

# SUSTAINABILITY

FOR CAL POLY FACILITIES & OPERATIONS

**CAL POLY**  
SAN LUIS OBISPO

Developed by Facility Services, Facilities Planning & Capital Projects  
in cooperation with the Sustainability Advisory Committee





**A CONCEPT OF SUSTAINABILITY**

Cal Poly endorses the World Commission on Environment and Development definition of sustainability as: “The concept of meeting the needs of the present without compromising the ability of future generations to meet their needs.” At Cal Poly, we strive to be responsible stewards of our lands, water, energy, and other natural resources. This stewardship occurs in the context of furthering our principal academic mission and must reflect financial reality. Thus, sustainable operations and development can be viewed as a triad of interrelated forces that must become mutually supportive.

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“Our mission at Cal Poly is to produce graduates who are able to succeed not only in their chosen professions but are also able to lead in their communities and make a positive impact. In true Learn by Doing tradition, then, it is imperative that we present sustainability in our curriculum as well as practice throughout our campus community every day. It is the only way we will truly prepare the next generation of resourceful professionals and innovative leaders who will be good stewards of the Earth.”

—President Jeffrey D. Armstrong

## THE TALLOIRES DECLARATION

*In response to the problems of environmental pollution and degradation, and the depletion of natural resources, university leaders from around the world have recognized that universities have a major role in the education, research, policy formation and information exchange necessary to address these issues. The Talloires Declaration articulates the following key actions that are especially relevant to institutes of higher education:*

- ▲ Increase Awareness of Environmentally Sustainable Development
- ▲ Create an Institutional Culture of Sustainability
- ▲ Educate for Environmentally Responsible Citizenship
- ▲ Foster Environmental Literacy for All
- ▲ Practice Institutional Ecology
- ▲ Involve All Stakeholders
- ▲ Enhance Capacity of Primary and Secondary Schools
- ▲ Collaborate for Interdisciplinary Approaches
- ▲ Broaden Service and Outreach Nationally and Internationally
- ▲ Maintain the Movement



President Jeffrey D. Armstrong



## SUSTAINABILITY IN FACILITIES AND OPERATIONS

*At Cal Poly, sustainability is not only a subject of teaching and research, but also a principle that, in balance with other core values, guides campus planning, operations and maintenance. The university has demonstrated a strong commitment to advancing sustainable practices and to tracking and reporting progress.*

Understanding sustainability in campus operations requires an appreciation of the scope and complexity of this university. In achieving its primary mission of educating almost 20,000 students each year, Cal Poly operates and maintains more than five million square feet of buildings, stewards thousands of acres of land, houses about 6,900 students on campus, employs more than 4,000 faculty and staff, and provides administrative, safety, health, recreational, commercial, food service and many other support functions. Assessing sustainability in this context demands a systems perspective and the recognition that many interrelated variables affect the use of campus resources.

The best approach to gauge changes in such a complex system is to focus on certain key “indicators” – variables that are clearly linked to sustainable practices and outcomes and that can be measured by a consistent methodology over time. Cal Poly recognizes that practicing sustainability is an ongoing endeavor. Many undertakings – such as building more on-campus housing, upgrading older facilities with high-efficiency water and energy features, or installing new energy-conserving infrastructure – all take years to plan, fund and implement. Furthermore, external factors such as weather and the economy can significantly affect resource use apart from any program specifically undertaken by the university. And, of course, budget constraints pose challenges to the pace and scope of certain sustainability efforts. Thus, analyzing *trends* in indicators is more meaningful than their status at any particular point in time.

In 2006, Cal Poly adopted several sustainability indicators that it has monitored since; this is the latest in a series of biennial reports on trends of those indicators.

## CAL POLY SUSTAINABILITY INDICATORS

### ENERGY USE

- ▲ BTUs per square foot of building
- ▲ Percentage of electricity from renewable resources
- ▲ Percentage of vehicles in the operations fleet using alternative fuels

### TRANSPORTATION

- ▲ Commuter parking permits sold per student
- ▲ Public transit ridership
- ▲ Percentage of student population living on campus

### WATER RESOURCES

- ▲ Total delivered water
- ▲ Total domestic water
- ▲ Indoor water use
- ▲ Fecal coliform in Stenner Creek
- ▲ Nitrates in groundwater monitoring wells
- ▲ Pollutants in wastewater

### LAND USE & DEVELOPMENT

- ▲ Percentage of campus square footage in LEED-certified buildings
- ▲ Habitat restoration projects

### GREENHOUSE GASES

- ▲ 2006 baseline for ongoing emissions monitoring
- ▲ Percentage of electricity from non-GHG emitting sources

### SOLID WASTE & RECYCLING

- ▲ Percentage of solid waste diverted from landfills

## KEY DEPARTMENTS RESPONSIBLE FOR SUSTAINABILITY

*Cal Poly’s Administration and Finance Division (AFD) is responsible for many of the university’s sustainability functions. The Facilities Department within AFD includes:*

### FACILITY SERVICES

Maintains and operates buildings, grounds, roads and utility infrastructure.

### FACILITIES PLANNING & CAPITAL PROJECTS

Oversees long-range physical planning and new construction.

### ENVIRONMENTAL HEALTH AND SAFETY

Monitors air and water quality and administers hazardous materials handling.

## OTHER AFD DEPARTMENTS RELEVANT TO SUSTAINABILITY EFFORTS

### CONTRACTS, PROCUREMENT & RISK MANAGEMENT

Sets policies for university purchases, requiring environmentally friendly products.

### UNIVERSITY POLICE DEPARTMENT

Administers parking, transit and bicycle programs.

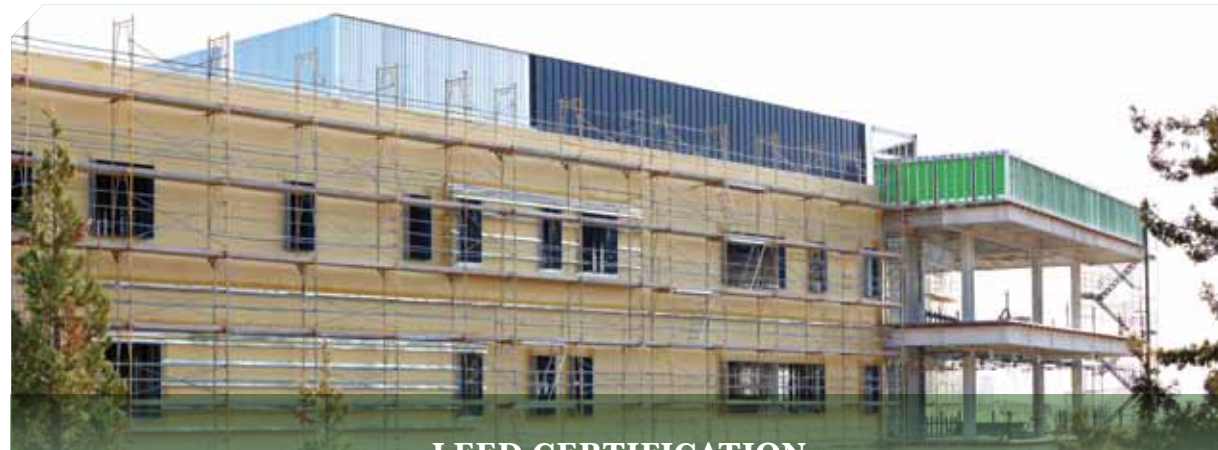
### CAL POLY CORPORATION

Operates several important university functions, including Campus Dining.

Apart from AFD, **University Housing** administers the on-campus residential facilities, and the **College of Agriculture, Food and Environmental Sciences (CAFES)** manages extensive university lands in San Luis Obispo and Santa Cruz counties, including the campus organic farm and the Swanton Pacific Ranch. The latter includes 1,600 acres of timberland that has earned the highest designation for sustainable practices by the Forest Stewardship Council.



## SUSTAINABILITY HIGHLIGHTS 2010-2011



### LEED CERTIFICATION

Two major construction projects – the Recreation Center expansion and the Center for Science and Mathematics – are designed to meet Leadership in Energy and Environmental Design (LEED) certification standards. Two other buildings, the Construction Innovation Center and University Union, are in the process of LEED-EB (Existing Building) certification.

### AASHE

In 2011 Cal Poly began the process to participate in the Association for the Advancement of Sustainability in Higher Education (AASHE) STARS rating system.

### ENERGY EFFICIENCY UPGRADES

Despite budget constraints, Cal Poly invested \$7 million in energy- and water-efficiency upgrades in existing buildings in 2010-11.

### GREEN CAMPUS PROGRAM

Students joined with Facility Services staff to initiate a “Green Campus Certified” program that encourages and rates sustainable practices in university workplaces.

### BIKES

The university adopted a new bike plan in 2011 that identifies gaps in the campus bikeway system and recommends priorities among projects to address them. New separated bike paths were installed on California Boulevard and on South Perimeter Road. There is now more than a half-mile of separated bike paths on campus.



## AWARDS AND ACCOLADES

*Cal Poly is a recognized leader in sustainability, and its efforts continue to be lauded. Over the last five years, the university has garnered many awards and recognitions.*

### UC/CSU/CCC ENERGY EFFICIENCY PARTNERSHIP PROGRAM 2010-12

- ▶ **Best Overall Sustainable Design** (*Poly Canyon Village*)
- ▶ **Best HVAC Design/Retrofit** (*Recreation Center Expansion*)
- ▶ **Best Student Sustainability Program** (*Green Campus Program*)
- ▶ **Best Lighting Design/Retrofit, Honorable Mention** (*Recreation Center Expansion*)
- ▶ **Water Efficiency and Site Water Quality** (*Irrigation Water Conservation & Site Water Quality Program*)
- ▶ **Sustainability Innovations** (*Sustainability Mentors Program*)

### 2009

- Best Overall Sustainable Design**  
(Center for Science and Mathematics)
- Best HVAC Design/Retrofit**  
(Various Projects)
- Best Lighting Design/Retrofit**  
(Various Projects)
- Best Student Energy Efficiency Project**  
(Green Campus Program)

### 2008

- Best Overall Sustainable Design**  
(Bonderson Engineering Building)
- Best Practices in New Construction, HVAC** (Satellite Central Plant)
- Best Practices in Innovative Waste Reduction** (Campus Integrated Waste Management Program)

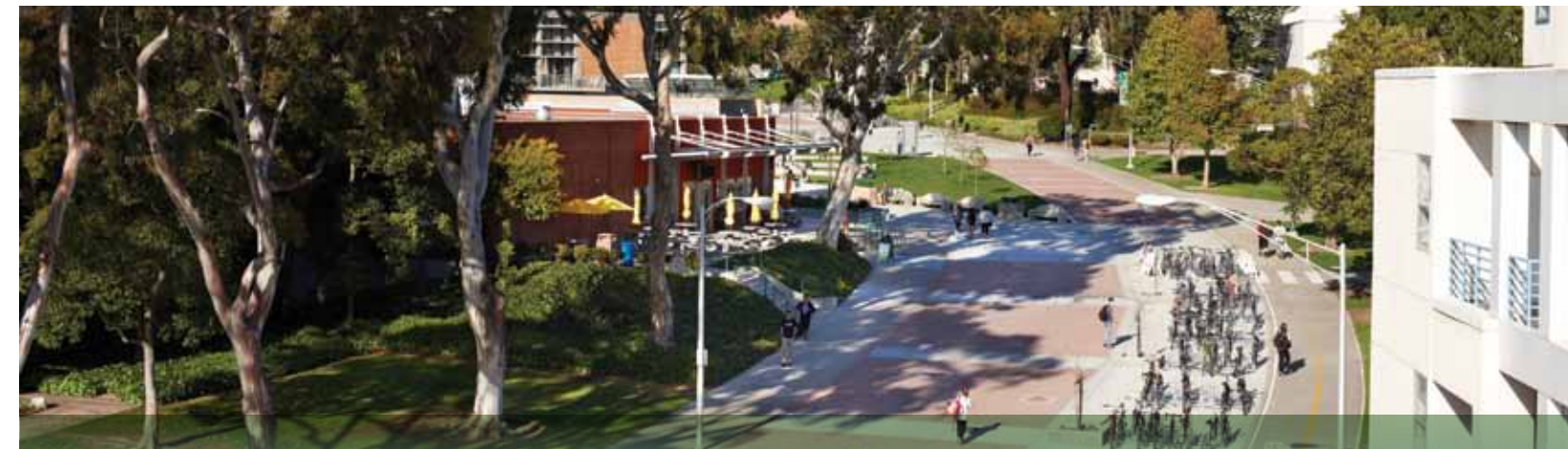
### 2007

- Best Practices in Traffic Demand Management** (OPTIONS program to encourage alternative transportation modes)
- Best Practices in Water Efficiency** (Comprehensive water retrofit program)
- Best Practices in Renewable Energy, Honorable Mention** (Rooftop solar PV, Engineering West)

The National Wildlife Federation’s “National Report Card on Sustainability in Higher Education” has rated Cal Poly a “Leading School for Environmental Sustainability Goal Setting” and “Leading Employer of Environmental Management and Sustainable Professionals.”

The University of South Florida’s National Center for Transit Research awarded Cal Poly its “Gold” medal as “Best Workplaces for Commuters.” The U.S. Environmental Protection Agency recognized Cal Poly with similar awards in previous years.

The SLO County Air Pollution Control District issued a Pollution Reduction Award for the Rooftop solar PV Project on Engineering West.



*Pursuant to the university master plan, the campus continues to convert to a more bike- and pedestrian-friendly ambience. In 2010 South Perimeter was closed to through traffic and converted to a walking mall and bike path.*



## ENERGY USE

*Despite the addition of thousands of on-campus residences, energy use per square foot of building is lower now than it was 10 years ago. This improvement is likely due to several factors including millions of dollars invested in energy efficiency upgrades in older buildings, the addition of several new buildings designed and built to stricter standards, and increased conservation.*

The CSU tracks energy use per square foot of building for each of its 23 campuses, using a methodology that accounts for special cases such as parking structures and agricultural facilities. Figure 1 reflects the calculations by the CSU Chancellor's Office. They are slightly different from Cal Poly's own estimates in previous reports that used a somewhat different formula for counting total building square footage.

At Cal Poly, the trend in BTUs per square foot shows a spike in 2005-06, only to decline again over the next few years. Clearly accounting for this apparent increase and decline is difficult. Since 2008-09, energy use per square foot has changed little.

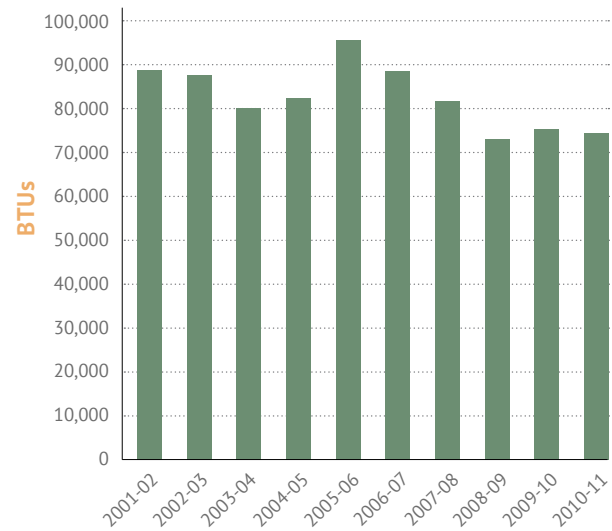


FIGURE 1: BTUs PER SQ/FT OF BUILDING

## ENERGY CONSERVATION

*A campuswide audit was completed in 2008 that identified more than \$40 million in potential energy and water conservation projects; during 2010 – 2011, approximately \$7 million was invested in efficiency improvements. Major initiatives included:*

- ▲ Comprehensive lighting upgrades in 45 buildings with low-wattage fluorescent lamps and ballasts, LED lighting, occupancy sensors, wireless controls and daylight harvesting. More than 28,000 new lamps were installed.
- ▲ Major upgrade of the HVAC systems in the Education Building and University Union.
- ▲ Decommissioning two aging air conditioning chillers serving the Business, Education, and Fisher Science buildings, and connecting them to the more-efficient campus central plant.

The projects save 1.35 million kWh of electricity and 8,500 therms of natural gas each year, which reduces CO<sub>2</sub> emissions by about 1,000 tons annually. They also generated cost savings of \$160,000 per year, and qualified for \$515,000 in utility incentives.



### POLY CANYON VILLAGE COGEN UPGRADE

The LEED Gold-certified Poly Canyon Village student housing complex, completed in 2009, was designed and constructed with a cogeneration system to produce 500 kW of electricity. Waste heat from the system is used for space heating, domestic hot water, and the swimming pool. In 2011, this system was upgraded with enhanced controls and connections to additional buildings, allowing greater production and year-round utilization.

### THERMAL ENERGY STORAGE PROJECT

In early 2012, a major upgrade to the central cooling plant was completed that included a new 1.5 million gallon thermal energy storage tank, related equipment and the extension of piping in the core campus. The system allows water to be chilled at night when electrical rates are lower and ambient temperatures cooler. The chilled water is then pumped to buildings during the day when cooling is needed. The project will result in more than \$100,000 per year in energy savings, and qualified for more than \$400,000 in utility incentives.

### ELECTRICAL DEMAND RESPONSE

As part of a statewide Demand Response System, Cal Poly voluntarily reduces energy use during periods of hot weather and high electrical load across the state. In summer of 2011, Cal Poly saw exemplary performance of its electrical load curtailment program. The university reduced its electrical load by as much as 1.5 megawatts, garnering \$63,000 in utility rebates, more than double the payment in previous years.





One of 80 alternative-fuel vehicles used by Facility Services.

VEHICLE FLEET

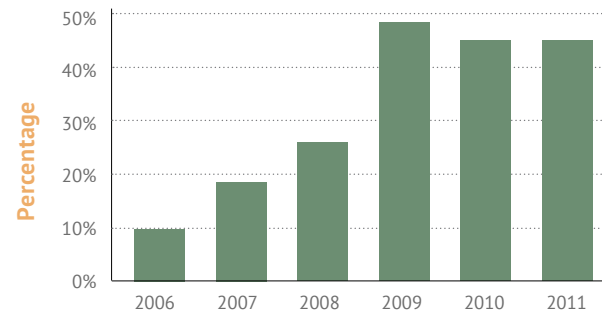
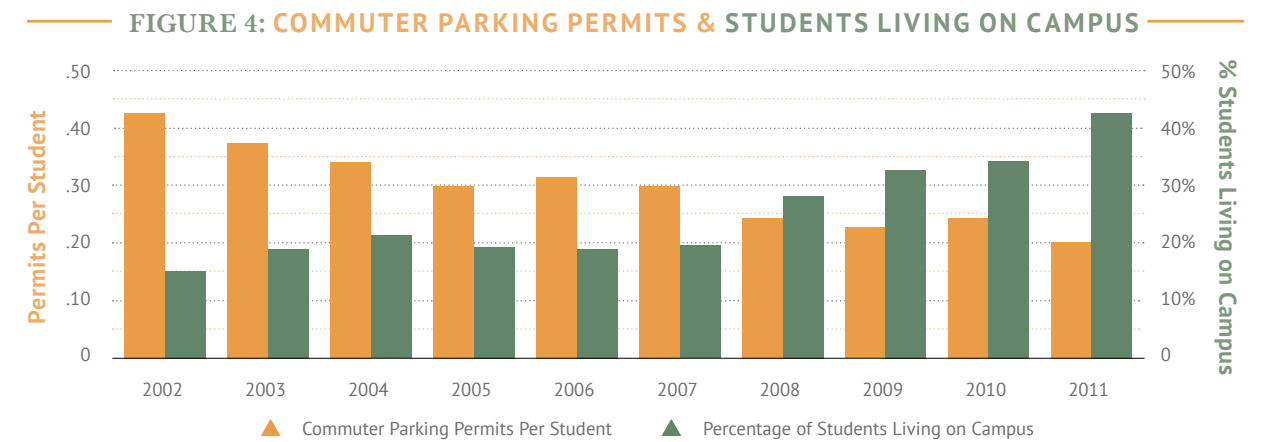


FIGURE 2: PERCENTAGE OF FLEET VEHICLES USING ALTERNATIVE FUELS

By the late 2000s, Facility Services had substantially invested in alternative fuel vehicles for use in campus operations. Since 2009, almost half of that operational fleet now runs on rechargeable electricity, propane or biodiesel.

Cal Poly has experienced a significant and continual decline in automobile commuting. In 2002 about one commuter parking permit was sold for every two students; in 2011 one permit was sold for every four students. At least part of this decline in commuting reflects the goal of the campus master plan that called for additional on-campus housing and the transition of Cal Poly to a more bike- and pedestrian-oriented campus.



Since 2001, Cal Poly has built housing for an additional 3,500 students with the addition of the Cerro Vista apartments and more recently Poly Canyon Village. Demand for university housing exceeds supply: in 2011 some student lounges were converted to dorm rooms and many doubles were turned into triples to try to accommodate students who preferred to live on campus. Preliminary plans for the future envision more student apartments and support facilities.

As more students live on campus, bicycling has dramatically increased. Since 2006, the number of bike racks on campus has tripled; the number of bike lockers has more than doubled. To better accommodate bike travel, Cal Poly installed separated bike paths on California Boulevard and on a portion of South Perimeter in conjunction with the University Union remodel and Recreation Center expansion. The campus bike plan was updated in 2011 and several projects are planned to improve circulation that will be implemented as funding permits.

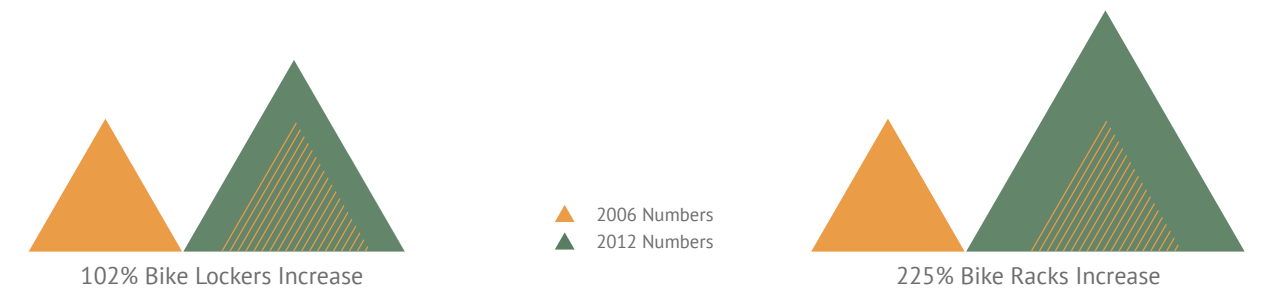
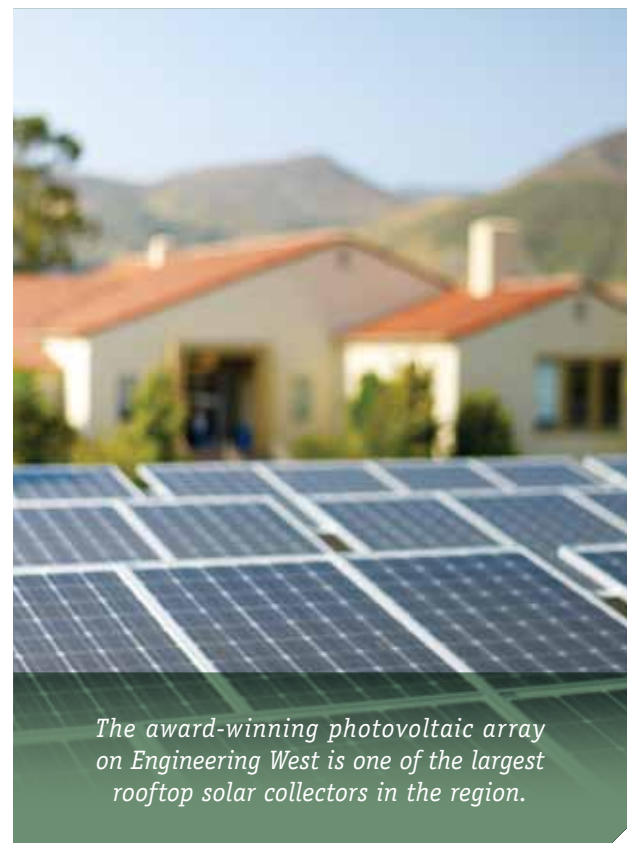


FIGURE 5: BIKE LOCKERS & RACKS

RENEWABLE SOURCES OF ELECTRICITY

In 2010, Cal Poly's electrical power mix supplied by PG&E included about 16 percent from renewable sources such as biomass, geothermal, solar and wind generation, about the same as the previous year (an increase from 13 percent in 2007). More than half of Cal Poly's electricity now comes from sources that do not emit greenhouse gases, up from about 48 percent the previous year. A rooftop solar photovoltaic array on Engineering West contributes to Cal Poly's electricity from renewable sources.



The award-winning photovoltaic array on Engineering West is one of the largest rooftop solar collectors in the region.

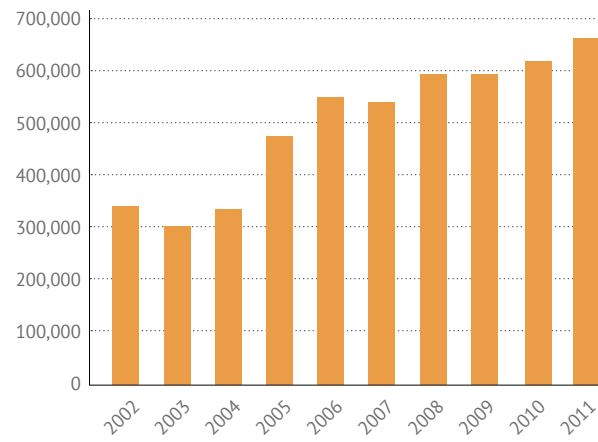
	Percent	Eligible Renewable	Non-GHG Emitting
Biomass and Waste	4%	Yes	No
Geothermal	5%	Yes	Yes
Small Hydro	3%	Yes	Yes
Solar	1%	Yes	Yes
Wind	4%	Yes	Yes
Large Hydro	16%	No	Yes
Nuclear	24%	No	Yes
Natural Gas	20%	No	No
Coal	1%	No	No
Unspecified	24%	No	No
2010 : 2009	100% : 16%	16% : 16%	51% : 48%

FIGURE 3: ELECTRIC POWER MIX 2010



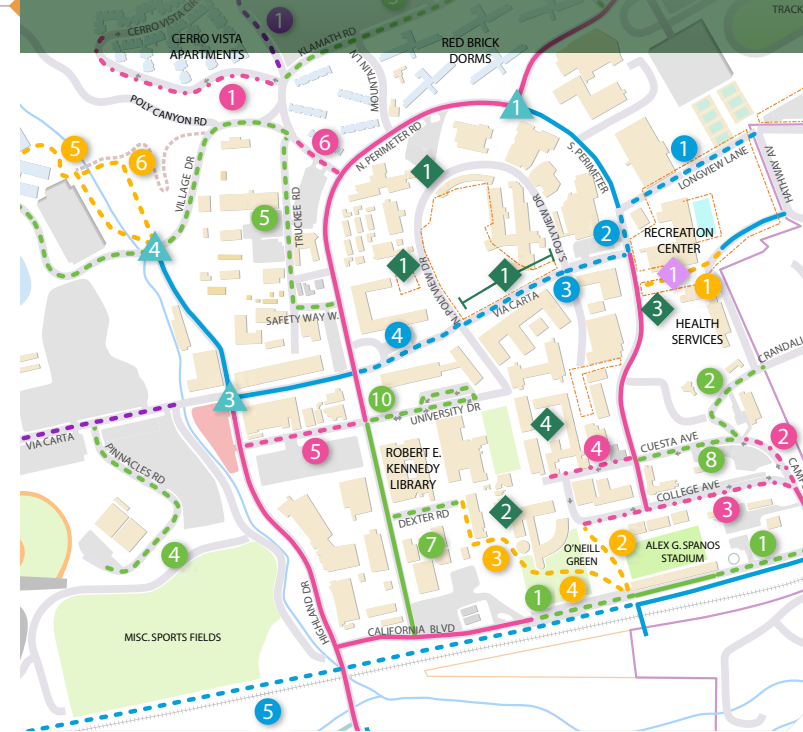
## TRANSPORTATION

Cal Poly has devoted significant efforts to encourage those who do commute to campus to use alternatives to single-occupancy cars. Over the last two years the university paid the City of San Luis Obispo about \$700,000 (out of parking fine revenue) so that Cal Poly students and employees can ride local buses for free. The university also invested in two new transit centers at Kennedy Library and at the corner of Grand and Perimeter that have increased efficiency and convenience for both local and regional buses. The centers not only include covered seating and information kiosks, but also real-time electronic displays of the status of buses. Local transit ridership increased by 8.5 percent since the installation of the new transit facilities in 2010 and has doubled since 2002.



**FIGURE 6: CAL POLY SLO TRANSIT RIDERSHIP**

The updated bike plan recommends several improvements to the bike system including a new cross campus connection on Via Carta that will be installed with the completion of the new Center for Science and Mathematics.



To encourage people to leave their cars at home, the university has two "zip cars" that students and employees can rent for off-campus errands and other short-term uses. Started as an experiment two years ago, "zip cars" reached a remarkable 75 percent weekday and 50 percent weekend utilization in 2011.



The city acquired a double-decker bus to better accommodate peak-time demand on popular Cal Poly routes.



Cooperatively designed and constructed by Cal Poly and the city, and funded in part from a grant, a separated bike path parallel to California Boulevard now connects the campus to Foothill Boulevard and points south.



Especially after the opening of Poly Canyon Village, bike use on campus increased significantly.



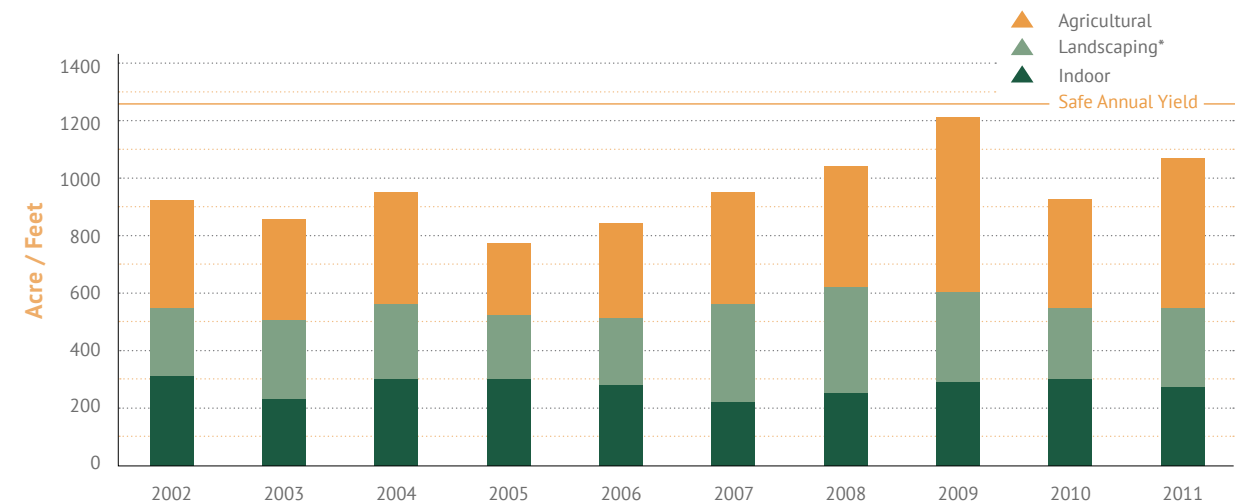


## WATER RESOURCES

*Through the widespread retrofitting of existing buildings with low-flow plumbing fixtures, improvements to irrigation practices and systems, and educational outreach to encourage conservation, domestic water use is at about the same level as it was before opening the Cerro Vista apartments and Poly Canyon Village, projects that house thousands of students on campus.*

Most of Cal Poly's water is allocated from Whale Rock Reservoir in Cayucos, which it shares with the City of San Luis Obispo and the California Men's Colony. Water for domestic purposes is piped to the city-operated treatment plant adjacent to the campus. Water used for agricultural purposes is not treated. **Total delivered water** to campus is the combination of treated and untreated amounts. **Total domestic water** is the **indoor water** plus treated water used outdoors, primarily for landscaping.

As the first and second phases of Poly Canyon Village opened, indoor water use increased from 2008 through 2010. In 2011, however, indoor water use declined, probably due to greater conservation efforts and the continued installation of high-efficiency fixtures. Major projects during 2011-2012 included the installation of low-flow plumbing fixtures in Yosemite Hall and the Architecture and Engineering South buildings, resulting in annual savings of 540,000 gallons of water.



**FIGURE 7: AGRICULTURAL, LANDSCAPING & INDOOR WATER USE**

\*Includes landscaping, sports fields and some animal science uses.

Cal Poly uses almost as much water for its agricultural operations as it does for all domestic purposes. Most of that water is allocated from Whale Rock Reservoir but a significant amount comes from campus wells. The infrastructure that delivers agricultural water is old; some pipes and wells were installed 75 years ago. A well failure in 2009-10 contributed to an increase in the total delivered water piped from off-campus sources. Beginning in 2010, Agricultural Operations (Ag Ops) within CAFES began an extensive program of upgrading that infrastructure including replacement wells and new pump stations. Using state-of-the-art water management practices with assistance from Cal Poly's Irrigation Technology Research Center, Ag Ops aims to increase water efficiency and to decrease electricity used for pumping irrigation water.



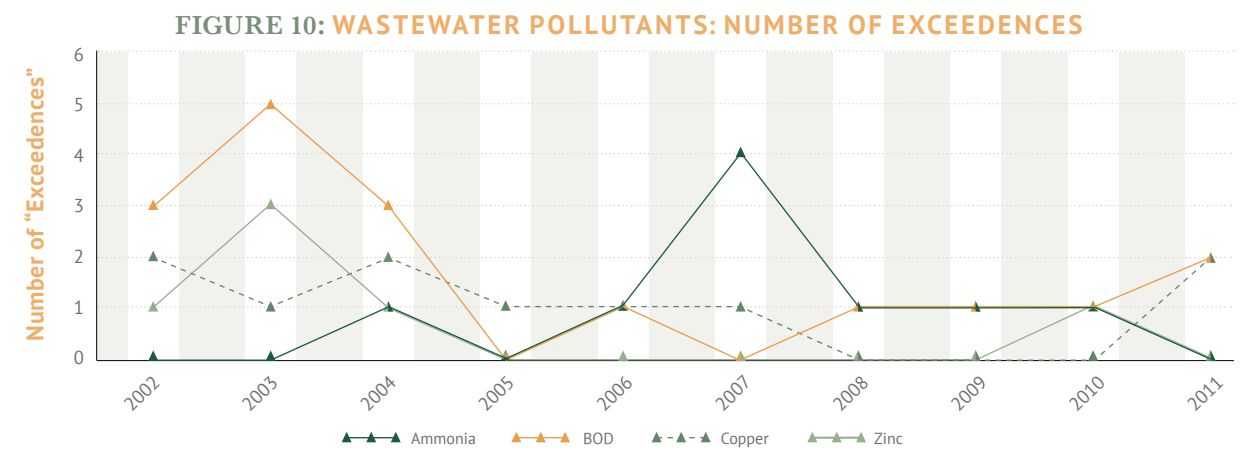
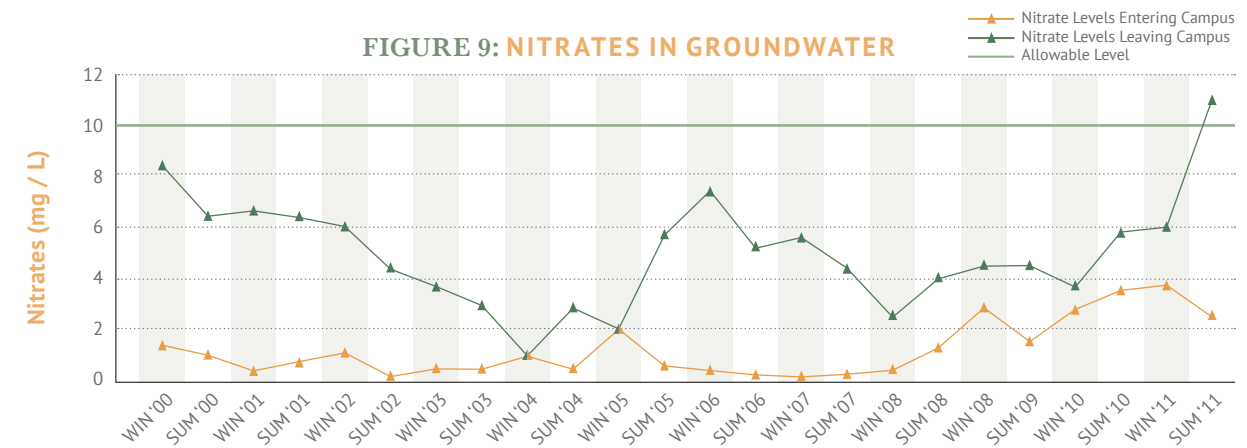
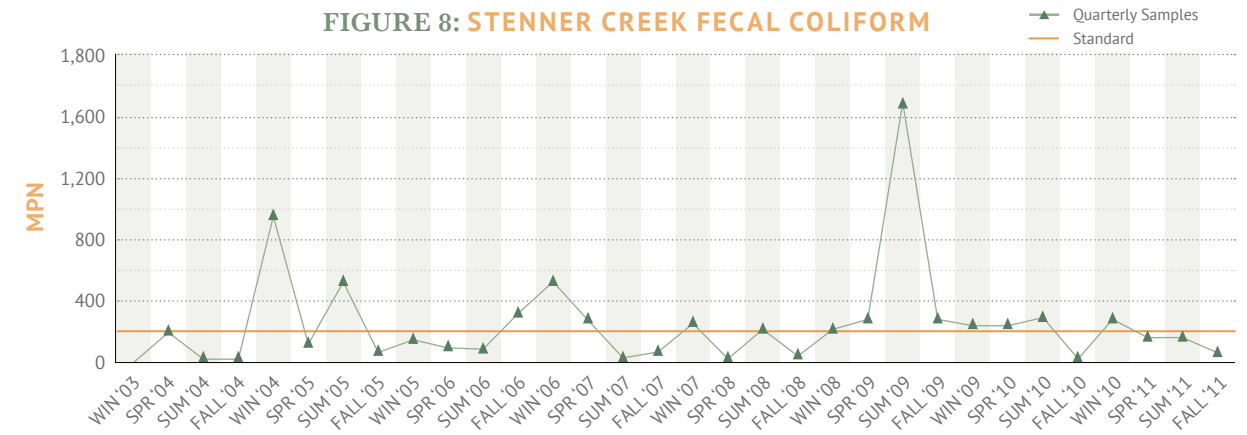
## WATER QUALITY

*Cal Poly has adopted a Water Quality Management Plan that was approved by the Central Coast Regional Water Quality Control Board. The university monitors pollution in its surface waters, groundwater, and the wastewater that leaves the campus through the sewer system for treatment.*

The water in Stenner Creek is tested quarterly for fecal coliform, an indicator of bacterial contamination. After an unusual spike in 2009, more recent testing shows pollution levels more in line with historic trends and most recently within water quality standards.

The university has monitoring wells around the campus for testing the quality of its groundwater. One well is used to measure nitrate levels in the groundwater above the campus; another tests nitrates down gradient below the campus. Water entering the campus is generally cleaner than that leaving the campus. Despite some fluctuations from year to year, the groundwater has generally met minimum standards. More recently, however, water entering the campus has tested higher for nitrates, and in summer 2011 groundwater at the lower campus gradient exceeded the standard. Changes in groundwater levels due to a lack of precipitation significantly affect the nitrate load.

Cal Poly tests for a number of potential pollutants in its wastewater. Starting in 2012, new standards were adopted for several of these materials. Pursuant to the new standards, some contaminants that the campus had been monitoring are no longer considered significant enough to warrant future testing, while some others are newly added to the array. To create meaningful trend lines for this report, the new standards were applied retroactively to four key pollutants that have been monitored for the last 10 years. In general, the campus has met applicable standards with no more than one or two annual "exceedences" on any of these constituents in the last four years of monthly testing. BOD, which had previously been a problem, has greatly improved from peak years, and ammonia levels which curiously spiked in 2008 met the applicable standards throughout last year. Zinc has been essentially eliminated from the waste stream by shifting to more ecologically friendly floor cleaning products.



*Working with the Morro Bay National Estuary Program and the California Conservation Corps, Cal Poly is developing a rain catchment system at the Beef Evaluation Center in the Chorro Valley. Expected to be completed by 2012, the catchment project will reduce groundwater withdrawals, saving both water and power.*



*Water quality in Stenner Creek is generally good and supports a population of Southern Steelhead trout — a threatened species.*





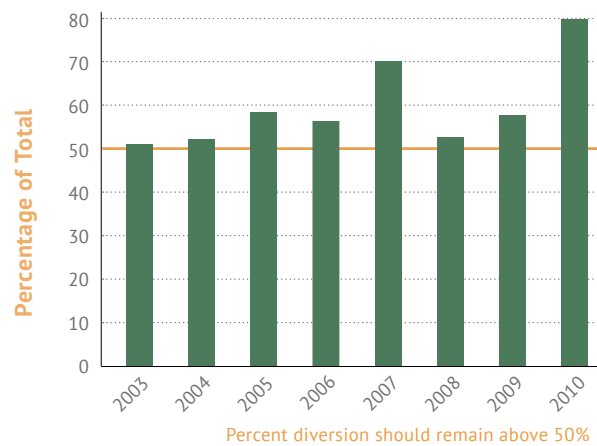
The majority of Cal Poly's solid waste is recycled or otherwise re-used, including most materials from the demolition of portions of the old Recreation Center and old Science Building that occurred to make way for new construction.

Cal Poly's goal is to divert at least half of all its solid waste from disposal in a landfill. Paper, cardboard, aluminum, glass and plastics are collected and sent to recycling facilities. Campus Dining sends food waste to a composting operation. The university also encourages recycling through its procurement policies: to the extent possible, all products must be recyclable or made from recycled materials.

An especially important program has been the on-campus composting of manure from animal science facilities mixed with green waste from landscape maintenance, creating a product that can be used on campus, with excess packaged and sold to the public. The "recipe" has resulted in a high-end, uniform product that has been approved by the U.S. Composting Council. Under that program, the material is regularly tested and has thereby earned a Seal of Testing Assurance. This composting operation recycles more than 4,000 tons of green waste and manure each year.

Thousands of tons of waste were generated by the demolition of older buildings necessitated by the construction of the expanded Recreation Center and new Center for Science and Mathematics. Cal Poly requires contractors to divert much of that waste from the landfill so that it can be recycled for new uses. Of 8,090 tons resulting from these two major projects, 7,865 (97 percent) were diverted in 2010.

FIGURE 11: PERCENT SOLID WASTE DIVERTED FROM LANDFILL

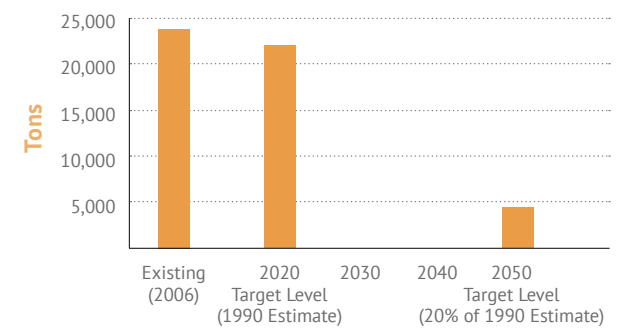


Responding to the challenge of climate change is now adopted public policy in California. The Global Warming Solutions Act (AB 32) sets a statewide target of reducing Greenhouse Gas (GHG) emissions to 1990 levels by 2020.

The reduction of greenhouse gases (GHG) associated with climate change remains an adopted policy in California. Pursuant to the Global Warming Solutions Act (AB 32) the CSU aims to lower systemwide GHG emissions to 1990 levels by 2020. Preliminary target levels have been established for individual campuses as well as for CSU as a whole. However, the analysis of data provided by the campuses has been hampered by inconsistencies in methodologies used for calculating emissions. The Chancellor's Office has been charged with coming up with a common, meaningful way of accounting for GHG emissions across the campuses as well as updated targets. As of 2012, a new policy regarding GHG inventories and reporting was being considered that would require biennial submissions from the campuses starting in 2014.

As noted in earlier reports, GHG inventories raise the troublesome dilemma of setting boundaries. For example, if the campus itself is considered the appropriate boundary, the addition of on-campus housing at Cal Poly could be viewed as a problem because it has raised energy demand and GHG emissions. However, from a wider and more appropriate perspective, moving thousands of students into more energy-efficient, high-density housing within walking distance of the campus core is part of a "smart growth" approach to addressing climate change. This illustrates at least part of the difficulty in meaningfully quantifying and monitoring changes to GHG emissions across a 23-campus statewide university system.

FIGURE 12: ESTIMATED GHG EMISSIONS (NATURAL GAS AND PURCHASED POWER)



The campus waste is composted into a valuable product. The next goal is for the compost to be approved by the Organic Materials Research Institute and thus be USDA certified organic for farm and garden use.

## CALIFORNIA STATE UNIVERSITY SUSTAINABILITY POLICIES

The California State University has been working toward improved sustainability within the system as a whole. Executive Order 987 established important sustainability goals related to energy efficiency in operations and the design of new buildings, renewable sources of electricity and "green" purchasing standards. By 2012 the Chancellor's Office, with input from many of the campuses, had drafted an updated EO 987 that included greenhouse gas emissions and solid waste. As of the writing of this report, the proposed sustainability policy was still under review and not yet adopted.



## LAND USE AND DEVELOPMENT

*Cal Poly is a leader in the design and construction of “green” buildings. Poly Canyon Village, which earned LEED’s Gold standard, is the largest LEED-certified project in the CSU system, and the largest university housing project to be so certified in the country.*

Cal Poly is continually advancing campus standards for new and remodeled buildings. The new Center for Science and Mathematics has been designed to meet a high level of LEED certification. Students approved funding to ensure that the new Recreation Center exceeds minimum LEED standards. The Recreation Center includes such features as an Indirect/Direct Evaporative Cooling (IDEC) system that is expected to save 160,000 kWh per year over conventional air conditioning, a “green roof,” and other low-energy and high-efficiency HVAC and lighting systems that will exceed already strict building standards by 25 percent, resulting in another 450,000 kWh of annual savings.

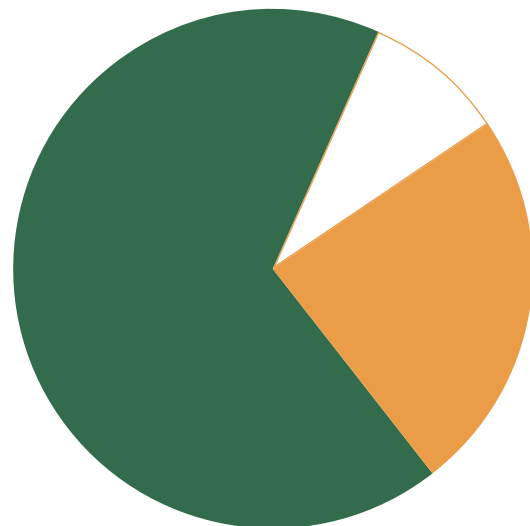
Another recent building project, the University Union remodel, was also designed to meet LEED requirements and is undergoing the certification process as of 2012.

Not only does Cal Poly design new projects to meet recognized environmental standards, it is working to upgrade existing buildings to meet those requirements as well. Faculty East was the first campus facility to earn LEED–EB (Existing Building) certification. The Construction Innovations Center building is currently going through the upgrade and certification process.

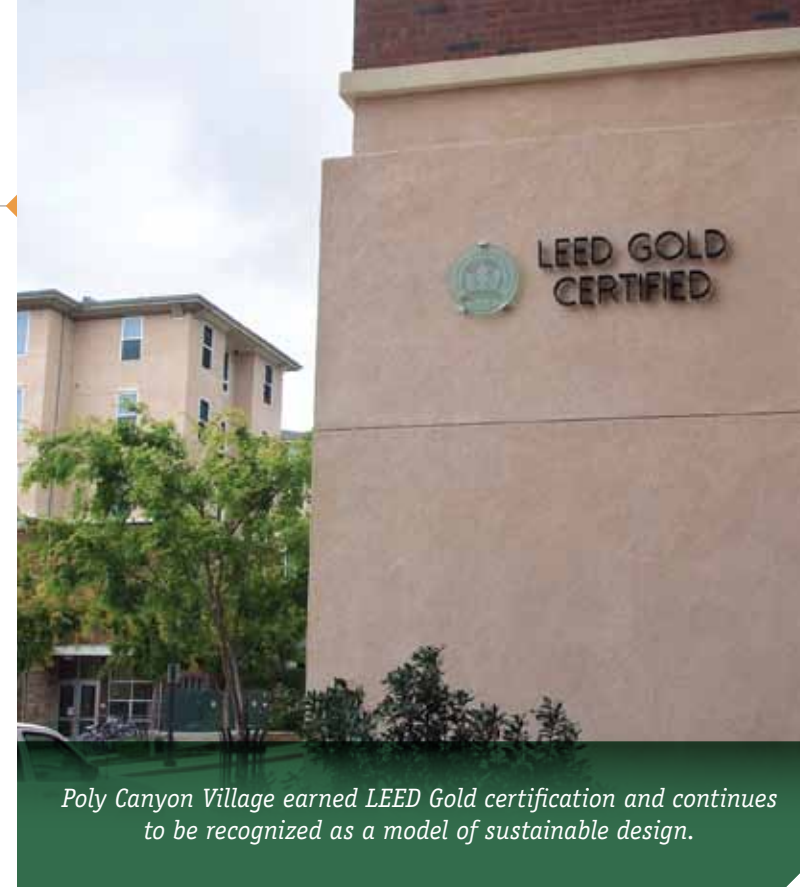
Outside the main campus, the university has also been working on environmentally appropriate land stewardship. On the university ranchlands in the Chorro Valley, the Animal Science Department in CAFES has worked closely with the Morro Bay National Estuary Program, the California Department of Fish and Game and other partners to restore riparian habitat. Best management practices (BMPs) for grazing, such as the use of rotational pastures, riparian fencing, and off-stream stock watering facilities combined with erosion repair and re-vegetation work, have resulted in the dramatic conversion of previously degraded stream corridors into biologically productive areas.

**FIGURE 13: PERCENTAGE OF BUILDING SQUARE FOOTAGE LEED CERTIFIED**

■ Non-LEED ■ LEED Certified □ Under Construction or in Certification Process



**Between those buildings already LEED certified and those under construction or in the process of certification, about 1/3 of the total campus square footage is or will be LEED certified.**



*Poly Canyon Village earned LEED Gold certification and continues to be recognized as a model of sustainable design.*



*The new Recreation Center incorporates many sustainable design features including state-of-the-art cooling and lighting systems.*



*The Center for Science and Mathematics replaces a one-story building that was more than 50 years old. The new building not only provides better research and educational facilities, but also more efficiently uses valuable land in the campus core and has been designed with modern water and energy conserving features.*



*Campus Dining continues to enhance its sustainable practices. The use of non-recyclable polystyrene products has been discontinued. Waste cooking oil is recycled into biofuels, and in 2010 about 165 tons of food waste was composted. Sage Restaurant and Sage Catering often highlight organic produce from the campus farm on its menu.*

## TOWARD A SUSTAINABLE CAMPUS COMMUNITY

*The importance of sustainability at Cal Poly is reflected not only in its facilities and operations, but increasingly in its curriculum, research and student life.*



The **Green Campus Program** is a group of student interns working with Facility Services staff to promote energy efficiency and environmental stewardship. The program is funded through the nonprofit Alliance to Save Energy. Green Campus has sponsored competitions among dorms, offering prizes for the greatest reductions in energy and water use.

They recently initiated the “**Green Campus Workplace Certification**” project whereby different departments at Cal Poly, guided by “sustainability mentors,” can earn different levels of recognition for environmentally

responsible efforts related to energy and water efficiency, recycling, procurement and alternative transportation. The program, successfully implemented in Administration and Finance departments, has been approved by the Academic Senate and endorsed by President Armstrong for wider application to academic departments as well.

Brett Edwards, one of the Green Campus interns, is **Mr. Eco** – an environmental rap superhero that encourages sustainable practices. Mr. Eco not only appears at university events but has also taken his message to schools, community groups and social media.

**ASI** is expanding its interest in sustainability, including the annual appointment of a student government position on the ASI President’s cabinet dedicated to educating the student body on sustainable practices. In addition to funding many sustainable features in the University Union upgrade and Recreation Center expansion, and seeking LEED certification for both, ASI has also committed to **Green Cleaning** programs that utilize environmentally responsible products and practices in both facilities.

The **EmPower Poly Coalition** is a consortium of more than 25 clubs on campus that are oriented to some aspect of sustainability. The EmPower Poly Coalition hosted the California Student Sustainability Coalition Convergence in spring 2012.

The **Academic Senate Sustainability Committee (ASSC)** has developed a Sustainability Catalog (SusCat) that lists more than 150 courses related to environmental topics. Largely through the efforts of the ASSC, Cal Poly formally adopted sustainability learning objectives in 2009 – educational outcomes expected of every graduating student – and is now working on a sustainability graduation requirement.



*Cal Poly’s Green Campus Program has received multiple awards from the UC/CSU/CCC Energy Efficiency Partnership for its innovative work encouraging sustainability among students. Here, winners of an inter-dorm competition sponsored by Green Campus Program celebrate their success at conserving energy and water.*



In 2011, **Contracts and Procurement** teamed up with OfficeMax to launch an online catalog of Environmentally Preferred Products (EPP), making it easier for users to choose from more than 450 commonly used office supplies. The EPP catalog promotes the use of reusable, refillable and recycled products, bulk purchase and reduced packaging.

In 2010, the **CAFES Center for Sustainability** was formally established. The center promotes education and research in sustainable agriculture, resource management and food systems through interdisciplinary collaboration. In 2011, the center created the **Sustainable Stewards Program** – paid student internships modeled after the Green Campus Program that focus on implementing sustainable practices within the college and on the Cal Poly farm.

Cal Poly offers several **majors** in fields closely linked to sustainability. **Minors** in sustainability include sustainable environments and sustainable agriculture, among others.

In 2011, students founded the **Cal Poly Bicycle Coalition** to promote bike use and safe cycling practices. The coalition also advocates for improvements to the bicycle system.



*Health Services used to generate about 250 gallons of toxic waste per year from its X-ray operations. In 2011, the facility switched to a computerized radiography system that produces no waste at all.*



## AFD OPERATIONS SUSTAINABILITY PLAN

Cal Poly's Administration and Finance Division articulated its plan for sustainability in 2008 and has biennially updated it since. The plan, summarized here, includes principles, specific targets and actions for meeting those targets.

## GUIDING PRINCIPLES

Cal Poly operations are committed to the continued improvement in the sustainability of the physical campus. Our guiding principles include the following:

- ▲ To contribute to sustainability as an integral aspect of the Cal Poly learning environment by making such practices visible and accessible
- ▲ To be careful stewards of the campus resources
- ▲ To be leaders in sustainable practices

## TARGETS

In addition to the principles, operations have established the following more specific targets:

Reduce energy use by an average of 15% per square foot of campus space by 2015 (relative to 2005 levels).	Achieved 8% as of 2011	p. 10
Increase purchase (or production) of electricity from renewable sources by 33% by 2020.	Achieved 16% as of 2010	p. 12
Reduce campus GHG emissions annually between 2008 and 2020 by the amount necessary to achieve 1990 levels by 2020.	Ongoing	p. 21
Construct all major capital building renovation projects to LEED certification or equivalent.	Ongoing	p. 22
Convert one existing building on campus to achieve LEED EB status or equivalent every three years.	Ongoing	p. 22
Continue to keep annual commuter parking permits to levels at least 25% below that of 2001.	Ongoing	p. 13
Divert at least 50% of the solid waste stream from landfills through recycling or re-use each year.	Ongoing	p. 20
Meet all adopted water quality standards for wastewater effluent, creeks and groundwater.	Not Yet Achieved	p. 18
Complete AASHE STARS registration by Spring 2014.	Ongoing	p. 8

## AFD SUSTAINABILITY PLAN ITEMS COMPLETED BY 2011

- ▲ Create Sustainability Manager Position
- ▲ Complete campuswide energy/water audit
- ▲ Establish baseline for GHG monitoring
- ▲ Achieve LEED EB for Faculty East
- ▲ Meet with the City of San Luis Obispo regarding use of recycled water for campus
- ▲ Host UC/CSU/CCC Sustainability Conference
- ▲ Install bike path on California Boulevard
- ▲ Install pedestrian path from Poly Canyon Village to campus core
- ▲ Add at least 60 bike racks and 35 lockers
- ▲ Add at least one additional van to vanpool program

# OPERATIONS SUSTAINABILITY PLAN STATUS AS OF 2012

ENERGY USE	Contract to perform annual projects	▲
	Assess feasibility of new solar and wind generation projects	▲
LANDSCAPING	Install centralized controls with weather station	△
	Create Landscape Management Plan for undeveloped, non-ag land	△
PURCHASING	Require Energy Star	▲
	Institute Environmental Purchasing Program	▲
NEW CONSTRUCTION	Require energy goal setting with schematic design	▲
GHG	Monitor per CSU guidelines	▲
CORPORATION	Continue to convert vegetable oil to biodiesel fuel	▲
	Compost 1,500 lbs/day of food waste	▲
	Eliminate polystyrene containers	▲
HOUSING	Provide on-campus housing	▲
	Design housing with support facilities	▲
	Provide information to residents about conservation	▲
PARKING	Continue to subsidize transit	▲
	Continue OPTIONS program	▲
	Update and implement bike plan	▲
	Continue to convert campus core to pedestrian environment	▲
	Continue to provide discount fares to students on Amtrak	▲
	Research feasibility of providing charging stations for electric vehicles	△
WATER	Continue with installation of water-efficient fixtures	▲
	Continue to monitor water quality	▲
	Investigate and ameliorate pollution standard exceedences	▲
	Assess feasibility of non-treated water for ITRC	▲
OUTREACH	Support Green Campus Intern Program	▲
	Employ student assistants	▲
	Provide open access to plans, provide presentations	▲
	Support senior projects	▲
	Extend green Campus Certified from AFD to other departments of campus	▲
BUILDING OPS	LEED EB for University Union and Construction Innovation Center	△
FLEET	Continue alternative fuel transition	▲
	Right size fleet including vehicle sharing technology	▲

▲ Implemented & Ongoing    △ Not Yet Implemented



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*The green roof at the Recreation Center is only one of  
the facility's many sustainable features.*

