STATE	Tier 2	12/15/2014	224,775	21,060
08C8528	MBCx	HVAC	H3038	SOUTH HALL	Monitoring Based Commissioning	STATE	Tier 2	12/15/2014	80,921	3,763
08CWIDE	RET	OTHER	H3185	CAMPUSWIDE	Server Virtualization Phase 2 of 3: 10 VM Installations	STATE	Tier 2	12/15/2014	280,000	-
08C8511	MBCx	HVAC	H3032	MAC	Monitoring Based Commissioning	RECREATION	Tier 2	12/15/2014	41,244	5,624
08C8572	RET	HVAC	H1008	BROIDA HALL (Physics)	S-1, S2, S3, S8 - CAV to VAV	STATE	Tier 2	12/15/2014	134,035	14,082
08C8948	MBCx	HVAC	H3084	IV THEATER	Monitoring Based Commissioning	STATE	Backup		8,332	1,136
08C8505	RET	HVAC	H1027	EVENTS CNTR	AH-2, AH3 - CAV to VAV and DCV	OTHER	Backup		11,540	1,330
08C8578	MBCx	HVAC	H3074	HARDER OFFIC	Monitoring Based Commissioning	STATE	Backup		9,675	1,319
08C8531	RET	HVAC	H1022	MUSIC	1S2, 2S1, 2S2, AHU 3,4,5,6 - CAV to VAV and DCV	STATE	Backup		80,190	594
08C8504	MBCx	HVAC	H3029	BSC INST FAC	Monitoring Based Commissioning	STATE	Backup		10,638	1,451
08C8434	MBCx	HVAC	H3025	BLDG 434	Monitoring Based Commissioning	STATE	Backup		10,692	1,458
08C8574	MBCx	HVAC	H3072	PUBL SAFETY	Monitoring Based Commissioning	STATE	Backup		12,626	1,722
08C8494	MBCx	HVAC	H3027	CREAT STDY	Monitoring Based Commissioning	STATE	Backup		12,838	1,751
08CWide	SBD-DM & CR	BLDG	H3093	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	STATE	Backup		-	28,409
08CWide	SBD-DM & CR	BLDG	H3096	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	STATE	Backup		-	28,409
08CWide	SBD-DM & CR	BLDG	H3099	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	STATE	Backup		-	28,409
08CWide	SBD-DM & CR	BLDG	H3102	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	STATE	Backup		-	28,409
08CWide	SBD-DM & CR	BLDG	H3105	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	STATE	Backup		-	28,409
08C8672	MBCx	HVAC	H3079	PSB SOUTH	Monitoring Based Commissioning	STATE	Backup		17,618	2,402
08C8479	MBCx	HVAC	H3026	OLD GYM	Monitoring Based Commissioning	STATE	Backup		17,682	2,411
08C8997	RET	LIGHT	H3169	ENG RSH LAB	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	OTHER	Backup		84,462	-
08C8556	RET	LIGHT	H3147	HAROLD FRANK	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	STATE	Backup		157,439	-
08CWide	SBD-DM & CR	BLDG	H3104	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2014	STATE	Backup		454,550	-
08C8943	RET	LIGHT	H3166	HRC	Replace Gen2 T8 w/ T8 dimmables + Occupancy Sensors	OTHER	Backup		75,886	-
08C8568	MBCx	HVAC	H3068	SAASB	Monitoring Based Commissioning	STATE	Backup		94,712	2,744
08C8505	RET	HVAC	H1015	EVENTS CNTR	AH-1 - CAV to VAV and DCV	OTHER	Backup		24,440	1,137
08C8251	MBCx	HVAC	H3022	PSYCH ADDITI	Monitoring Based Commissioning	STATE	Backup		1,750	3,372
08CWIDE	NC	BLDG	H3113	CAMPUSWIDE - OTHER	SBD, New/Renov - Campus Approved Projects Under \$5 Million	OTHER	Backup		7,326	686

Table D-2 Strategic Energy Partnership (SEP) Projects By Completion Date (2009-2014)

Building Key	Project Type	System Type	SEP ID#	Building Name	Project Name	Fund Source	Project Tier	Final Completion	Electric Annual Savings (kWh/yr)	Gas Annual Savings (therms)
08CWIDEO	NC	BLDG	H3114	CAMPUSWIDE - OTHER	SBD, New/Renov - Campus Approved Projects Under \$5 Million	OTHER	Backup		7,326	686
08CWIDEO	NC	BLDG	H3115	CAMPUSWIDE - OTHER	SBD, New/Renov - Campus Approved Projects Under \$5 Million	OTHER	Backup		7,326	686
08CWIDEO	NC	BLDG	H3116	CAMPUSWIDE - OTHER	SBD, New/Renov - Campus Approved Projects Under \$5 Million	OTHER	Backup		7,326	686
08C8574	NC	BLDG	H3073	PUBL SAFETY	SBD, New/Renov - Public Safety Building Renovation and Expansion	STATE	Backup		81,905	7,674
08CWIDE	RET	OTHER	H3186	CAMPUSWIDE	Server Virtualization Phase 3 of 3: 5 VM Installations	STATE	Backup		140,000	-
08C8567	MBCx	HVAC	H3067	KOHN HALL	Monitoring Based Commissioning	OTHER	Backup		30,518	4,162
08C8588	RET	LIGHT	H3161	STDNT HLTH	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	OTHER	Backup		106,070	-
08C8503	RET	LIGHT	H3123	ENGR 2	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Backup		316,252	-
08C8657	RET	LIGHT	H3164	PSB NORTH	Replace Gen1 T8 w/ T8 dimmables; + Occupancy Sensors	STATE	Backup		235,019	-
08C8526	MBCx	HVAC	H3036	WEBB HALL	Monitoring Based Commissioning	STATE	Backup		33,558	4,576
08C8544	MBCx	HVAC	H3048	NOBLE HALL	Monitoring Based Commissioning	STATE	Backup		34,119	4,653
08C8552	MBCx	HVAC	H3055	CHEADLE HALL	Monitoring Based Commissioning	STATE	Backup		60,100	1,133
08C8533	RET	HVAC	H1001	ROBERTSN GYM	S2, S3 - CAV to VAV	STATE	Backup		40,871	15,013
08C8557	RET	HVAC	H4017	CHEMISTRY	Fume Hood Exhaust Fan Consolidation	STATE	Backup		17,735	-
08C8551	RET	HVAC	H4012	PSYCHOLOGY	VFD on Exhaust Fans	STATE	Backup		13,337	-
08CWIDE	RET	OTHER	H3182	CAMPUSWIDE	LCD Phase 4 of 5: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	STATE	Backup		213,796	-
08CWIDE	RET	OTHER	H3183	CAMPUSWIDE	LCD Phase 5 of 5: 535 Verdiem (PC Power Management) Installations and 22 CRT Replacements	STATE	Backup		114,381	-
08C8525	RET	HVAC	H1019	DAVIDSON LIB (Main)	L2 - S1 to 5 - CAV to VAV	STATE	Backup		765,576	106,043
08C8552	RET	HVAC	H1006	CHEADLE HALL	S-1, 2 - CAV to VAV	STATE	Backup		498,193	49,552
08C8251	RET	HVAC	H1024	PSYCH ADDITI	AH-B1, AH-R1 - TOD Controls (w/o Spot Cooling)	OTHER	Backup		49,492	-

Table D-3 Mitigations From Existing Documents by Category (Duplicates Removed)

CAP Category	ID #	Source Document	Requirement	
Academic	139	D1	20% of faculty know where to find sustainability resources.	
	140	D1	30% of students know where to find a course on sustainability.	
	141	D1	20% of students know where to find an internship/job related to sustainability.	
	142	D1	Encourage Academic Senate to create sustainability working group.	
	143	D1	Publish sustainable practices related to academics and highlight interesting courses/research.	
	145	D1	Set mid- and long-term goals.	
Build-EB	24	A	Develop strategic plan for implementing energy efficiency projects for existing buildings.	
	49	A	Develop plan to operate existing buildings at LEED-EB level.	
	53	A	Description of the buildings that are eligible for LEED-EB retrofits.	
	54	A	Develop timetable for full LEED-EB implementation.	
	55	A	Submit one pilot retrofit project by July 1, 2008.	
	56	A	Inventory buildings that meet the LEED-EB scope eligibility requirements and group them.	
	57	A	Submit proposed core credits for one building type grouping and any campus wide core credits by July 1, 2009.	
	58	A	Evaluate implementation plan and funding for campuswide LEED-EB certification by July 1, 2009.	
	146	D2	Add renovation policies to Green Building Policy.	
	147	D2	Renovation projects must apply sustainability principles (e.g. Campus Baseline Green Building points)	
	148	D2	If budgeted after July 1, 2007, large renovation projects shall achieve LEED-NC2.1 and achieve 20% reduction over Title 24.	
	149	D2	If budgeted after July 1, 2007, renovation projects (>\$5,000,000) achieve LEED Commercial Interiors certified rating.	
	150	D2	Renovations after July 1, 2007 must comply.	
159	D2	Certify 25 buildings through LEED-EB by 2012.		
Build-Gen	14	A	Work with others to develop technology.	
	15	A	Work with others to share best practices.	
	16	A	Train facilities staff in Green Building Design policy.	
	17	A	Exceptions may be requested.	
	18	A	External LEED and Labs21 certification may be pursued.	
	19	A	Lifecycle cost shall be included in design process.	
	20	A	Work with others to improve evaluation methods for use by universities.	
	151	D2	Sustainability representatives for each committee involved in building design.	
	152	D2	Develop UCSB Green Checklist.	
	154	D2	Follow Whole Building Design Guideline and LEED.	
	156	D2	Require eco-charrette in pre-programming phase.	
	161	D2	Design, construct, and operate buildings using a closed-loop process.	
	261	D8	No net growth in campus parking spaces beyond 2006 levels.	
	318	J	Implement Green Building Design policy guidelines.	
	Build-NC	1	A	20 percent beyond Title 24.
		2	A	LEED 2.1 or better required.
		3	A	LEED Silver encouraged.
4		A	LEED 2.1 and LABS21.	
5		A	UCSB internal certification standard.	
6		A	Implement UCOP policies for projects submitted after July 1, 2004.	
130		C	New buildings shall be LEED Silver or better.	
310		I	30% reduction beyond Title 24.	
311		I	Reduce indoor potable water use by at least 20% as compared to CGBC Section 603.2.	
312		I	Reduce outdoor potable water use for landscape irrigation by at least 50% as compared to CGBC Section 604.2.	
313		I	Recycle and/or salvage at least 75% of non-hazardous construction and demolition debris by weight (residential) or by weight or volume (commercial)	
314		I	Use recycled materials for at least 20% of construction materials.	
315		I	Provide alternative transportation mode options or incentives for workers to and from worksite on days that construction requires 200 or more workers	
Energy	21	A	Implement an energy portfolio approach.	
	22	A	20% renewables by 2010.	
	23	A	10 MW of renewables by 2014.	
	25	A	Continuously evaluate feasibility of other measures to reduce fossil fuel use.	
	29	A	Develop a campus strategic plan for energy efficiency projects.	
	167	D3	Reduce electricity use by 33% over 2010 levels by 2050.	
	168	D3	Reduce fossil fuel usage to 20% of total consumption (used in natural gas fired cogeneration)	
	169	D3	7% of total electricity from solar.	
	170	D3	20% of total electricity from wind.	
	171	D3	6% of total electricity from new green technologies.	
	185	D4	Replace aging equipment with ENERGY STAR ® models.	
	190	D5	Upgrade equipment with ENERGY STAR ® models.	
	197	D5	ENERGY STAR ® dish machines and equipment.	
	230	D7	Purchase ENERGY STAR ® products	
	237	D7	Implement energy efficiency programs and monitor behavioral changes.	
	272	D9	Reduce GHG emissions by clean fuel in diesel generators/campus fleet and implement waste heat recovery.	
	303	G	33% renewables by 2020.	
Funding	65	A	Develop funding source for waste reduction projects.	
	144	D1	Develop funding for sustainability in academics initiatives.	
	165	D3	Develop funding sources.	
	172	D3	Generate emissions credits as a means to bridge cost-feasibility gap for green power projects.	
	307	G	Consider creating targeted fees to fund administrative costs of GHGMP-CAP.	
	Ops	48	A	Develop methodology for sustainable facilities management.
50		A	Train facilities staff in Sustainable Operation Policy.	
135		C	Establish an instrument to support climate and sustainability proposals at companies where endowment is invested.	
193		D5	Establish a Food Working Group.	
200		D5	Food group will collaborate with other groups to reach common goals.	
205		D5	Certify one campus dining facility as a green facility.	
211		D6	GIS for landscape / planning management and to support education and outreach.	
212		D6	Landscape Team to work with Facilities Management on stormwater treatment as new buildings are constructed.	
224		D7	Increase utilization of website(s) as a strategic resource and tool.	
225		D7	Web-based equipment sharing (LabRATS).	
234		D7	Expand video conferencing and other electronic alternatives to travel.	
247		D7	E-signatures.	
248		D7	Use web to promote re-use/sharing of surplus equipment.	
249		D7	Website.	
250		D7	Allocate staff and resources.	
253		D7	Fully integrated e-commerce.	
287		D10	Publish water consumption data online.	
321		J	Develop a refrigerant management program.	
Policy		51	A	Work with USGBC to address campus needs in further development of LEED-EB rating system.
	52	A	Explore ways to use LEED-EB buildings as living, learning laboratories.	
	68	A	Advance sustainable technologies and continually improve resource productivity.	
	71	A	Transition to electronic and paperless processes	
	76	A	Negotiate better pricing for rated commodities.	
	77	A	Partner with EPA ENERGY STAR ® program to press market for greater energy efficiency in products used.	
	79	A	Enable available energy conservation features on goods that are in use.	
	82	A	Negotiate better pricing for commodities with recycled content as compared to those without recycle.	
	84	A	Encourage consultants to print on both sides using recycled paper which is clearly marked as such.	
	90	A	Ensure that recyclers operate responsibly.	
	110	B	Increase awareness of environmentally sustainable development.	
111	B	Create an institutional culture of sustainability.		

Table D-3 Mitigations From Existing Documents by Category (Duplicates Removed)

CAP Category	ID #	Source Document	Requirement	
Policy	112	B	Educate for environmentally responsible citizenship.	
	113	B	Foster environmental literacy.	
	114	B	Practice institutional ecology.	
	115	B	Involve all stakeholders in supporting sustainable and environmental principles.	
	116	B	Collaborate for interdisciplinary approaches.	
	117	B	Enhance capacity of primary and secondary schools.	
	118	B	Broaden service and outreach nationally and internationally.	
	119	B	Maintain the movement in environmental and sustainable principles.	
	131	C	Adopt a policy to purchase only ENERGY STAR ® certificated products where available.	
	153	D2	Develop sustainable design language for RFPs and contracts.	
	155	D2	Showcase sustainable design using a "building that teaches" approach.	
	157	D2	Select consultants that design buildings which reflect UCSB standards.	
	158	D2	Encourage flexible design to accommodate future technologies.	
	160	D2	Educate campus on impacts of new construction and Campus sustainability efforts.	
	184	D4	Add sustainability language to new and renewal tenant contracts.	
	192	D5	Educate on sustainability, food quality, and conservation.	
	199	D5	Share framework for creating sustainable food systems with others.	
	201	D5	Influence suppliers of natural/orgain food to use bulk recyclable packages.	
	204	D5	Purchase socially responsible food items.	
	207	D6	Support student projects.	
	208	D6	Identify opportunities to inform others.	
	213	D6	Consider all options to replace turf and compelling reasons must be provided for turf prior to installation.	
	216	D6	Support sustainable grounds choices.	
	228	D7	Expand use of green cleaning products.	
	233	D7	Expand environmentally preferable product options for O&M supplies.	
	236	D7	Establish a sustainable procurement policy and launch web resources and training.	
	243	D7	Leverage electronic commerce.	
	252	D7	Policy/education outreach.	
	259	D8	Encourage student involvement.	
	286	D10	Create policy to achieve all available LEED points in the water category.	
	302	G	Expand enegy efficiency programs as well as building and appliance standards.	
	304	G	Develop policy on offset purchase and generation.	
	306	G	Comply with existing and future laws and policies (e.g. AB 32 Scoping Plan)	
	Climate	32	A	Participate in CCAR.
		120	C	Develop a CAP.
		121	C	Create institutional structures to guide CAP development.
122		C	Inventory GHG emissions.	
124		C	Establish target date for neutrality.	
125		C	Establish interim targets that will lead to neutrality.	
126		C	Establish actions to make climate neutrality and sustainability part of educational experience for all students.	
127		C	Establish actions to expand research to achieve climate neutrality.	
128		C	Establish mechanisms for tracking progress on goals and actions.	
129		C	Take tangible actions.	
163		D3	2000 levels by 2010.	
164		D3	1990 levels by 2020	
308		H	80% less than 1990 levels by 2050	
Procure		69	A	Work with vendors to develop green products where none exist.
		70	A	Cradle to cradle purchasing practices.
		72	A	Incorporate LEED credit requirements into procurement.
		73	A	Evaluate total cost of ownership when selecting suppliers.
		74	A	Buy ENERGY STAR ® rated products where available.
	75	A	Electronics will be supplied by vendors with energy efficiency and conservation features enabled.	
	78	A	Buy technologies that ensure efficient use of water.	
	81	A	Uncut paper uses including janitorial supplies shall be 100% PCW.	
	83	A	Increase procurement of products with high recycled content.	
	86	A	Green Seal certified products.	
	87	A	Computer equipment is required to have Bronze registration under (EPEAT).	
	88	A	Consider EPEAT Silver and Gold equipment.	
	91	A	Apply sustainability principles to packaging for electronics.	
	92	A	Specify packing materials.	
	93	A	Work with suppliers to ensure effective waste management and recycling.	
	94	A	Require a take-back program for packaging of electronics and give preference to green materials.	
	95	A	Packing materials specifications.	
	96	A	100% PCW and recycleable or reuseable packaging.	
	97	A	Non-toxic packaging.	
	98	A	Biodegradable packaging.	
	99	A	Minimize or eliminate packaging if possible.	
	100	A	Work with suppliers to ensure effective waste management and recycling.	
	101	A	Incorporate end-of-life recycling programs into each commodity.	
	102	A	Work with suppliers to establish take-backs at no cost.	
	103	A	Encourage suppliers to implement environmental management programs.	
	104	A	Suppliers claiming to have green products shall substantiate their claims.	
	105	A	Suppliers provide certification or detailed information.	
	106	A	Incorporate Environmentally Preferable Purchasing Policy into existing strategic sourcing and training programs.	
	175	D4	80% of cleaning chemicals used at UCen will be Green Seal certified.	
	176	D4	Add sustainability information to purchase orders and require UCen vendors to provide annual updates on their practices.	
	178	D4	Add organic dairy products.	
	179	D4	25% of total produces will be organic.	
180	D4	25% of produce will be grown within the County.		
183	D4	10% of meat, fish and poultry will be organic.		
186	D5	80% of cleaning chemicals will be replaced with green chemicals.		
187	D5	5-10% Increase in organic and locally grown produce. One salad bar with 50%.		
189	D5	Replace disposable flatware with biodegradable products.		
194	D5	PO/RFP language stating sustainability is part of "basis for award."		
195	D5	10% increase in sustainable meat/dairy and 25% increase in organic produce.		
202	D5	25 to 50% organic and locally grown produce in all units.		
203	D5	15 to 25% organic and sustainably produced meat/dairy.		
219	D7	100% electronic and paperless systems for all procurement and accounting systems.		
220	D7	Phase out hard copy vendor catalogs.		
221	D7	Expand FlexCard purchasing.		
222	D7	Integrate priority purchasing and GUS, the Grand Unified System.		
223	D7	Electronic process payments.		
226	D7	Environmentally preferable commodity options.		
227	D7	30% PCW paper and phase-out virgin paper. Measure and set targets.		
231	D7	Purchase modular carpet tiles and more sustainable flooring options.		
232	D7	Sustainable furniture options.		
235	D7	Organic and locally produced food options and transition to environmentally preferable food operation.		
239	D7	Develop specifications for sustainable packaging		
240	D7	Develop product content standards and criteria.		

Table D-3 Mitigations From Existing Documents by Category (Duplicates Removed)

CAP Category	ID #	Source Document	Requirement	
Procure	241	D7	Develop standardized sustainability language to align principles with goals for strategic initiatives.	
	242	D7	Green marketing that designates green products and practices.	
	245	D7	Pilot e-commerce systems.	
	246	D7	FlexCard.	
	251	D7	Commodities	
	254	D7	Fully implement international standards for Environmentally Preferable purchasing.	
	317	J	Implement sustainable fleet purchasing initiatives.	
	Report	38	A	Report fuel consumption annually.
		107	A	Report annually on environmental purchasing plan and efforts.
		108	A	Report annually by Campus Sustainability Committee to the Sustainability Steering Committee
137		C	Send ACUPCC plan/reports to AASHE for dissemination.	
138		D1	Assess sustainability of academics and research programs.	
206		D6	Baseline measurements of indicators.	
209		D6	Assess native-dominated vs. traditional landscaped areas in terms of water use.	
210		D6	Monitor baseline indicators.	
214		D6	Monitor GIS development.	
215		D6	Survey behavior and attitudes towards water use to determine impact of outreach efforts.	
262		D9	Characterize waste on campus and develop a Integrated Waste Management Plan.	
263		D9	Determine applicable regulatory framework for IWMP.	
265		D9	Annual evaluation of IWMP indicators and progress.	
266		D9	Create UCSB Waste Management Plan.	
267		D9	Study solid waste cogen feasibility.	
269		D9	Create plan to improve quality of discharges from storm/waste/sea water systems.	
270		D9	Develop plan to change systemwide agreements to implement packing reductions, take-back programs, and PCW product use.	
271		D9	Complete a "close the loop-study" to assess ways of re-using waste and create incentives for research in this area.	
275		D9	Stormwater quality plan.	
280		D9	Create plan to eliminate balance of waste from campus.	
284		D10	Gather missing data on water types.	
285		D10	Recommend monitoring and metering needed.	
289		D10	Create water management plan.	
290		D10	Annual reassessment of Water Team goals.	
297		E	Report emissions annually.	
298		F	Participate in AASHE reporting.	
Trans		33	A	Purchase clean fleet vehicles.
		34	A	Collect data on average vehicle ridership (AVR).
		36	A	Targets for purchasing PZEV and ZEV vehicles.
		37	A	Work with others to promote biodiesel or other alternative fuel sources.
	39	A	Use AVR data to set fuel use reduction targets.	
	40	A	Work with others to find solutions for increasing availability of LEV, ZEV, alt fuel.	
	41	A	Share best practices with others.	
	42	A	Involve students.	
	43	A	Implement a pre-tax transit pass program.	
	44	A	Start a ride-share program and work with others to improve routes.	
	45	A	Develop a business-case analysis for any proposed parking structure projects	
	46	A	Participate in transportation sessions at the annual sustainability conference.	
	132	C	Adopt a policy to offset GHG emissions from air travel.	
	133	C	Promote public transportation.	
	217	D6	Majority of fleet and grounds equipment will be fueled sustainably with naturally-generated fuels.	
	256	D8	Facilitate voluntary offsets for parking permits.	
	257	D8	Minimum bicycle parking access.	
	258	D8	Collect data on average vehicle ridership (AVR).	
	260	D8	75% of campus fleet purchases will be alt fuel or ultra efficient by 2011.	
	305	G	Develop targets (e.g. AVR).	
320	J	Purchase low carbon fuel when it becomes available.		
Waste	59	A	Comply with Public Resources Code and support CIWMB goal for "a zero waste California" by adopting waste diversion goals.	
	60	A	Divert 50% of waste by 2008.	
	61	A	Divert 75% of waste by June 30, 2012.	
	62	A	Zero waste by 2020.	
	63	A	Develop IWMP and funding mechanism by June 30, 2007.	
	64	A	Integrate waste reduction and recycle into building design and operation.	
	66	A	Report details in IWMP.	
	67	A	Medical center waste diversion requirements.	
	89	A	Recycle all electronic waste.	
	136	C	Participate in RecycleMania.	
	173	D4	90% of green waste and coffee grounds from UCen units will be composted.	
	174	D4	Test feasibility of composting biodegradable flatware and disposables.	
	177	D4	95% of used cooking oil produced by UCen Dining will be recycled into bio diesel.	
	181	D4	25% of disposable products will be compostable.	
	182	D4	50% reduction in paper waste from Subway.	
	188	D5	Expand composting efforts.	
	191	D5	Recycle discarded cooking oils to produce biodiesel.	
	196	D5	Site a composting vessel.	
	229	D7	Establish ewaste standards.	
	238	D7	Develop standardized take-back program for old equipment.	
	244	D7	Eliminate decentralized hard copies of course catalogues.	
	264	D9	Set waste goals.	
	268	D9	Create lab waste protocols.	
	273	D9	Implement findings of solid waste cogen feasibility study in new construction protocols.	
	274	D9	Improve efficiency of chemical use in labs.	
	276	D9	Reduce food waste to zero within 25 years.	
	277	D9	Implement findings of IWMP and create profitable way of handling waste.	
	278	D9	50% reduction in total weight (per capita) of campus waste within 10 years	
279	D9	Identify and reduce environmentally problematic waste.		
281	D9	80% reduction in total weight (per capita) of campus waste within 15 years.		
282	D9	95% reduction of total weight of campus waste within 25 years.		
283	D9	Zero waste within 30 years.		
330	J	Implement waste diversion and composting initiatives.		
Water	218	D6	20% reduction in water intensive plantings by 2015.	
	288	D10	Update water targets once missing data has been assessed.	
	291	D10	Hire consultant to perform hydrologic feasibility study.	
	292	D10	Off campus, reduce potable use and increase reclaimed water use, each: 15% within 1-3 years; 25% within 3-5 years.	
	293	D10	Reduce potable water from off campus use by 50% (10-15 yrs) – provide 50% of our potable water from on-site generation (10-15 yrs).	
	294	D10	Reduce potable water from off campus use by 75% (15-20 yrs) – provide 75% of our potable water from on-site generation (15-20 yrs).	
	295	D10	Reduce potable water from off campus use by 90% (20-25 yrs) – provide 90% of our potable water from on-site generation (20-25 yrs).	
	296	D10	Reduce potable water from off campus use by 100% (25-30 yrs) – provide 100% of our potable water from on-site generation (25-30 yrs).	

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
139	D1	Academic	-		20% of faculty know where to find sustainability resources.		
140	D1	Academic	-		30% of students know where to find a course on sustainability.		
141	D1	Academic	-		20% of students know where to find an internship/job related to sustainability.		
142	D1	Academic	-		Encourage Academic Senate to create sustainability working group.		
143	D1	Academic	-		Publish sustainable practices related to academics and highlight interesting courses/research.		
145	D1	Academic	-		Set mid- and long-term goals.		
8	A	Build-EB	1/2	NG, EL	Renovation projects must apply sustainability principles (e.g. Campus Baseline Green Building points)	Policy in-progress	Y
9	A	Build-EB	1/2	NG, EL	If budgeted after July 1, 2007, large renovation projects shall achieve LEED-NC2.1 and achieve 20% reduction over Title 24.	Policy in-progress	Y
10	A	Build-EB	1/2	NG, EL	If budgeted after July 1, 2007, renovation projects (>\$5,000,000) achieve LEED Commercial Interiors certified rating.	Policy in-progress	Y
11	A	Build-EB	-	NG, EL	Renovations after July 1, 2007 must comply.	Policy in-progress	Y
24	A	Build-EB	2	EL	Develop strategic plan for implementing energy efficiency projects for existing buildings.	The Strategic Energy Partnership (SEP) proposal has been submitted and will be decided upon in March of 09. We are also currently working on feasibility assessments for both wind and PV's. We need to take one more look at it to be sure we hit the 10% target listed in this goal.	
49	A	Build-EB	1/2	NG, EL	Develop plan to operate existing buildings at LEED-EB level.	Done. We are piloting with the USGBC for 25 buildings in 5 years.	
53	A	Build-EB	1/2	NG, EL	Description of the buildings that are eligible for LEED-EB retrofits.	We don't have this in place for renovations	
54	A	Build-EB	1/2	NG, EL	Develop timetable for full LEED-EB implementation.	no action required yet	
55	A	Build-EB	1/2	NG, EL	Submit one pilot retrofit project by July 1, 2008.	Done. We've completed Girvetz and the RecCen.	
56	A	Build-EB	1/2	NG, EL	Inventory buildings that meet the LEED-EB scope eligibility requirements and group them.	Done. We have a list of the 25 buildings currently slated for the LEED EB Portfolio Program. Jordan has also developed a list of buildings by type for stage 2 of the LEED EB program.	
57	A	Build-EB	1/2	NG, EL	Submit proposed core credits for one building type grouping and any campus wide core credits by July 1, 2009.	Have a number of points submitted and approved. The Built Environment Team is currently assessing additional points to consider for campus wide implementation and should finish these up Winter 09. We may choose to go after a third set of core points shortly.	
58	A	Build-EB	1/2	NG, EL	Evaluate implementation plan and funding for campus wide LEED-EB certification by July 1, 2009.	We have a 5 year plan, just no funding strategy	
146	D2	Build-EB	-		Add renovation policies to Green Building Policy.	Policy in-progress	
147	D2	Build-EB	1/2	NG, EL	Renovation projects must apply sustainability principles (e.g. Campus Baseline Green Building points)	Policy in-progress	
148	D2	Build-EB	1/2	NG, EL	If budgeted after July 1, 2007, large renovation projects shall achieve LEED-NC2.1 and achieve 20% reduction over Title 24.	Policy in-progress	
149	D2	Build-EB	1/2	NG, EL	If budgeted after July 1, 2007, renovation projects (>\$5,000,000) achieve LEED Commercial Interiors certified rating.	Policy in-progress	
150	D2	Build-EB	-	NG, EL	Renovations after July 1, 2007 must comply.		
159	D2	Build-EB	1/2	NG, EL	Certify 25 buildings through LEED-EB by 2012.		
12	A	Build-Gen	-		MOVED	see section V for this	Y

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
13	A	Build-Gen	-		MOVED	see section VII for this	Y
14	A	Build-Gen	-		Work with others to develop technology.	We don't appear to have anything formal in place to meet this point	
15	A	Build-Gen	-		Work with others to share best practices.	We started the UC/CSU/CCC Conference to meet this point	
16	A	Build-Gen	-		Train facilities staff in Green Building Design policy.	We don't appear to have anything formal in place to meet this point	
17	A	Build-Gen	-		Exceptions may be requested.	We don't appear to have anything formal in place to meet this point	
18	A	Build-Gen	-		External LEED and Labs21 certification may be pursued.	UCSB has implemented LEED practice for all new construction. Practice in place since 2004. Lab 21 policy in-progress.	
19	A	Build-Gen	1/2	NG, EL	Lifecycle cost shall be included in design process.	Not sure UCSB is truly using lifecycle cost - need to ask DCS this	
20	A	Build-Gen	-	NG, EL	Work with others to improve evaluation methods for use by universities.	Members of the UCSB staff and faculty serve on USGBC and Labs21 teams for this.	
151	D2	Build-Gen	-		Sustainability representatives for each committee involved in building design.		
152	D2	Build-Gen	-		Develop UCSB Green Checklist.		
154	D2	Build-Gen	-		Follow Whole Building Design Guideline and LEED.		
156	D2	Build-Gen	-		Require eco-charette in pre-programming phase.		
161	D2	Build-Gen	-		Design, construct, and operate buildings using a closed-loop process.		
261	D8	Build-Gen	-		No net growth in campus parking spaces beyond 2006 levels.		
318	J	Build-Gen	1/2	NG, EL	Implement Green Building Design policy guidelines.		
1	A	Build-NC	1/2	NG, EL	20 percent beyond Title 24.	Practice in place since 2004. Policy increased to 30% - IP	
2	A	Build-NC	1/2	NG, EL	LEED 2.1 or better required.	Practice in place since 2004 (NC projects to date include Bren Hall LEED Platinum 2002, MSRB LEED Certified 2007, Student Resources Building LEED Silver 2008, San Clemente LEED Gold.	
3	A	Build-NC	1/2	NG, EL	LEED Silver encouraged.	Practice in place since 2004 (NC projects to date include Bren Hall LEED Platinum 2002, MSRB LEED Certified 2007, Student Resources Building LEED Silver 2008, San Clemente LEED Gold.	
4	A	Build-NC	1/2	NG, EL	LEED 2.1 and LABS21.	Practice in place since 2004 (NC projects to date include Bren Hall LEED Platinum 2002, MSRB LEED Certified 2007, Student Resources Building LEED Silver 2008, San Clemente LEED Gold.	
5	A	Build-NC	-	NG, EL	UCSB internal certification standard.	OP Decided to go with LEED rather than develop another standard - recommended for approval at the Fall 08 meeting	
6	A	Build-NC	1/2	NG, EL	Implement UCOP policies for projects submitted after July 1, 2004.	Practice in place since 2004	
7	A	Build-NC	-	NG, EL	Acute-care facility design.	N/A	Y
130	C	Build-NC	1/2	NG, EL	New buildings shall be LEED Silver or better.	Done-Established in USGBC LEED Silver Practice in 2004	
310	I	Build-NC	1/2	NG, EL	30% reduction beyond Title 24.	Policy in-progress	
311	I	Build-NC	-	WAT	Reduce indoor potable water use by at least 20% as compared to CGBC Section 603.2.		
312	I	Build-NC	-	WAT	Reduce outdoor potable water use for landscape irrigation by at least 50% as compared to CGBC Section 604.2.		
313	I	Build-NC	-		Recycle and/or salvage at least 75% of non-hazardous construction and demolition debris by weight (residential) or by weight or volume (commercial)		

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
314	I	Build-NC	-		Use recycled materials for at least 20% of construction materials.		
315	I	Build-NC	-	MOB	Provide alternative transportation mode options or incentives for workers to and from worksite on days that construction requires 200 or more workers		
30	A	Climate	All	ALL	1990 levels by 2020; 2000 levels by 2014; target date for neutrality.	Draft plan submitted in 12/08. Final plan to be submitted in August 2009.	Y
31	A	Climate	All	ALL	Develop a climate action plan.	Draft plan submitted in 12/08. Final plan to be submitted in August 2009.	Y
32	A	Climate	All	ALL	Participate in CCAR.	Done-we've been a member since 2005	
120	C	Climate	All	ALL	Develop a CAP.		
121	C	Climate	All	ALL	Create institutional structures to guide CAP development.	Established the Central Campus Sustainability Committee and the Sustainability Working Group in 2002, then changed this formation to the CPC Sub-Committee on Sustainability, 10 Change Agent Teams 2005, and now have the Chancellor's Sustainability Committee (established in Fall 2008)	
122	C	Climate	All	ALL	Inventory GHG emissions.	Began reporting California Climate Action Registry in 2004. Have data completed for 2004/2005/2006, and all 5 Kyoto gases in 2007. 2008 in-progress.	
123	C	Climate	All	ALL	Develop a CAP.	Working on Plan to meet 2000 levels by 2012, 1990 levels by 2020, 80% below 1990 levels by 2030 and be neutral by 2050. Required by AB32 to meet 2000 levels by 2012, 1990 levels by 2020, and be neutral by 2050	Y
124	C	Climate	All	ALL	Establish target date for neutrality.	In process (working on the Greenhouse Gas Management Plan) 2050.	
125	C	Climate	All	ALL	Establish interim targets that will lead to neutrality.	In process (working on the Greenhouse Gas Management Plan)	
126	C	Climate	All	ALL	Establish actions to make climate neutrality and sustainability part of educational experience for all students.	Academic Senate working Group on Sustainability is working on a proposal for an undergraduate requirement in environment/sustainability - hope to have it in committee in 2009 for review.	
127	C	Climate	All	ALL	Establish actions to expand research to achieve climate neutrality.	Mo Lovegreen and Kathy Scheidemen met with the Office of Research staff to proposed revision for Data Sheet 1/09 to better track research in environment/sustainability. We haven't done anything to create on-campus incentives to encourage this line of work.	
128	C	Climate	All	ALL	Establish mechanisms for tracking progress on goals and actions.	We need to work on an exit survey for graduating seniors to see what level of environment/sustainability education they are leaving the campus with	
129	C	Climate	All	ALL	Take tangible actions.		
162	D3	Climate	All	ALL	Develop a CAP.		
163	D3	Climate	All	ALL	2000 levels by 2010.		
164	D3	Climate	All	ALL	1990 levels by 2020		
166	D3	Climate	-	ALL	Mid- and long-term.		Y
301	G	Climate	All	ALL	1990 levels by 2020	In-process, currently working up green house gas management plan. Draft submitted to OP 12/08, final plan we hope to have complete in August.	Y
308	H	Climate	All	ALL	80% less than 1990 levels by 2050	UCSB has decided to achieve an 80% reduction below 1990 levels by 2030. We will include this in the Greenhouse Gas Management Plan.	
309	H	Climate			Sea level rise from climate change.		Y
328	J	Climate	All	ALL	Establish campus GHG emissions reduction targets in CAP.		Y
331	J	Climate	-		Capturing methane from manure digesters does not apply.		Y
21	A	Energy	2	EL	Implement an energy portfolio approach.	The Strategic Energy Partnership (SEP) proposal has been submitted and finalized. We are also currently working on feasibility assessments for both wind and PV's.	

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
22	A	Energy	2	EL	20% renewables by 2010.	Current contract has 17% of our portfolio with renewables. David McHale and the Energy Team are working on options to bring the percentage to over 20% by 2010 to comply with this.	
23	A	Energy	2	EL	10 MW of renewables by 2014.	David McHale is point person working with OP on their global approach to the 10 megawatts. See a above for the items we are working on.	
25	A	Energy	1	MOB	Continuously evaluate feasibility of other measures to reduce fossil fuel use.	We don't appear to have anything formal in place to meet this point	
28	A	Energy	1	EL	10% renewable by 2004 and track progress towards 2010 target.	in place	Y
29	A	Energy	1/2	NG, EL	Develop a campus strategic plan for energy efficiency projects.	Not clear if we are covering this	
134	C	Energy	2	EL	Buy at least 15% of electricity from renewable sources.	Done-Currently purchase 17% of power from renewables	Y
167	D3	Energy	2	EL	Reduce electricity use by 33% over 2010 levels by 2050.		
168	D3	Energy	1	NG	Reduce fossil fuel usage to 20% of total consumption (used in natural gas fired cogeneration)		
169	D3	Energy	2	EL	7% of total electricity from solar.		
170	D3	Energy	2	EL	20% of total electricity from wind.		
171	D3	Energy	2	EL	6% of total electricity from new green technologies.		
185	D4	Energy	1/2	NG, EL	Replace aging equipment with ENERGY STAR © models.		
190	D5	Energy	1/2	NG, EL	Upgrade equipment with ENERGY STAR © models.		
197	D5	Energy	1/2	NG, EL	ENERGY STAR © dish machines and equipment.		
230	D7	Energy	1/2	NG, EL	Purchase ENERGY STAR © products		
237	D7	Energy	-		Implement energy efficiency programs and monitor behavioral changes.		
272	D9	Energy	1/3	MOB, STA	Reduce GHG emissions by clean fuel in diesel generators/campus fleet and implement waste heat recovery.		
303	G	Energy	2	EL	33% renewables by 2020.	Feasibility plan in process, hope to have completed by 6/09 for Wind, and 12/09 for PV	
319	J	Energy	2	EL	33% renewables by 2020.		Y
322	J	Energy	-		Sustainable forests do not apply.		Y
327	J	Energy	2	EL	Implement campus solar initiatives.		Y
332	J	Energy	-		Measures for large industrial sources do not apply.		Y
26	A	Funding	-	EL	Develop financing sources.	We don't appear to have anything formal in place to meet this point, but the Energy Team is trying to develop some options to consider	Y
27	A	Funding	-	EL	Pursue marketing of emissions credits as a means to bridge the cost-feasibility gap for green power projects.	We don't appear to have anything formal in place to meet this point but the Energy Team and the Greenhouse Gas Management Group are exploring options for this	Y
65	A	Funding	-	MOB	Develop funding source for waste reduction projects.	Currently applying for grants.	
144	D1	Funding	-		Develop funding for sustainability in academics initiatives.		
165	D3	Funding	All	ALL	Develop funding sources.		
172	D3	Funding	2	EL	Generate emissions credits as a means to bridge cost-feasibility gap for green power projects.		
307	G	Funding	-		Consider creating targeted fees to fund administrative costs of GHGMP.	Not clear on how this applies to us - need clarification	
48	A	Ops	-	NG, EL	Develop methodology for sustainable facilities management.	Done. We are piloting with the USGBC for 25 buildings in 5 years.	
50	A	Ops	-	ALL	Train facilities staff in Sustainable Operation Policy.	Not clear this has been institutionalized within FM	

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
135	C	OPS	-		Establish an instrument to support climate and sustainability proposals at companies where endowment is invested.	Per John Weimann, we don't do this	
193	D5	Ops	-		Establish a Food Working Group.	Done.	
200	D5	Ops	-		Food group will collaborate with other groups to reach common goals.	Done.	
205	D5	Ops	-		Certify one campus dining facility as a green facility.		
211	D6	Ops	-	WAT	GIS for landscape / planning management and to support education and outreach.		
212	D6	Ops	-	WAT	Landscape Team to work with Facilities Management on stormwater treatment as new buildings are constructed.		
224	D7	Ops	-		Increase utilization of website(s) as a strategic resource and tool.		
225	D7	Ops	-	MOB	Web-based equipment sharing (LabRATS).	Done.	
234	D7	Ops	3	MOB	Expand video conferencing and other electronic alternatives to travel.		
247	D7	Ops	-		E-signatures.		
249	D7	Ops	-		Website.		
250	D7	Ops	-		Allocate staff and resources.		
253	D7	Ops	-		Fully integrated e-commerce.		
287	D10	Ops	-	WAT	Publish water consumption data online.		
321	J	Ops	1	REF	Develop a refrigerant management program.		
51	A	Policy	-	NG, EL	Work with USGBC to address campus needs in further development of LEED-EB rating system.	Done. We are piloting with the USGBC for 25 buildings in 5 years.	
52	A	Policy	-		Explore ways to use LEED-EB buildings as living, learning laboratories.	Though we currently include a few student interns in this process, we have not institutionalized this into the educational process on campus.	
68	A	Policy	-		Advance sustainable technologies and continually improve resource productivity.	We don't have the Procurement Staffing in place to do this (lost person/funding for this work).	
71	A	Policy	-	MOB	Transition to electronic and paperless processes	Made the request to the Chancellors Sustainability Committee in 1/09 for funding to allow us to do this.	
76	A	Policy	-		Negotiate better pricing for rated commodities.	This is mainly handled through strategic sourcing agreements up at UCOP. We lost the staff position that was doing this at UCSB.	
77	A	Policy	-	EL	Partner with EPA ENERGY STAR © program to press market for greater energy efficiency in products used.	Policy in-progress	
79	A	Policy	1/2	NG, EL	Enable available energy conservation features on goods that are in use.	Policy in-progress	
84	A	Policy	-		Encourage consultants to print on both sides using recycled paper which is clearly marked as such.	Policy in-progress	
90	A	Policy	-		Ensure that recyclers operate responsibly.	Need to confirm with PAM LOMBARDO that this this in place for us.	
110	B	Policy	-		Increase awareness of environmentally sustainable development.	We don't have anything formalized on this, but where possible, the Chancellor has a preference for putting out press releases that feature research related to sustainability (not just sustainability by staff on campus)	
111	B	Policy	-		Create an institutional culture of sustainability.	We don't have anything formalized/institutionalized on this, but have teams working across the campus on this as well as the Academic Senate Working Group on Sustainability, and the Bren School that has a policy component within it.	

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
112	B	Policy	-		Educate for environmentally responsible citizenship.	We don't have a core requirement for all students to leave UCSB with some level of environmental literacy, but we do have Geography, Environmental Studies, Global and International Studies, EEMB, and the Bren School (as well as some programs like the writing program that has an environmental component to it as well as engineers without borders)	
113	B	Policy	-		Foster environmental literacy.	We don't have a core requirement for all students to leave UCSB with some level of environmental literacy, but we do have Geography, Environmental Studies, Global and International Studies, EEMB, and the Bren School (as well as some programs like the writing program that has an environmental component to it as well as engineers without borders)	
114	B	Policy	-		Practice institutional ecology.	In process.	
115	B	Policy	-		Involve all stakeholders in supporting sustainable and environmental principles.	Again, not formalized across the campus but interdisciplinary research is strongly encouraged in most departments as part of the merit and promotion process. We also have ORU's established to encourage interdisciplinary research. We are weak in the policy formation and information exchange.	
116	B	Policy	-		Collaborate for interdisciplinary approaches.	We don't have this formalized yet.	
117	B	Policy	-		Enhance capacity of primary and secondary schools.	Though we have successes in certain areas, we don't have this institutionalized or a way to track it in place.	
118	B	Policy	-		Broaden service and outreach nationally and internationally.	Faculty are carrying out this work in the Bren School, Geography, Earth Science, Engineering, ICESS, MSI..... but we don't have a mechanism in place to track it.	
119	B	Policy	-		Maintain the movement in environmental and sustainable principles.	We now have AVC Ron Cortez in place as well as the Chancellor's Sustainability Committee, 11 Change Agent Teams, and the Academic Senate Working Group on Sustainability	
131	C	Policy	1/2	NG, EL	Adopt a policy to purchase only ENERGY STAR © certificated products where available.	Policy in-progress	
153	D2	Policy	-		Develop sustainable design language for RFPs and contracts.	Policy in-progress	
155	D2	Policy	-		Showcase sustainable design using a "building that teaches" approach.		
158	D2	Policy	-		Encourage flexible design to accommodate future technologies.		
160	D2	Policy	-		Educate campus on impacts of new construction and Campus sustainability efforts.		
184	D4	Policy	-		Add sustainability language to new and renewal tenant contracts.		
192	D5	Policy	-		Educate on sustainability, food quality, and conservation.	Sustainability Champion, David Cleveland 2009-2010 year.	
199	D5	Policy	-		Share framework for creating sustainable food systems with others.		
201	D5	Policy	-		Influence suppliers of natural/organic food to use bulk recyclable packages.		
204	D5	Policy	-		Purchase socially responsible food items.		
207	D6	Policy	-	WAT	Support student projects.		
208	D6	Policy	-	WAT	Identify opportunities to inform others.		
213	D6	Policy	-	WAT	Consider all options to replace turf lawns and compelling reasons must be provided for turf prior to installation.		
216	D6	Policy	-	WAT	Support sustainable grounds choices.		

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
228	D7	Policy	-		Expand use of green cleaning products.		
233	D7	Policy	-		Expand environmentally preferable product options for O&M supplies.		
236	D7	Policy	-		Establish a sustainable procurement policy and launch web resources and training.		
243	D7	Policy	-		Leverage electronic commerce.		
252	D7	Policy	-		Policy/education outreach.		
259	D8	Policy	-		Encourage student involvement.		
286	D10	Policy	-	WAT	Create policy to achieve all available LEED points in the water category.		
302	G	Policy	1/2	NG, EL	Expand energy efficiency programs as well as building and appliance standards.	In-process, phase one of the current Strategic Energy Program (SEP) pending funding in 3/09. Phase 2 will cover 2013-2015 and will include further targets for reductions	
304	G	Policy	-		Develop policy on offset purchase and generation.	Looking into this as part of the Greenhouse Gas Management Plan	
306	G	Policy	-	ALL	Comply with existing and future laws and policies (e.g. AB 32 Scoping Plan)	in process-We will establish targets for Campus via the Greenhouse Gas Management Plan	
316	J	Policy	-		Develop policy on offset purchase and generation.		Y
324	J	Policy	1	MOB	Develop policy on maintaining inflated tires on fleet vehicles.		Y
333	J	Policy	1/2	NG, EL	Implement Green Building Design policy guidelines.		Y
69	A	Procure	-		Work with vendors to develop green products where none exist.	Lack the Procurement Staff to do this (lost person/funding for the position).	
70	A	Procure	-	MOB	Cradle to cradle purchasing practices.	Doing some of this at the system wide level with the strategic sourcing, but we don't have the staff at UCSB to do this.	
72	A	Procure	1/2	NG, EL	Incorporate LEED credit requirements into procurement.	It doesn't appear we have formalized this yet.	
73	A	Procure	1/2	NG, EL	Evaluate total cost of ownership when selecting suppliers.	Starting to do this at the system wide level, but we lost our staff person to do this.	
74	A	Procure	1/2	NG, EL	Buy ENERGY STAR © rated products where available.	We don't have this formalized yet.	
75	A	Procure	2	EL	Electronics will be supplied by vendors with energy efficiency and conservation features enabled.	Policy in-progress	
78	A	Procure	-	EL	Buy technologies that ensure efficient use of water.	Policy in-progress	
80	A	Procure	-		Phase out virgin paper and purchase 30% PCW paper.	UCSB is currently selling recycled content paper at a lower price than virgin paper. We need the Chancellor's Sustainability Committee to approve a policy to outlaw the use of virgin paper on campus. Policy in-progress.	Y
81	A	Procure	-		Uncut paper uses including janitorial supplies shall be 100% PCW.	10/27/08 Per Byron Sandoval- Custodial currently uses 60% post consumer recycled content paper towels, 100% post consumer content for toilet paper and seat covers. We need to confirm with H&RS they are using these same products. We need to find paper towels that are 100% recycled content to meet this point	
83	A	Procure	-		Increase procurement of products with high recycled content.	Where available, this is handled at the OP level in strategic sourcing contracts. We don't have the staffing at UCSB to implement this.	
85	A	Procure	-		Green Seal certified products.	10/27/08 Per Byron Sandoval we just got the new hand soap green seal certified, the bulk of custodial products are green seal certified (we are also testing out a new floor wax this year). Byron has done an excellent job at this for main campus custodial services. In Food Services at H&RS and UCen they are utilizing about 13-15% Green Seal Certified products. We know that H&RS also uses the same suite of products (we just need to confirm the percentage).	Y
87	A	Procure	2	EL	Computer equipment is required to have Bronze registration under (EPEAT).	FEEDBACK FROM PURCHASING TEAM=THIS Doesn't WORK VERY WELL	
88	A	Procure	2	EL	Consider EPEAT Silver and Gold equipment.	FEEDBACK FROM PURCHASING TEAM=THIS Doesn't WORK VERY WELL	
91	A	Procure	-		Apply sustainability principles to packaging for electronics.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
92	A	Procure	-		Specify packing materials.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
93	A	Procure	-		Work with suppliers to ensure effective waste management and recycling.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
94	A	Procure	-		Require a take-back program for packaging of electronics and give preference to green materials.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
95	A	Procure	-		Packing materials specifications.	"	
96	A	Procure	-		100% PCW and recyclable or reusable packaging.	"	
97	A	Procure	-		Non-toxic packaging.	"	
98	A	Procure	-		Biodegradable packaging.	"	
99	A	Procure	-		Minimize or eliminate packaging if possible.	"	
100	A	Procure	-		Work with suppliers to ensure effective waste management and recycling.	"	
101	A	Procure	-		Incorporate end-of-life recycling programs into each commodity.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
102	A	Procure	-		Work with suppliers to establish take-backs at no cost.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
103	A	Procure	-		Encourage suppliers to implement environmental management programs.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
104	A	Procure	-		Suppliers claiming to have green products shall substantiate their claims.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
105	A	Procure	-		Suppliers provide certification or detailed information.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
106	A	Procure	-		Incorporate Environmentally Preferable Purchasing Policy into existing strategic sourcing and training programs.	UCOP Strategic Sourcing is working on this at a system wide level. We don't have the staff to do this at UCSB.	
175	D4	Procure	-		80% of cleaning chemicals used at UCen will be Green Seal certified.		
176	D4	Procure	-		Add sustainability information to purchase orders and require UCen vendors to provide annual updates on their practices.		
178	D4	Procure	-		Add organic dairy products.		
179	D4	Procure	-		25% of total produce will be organic.		
180	D4	Procure	-	MOB	25% of produce will be grown within the County.		
183	D4	Procure	-		10% of meat, fish and poultry will be organic.		
186	D5	Procure	-		80% of cleaning chemicals will be replaced with green chemicals.		
187	D5	Procure	-	MOB	5-10% Increase in organic and locally grown produce. One salad bar with 50%.		
189	D5	Procure	-	MOB	Replace disposable flatware with biodegradable products.		
194	D5	Procure	-		PO/RFP language stating sustainability is part of "basis for award."		
195	D5	Procure	-		10% increase in sustainable meat/dairy and 25% increase in organic produce.		
202	D5	Procure	-	MOB	25 to 50% organic and locally grown produce in all units.		
203	D5	Procure	-		15 to 25% organic and sustainably produced meat/dairy.		

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
219	D7	Procure	-	MOB	100% electronic and paperless systems for all procurement and accounting systems.		
220	D7	Procure	-	MOB	Phase out hard copy vendor catalogs.		
221	D7	Procure	-		Expand FlexCard purchasing.		
222	D7	Procure	-		Integrate priority purchasing and GUS, the Grand Unified System.		
223	D7	Procure	-	MOB	Electronic process payments.		
226	D7	Procure	-		Environmentally preferable commodity options.		
227	D7	Procure	-		30% PCW paper and phase-out virgin paper. Measure and set targets.	Policy in-progress	
231	D7	Procure	-		Purchase modular carpet tiles and more sustainable flooring options.		
232	D7	Procure	-		Sustainable furniture options.	Policy in-progress	
235	D7	Procure	-	MOB	Organic and locally produced food options and transition to environmentally preferable food operation.		
239	D7	Procure	-		Develop specifications for sustainable packaging		
240	D7	Procure	-		Develop product content standards and criteria.		
241	D7	Procure	-		Develop standardized sustainability language to align principles with goals for strategic initiatives.		
242	D7	Procure	-		Green marketing that designates green products and practices.		
245	D7	Procure	-		Pilot e-commerce systems.		
246	D7	Procure	-		FlexCard.		
251	D7	Procure	-		Commodities		
254	D7	Procure	-		Fully implement international standards for Environmentally Preferable purchasing.		
317	J	Procure	1	MOB	Implement sustainable fleet purchasing initiatives.	Policy in-progress	
38	A	Report	1	MOB	Report fuel consumption annually.	We report this as part of the California Climate Action Registry. John Behlman does this for the campus for OP and SBAPCD.	
107	A	Report	-		Report annually on environmental purchasing plan and efforts.	We don't have the accounting system nor the staffing in place to be able to capture and report this data.	
108	A	Report	-		Report annually by Campus Sustainability Committee to the Sustainability Steering Committee	via Ron Cortez	
109	A	Report	-		Report annually by UCOP to UC Regents.	UCOP	
137	C	Report	All	ALL	Send ACUPCC plan/reports to AASHE for dissemination.	Jill submitted the first plan (date ?). Annual plans are due every Sept. 15th.	Y
138	D1	Report	-		Assess sustainability of academics and research programs.		
206	D6	Report	-	WAT	Baseline measurements of indicators.		

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
209	D6	Report	-	WAT	Assess native-dominated vs. traditional landscaped areas in terms of water use.		
210	D6	Report	-	WAT	Monitor baseline indicators.		
214	D6	Report	-	WAT	Monitor GIS development.		
215	D6	Report	-	WAT	Survey behavior and attitudes towards water use to determine impact of outreach efforts.		
262	D9	Report	-		Characterize waste on campus and develop a Integrated Waste Management Plan.		
263	D9	Report	-		Determine applicable regulatory framework for IWMP.		
265	D9	Report	-		Annual evaluation of IWMP indicators and progress.		
266	D9	Report	-		Create UCSB Waste Management Plan.		
267	D9	Report	2	EL	Study solid waste cogen feasibility.		
269	D9	Report	-		Create plan to improve quality of discharges from storm/waste/sea water systems.		
270	D9	Report	-		Develop plan to change system wide agreements to implement packing reductions, take-back programs, and PCW product use.		
271	D9	Report	-		Complete a "close the loop-study" to assess ways of re-using waste and create incentives for research in this area.		
275	D9	Report	-		Stormwater quality plan.	IP in EH&S - Stacy Callaway	
280	D9	Report	-		Create plan to eliminate balance of waste from campus.		
284	D10	Report	-	WAT	Gather missing data on water types.		
285	D10	Report	-	WAT	Recommend monitoring and metering needed.		
289	D10	Report	-	WAT	Create water management plan.		
290	D10	Report	-	WAT	Annual reassessment of Water Team goals.		
297	E	Report	All	ALL	Report emissions annually.	Completed 2004, 2005, 2006, 2007 and in process of completing 1990 and 2000 levels	
298	F	Report	-		Participate in AASHE reporting.	We are still deciding if we want to participate in this program as the staffing required to do so is more than we have in place at this point. We will revisit this W/S 09.	
299	G	Report	All	ALL	Report Kyoto 6.	Done in 2008.	Y
300	G	Report	All	ALL	Annual reporting.	Done-we already report all 6 gases via the California Climate Action Registry	Y
33	A	Trans	1	MOB	Purchase clean fleet vehicles.	We have draft purchasing guidelines - we need to have them turned into a policy via the sustainability committee (see reference sheet Chancellor's TAB Response). Policy in-progress.	
34	A	Trans	-	MOB	Collect data on average vehicle ridership (AVR).	Need Steven Velasco's Office to comply with OP's methodology and requirement to do this on an annual basis for faculty, staff, and students. In addition we want to be able to calculate their GHG emissions for all commuter trips (see reference sheet Chancellor's TAB Response).	
35	A	Trans	-	MOB	n/a	Not a campus level issue (OP level)	Y
36	A	Trans	1	MOB	Targets for purchasing PZEV and ZEV vehicles.	OP working on new guidelines on this one-we need to pull in the new text. UCSB is working on a policy for 75% for alternative fuel vehicles. Policy in-progress.	
37	A	Trans	-	MOB	Work with others to promote biodiesel or other alternative fuel sources.	Not a campus level issue (OP level). Policy in-progress.	
39	A	Trans	-	MOB	Use AVR data to set fuel use reduction targets.	Policy in-progress	
40	A	Trans	-	MOB	Work with others to find solutions for increasing availability of LEV, ZEV, alt fuel.	Not a campus level issue (OP level)	

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
41	A	Trans	-	MOB	Share best practices with others.	Done via the UC/CSU/CCC Sustainability Conference	
42	A	Trans	-	MOB	Involve students.	We do this as part of the UC/CSU/CCC Sustainability Conference. ESLP is also another options for this.	
43	A	Trans	-	MOB	Implement a pre-tax transit pass program.	We've had this in place since for more than 10 years for van pools. For busses we've been doing this since 2006.	
44	A	Trans	-	MOB	Start a ride-share program and work with others to improve routes.	We've had ride-share in place (carpool matching) program in place for 12 years (green ride). We have established relationships with MTD/Coastal Express/Clean Air Express and have periodic meetings and regular communications on needs of our unmet transit needs.	
45	A	Trans	-	MOB	Develop a business-case analysis for any proposed parking structure projects	Done via the Parking Rate Payers Board	
46	A	Trans	-	MOB	Participate in transportation sessions at the annual sustainability conference.	Done	
47	A	Trans	-	MOB	n/a	Done at OP level	Y
132	C	Trans	3	MOB	Adopt a policy to offset GHG emissions from air travel.	Mo Lovegreen and Kathy Scheidemen coordinated with Accounting in Fall 2008 to have the on-line travel voucher code modified to incorporate tracking on travel so we could calculate the emissions. We currently have no methodology in place to track travel mileage so can't calculate emissions for this. Jim Corkil in Accounting said he would modify the system so we can capture this data. He thinks he won't be able to have it in place until 2009. We don't have a program in place for offsets. Travel data estimated for 2008 emissions. Hoping to get Connexus up and running in 2009-2010.	
133	C	Trans	-	MOB	Promote public transportation.	Done-We achieve a pretty high mode split, but we need to survey faculty/staff/students on an annual basis to be sure we are headed in the right direction	
217	D6	Trans	-	MOB	Majority of fleet and grounds equipment will be fueled sustainably with naturally-generated fuels.		
256	D8	Trans	3	MOB	Facilitate voluntary offsets for parking permits.		
257	D8	Trans	-	MOB	Minimum bicycle parking access.	Policy in-progress	
258	D8	Trans	-	MOB	Collect data on average vehicle ridership (AVR).		
260	D8	Trans	1	MOB	75% of campus fleet purchases will be alt fuel or ultra efficient by 2011.	Policy in-progress	
305	G	Trans	-	MOB	Develop targets (e.g. AVR).	In process-We will establish targets for Campus via the Greenhouse Gas Management Plan	
320	J	Trans	1	MOB	Purchase low carbon fuel when it becomes available.		
325	J	Trans	-	MOB	Goods movement does not apply.		Y
326	J	Trans	-	MOB	Heavy/Medium duty vehicle initiatives do not apply.		Y
329	J	Trans	-		High speed rail does not apply.		Y
59	A	Waste	-	MOB	Comply with Public Resources Code and support CIWMB goal for "a zero waste California" by adopting waste diversion goals.		
60	A	Waste	-	MOB	Divert 50% of waste by 2008.	Done. Current recycling on campus is 65%.	
61	A	Waste	-	MOB	Divert 75% of waste by June 30, 2012.	Pilot programs in place Fall 2008. Working on grants to fund bins. Composting pilot program in February 09 (a 6 month pilot for pre and post consumer food waste at De La Guerra).	
62	A	Waste	-	MOB	Zero waste by 2020.		
63	A	Waste	-	MOB	Develop IWMP and funding mechanism by June 30, 2007.	We don't have a formal plan for this.	
64	A	Waste	-	MOB	Integrate waste reduction and recycle into building design and operation.	We don't have this institutionalized yet.	
66	A	Waste	-	MOB	Report details in IWMP.	Strategies being developed by the Waste Team.	
67	A	Waste	-	MOB	Medical center waste diversion requirements.	N/A	
89	A	Waste	-		Recycle all electronic waste.	PAM LOMBARDO from Business Services has this in place for the campus.	
136	C	Waste	-		Participate in RecycleMania.	Done. Participated in RecycleMania in Winter 2009	

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
173	D4	Waste	-	MOB	90% of green waste and coffee grounds from UCen units will be composted.		
174	D4	Waste	-	MOB	Test feasibility of composting biodegradable flatware and disposables.		
177	D4	Waste	-	MOB	95% of used cooking oil produced by UCen Dining will be recycled into bio diesel.	In-progress with composting pilot.	
181	D4	Waste	-	MOB	25% of disposable products will be compostable.		
182	D4	Waste	-	MOB	50% reduction in paper waste from Subway.		
188	D5	Waste	-	MOB	Expand composting efforts.		
191	D5	Waste	-	MOB	Recycle discarded cooking oils to produce biodiesel.	Currently doing this.	
196	D5	Waste	-	MOB	Site a composting vessel.		
229	D7	Waste	-		Establish ewaste standards.		
238	D7	Waste	-		Develop standardized take-back program for old equipment.		
244	D7	Waste	-	MOB	Eliminate decentralized hard copies of course catalogues.		
264	D9	Waste	-		Set waste goals.		
268	D9	Waste	-		Create lab waste protocols.		
273	D9	Waste	1/2	NG, EL	Implement findings of solid waste cogen feasibility study in new construction protocols.		
274	D9	Waste	-	MOB	Improve efficiency of chemical use in labs.		
276	D9	Waste	-		Reduce food waste to zero within 25 years.		
277	D9	Waste	-		Implement findings of IWMP and create profitable way of handling waste.		
278	D9	Waste	-		50% reduction in total weight (per capita) of campus waste within 10 years		
279	D9	Waste	-		Identify and reduce environmentally problematic waste.		
281	D9	Waste	-		80% reduction in total weight (per capita) of campus waste within 15 years.		
282	D9	Waste	-		95% reduction of total weight of campus waste within 25 years.		
283	D9	Waste	-		Zero waste within 30 years.		
330	J	Waste	-	MOB	Implement waste diversion and composting initiatives.		
218	D6	Water	-	WAT	20% reduction in water intensive plantings by 2015.		
288	D10	Water	-	WAT	Update water targets once missing data has been assessed.		
291	D10	Water	-	WAT	Hire consultant to perform hydrologic feasibility study.		
292	D10	Water	-	WAT	Off campus, reduce potable use and increase reclaimed water use, each: 15% within 1-3 years; 25% within 3-5 years.		
293	D10	Water	-	WAT	Reduce potable water from off campus use by 50% (10-15 yrs) – provide 50% of our potable water from on-site generation (10-15 yrs).		
294	D10	Water	-	WAT	Reduce potable water from off campus use by 75% (15-20 yrs) – provide 75% of our potable water from on-site generation (15-20 yrs).		
295	D10	Water	-	WAT	Reduce potable water from off campus use by 90% (20-25 yrs) – provide 90% of our potable water from on-site generation (20-25 yrs).		

Table D-4 Mitigations From Existing Documents by Category (Duplicates Removed)

ID #	Source Document	CAP Category	ACUPCC SCOPE	Source Affected	Requirement	Status Summer 09	Duplicate / Not Applicable
296	D10	Water	-	WAT	Reduce potable water from off campus use by 100% (25-30 yrs) – provide 100% of our potable water from on-site generation (25-30 yrs).		
323	J	Water	-	WAT	Implement efficiency and conservation initiatives.		Y

Source Documents		Emissions Source Categories	
A	UCOP Policy Guidelines on Sustainable Practices	NG	Natural gas in buildings
B	Talloires	EL	Electricity in buildings
C	ACUPCC	MOB	Mobile sources
D1	CSP-ACADEMICS	WAT	Water use
D2	CSP-BUILD	STA	Stationary sources
D3	CSP-ENERGY	REF	High GWP (i.e. refrigerants)
D4	CSP-UCenFOOD	ALL	All sources affected
D5	CSP-HOUSING		
D6	CSP-BIO		
D7	CSP-PROCURE		
D8	CSP-TRANS		
D9	CSP-WASTE		
D10	CSP-WATER		
E	CCAR		
F	AASHE STARS		
G	AB32		
H	EO S-3-05		
I	LRDP RDEIR		
J	CARB SCOPING PLAN		

Appendix E

Educational, Research & Community Outreach

- Academic Senate Work Group on Sustainability (SWG)

Academic Senate Work Group on Sustainability (SWG)

The current goal of the Senate Working Group on Sustainability is to produce six proposals that would form the core of UCSB's academic program in sustainability, which could be expanded by future generations.

1.) Campus Sustainability Champion (Champion)

Goal and Description: To recognize faculty innovation and encourage ongoing research and teaching in sustainability through the creation of a faculty "Campus Sustainability Champion" to be funded by private donors. Faculty will submit competitive proposals for programs that will engage undergraduate and graduate students in sustainability issues and provide campus-wide leadership and visibility of sustainability in education and research. Awardees will be selected by a committee based on the merit of their proposals; recipients will receive funding to support activities including but not limited to graduate and undergraduate research assistants. All awardees will be required to lead an annual Freshman Seminar in Sustainability and to present a campus wide lecture upon completion of their tenure as champion.

Status: This proposal was completed in Spring 2008 and was submitted to the TGIF grant process to fund the inaugural year. If TGIF does not fund the proposal, the Working Group will submit the proposal to EVC Lucas with a request for seed money to fund the inaugural year. The Working Group has also been in discussion with the Office of Development to seek a donor to support this initiative in subsequent years.

2.) Chancellor's Sustainability Internship (CSI)

Goal and Description: The Chancellor's Sustainability Internship will help *Increase Awareness of Environmentally Sustainable Development, Create an Institutional Culture of Sustainability and Educate for Environmentally Responsible Citizenship*, the first three commitments under the Talloires Declaration signed by Chancellor Uehling. It will accomplish these goals by supporting undergraduate initiatives for campus-level sustainability projects, offer students in all academic disciplines an opportunity to actuate and apply their education in sustainability and gain practical experience, and to facilitate partnerships between faculty, staff, and students. It will also facilitate implementation of the Campus Sustainability Plan approved by Chancellor Yang in 2008.

During the Fall Quarter each year, undergraduates will be encouraged to submit proposals to a campus-wide competition for projects that promise to further sustainable practices at UCSB. A maximum of five winning proposals will be selected annually by a Committee that includes faculty, representatives from functional areas of campus operations, campus administration and student-led organizations. Calls for proposals will welcome projects from individuals or small groups of undergraduates that plan substantive changes to campus practices, broadly defined. Applicants will be required to secure project

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commitments from both faculty and staff prior to submission, submit detailed budgets and outline the standards by which project success will be measured. Successful proposals will help realize the Campus Sustainability Plan and strengthen UCSB's commitments under the Talloires Declaration. CSIs will work with faculty sponsor(s) and staff under the guidance of the Campus Sustainability Internship Program in the Department of Geography to complete the project(s) within the academic year. Interns will submit final reports to the Committee and present their projects at annual Sustainability Colloquia and the Undergraduate Research and Creative Activities Symposium.

Status: Proposal under review by AVC Ron Cortez.

3.) Special Subject GE in Environment and Sustainability (E&S GE)

Goal and Description: To meet our promise made in the fourth action item of the Talloires Declaration to *Foster Environmental Literacy For All* and *Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate and professional students*, and to respond to the Associated Students' Resolution in support of an "Environmental GE." we propose a general education requirement in Environment and Sustainability (E&S). Only a GE requirement can ensure that all students will receive education in sustainability, arguably a prerequisite to an education that "fosters environmental literacy for all." An E&S GE requirement is therefore a fundamental first step to fulfilling our obligation under the Talloires Declaration. No other UC Campus has an E&S GE requirement; if we were to adopt an E&S GE we would lead the UC in this area.

Consensus was reached early that an E&S GE should be of the "Special Subject" variety, like writing, because its goal is to infuse sustainability into teaching across campus. As a GE, however, it was also agreed that E&S GE courses should be dominated by "1-10" numbered courses with large enrollment capacities and "100s" that already meet existing GE requirements. We estimated that collectively, courses would have to serve approximately 5,000 students per year to ensure that the new E&S requirement would not require an infusion of new resources. We identified courses that would meet the new requirement and found that the requirement can easily be met by existing courses with an environmental/sustainability component.

Status: A penultimate draft of a Special Subject GE in E&S under Senate Working Group review. We developed a list of courses that would meet that criteria and are already approved GE courses and found that more than 70% of our graduating seniors in both of the last two years enrolled in at least one of these courses. We estimate that many more students took non-GE courses that would also meet the requirement. Actual course enrollments in each of the last two years number approximately 9,000 – almost twice the number identified by the group as necessary to its enactment without new resources. We are also working on a companion proposal from Instructional Development that will help faculty integrate environment and sustainability into courses to qualify under the new GE requirement.

4.) Graduate Education: Interdisciplinary Training

Goal and Description: We recognize that an institutional chasm divides academics who study humans and their institutions from those who study the rest of the biophysical world. This division inhibits interdisciplinary collaborations necessary to address environmental problems because solutions to global problems must bridge academic disciplines and researchers are not trained in each other's approaches and methods. We believe the key to dealing with this problem is to train the next generation of researchers to engage in interdisciplinary collaborations through the development of an interdisciplinary graduate program in environment and sustainability. Three options have been discussed: 1) a new interdisciplinary PhD in environment and sustainability, 2) an Emphasis in environment and sustainability within existing Ph.D. programs, and 3) a Minor in environment and sustainability. Given that an interdepartmental PhD will require additional resources, including at least a partial FTE, and a "floating minor" would require a broad review process, a new PhD Emphasis appears to be the most tenable of the alternatives in the short term. A new Emphasis would allow students to get a degree in an established program but take additional courses to satisfy the Emphasis; discussion suggests that the additional courses needed would include core courses common to all students and additional courses that cross the natural/social science divide, i.e., students earning a degree in natural sciences would be required to take additional courses in social sciences or humanities and vice versa.

Status: The SWG is working on two proposals; one for an interdisciplinary PhD emphasis, another for an interdisciplinary PhD program.

5.) Communication and Outreach

Goal and Description: We agree that enhanced internal and external communications are critical components of an academic program in sustainability, but we have not yet devoted time to developing a proposal in this area. At minimum however we believe it necessary that UCSB take additional steps to facilitate internal (campus-wide) and external (public) communication of environment and sustainability programs. Many have suggested the development of a website that provides information on academic programs and initiatives in sustainability, provides a comprehensive list of individual courses in the area, identifies faculty with active research opportunities in sustainability, and provides information on funding opportunities for course development and research.

6.) Sustainability in Research Practices

Goal and Description: An initial resolution was drafted to address the application of sustainability in our office and laboratory environments. However, the Senate Working Group has not yet had time to create a detailed proposal. When proposals one through four are launched, we will work with the existing LabRats initiative to involve the Senate in developing of a manual of good research practices applicable to office and laboratory based

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research activities that could be distributed campus wide and serve as a model for the UC system.

Concluding Remarks

The Senate Working Group proposals reviewed above constitute the planks of an academics and research program consistent with the goals of the “Comprehensive Sustainability Plan” adopted last year. The focal point is a faculty “Champion” that would initiate an annual Freshman Seminar in Sustainability and substantially increase the visibility of sustainability issues in teaching and research. Undergraduate education in sustainability would be grounded in a new Environment and Sustainability GE, and excellence would be rewarded with participation in a prestigious internship program (CSI). An interdisciplinary graduate Emphasis in Sustainability would complete the program, set the campus apart and cement our leadership in this area. Future efforts will include (but not be limited to) developing appropriate sustainable policies for offices and laboratories, and publicizing UC Santa Barbara’s efforts in these and other sustainability initiatives.

Lorelei Moosbrugger
Chair, Academic Senate Work Group on Sustainability