

Biennial Progress Report 2006

Sustainability at Cal Poly

Facilities & Operations

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



The Talloires Declaration: University Presidents for a Sustainable Future

Signed by Cal Poly President Warren Baker, April 23, 2004

- 1. Increase Awareness Of Environmentally Sustainable Development**

Use every opportunity to raise public, government, industry, foundation, and university awareness by openly addressing the urgent need to move toward an environmentally sustainable future.
- 2. Create an Institutional Culture of Sustainability**

Encourage all universities to engage in education, research, policy formation, and information exchange on population, environment, and development to move toward global sustainability.
- 3. Educate for Environmentally Responsible Citizenship**

Establish programs to produce expertise in environmental management, sustainable economic development, population, and related fields to ensure that all university graduates are environmentally literate and have the awareness and understanding to be ecologically responsible citizens.
- 4. Foster Environmental Literacy For All**

Create programs to develop the capability of university faculty to teach environmental literacy to all undergraduate, graduate, and professional students.
- 5. Practice Institutional Ecology**

Set an example of environmental responsibility by establishing institutional ecology policies and practices of resource conservation, recycling, waste reduction, and environmentally sound operations.
- 6. Involve All Stakeholders**

Encourage involvement of government, foundations, and industry in supporting interdisciplinary research, education, policy formation and information exchange in environmentally sustainable development. Expand work with community and nongovernmental organizations to assist in finding solutions to environmental problems.
- 7. Collaborate for Interdisciplinary Approaches**

Convene university faculty and administrators with environmental practitioners to develop interdisciplinary approaches to curricula, research initiatives, operations, and outreach activities that support an environmentally sustainable future.
- 8. Enhance Capacity of Primary and Secondary Schools**

Establish partnerships with primary and secondary schools to help develop the capacity for interdisciplinary teaching about population, environment, and sustainable development.
- 9. Broaden Service and Outreach Nationally and Internationally**

Work with national and international organizations to promote a worldwide university effort toward a sustainable future.
- 10. Maintain the Movement**

Inform and support each other's efforts in carrying out this declaration.

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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 key actions that are especially relevant to institutes of higher education.



Cal Poly's Organic Farm teaches students crop raising methods that do not require pesticides or chemical fertilizers.

Sustainability in Facilities and Operations

Cal Poly is committed to sustainability in its campus planning, development and operations; its land and resource stewardship; and its teaching and research. In 2004, President Warren Baker signed the international Talloires Declaration (see inside front cover) that spells out key actions that institutions of higher education should take to ensure a more sustainable future.

Cal Poly is especially well-positioned to educate students for leadership in science and technology. Those fields will be critical to creating a truly sustainable society.

In addition to its educational role, Cal Poly as an institution can demonstrate sustainable practices. The focus of this report is on sustainability in Cal Poly's operations, maintenance, construction and resource management.

As a polytechnic university, it is at the core of our mission to examine the ways in which knowledge may be applied to improve society, manage scarce resources and preserve the precious environmental values that support us physically as a species and uplift us spiritually.

--President Warren Baker, 2004

The Facility Services Department is responsible for building renovations, new construction of all but the largest capital projects, and most of the operations and maintenance of the core campus. Facility Services emphasizes sustainability in the full range of its responsibilities.

Although every department -- and really, every individual -- is critical to a sustainable campus, some are especially important partners with Facility Services in this effort:

- Facilities Planning & Capital Projects is responsible for long-range physical planning and new construction.
- The College of Agriculture manages thousands of acres of agricultural and timber lands located in San Luis Obispo and Santa Cruz counties.
- Environmental Health and Safety monitors water and air quality.
- The University Police Department runs the parking operations and programs to encourage alternative transportation modes.
- Housing and Residential Life oversees on-campus housing and dining facilities.



Facility Services recently upgraded the Christopher Cohan Center for the Performing Arts with state-of-the-art environmental controls to more efficiently regulate heating and cooling; that work won a state-wide competition among sustainable operations related to HVAC retrofits from the Green Building Research Center.

Purpose of this Report

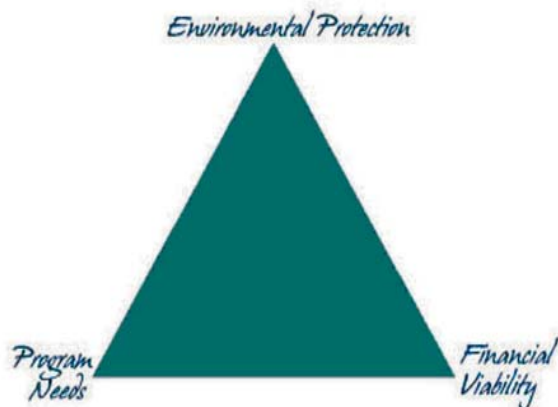
This report is one of many attempts to quantify and track Cal Poly's movement toward a "greener" campus. Efforts are underway to reduce reliance on automobile commuting to campus, to promote energy and water conservation, to recycle solid waste, and to incorporate "green" products and practices in new buildings and in campus operations.

This report looks at measures of sustainability along several parameters. The results not only highlight various successes, but also suggest areas in which additional efforts are needed. We intend to update this report biennially.

A Concept of Sustainability

Sustainability refers to ways that we, as individuals and as a campus community, can use natural resources so that our current and future needs for those resources can be provided for. Moreover, a sustainable campus must also include a recognition of our academic mission as a state university, and an appreciation that our organization must be financially viable within the budget realities of California and the CSU system. Thus, sustainability can be viewed as a triad of interrelated forces that must become mutually supportive:

The Goals of Sustainable Campus Development must balance Environmental Protection, Academic Program Needs and Financial Viability



Role of the Master Plan

Cal Poly's Master Plan was adopted by the CSU Board of Trustees in 2001. It includes a statement of core values calling for development of an environmentally responsible campus that demonstrates high regard for bio-diversity, land stewardship, resource efficiency and energy conservation. The Master Plan includes many guiding principles that directly address campus sustainability and, thus, provide a large-scale ecological framework for the University's future. Some examples of Master Plan principles supporting sustainability at Cal Poly include:

- Protect environmentally sensitive areas, including prime farm land.*
- Enhance environmental resources.*
- Maintain habitats of sufficient size to support diverse species.*
- Promote sustainability in design, including but not limited to energy and water conservation.*
- Reduce vehicle trips and support alternative transportation.*
- Provide more on-campus housing and related support services to reduce auto use.*

Commitment to Sustainability

Cal Poly has demonstrated its commitment to sustainability at many levels. As discussed in greater detail later in this report, efforts are underway to promote energy and water conservation, to reduce reliance on automobile commuting to campus, to recycle solid waste, and to incorporate “green” products and practices in new buildings and in campus operations. However, many other efforts are also on-going.

For example, the University has two standing committees devoted exclusively to sustainability issues. The Vice President’s Sustainability Advisory Committee provides advice on “green” practices in building design, land use, operations, and transportation, among other key topics. This committee is constituted of faculty, staff and students. The Academic Senate has also established a Sustainability Committee that focuses on developing and fostering teaching and learning related to sustainability.

Cal Poly sponsors a Biennial Sustainability Convocation, bringing in internationally renowned experts to speak on global issues relevant to our local campus. Recent speakers

have included such well known experts as Amory Lovins and Peter Raven.

Associated Students, Inc. (ASI), as well as many other student clubs and committees, has emphasized sustainability as a campus concern. In 2005, ASI published the first edition of “A Student Guide to Sustainable Living,” a booklet that encourages environmental practices and perspectives.

Many of Cal Poly’s faculty and students have turned increasing attention to sustainability-related topics in courses, assignments and senior projects. The Academic Senate Sustainability Committee is working on ways to categorize sustainable curricula, leading, perhaps, to recommendations for new classes and for new concentrations.

Cal Poly’s faculty and students also undertake research in a wide variety of fields linked to sustainability. Millions of dollars in applied research grants have been awarded to Cal Poly’s faculty, centers and institutes related to water conservation, energy efficiency, transportation alternatives, grazing management to improve water quality and habitat values, ecological monitoring and conservation, fisheries management, and many other important topics. The Baker Forum held in 2006 emphasized sustainable energy alternatives, and the President’s Cabinet has suggested that new energy technologies would be an especially important focus for Cal Poly’s applied research.

A more complete and systematic cataloging of courses, projects, research and events involving Cal Poly and sustainability may be an appropriate addition to future reports.

Cal Poly’s Solar Decathlon entry—a 650 s.f. home that is powered by solar energy—won third place in an international competition sponsored by the U.S. Department of Energy and held in Washington, DC in 2005.



Indicators of Change

Cal Poly's efforts should contribute to positive changes in the campus environment. Identifying ways that progress can be meaningfully measured over time has been a challenge.

Variables that are linked to sustainable practices and outcomes, and that can be measured by a consistent methodology, are sometimes called "indicators" of environmental change. Ideally, a relatively few indicators that can be easily and efficiently measured would suggest how the entire system is changing, showing both improvements and areas that need further work. The indicators listed here were developed by the Facility Services staff in conjunction with the Sustainability Advisory Committee.

Even with a suite of useful indicators, accurately tracking environmental progress can be difficult over the short term given the complexity of ecological systems.

Consider that fluctuations in weather from year to year can dramatically affect water conservation (was it relatively rainy or dry?) and energy use (was it relatively hot or cold?). Nonetheless, over time, we should be able to observe general trends, while also recognizing that short term ups and downs can be affected by many extraneous factors over which the University has little control.

Indicators Used in This Report

Energy Use

- *BTU per square foot of buildings*
- *Percent of electricity supply from renewable sources*
- *Vehicles in campus fleet using alternative fuels*

Transportation

- *Commuter parking permits sold per student*
- *Public transit ridership*
- *On-campus housing*

Water Resources

- *Total domestic water use per square foot of building*
- *Indoor water use per square foot of building*
- *Pollutants in wastewater*
- *Nitrates in groundwater monitoring wells*
- *Fecal coliform levels in Stenner Creek*

Solid Waste and Recycling

- *Solid waste diverted from landfill (re-used or recycled)*

Land Use and Development

- *Acreage in open space preserves*
- *Habitat restoration projects*
- *"Green" design in buildings*

Energy Use

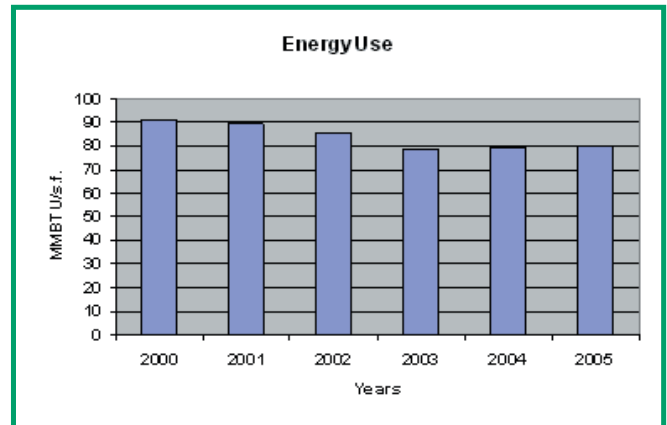
As the cost of oil and natural gas climb, and our awareness of the environmental consequences of using fossil fuels becomes more sophisticated, improving energy efficiency is surely an important measure of sustainability.

Conservation

The CSU set a goal of reducing energy use, as measured by BTUs per square foot of building area, by 15% between 1999 and 2005. BTUs are calculated by combining both electricity consumption and natural gas use. Cal Poly had reached a savings of almost 13% by 2003. The savings were accomplished by dozens of energy efficiency measures, including the re-fitting of over 27,000 lighting fixtures campus wide. However, energy expenditure per square foot has increased slightly, though still well below levels in the earlier part of the decade. One explanation may be that Cerro Vista student residential apartments were opened in 2003. A square foot of housing generally requires more energy consumption than, say, new lecture space. Thus, the average use per square foot, based on all the University's facilities, would rise, even if efficiencies in all other existing buildings stayed the same. Due to metering complications, it has been difficult to separate Cerro Vista energy consumption apart from campus-wide calculations. Future student housing projects, notably Poly Canyon Village, will be separately metered so that their effects on energy efficiency averages can be explicitly analyzed.



Mott Gym HID saves over 200,000 kWh per year.



The CSU has set a new goal of an additional 15% per square foot reduction by 2010 from a baseline of 2004. Cal Poly is aggressively working toward that goal. Achieving it will be complicated as additional on-campus housing is expected to come on line during that period, and the energy demand of residences is typically higher than that of office and classroom space of equivalent area.

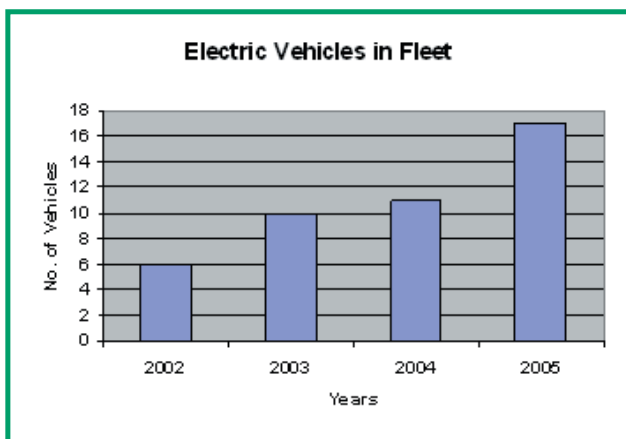
It is important to keep in mind that overall energy use by the Cal Poly community is more efficient when fewer people are commuting by cars to the campus. Energy used by students for household purposes in the on-campus residences would be expended even if those students were living off campus (and it is likely that the more modern and efficient campus apartments are more energy-efficient than most off-campus housing). However, the amount of energy used in transportation is significantly reduced. There are, of course, other benefits from having fewer commuters: less air pollution, traffic and congestion. This strategy is discussed further in the transportation section.

Utilidor Project

In 1999 Cal Poly completed a major revamping of the way the campus is heated and cooled. In what is called the "Utilidor" project, antiquated boilers and chillers were upgraded. Hot and cold water is now much more efficiently distributed through a single system which was placed in vaults underneath sidewalks on the core campus. This single project reduced the campus use of natural gas by about 30%.

Vehicle Fleet

Cal Poly has been gradually increasing its use of vehicles that run on electricity or natural gas, resulting in improved air quality and less direct reliance on gasoline. By 2005 over 18% of the total fleet had been converted to electric or LPG or other alternative fuel vehicles.



One of the fleet of electric vehicles now being used by Facilities Services

Renewable Sources

The CSU is aiming for at least 20% of total energy supplies to come from renewable sources by 2010. Cal Poly is working toward that goal through a number of ways. Contracts for electricity purchases require the supplier to use at least 17% from renewable sources such as wind, solar and hydro. CSU policies also aim for 50 MW of power to be developed on campuses system-wide by 2014, including co-generation. Cal Poly is switching to on-site power generation where opportunities arise. For example, Cal Poly is one of only three CSU campuses to undertake a photovoltaic project under a systemwide incentive program. In 2006, the roof of the Engineering West building will be outfitted with solar panels that are expected to produce over 135 kWh at peak capacity, supplying about .25% of the campus total electricity use. While only a small fraction of our overall needs, it is an important first step toward greater on-campus power production.

The Poly Canyon Village (PCV) Student Housing Complex -- slated to open in 2008-09 -- incorporates a co-generation plant that will produce electricity on site by burning natural gas; the resulting "waste" heat from that process is then used to produce all the hot water in the 2700 bed complex.



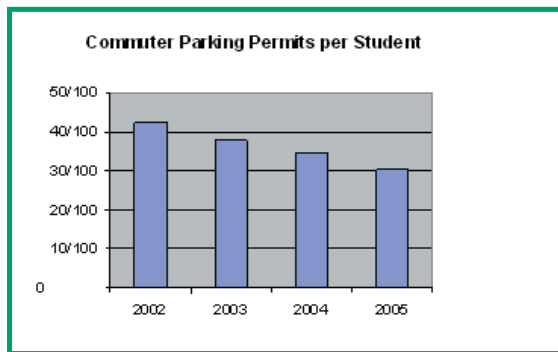
One of only three CSU campuses to take advantage of a systemwide program, Cal Poly installed photovoltaic panels on Engineering West in 2006.

Transportation

In the regional context, Cal Poly can best support sustainability by reducing the reliance on automobiles, especially as a mode of transportation to and from campus. The Master Plan calls for a reduction in commuter automobile trips by at least 25% by 2020. The University has aggressively moved toward that goal by building more housing on campus, by reducing the number of parking spaces for commuters, by increasing the cost of parking and by encouraging alternative modes of transportation. Recently, significant changes in commuter parking demand have been observed as a consequence.

Commuter Parking Demand

In Fall Quarter 2002, there were 7774 commuter parking permits sold -- that is, "general" parking permits for students as well as faculty and staff permits. In Fall Quarter 2005, that number had fallen to only 5629 permits, a reduction of over 27%. The following graph shows how the number of commuter parking permits per student has steadily declined over the past few years.



On-campus Housing

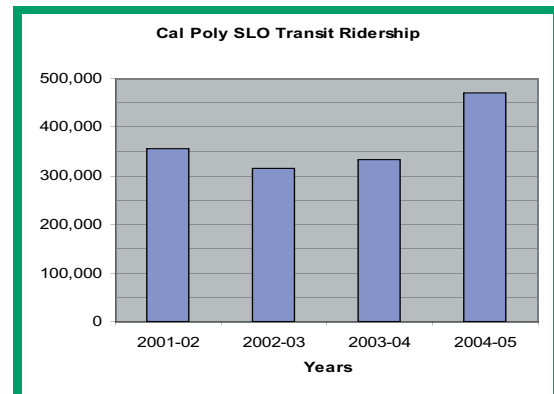
The Master Plan provides for a significant increase in housing on campus. In 2003, the Cerro Vista apartments opened, increasing the number of on-campus student residents by about 800. By 2008-09, the much larger Poly Canyon Village will be available. At that time, there will be housing for over 6000 students on the campus, about one third of the total population.

Transit Use

While automobile use has declined, other modes of transportation seem to have correspondingly increased. Very notably, transit ridership increased between 2004 and 2005 by over 40%.



All Cal Poly students, faculty and staff can ride the local transit system free of charge thanks to an agreement between the City and the University. Between 2000 and 2005 Cal Poly contributed approximately \$275,000 per year to the City to assist with transit costs; the sources of that contribution are parking permit and parking fine revenues. Thus, commuters are, in effect, subsidizing bus use.



Sixty nine units of faculty and staff housing were under construction in 2005-06, adjacent to the main campus.

TDM/OPTIONS

The University utilizes several Traffic Demand Management (TDM) techniques to help reduce car commuting.

Foremost has been the steady increase in costs for parking, along with continued free access to the local transit system and subsidies for regional transit. The University also provides faculty and staff with van pools, helps arrange car pools, and provides direct incentives for using alternative modes in the form of credits toward items at campus stores and dining. In 2004, Cal Poly instituted its OPTIONS campaign to encourage commuters to use alternatives to single-occupancy automobiles. It includes an ongoing public awareness program for students and faculty, and provides information for bike riding, walking and transit use. The U.S. EPA has recognized these efforts, citing Cal Poly among the nation's "Best Workplaces for Commuters".

In 2006 the campus community — including students, faculty and staff — collaborated on a Campus Sustainable Transportation and Mobility Initiative, including a series of workshops on improving the campus community's transportation systems to reduce dependence on automobiles. This has led to a list of possible class assignments and senior projects that will help provide information needed to evaluate possible systems changes.



Vehicle Fleet

As noted earlier, Cal Poly has been gradually increasing its use of vehicles that run on electricity or natural gas, resulting in improved air quality and less direct reliance on gasoline.



In 2006, Cal Poly was recognized by the U.S. EPA as one of the nation's Best Workplaces for Commuters among colleges and universities in recognition of Cal Poly's contributions to local transit, encouragement of alternative modes through its OPTIONS campaign, and car and van pool incentives for faculty and staff.

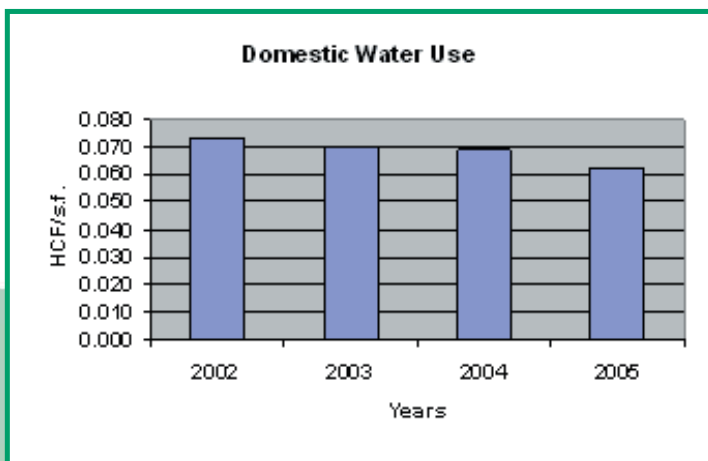
Water Resources

Cal Poly gets all its domestic water from Whale Rock reservoir near Cayucos. The University was a partner in the construction of that reservoir in the late 1950s and early 1960s, along with the City of San Luis Obispo and the California Men's Colony. Water piped from the reservoir is treated at a plant operated by the City adjacent to the campus. Although the capacity of the reservoir is quite large, it fills only irregularly. Therefore, the amount Cal Poly can withdraw is limited and carefully monitored. The Master Plan calls for significant conservation measures to make sure the existing water supply is sufficient to meet future needs.

Water Conservation

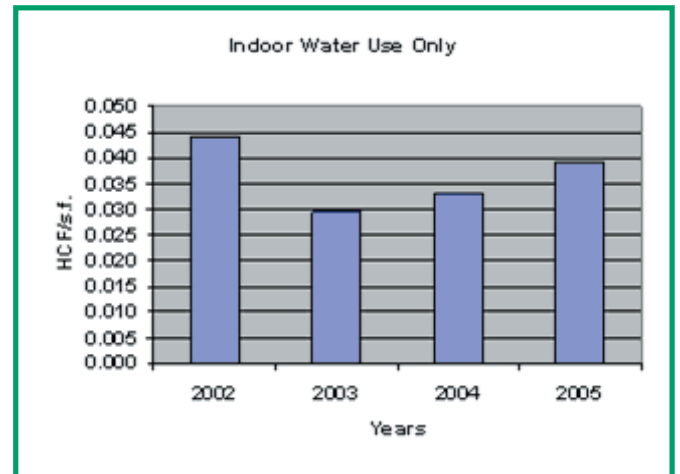
The University has undertaken a large-scale retrofitting of its plumbing fixtures with water-conserving technologies. In addition, the College of Agriculture has installed micro-sprinklers to increase irrigation efficiency and uses groundwater and re-cycled water when it is practical, safe and environmentally sound. The result has been an overall increase in efficiency over the last few years.

The following chart shows water use relative to total area of campus facilities.



Not every type of facility uses the same amount of water for the same area. For example, new on-campus housing will need more water per square foot than comparably

sized lecture space. Thus, when we measure indoor water use only, we see a decrease in efficiency after the Cerro Vista apartments were opened in 2002-03. As noted earlier under Energy Conservation, the development of even more on-campus housing will complicate tracking water use based on a campus-wide average.



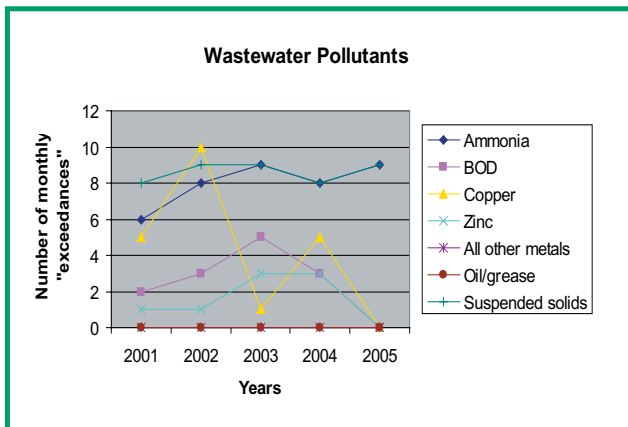
It will also be interesting to see how our weather patterns affect the trends. For example, rainfall in 2005 was above average; that could at least partially affect outside water use, perhaps contributing to the reduction in total domestic water consumption observed in that year.



Waterless urinals are becoming more common on campus. Each can save thousands of gallons of water per year.

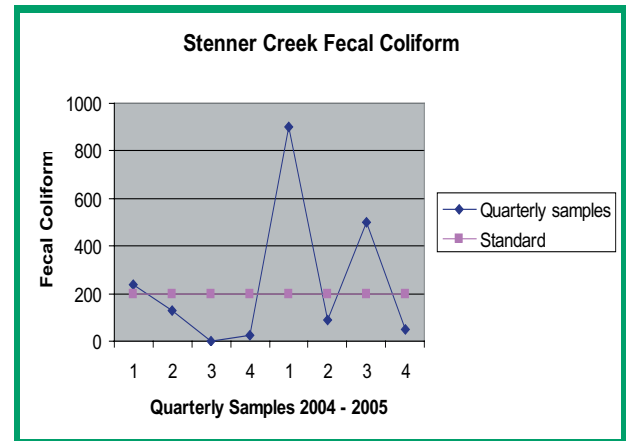
Water quality

Cal Poly monitors water quality in a couple of different ways. First, the University, in cooperation with the City of San Luis Obispo, checks the quality of its sewage effluent as it leaves the campus and enters the city-wide collection and treatment system. This analysis helps pin-point where certain pollutants may be draining into the wastewater system, including those that could adversely affect proper treatment downstream. By most measures, wastewater quality has been improving over time; however, the trends are not always clear or regular. The following chart shows how many times Cal Poly has exceeded usual water quality standards for its wastewater (tests are done on a monthly basis). Note particularly that in 2005, there were only two parameters found to exceed those standards, down from a high of five only the year before. Note, too, that the limits for some pollutants including oil/grease were never exceeded during this time. The reduction in copper and zinc is largely attributable to changes in cleaning products used in large-scale maintenance operations (e.g. floor stripping and waxing).



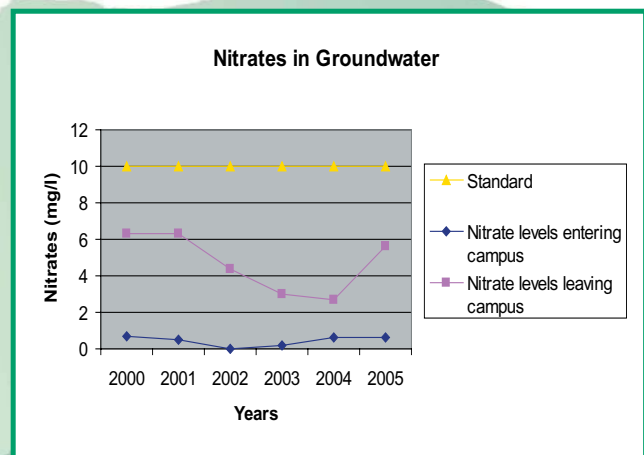
In addition to monitoring the constituents in its wastewater, Cal Poly also checks the water quality of the streams flowing through the campus. Data has been collected regularly only over the last few years. The key pollutant of interest is "fecal coliform", a measure of bacterial contamination. Pollution can enter streams from water draining from streets and parking lots, livestock operations, and other sources.

The following chart plots the fecal coliform levels observed by quarterly monitoring in 2004 and 2005 on Stenner Creek. In the past, coliform levels in Brizzolara Creek have been of particular concern; however, with the relocation and upgrading of the Beef Center in 2006, significant improvements are expected.



Groundwater Quality

Another important measure of water quality is how subsurface water is affected by pollutants. Cal Poly has monitoring wells that are used to check the quality of groundwater as it flows through the campus. The key pollutant of interest in the groundwater is nitrate, which can increase due to animal manure, leaking sewage or septic lines, and the use of certain fertilizers. The following chart shows the level of nitrates in water as it enters the campus and then as it moves off campus. Nitrate levels rise while flowing under Cal Poly but do not exceed acceptable standards at the downstream campus edge.



Water Quality Management Plan

Perhaps the most important policies for water quality protection are contained in the Cal Poly Water Quality Management Plan. This document lists numerous Best Management Practices or “BMPs” that prescribe how water resources will be protected. The Water Quality Management Plan includes measures related to grazing, farm operations, construction, erosion control, and storm water drainage. For example, all new construction projects larger than one acre must utilize water pollution prevention measures such as barriers to capture sediment laden runoff. These efforts are monitored by the University’s Department of Environmental Health and Safety, and also by the Central Coast Regional Water Quality Control Board.

The principal goal of the Water Quality Management Plan is to “preserve, protect and enhance the quality of water of the Cal Poly Campus and surrounding areas.” The plan covers both “point” sources of pollution (certain agricultural operations such as the swine unit) and “non-point” pollution, which is generally associated with runoff into streams. In addition to the Water Quality Management Plan, the University operates under a Storm Water Pollution Prevention Plan. This plan specifically covers measures to reduce or prevent pollution carried by rainfall.

Air Quality

Cal Poly lies within a much larger air basin, which generally meets state and federal standards for most air pollutants. One area that has been a problem, however, is particulate matter—dust and fine solids. Cal Poly’s contributions to regional particulate pollution arise primarily from larger construction activities and from farming operations (such as cultivating fields). A few facilities on campus (such as the Animal Nutrition Center where different grains and other nutritional items are mixed for animal food) are subject to “point source” permits from the Air Pollution Control District which require emissions controls. Large construction projects must generally comply with a list of standard practices to reduce dust, such as watering during grading operations and covering materials susceptible to being wind borne. Overall, air quality in our area is good.

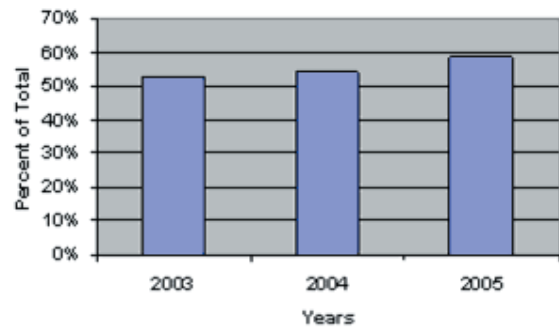
Solid Waste

The majority of Cal Poly's solid waste is currently recycled or otherwise re-used. This achievement is due to changes in the procedures carried out by the University operations, as well as through the awareness and participation of students, such as the "zero waste" concept supported by student groups. Cal Poly has a staff position devoted specifically to recycling.

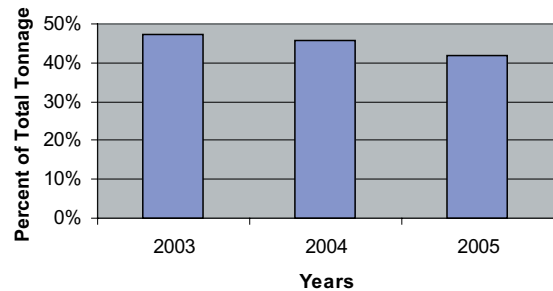
Almost all landscape "green waste" is either used on campus or is sent to off-campus composting facilities. All paper, aluminum, glass and plastics are also sent to recycling facilities. New building contracts require that a significant portion of all materials left over from demolition and waste from construction be recycled or re-used, rather than simply dumped in a landfill.

At Cal Poly one of the largest sources of solid waste is the manure from the various agricultural facilities. Most of that yard waste is composted and sold as fertilizer as a Corporation enterprise operation.

Percent of Solid Waste Diverted from Landfill
(Re-used or Recycled)



Percent of Solid Waste Taken to Landfill



Recycle bins are placed throughout the campus.



Cal Poly's E-Surplus warehouse facilitates the re-use of surplus equipment.

Land Use

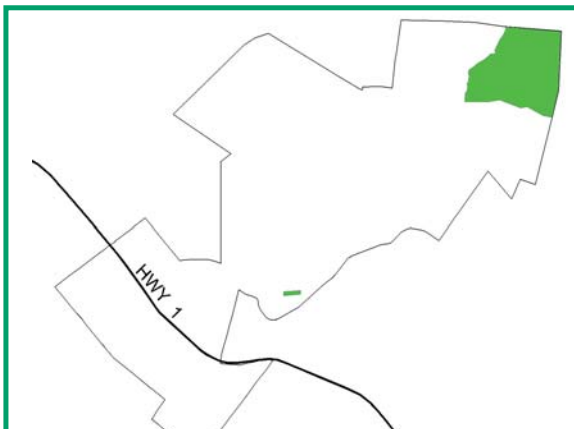
Cal Poly has nearly 10,000 acres of land, between the large agricultural and ranch lands in San Luis Obispo County and the Swanton Pacific Ranch in Santa Cruz County. Proper stewardship of these large holdings is an important goal.

Preserves

Cal Poly has designated several areas as natural preserves through the Master Plan. In addition, Cal Poly has designated buffers around its major creeks that will be kept open, or even enhanced, where needed, to a more natural habitat. Presently 260 acres are in designated preserves. In addition, and significantly, the University Master Plan protects prime farmlands on the campus holdings from development for non-agricultural purposes.



Location of preserves on the main campus



Location of preserves in the Chorro Valley

Chorro Valley Ranches

Cal Poly manages large land holdings in the Chorro Valley, the watershed that drains into the Morro Bay National Estuary, a nationally-significant wetlands. Much of this land is used for animal grazing, and Cal Poly has been directly involved in developing environmentally superior grazing management techniques. For example, Cal Poly's Department of Animal Science conducted a 10-year study, with support from the U.S. Environmental Protection Agency, the Central Coast Regional Water Quality Control Board and the Morro Bay National Estuary Program, comparing different grazing practices on Chumash and Walters Creeks. The long-term study showed that limiting grazing adjacent to streams, rapidly rotating pastures, introducing native plants to eroding banks, and other methods could dramatically improve the habitat value of those streams. Recently, Cal Poly was awarded grants from the MBNEP and the Department of Fish and Game and others to continue upgrading streams in these pastures.

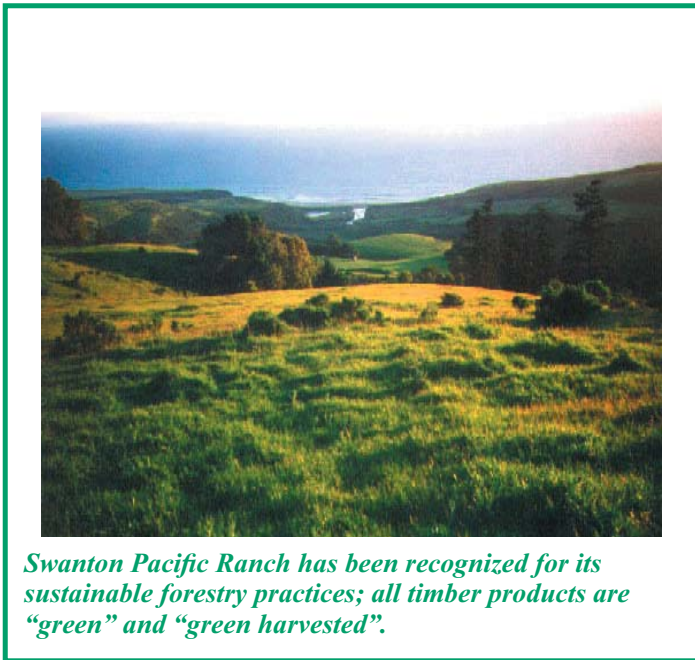


Cal Poly has been an important contributor in the development of more environmentally sensitive grazing practices. The 10-year "paired watershed" study showed how previously degraded streams could be significantly improved. The photo on the left shows habitat improvements after new grazing practices were used.

Swanton Pacific Ranch

Cal Poly also manages approximately 2000 acres of timberlands on the Swanton Pacific Ranch in Santa Cruz County. This resource allows students to learn improved forestry practices to maintain yields while protecting land, water and biological resources.

Cal Poly won the highest designation for responsible timber management from the international Forest Stewardship Council in 2004, only the fourth U.S. university to earn this honor.

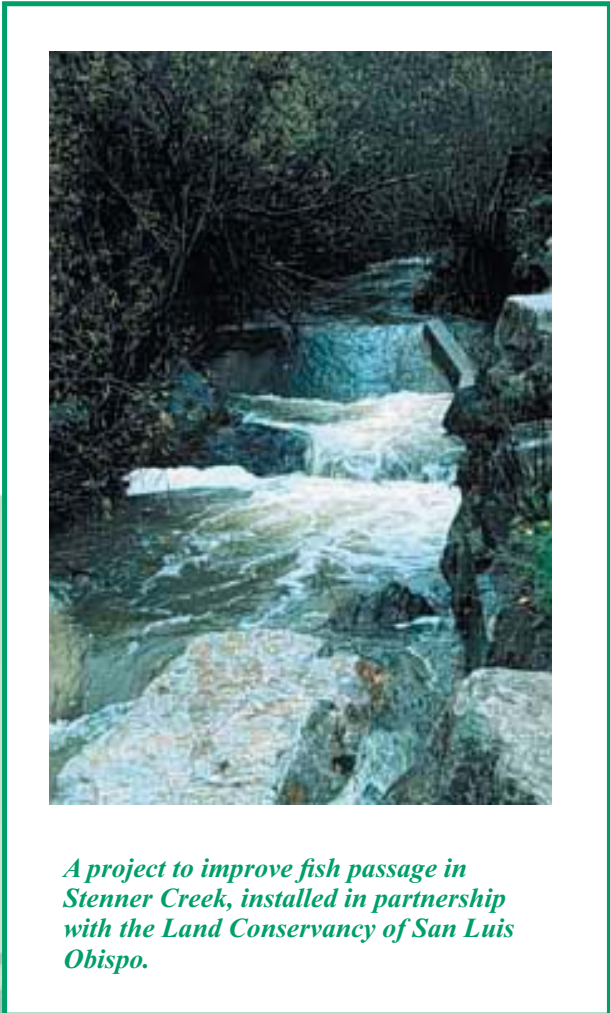


Habitat Enhancement Areas

In addition to the enhancement work on Chumash, and more recently, Walters Creek in the Chorro Valley, Cal Poly has been working on improvements to Stenner and Brizzolara Creeks on the main campus. For example, the Coastal Resources Institute, using monies from the Regional Water Quality Control Board, has developed a riparian enhancement program for the south side of Brizzolara Creek, just below Poly Canyon. This program includes the elimination of cattle grazing and the planting of native plant species.

Between 2000 and 2005 approximately 17 acres of degraded habitats were enhanced, including almost a mile of stream corridors. Four in-stream projects were built that improve migratory fish passage.

With the development of the Poly Canyon Village (PCV), the University decided to include the entire south side of Brizzolara Creek across from PCV (approximately 20 acres) as a new habitat enhancement area. In 2006, all the aged building facilities in this area, including the feed mill, abattoir, feed lot and commodity barn were removed. Plans call for removing all asphalt and concrete, re-grading the site to a more natural contour, re-planting with a native plant mix, removing culverts in the stream to improve fish passage, and restricting human uses to allow a more natural habitat to return. A committee composed of faculty, staff and students contributed concepts for this enhancement area.



Sustainable Design in New Construction

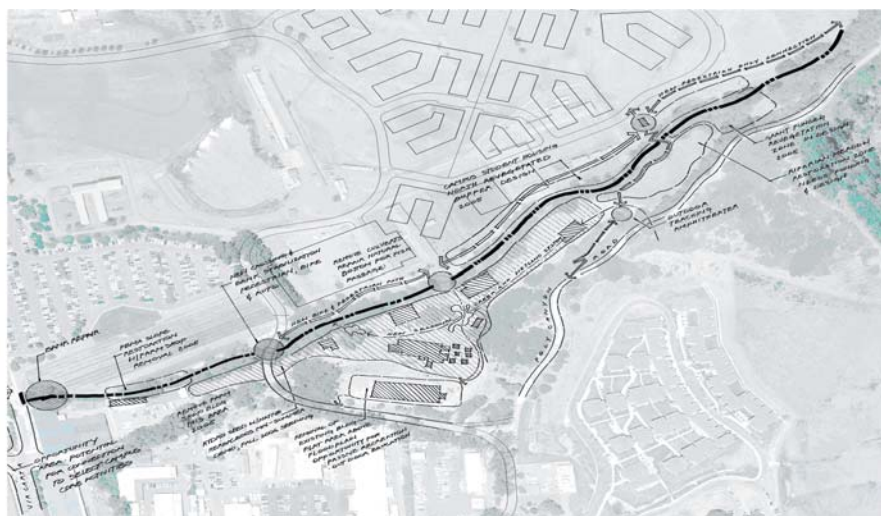
Sustainability is a consideration in the design and development of all new and renovated buildings on campus, balanced with financial feasibility and the University's academic mission. Recently, Facilities Planning and Capital Projects has retained sustainability experts as part of the design team for major new projects, and "green" elements in the design are presented to the Sustainability Advisory Committee for review and discussion.

The U.S. Green Building Council has developed "third party" evaluations of sustainable building design; buildings can be "certified" through this process with a "LEED" designation (Leadership in Energy & Environmental Design). All architectural firms working for the campus must include LEED certified personnel. Poly Canyon Village is the first Cal Poly building to be contracted to achieve LEED certification.

Due to the nature of a university environment, the California State University system is currently developing sustainable design criteria specifically relevant to its university campuses and buildings. Cal Poly has three representatives serving on the CSU Sustainability Advisory Committee.



Poly Canyon Village, Cal Poly's largest building project, will also be its first LEED certified facility.



The Brizzolara Creek Committee helped develop enhancement strategies for the area across the creek from Poly Canyon Village, including, most significantly, the removal of all parking and structures and the return of the land and drainages to a more natural state.

Conclusion

It is evident that Cal Poly has made noteworthy progress toward a more sustainable campus. In particular, between about 2000 and 2005, energy efficiency has improved, total domestic water use has declined, and now almost 60 percent of all solid waste is diverted from the landfill. Recently, the use of commuter parking permits has dropped significantly while transit ridership has risen impressively. Additional housing was added to the campus in 2003 and more is under construction as of 2006. The University has adopted a Water Quality Management Plan that prescribes best management practices to better protect streams and groundwater. Significant ecological areas and prime farmlands on the campus have been designated for preservation, certain degraded areas have been enhanced, and the timberlands at the Swanton Pacific Ranch have been recognized by an international council for exemplary “green” management.

This report helps document these changes and sets baselines from which future changes can be measured. Environmental modifications rarely occur in simple straight lines nor are they typically obvious over short periods of time. However, by regular monitoring and reporting, we intend to track our efforts over the long term to better observe changes and trends.

One important element in the move toward sustainability is a shift within the campus culture—attitudes and behaviors among students, faculty and staff. Here, too, positive changes are apparent. Consider the annual “Earth Day” events and the Biennial Sustainability Convocation; the widespread participation in the recent Campus Sustainable Transportation and Mobility Initiative; ASI’s publication of a “Student Guide to Sustainable Living;” the increasing success of the campus organic farm; the numerous student clubs and committees devoted to sustainability issues; the creation of a sustainability minor in the College of Architecture and Environmental Design and the environmental studies minor in the College of Science and Math; and

the Center for Sustainability in Engineering, the Coastal Watershed Institute, the Sustainable Agricultural Resource Consortium, and other campus institutes and centers focusing on sustainability issues.

While progress is impressive, we cannot rest on our laurels: the challenges posed by energy and water shortages, decreasing biodiversity, the loss of farmlands, and pollution in our water and air are not yet fully met, and some of these problems will surely intensify in the future. However, as a polytechnic institute, and as a thoughtful and conscientious campus community, Cal Poly is especially well situated to play an important role in helping our society meet those challenges.

The Cal Poly Organic Farm is a market-oriented agriculture project jointly managed by the Horticulture and Crop Science Department, students and the farm staff. It is a unique program that fosters the “learn by doing” philosophy of Cal Poly. The farm is an opportunity for students to gain hands-on experience in organic and alternative farming practices, management and marketing of organic crops.



Sustainability at Cal Poly Facilities & Operations

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