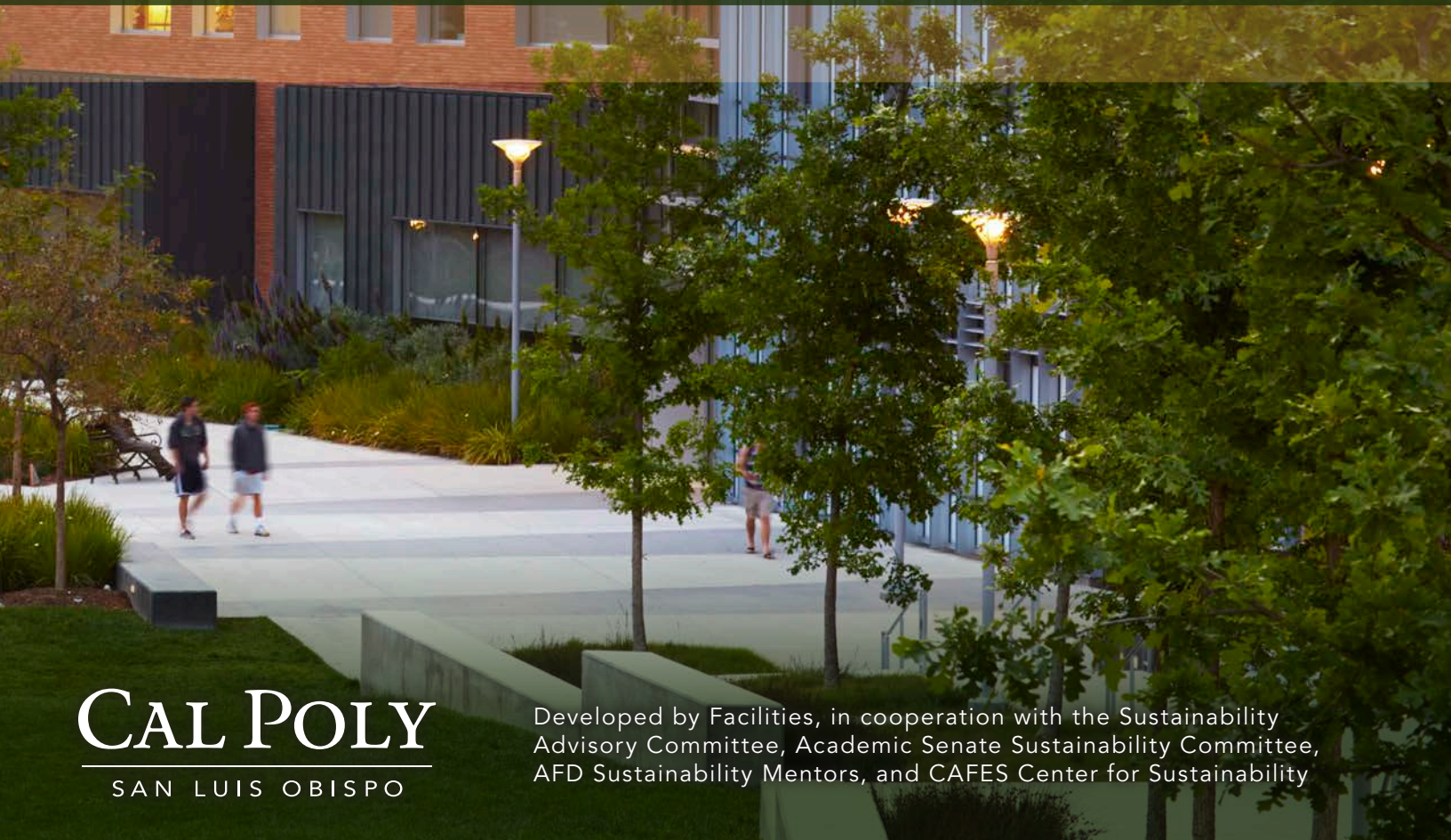




SUSTAINABILITY

FOR CAL POLY FACILITIES & OPERATIONS





A CONCEPT OF SUSTAINABILITY

Cal Poly endorses the United Nations 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.

“Cal Poly graduates go on to become innovative leaders in a broad range of critical industries, and so we have a great responsibility to guide the minds that will shape the future of our world. As students learn by doing at Cal Poly, a key part of that experience — from curriculum to campus life — must be a commitment to leave a better planet for future generations. The entire Cal Poly community must lead by example.”

—President Jeffrey D. Armstrong



THE TALLOIRES DECLARATION

The first official statement made by university administrators of a commitment to environmental sustainability in higher education, the Talloires Declaration is a 10-point action plan for incorporating sustainability and environmental literacy in teaching, research, operations and outreach at colleges and universities.

Adopted by Cal Poly in 2004, these principles are as relevant today as they were a decade ago, and they continue to guide the University's efforts in becoming a more sustainable campus, in both operations and academics.

- 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
- Collaborate for Interdisciplinary Approaches
- Enhance Capacity of Primary and Secondary Schools
- Broaden Service and Outreach Nationally and Internationally
- Maintain the Movement

(Source: THE TALLOIRES DECLARATION, http://www.ulsf.org/programs_talloires_td.html)

SUSTAINABILITY IN FACILITIES & OPERATIONS

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. Cal Poly continues to demonstrate a strong commitment to advancing sustainable practices and to track and report progress. This report focuses on Cal Poly's efforts to run the campus in a more sustainable way.

Understanding sustainability in campus operations requires an appreciation of the scope and complexity of this university. In achieving its primary mission of educating nearly 20,000 students each year, Cal Poly operates and maintains more than six million square feet of buildings, stewards thousands of acres of land, houses more than 7,000 students on campus, employs more than 2,000 faculty and staff, and provides administrative, safety, health, recreational, commercial, food service and many other support functions. Assessing sustainability in this context demands a whole 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.

Cal Poly adopted several sustainability indicators and monitors the related data and trends. This is the fifth biennial report on these indicators and trends.

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
- Vanpool participation



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



SUSTAINABILITY HIGHLIGHTS 2012-2014

LEED CERTIFICATION

Completed in 2012, the Student Recreation Center Expansion achieved Leadership in Energy and Environmental Design (LEED) Gold Certification by the U.S. Green Building Council. The Warren J. Baker Center for Science, which opened in fall 2013, was designed to LEED Gold Certification specifications and is expected to be certified in early summer. When complete, 30% of campus square footage will be LEED certified.

While Cal Poly will continue efforts to LEED-certify new buildings individually, we are transitioning from certifying individual existing buildings under LEED Operations and Maintenance (O+M) to a campus-wide program. The campus kicked off a pilot project this spring (2014), focusing its efforts on buildings in the campus core. This more efficient process more accurately reflects the operational methodology of the campus and will holistically address procurement, custodial, grounds and building management practices campus-wide.

SOLAR PANEL DONATION

In 2013, Cal Poly's College of Engineering received a donation of more than 1,000 high-performance solar PV modules from SunPower Corporation. Numerous departments have already used panels to create small laboratory demonstration systems. Facilities created an innovative grant program, providing funding to offset the cost of installation on state buildings in an amount equal to five years of electricity they will generate. The first system to be installed, a 10 kW array on the roof of the Agricultural Engineering building, is being designed by students in a new BRAE 240 class in partnership with local firm REC Solar and Grid Alternatives, a non-profit solar installer for low-income communities.

POWERSAVE CAMPUS PROGRAM

Formerly known as Green Campus, the PowerSave Campus Program continues to run effective and dynamic educational outreach and conservation programs, including the annual Residence Hall Energy Competition and Collegiate Conservation Nationals competition. PowerSave has also expanded the Green Workplace Certification program to a number of academic departments and auxiliaries.

STRATEGIC PLANNING

In 2014, an innovative partnership was created between Facility Services and the College of Engineering to do strategic planning around the topic of Sustainable Energy and Infrastructure. Their goals are to connect and strengthen teaching and research, better align programs with ongoing Advancement and Energy/Utility Master Planning, and ultimately implement multiple on-site and renewable energy generation projects that are integrated with the academic mission of the University. This initiative was recognized with a Sustainability Best Practice Award for innovation.

AWARDS & ACCOLADES

Because of its efforts, Cal Poly continues to be lauded by local, regional and national organizations as a leader in sustainable practices. In 2014, Cal Poly won its 21st Sustainability Best Practice Award from the UC/CSU/CCC Energy Efficiency Partnership Program. Cal Poly has received more Sustainability Best Practice awards than any campus in the CSU system, and it is the only campus to have received an award in every year of the program since its inception.

UC/CSU/CCC ENERGY EFFICIENCY PARTNERSHIP PROGRAM:

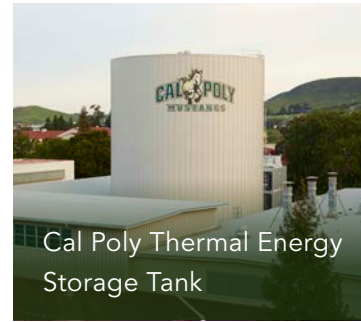
- 2014** ■ **SUSTAINABILITY INNOVATIONS**
Sustainable Energy and Infrastructure Initiative
- 2013** ■ **COMMUNICATING SUSTAINABILITY**
Sustainability Educational Outreach Program
- 2012** ■ **SUSTAINABILITY INNOVATIONS**
Sustainability Mentors Program
- 2012** ■ **WATER EFFICIENCY & SITE WATER QUALITY**
Irrigation Water Conservation & Site Water Quality Program
- 2012** ■ **STUDENT SUSTAINABILITY PROGRAM**
PowerSave Campus Program
- 2011** ■ **BEST OVERALL SUSTAINABLE DESIGN**
Poly Canyon Village
- 2010** ■ **BEST HVAC DESIGN/RETROFIT**
Student Rec Center Expansion
- 2010** ■ **BEST LIGHTING DESIGN/RETROFIT (HONORABLE MENTION)**
Student Rec Center Expansion
- 2010** ■ **STUDENT SUSTAINABILITY PROGRAM**
PowerSave Campus Program
- 2010** ■ **SUSTAINABILITY CHAMPION**
Dennis Elliot

OTHER GRANTS, AWARDS AND RECOGNITION

- 2014**
California Energy Commission Grant PON-13-606 for Electric Vehicle Charging Infrastructure – \$147,000
- 2014**
PG&E Savings by Design Incentive for the Warren J. Baker Center for Science – \$320,000
- 2013**
CSU Energy Efficiency Capital Program Allocation for Fisher Science VAV Conversion and Campus-wide LED Streetlight Retrofit – \$206,000
- 2013**
Winner, Recreation Management 11th Annual Innovative Architecture & Design Award for the Student Recreation Center
- 2012**
Cal Poly named Number 8 in top 25 "Best Outside Colleges" by Outside Magazine

ENERGY USE

In spite of the economic downturn and statewide budget pressures in recent years, Cal Poly continues to make progress on reducing energy use. Total energy use (electricity and gas combined, reported as BTU per square foot), has dropped 21 percent since 2000. Since the last Biennial Report in 2012, energy use is relatively flat despite a 9% increase in on-campus residency, and increased cooling loads due to weather variation.



Cal Poly Thermal Energy Storage Tank

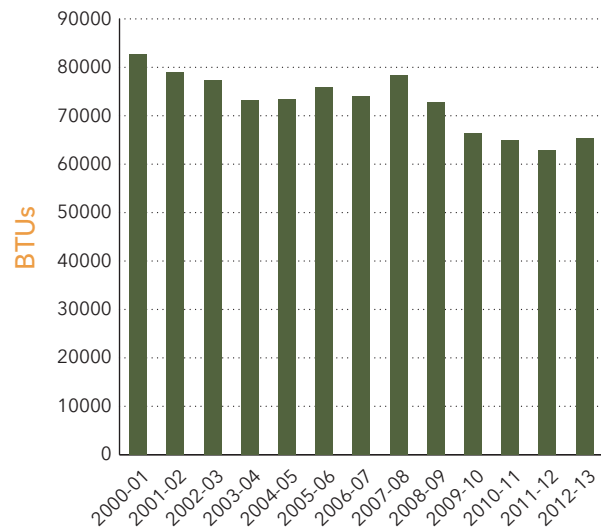
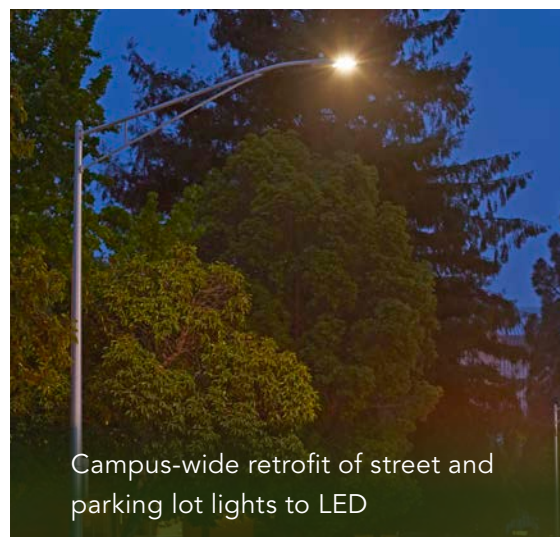


Figure 1: BTUs PER SQ. FT. OF BUILDING

In 2012 and 2013, Cal Poly worked on Monitoring Based Commissioning of five existing buildings to measure their performance, ensure systems were working as designed and optimize their energy use. In 2013, Cal Poly received funding from the Chancellor's Office to implement two energy projects – an upgrade of the HVAC control system in the Fisher Science building, and a campus wide retrofit of street and parking lot lighting to LED technology. Installation is slated for summer 2014.

With reduced capital available from the CSU, Cal Poly has had to get more creative to identify sources of funding. Cal Poly is working with PG&E and AECOM to develop the next major energy and water conservation project, being financed by a \$1,000,000 interest-free PG&E loan and a \$3,000,000 low-interest California Energy Commission loan. This is the first CSU project to use these loan programs, and it paves the way for other campuses to follow this model. Construction is scheduled to begin in summer 2014.

When complete, these projects will save 2.6 million kWh of electricity and 47,000 therms of gas, reducing annual CO2 emissions by 1,200 tons. They will also generate \$300,000 per year in operational savings and qualify for \$440,000 in utility incentives.



Campus-wide retrofit of street and parking lot lights to LED

EDUCATIONAL OUTREACH

Every year since 2007, the student-led PowerSave Campus program, hosted by Facilities, has run a Residence Hall Energy and Water Conservation competition. In 2012, this program was enhanced by creation of a digital energy dashboard for the six Redbrick Halls, viewable at www.buildingdashboard.net/calpoly. As part of this competition, Cal Poly participated in Collegiate Conservation Nationals, placing second in its region in 2013 and first in 2014.

ELECTRICAL DEMAND RESPONSE

Cal Poly again participated in a statewide Demand Response Program to curtail electrical use during times of peak load. In addition to 1 megawatt of peak load that has been shifted to off-peak use by completion of the Thermal Energy Storage system at the Central Plant, Cal Poly was able to reduce load by as much as 900 kW when called upon by the utility, achieving an average of 200 percent of its commitment.

ENERGY INFORMATION SYSTEM

To take energy management to the next level, Cal Poly has taken the lead on development of a CSU system-wide Enterprise Energy Information System – a powerful suite of software modules to perform utility management, billing, reporting and sophisticated analytics of real time energy data. The Request for Proposal is scheduled for release in spring 2014, with implementation on participating campuses phased over the next three years.

TRANSPORTATION

Over the past 10 years, Cal Poly has seen a decline in commuter trips to campus and a steady increase in the use of alternative modes of transportation, including local and regional public transit, bicycles, van- and carpools, and pedestrian activity. SLO Transit is free for all students, faculty and staff. Cal Poly ridership has doubled over the last 10 years; however, it was down slightly in 2013, likely due to fewer rainy days with more opportunities for walking and bicycling to campus.

The Zipcar program has increased on campus, doubling the number of cars available since 2012. The vanpool program takes 145 single-occupant vehicles off the road daily and saves more than 12,000 miles per month traveled. Carpools are organized through Rideshare.org and pair interested parties with each other to share rides to campus from around the county. In spring 2014, Cal Poly was the recipient of a \$147,000 grant from the California Energy Commission to install 12 level II electric vehicle charging stations.

ALTERNATIVE FUEL VEHICLES



Approximately 32 percent of the vehicle fleet is composed of alternative fuel vehicles. This includes more than 90 golf carts, 60 NEV's (Neighborhood Electric Vehicles), 10 flex fuel and two propane vehicles. Campus Dining continues to recycle waste cooking oil into biodiesel for use in their vehicles.



Figure 2: COMMUTER PARKING PERMITS & STUDENTS LIVING ON CAMPUS

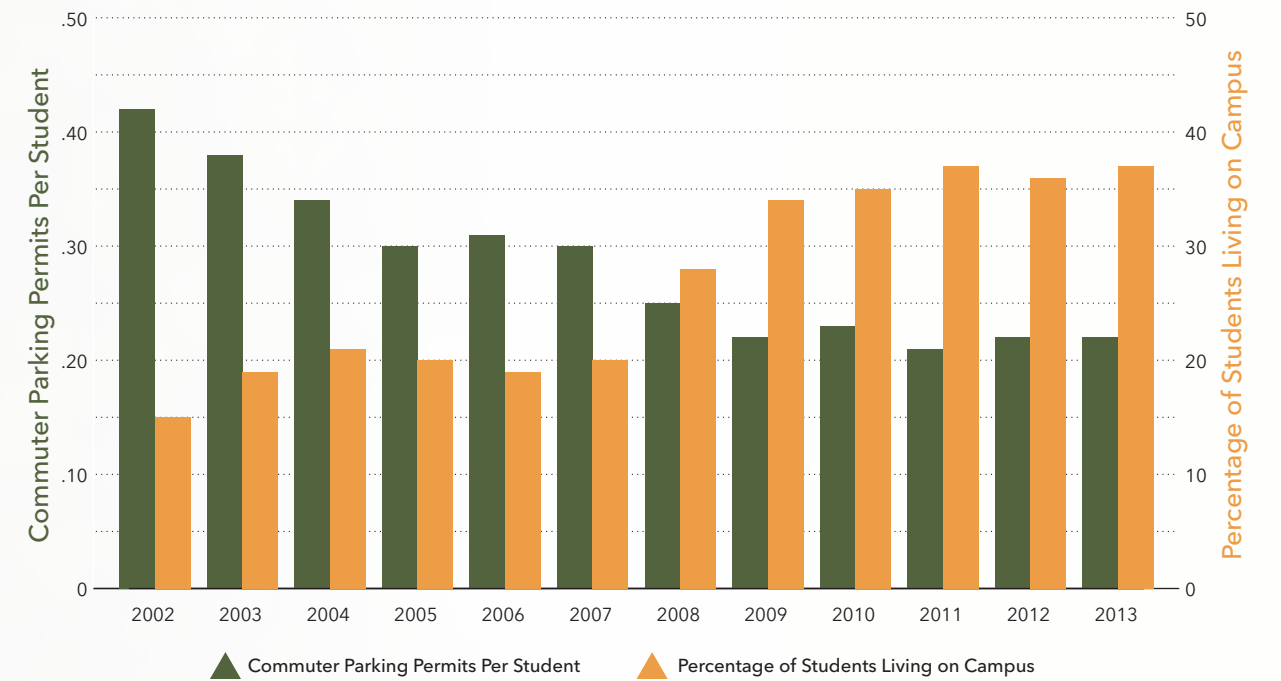
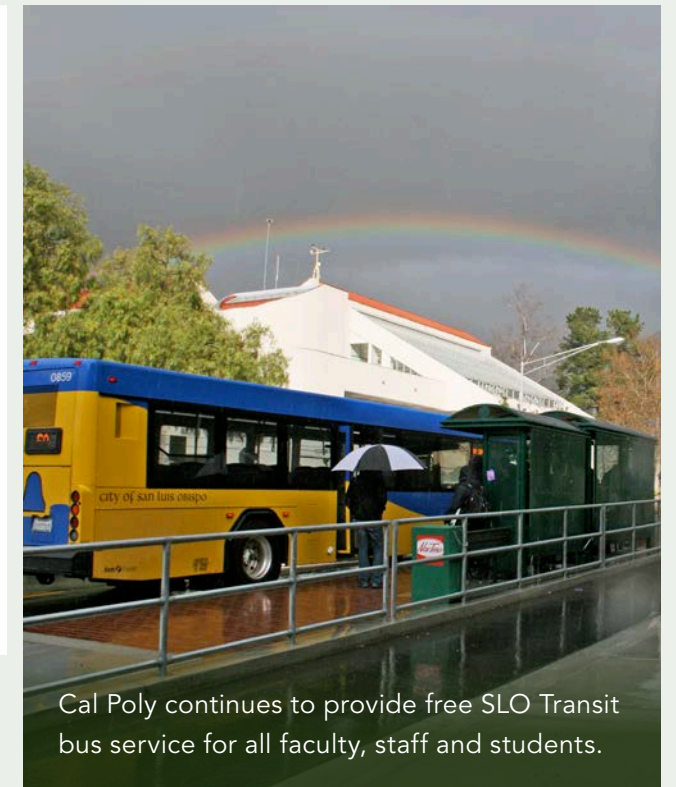


Figure 3: CAL POLY SLO TRANSIT RIDERSHIP

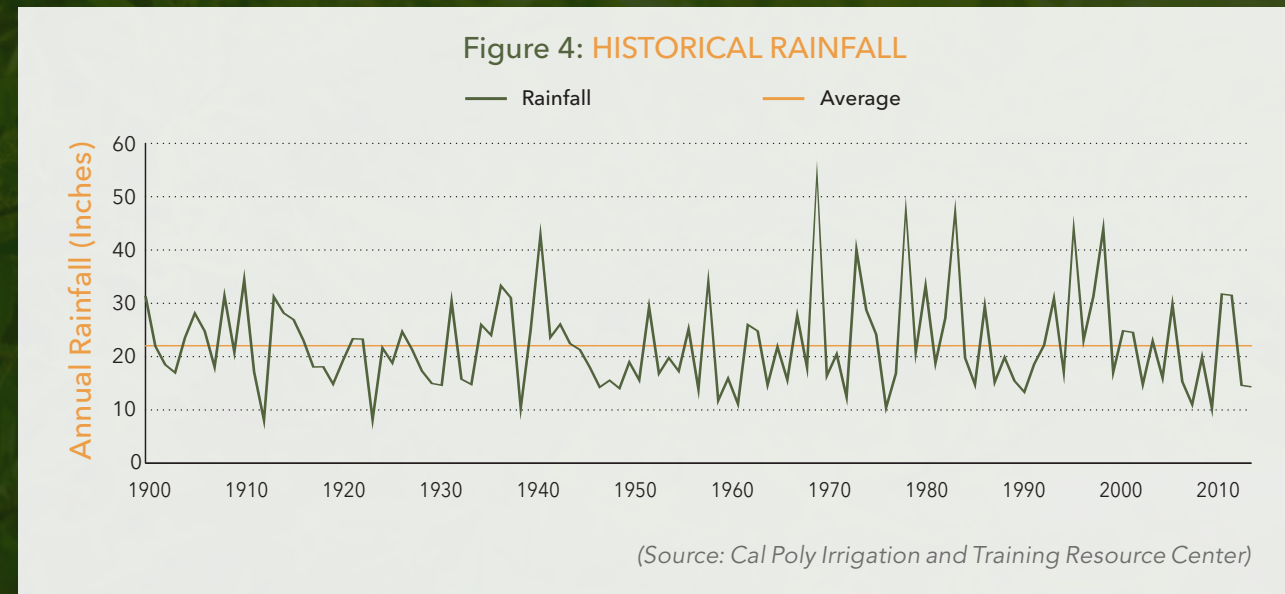


Cal Poly continues to provide free SLO Transit bus service for all faculty, staff and students.

SLO Transit photo credit: Marya Figueroa

WATER RESOURCES

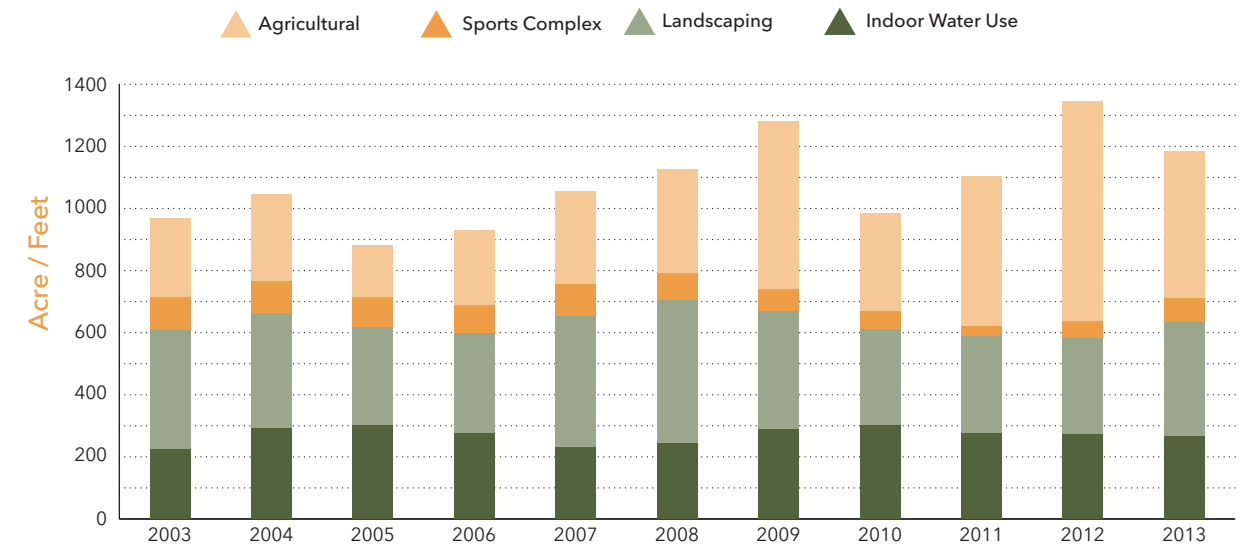
With the declaration of a State Water Emergency by Governor Brown in 2014 due to the ongoing drought, state agencies were directed to reduce water usage by 10 percent by 2016 and 20 percent by 2020. As a one-third partner in the development of Whale Rock Reservoir, constructed in Cayucos in 1960, Cal Poly secured water rights that have met the campus' needs for more than half a century, and it continues to be a careful steward of this natural resource. In spite of the drought, Cal Poly's storage at Whale Rock is at about two-thirds of capacity – enough to last for six years with no rainfall whatsoever. To be cautious, the University has opened discussions with the City of SLO to identify a secondary source of supply and is actively developing further conservation plans.



Through ongoing retrofit of existing buildings with ultra-low flow plumbing fixtures, use of micro-emitters and drip irrigation systems, use of native and drought tolerant plant species, educational outreach, and water conservation competitions, Cal Poly has managed to keep domestic water use essentially flat since the year 2003, despite a 60 percent increase in building square footage and a 100 percent increase in on-campus housing. Increases in indoor usage are clear in 2004 and 2009 when the Cerro Vista and Poly Canyon Village housing projects were completed; increases were mitigated in subsequent years by conservation.

A Drought Contingency working group, represented by Facilities, Ag Ops, University Housing, Associated Students Incorporated and the Cal Poly Corporation was formed to identify short- and long-term conservation measures and operational changes to meet the governor's reduction targets. In addition to identifying immediate operational changes, an investment grade audit of building plumbing fixtures and irrigation systems identified a list of conservation measures needed to meet the governor's mandate; these measures are pending funding for implementation.

Figure 5: AGRICULTURAL, SPORTS COMPLEX, LANDSCAPE & INDOOR WATER USE



Landscape and ag irrigation usage have a high correlation with rainfall – more irrigation must be used in dry years. A significant drop in usage at the Sports Complex in recent years is the result of conversion of three soccer fields to artificial turf. Within Facilities, Landscape Services installed a central irrigation control system for the largest turf areas on campus and is in the process of upgrading it to optimize watering based on measured plant evapotranspiration (ET).

AGRICULTURAL WATER MANAGEMENT

In 2010, the Agricultural Operations Department in the College of Agriculture, Food and Environmental Sciences (CAFES) identified, with assistance from the Irrigation Training and Research Center, several areas needing upgrades and replacement in order to improve water management. Since then, the following improvements have been made:

- A monthly CAFES Ag Water Report is published to track well activity and water usage.
- An additional pump station was installed at Nelson Reservoir with the participation of students.
- Eighteen flow meters were installed to track ag water use on a monthly and annual basis.
- Approximately 1,000 feet of underground pipe was replaced to improve water efficiency and water loss related to leaks in the system. An additional 8,500 feet remain to be installed.
- Soil moisture tensiometers are used for determining the timing of irrigation based on soil and crop requirements.
- Micro-emitters and drip tape were installed in the orchards and row crop fields.
- Sprinkler system pipes were repaired, and sprinkler heads and nozzles were repaired and replaced to improve irrigation efficiency.
- Four filter stations were installed/upgraded to improve water quality and water efficiency. Four more stations are proposed to be installed.
- Two pressure transducers were installed to improve the reservoir and well monitoring system, allowing for reservoir levels and underground water line pressure to be monitored. Five additional transducers will be installed in 2014.
- Upgrades to the valving system in key locations were completed in summer 2013. These improvements allow for direct use of well water in place of reservoir water during the irrigation season.

GREEN ROOFS AND RAINWATER HARVESTING

Two buildings on campus boast roof gardens: the recently completed Warren J. Baker Center for Science and the Student Recreation Center. Roof gardens help reduce overall heat absorption, mitigate building temperature, increase the lifespan of the roof, create wildlife habitat and mitigate the volume of stormwater runoff. Rainwater is captured, filtered and used as part of a water-use reduction system that includes high-efficiency plumbing fixtures. The gardens are planted with a palette of native plants that add visual beauty to the building, as well as functional sustainability to the overall building systems.

At Escuela Ranch, Cal Poly, the Morro Bay Estuary Program and the California Conservation Corps have partnered to demonstrate how rainwater harvesting can help alleviate water competition between water users and wildlife. This project captures rainwater from rooftops at the Cal Poly Beef Center and store it in four 74,000 gallon tanks for summer use. Through this demonstration project, the group will demonstrate how rainwater harvesting can help augment water use, allow for reduced pumping of riparian wells and help with on-site storm water management. The system is projected to produce more than 260,000 gallons during an average rainfall year. The project was funded by an American Recovery and Reinvestment Act grant from the National Oceanic and Atmospheric Administration, the California Conservation Corps, the Morro Bay Estuary Program, the US EPA and the California Department of Fish and Wildlife, with countless hours of in-kind services from local and California businesses.



Beef Center



Rainwater Catchment Tanks



WATER QUALITY

Cal Poly's Water Quality Management Plan, approved by the Central Coast Regional Water Quality Control Board and implemented by the Risk Management and Environmental Health and Safety Department, is a voluntary and cooperative implementation approach to address water quality management issues and permit requirements. It seeks to meet requirements related to maintaining and improving the quality of water passing through the campus. 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. Recent testing shows pollution levels in line with historic trends and within water quality standards. Monitoring wells around the campus are used to test the quality of the groundwater, identifying the levels of nitrates in water above and below the campus gradient. Historically, water entering the campus has been cleaner than that leaving the campus; however, recent measurements indicate that nitrate levels in water leaving campus are less than that entering campus and continuing on a downward trend.

Despite some fluctuations from year to year, the groundwater has generally met minimum standards. Since summer 2011, when there was a spike in nitrate levels leaving campus, the levels have declined significantly and are well under acceptable limits.

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 others were added to the array. In general, the campus has met applicable standards with no more than one or two annual "exceedances" on any of these metrics in the last four years of monthly testing. Biochemical oxygen demand (BOD), which had previously been a problem, has greatly improved from peak years, and zinc has essentially been eliminated from the waste stream, largely due to Custodial Services' Green Cleaning program.

Figure 6: STENNER CREEK FECAL COLIFORM

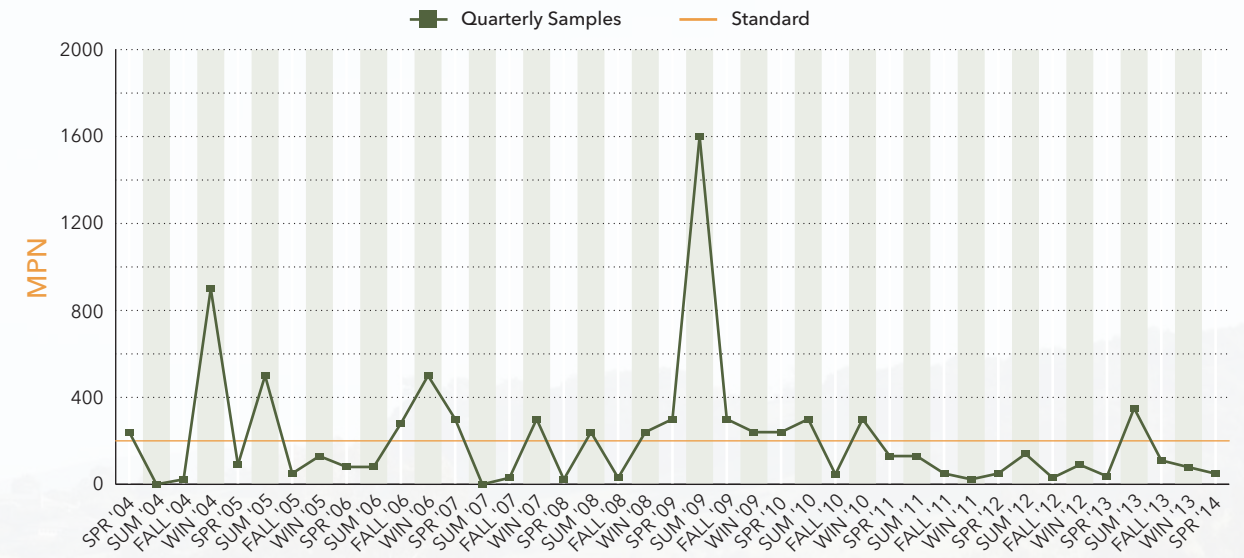


Figure 7: NITRATES IN GROUNDWATER

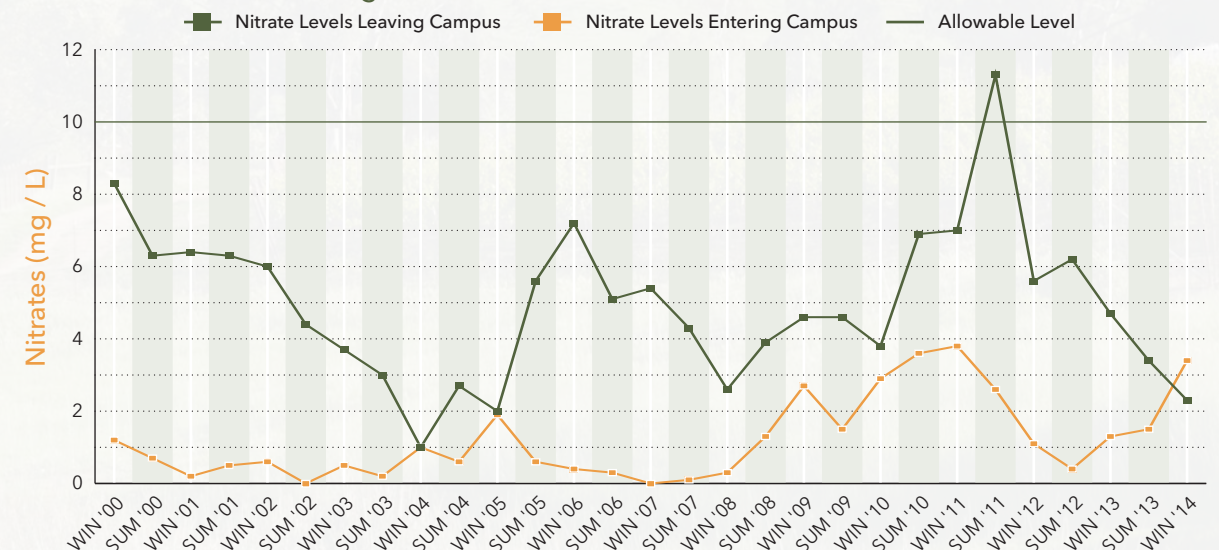
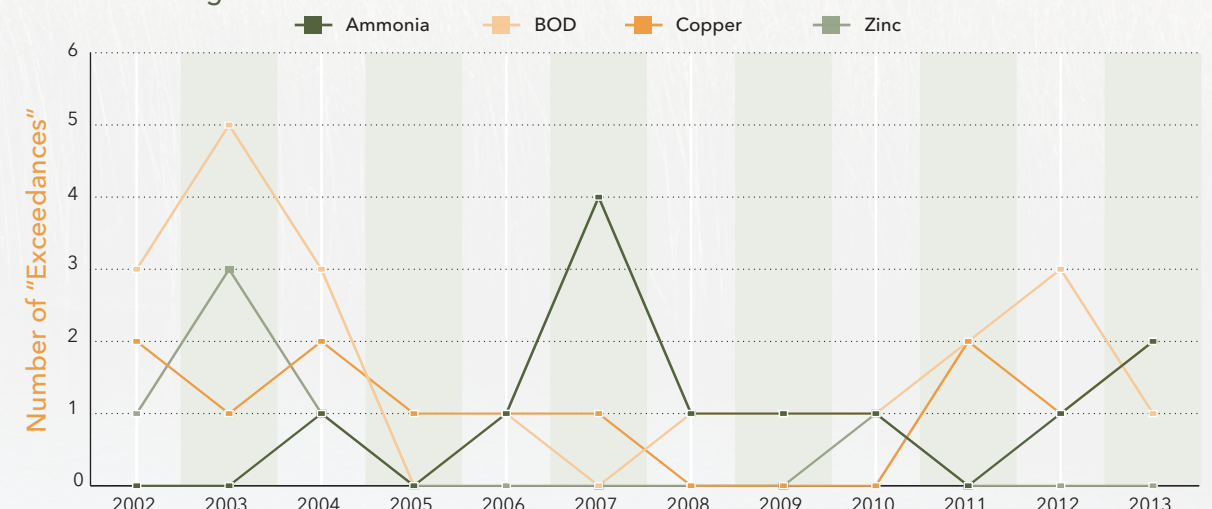


Figure 8: WASTEWATER POLLUTANTS: NUMBER OF EXCEEDANCES



SOLID WASTE & RECYCLING

Cal Poly continues to promote consumer recycling, and Facilities has worked with numerous campus organizations to adopt or improve waste diversion programs. Campus Dining has diverted food scraps from landfills through its composting program and is fully committed to a comprehensive waste reduction program, which includes recycling cooking oil and donating uneaten food to local food banks. University Housing has installed new recycling dumpsters and signage for all the Red Brick residence halls, resulting in a 9 percent increase in diversion from landfill. New Student Orientation Programs have instituted Zero Waste practices for food service at Open House, SOAR and WOW. In partnership with San Luis Garbage, campus has begun performing floor sorts of waste collected from various campus areas to quantify recyclables in the waste stream and opportunities for improvement.

The Cal Poly Compost Project was launched by the College of Agriculture, Food and Environmental Sciences (CAFES) Center for Sustainability in 2012 with support from the USDA's Sustainable Agriculture Research and Education (SARE) program to support education and research in composting, soil health, proper nutrient cycling and management of waste. Composting offers untapped potential to reduce the ecological footprint of the current waste management industry and of agricultural operations of all scales. Compost Project activities, which include student internships, foster campus and community interest and involvement in this process.

The Cal Poly Compost project has had nine student interns to date. The student interns have developed informative tours, education on composting, developed Standard Operating Procedures for the Cal Poly Composting Operation, and assisted in obtaining certification information for Organic Standards for Compost (OMRI and CCOF Certification programs for organic certification of the Cal Poly Compost). Confined animal operations in CAFES produce approximately seven million pounds of manure annually. The manure along with approximately 2,500 cubic yards of green waste generated from campus landscaping maintenance is combined to produce 3,500 cubic yards of finished compost annually, which has received the U.S. Composting Council's Seal of Testing Assurance.

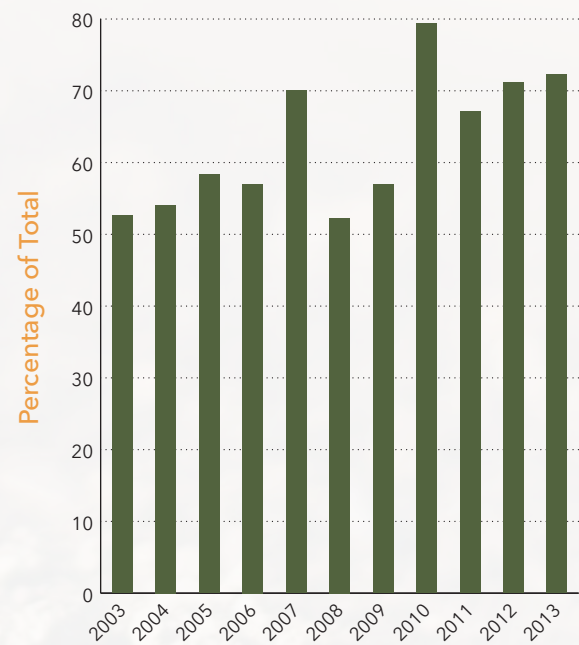


Figure 9: PERCENT SOLID WASTE DIVERTED FROM LANDFILL

GREENHOUSE GAS EMISSIONS

In 2006, California passed pioneering legislation in the form of AB32 – the Global Warming Solutions Act – to lead the nation in reducing emissions that contribute to Climate Change.

This policy states that California will reduce its greenhouse gas (GHG) emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. The new 2014 CSU Sustainability Policy, just approved by the Board of Trustees, accelerates the CSU's goal by 10 years – reducing GHG emissions to 80 percent below 1990 levels by 2040.

There are many initiatives underway across the state and CSU to meet or exceed these goals. An aggressive new Title 24 Energy Code was developed in 2013, and will apply to all new construction and major renovation projects beginning July 1, 2014. The new Title 24 outperforms the previous Energy Code by 22 percent and will require innovative HVAC and lighting systems, building envelopes, and passive energy features to achieve these targets. It further establishes Zero Net Energy goals for all new residential construction by 2020 and all new commercial construction by 2030. This will require homes and buildings to generate as much or more energy than they use, and it will lead to greater energy efficiency and use of on-site and renewable energy generation technologies.

As part of the AB32 Scoping Plan, California implemented a Cap and Trade program in 2012, which sets maximum GHG limits for certain business sectors and creates a market for the sale and trade of carbon credits. Cap and Trade is intended to foster innovation and investment in energy efficiency and clean generation technologies. Cal Poly is currently not subject to Cap and Trade regulation because our emissions from on-site combustion of fuel are below the regulatory threshold of 25,000 metric tons of CO₂e. In 2013, Cal Poly successfully submitted its first report of GHG emissions to the California Air Resources Board (a copy of this report may be viewed at www.afd.calpoly.edu/sustainability/docs/GHG2013.pdf). The scope of the report only includes on-site emissions, and does not account for emissions from purchased electricity.



The 2014 CSU Sustainability Policy mandates that campuses perform a GHG inventory starting in fiscal year 2014-15 and every two years thereafter using the Climate Registry protocol and voluntary reporting tool, which includes both on-site emissions and purchased utilities. Cal Poly is collecting data to prepare for this first comprehensive report and is finding some very positive indications. Since 1990, campus building square footage and on-campus residency have more than doubled while electricity use has only grown by 50 percent and natural gas use has actually dropped by 7 percent. Equally important, our source of electricity has become much cleaner since 1990. From 1990 to 2013, PG&E's effective carbon emissions per kWh dropped by 25 percent and are expected to drop another 30 percent by 2020. Combined with ongoing conservation efforts, retrofit of existing buildings and plans for additional renewable energy generation on campus, Cal Poly is on track to meet the AB32 target in 2020.

LAND USE & DEVELOPMENT

To practice what we teach, Cal Poly strives to be a leader and innovator in sustainable design and management of campus buildings, infrastructure and land.

BAKER SCIENCE

The Warren J. Baker Center for Science and Mathematics (Baker Science) opened for classes in fall 2014. The \$119 million, 188,000 GSF building replaced the north wings of the aging Science Building 52 with six levels of state-of-the-art laboratories, classrooms, faculty offices and student spaces in the heart of campus. Pending LEED Gold Certification, Baker Science utilizes chilled beams, variable flow fume hoods, ceiling radiant heating and cooling panels, displacement ventilation, demand ventilation, and the Aircuity Control System to exceed ASHRAE 90.1 energy standards by 30 percent. Just as science and mathematics are central to the polytechnic curriculum, pedestrian pathways from the residence halls, public transportation, the University Union, campus dining facilities, and the bookstore all lead to Baker Science. Together with Centennial Park, it is destined to become Cal Poly's unifying and defining campus landmark.



RECREATION CENTER

The expanded Recreation Center opened in January 2012 and is a destination for the Cal Poly community to relax, recreate and socialize. The space was created through the shared vision, hard work and financial commitment of Cal Poly students. The building design includes an innovative Indirect/Direct Evaporative Cooling (IDEC) system that provides virtually all of the cooling needs of the building with near-zero energy consumption. The building also includes a living roof, high-efficiency lighting systems and shaded glazing that floods the interior with natural light. The Recreation Center outperforms California Title 24 Energy Code by 25 percent and achieved LEED Gold Certification.

MASTER PLAN UPDATE

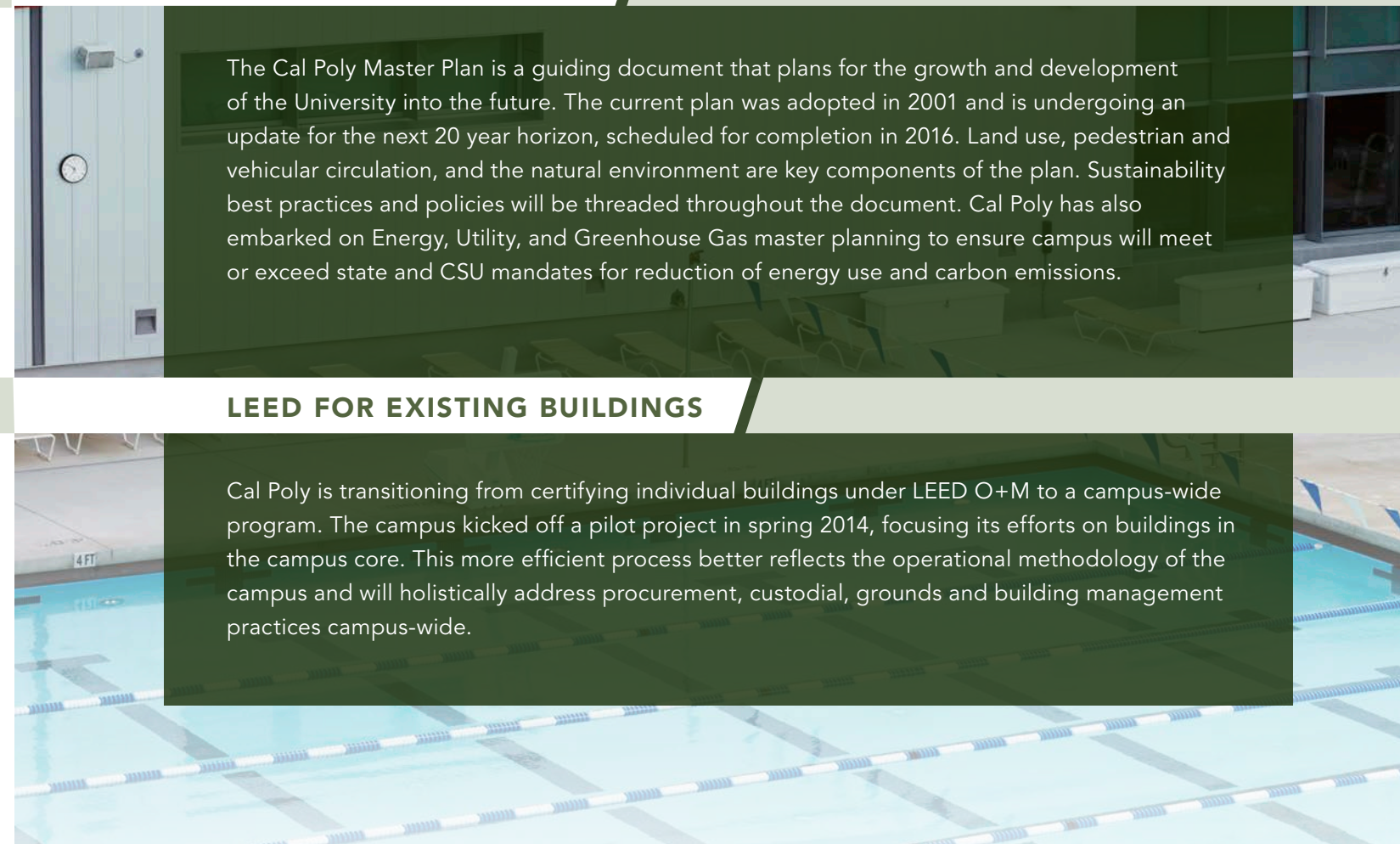
The Cal Poly Master Plan is a guiding document that plans for the growth and development of the University into the future. The current plan was adopted in 2001 and is undergoing an update for the next 20 year horizon, scheduled for completion in 2016. Land use, pedestrian and vehicular circulation, and the natural environment are key components of the plan. Sustainability best practices and policies will be threaded throughout the document. Cal Poly has also embarked on Energy, Utility, and Greenhouse Gas master planning to ensure campus will meet or exceed state and CSU mandates for reduction of energy use and carbon emissions.

STUDENT HOUSING PLANS

Plans for the future include development of additional student housing on campus. Student success increases significantly by living on campus, and additional student housing decreases commuter trips to campus from outside the area, thereby reducing traffic and greenhouse gas emissions. New housing facilities will be targeted for LEED Gold Certification, and could incorporate solar PV, cogeneration, or fuel cells for alternative energy.

LEED FOR EXISTING BUILDINGS

Cal Poly is transitioning from certifying individual buildings under LEED O+M to a campus-wide program. The campus kicked off a pilot project in spring 2014, focusing its efforts on buildings in the campus core. This more efficient process better reflects the operational methodology of the campus and will holistically address procurement, custodial, grounds and building management practices campus-wide.



A MORE 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.

CURRICULUM

ACADEMIC SENATE SUSTAINABILITY COMMITTEE

The concept and practice of sustainability is taking an ever-increasing role in Cal Poly curriculum. The Academic Senate, the faculty governing body to the university, has created a committee with the sole purpose of furthering sustainability efforts within the curriculum. The Sustainability Committee is tasked with informing and supporting the activities of other committees whose scope encompasses environmental responsibility. The Sustainability Committee makes recommendations to the Academic Senate, as appropriate, regarding the provisions of the Talloires Declaration.

CHARGES:

- Continue assessing the Sustainability Learning Objectives (SLOs)
- Work with the Academic Senate General Education Governing Board on incorporating sustainability into General Education requirements
- Develop a Resolution to identify sustainability courses in the catalog that satisfy the SLOs
- Work with students to better integrate approaches to sustainability inside and outside the classroom/curriculum
- Promote/extend the PowerSave Campus/STARS Certification
- Determine the role of sustainability in the University's strategic plan/action plan
- Develop procedures and guidelines

CAFES CENTER FOR SUSTAINABILITY

The mission of the College of Agriculture, Food and Environmental Sciences (CAFES) Center for Sustainability is to advance sustainable food and agricultural systems at Cal Poly, in the local community, and in industry. Faculty and staff are collaborating to develop centers of expertise, funding for projects, innovative initiatives on and off campus, and opportunities for students to deepen their understanding of approaches to sustainability in agricultural, food, and natural systems.

The Center's Sustainable Stewards intern program engages a team of students on an annual basis through paid internships to assess, implement and/or monitor

sustainability practices on the campus farm. Examples of student work completed to date include development of a resource outlining regulatory frameworks applicable to the campus farm, a standard operating procedure for the Cal Poly Compost Unit, and an assessment of sustainability metrics used on Cal Poly's Gallo-sponsored vineyard.

In 2012, the Center initiated the development of a new, comprehensive course in Sustainable Food and Fiber Systems that will cover social, economic, and environmental aspects of sustainability in the food/ag/fiber sector. This course is envisioned as a core requirement for Cal Poly's Sustainable Agriculture Minor.

RESEARCH

CONFERENCES, LECTURES & EXTENDED EDUCATION

The Center's longest-running continuing education offering, the annual Sustainable Agriculture Pest Management Conference, is held in San Luis Obispo during the first week of each December. The conference provides active industry professionals such as pest control advisors, consultants, and growers with information on innovative strategies for controlling pests using sustainable agricultural practices.

and artisans as a means of providing people with the Central Coast food/ag experience, teaching them about our regional traditions, and providing education in the science and artistry involved in food production overall.

The Center is currently assisting Cal Poly Extended Education in the establishment of a new program entitled SLOcavore which seeks to facilitate access to and understanding of local food economies. The Center has developed a series of workshops that feature Cal Poly and regional food producers

Each term, the Center offers a quarterly Sustainable Ag Lecture Series free to the general public to highlight current topics in sustainable food, agriculture, and resource management. Lectures over the past year have featured everything from heritage poultry production to organic seed research and sustainability monitoring and certification models being used in the agri-food industry.

REGIONAL FOOD SYSTEM ACTIVITIES

The Center for Sustainability has participated in several Central Coast initiatives to strengthen our regional food system. These include the establishment of a San Luis Obispo Food System Coalition, a CA Department of Food and Agriculture-funded food system assessment in collaboration with UC Davis, a San Luis Obispo County

"buy local" policy, and the establishment of a SLO City Farm. In collaboration with the Central Coast Grown non-profit, SLO City Farm will provide community education and potentially aggregation and distribution of local food in the future. Cal Poly also participates in the Inter-institutional Network for Food Agriculture and Sustainability (INFAS).

SUSTAIN-SLO

Cal Poly professors Lizabeth Schlemer and Linda Vanasupa and consultant Roger Burton have been exploring alternative teaching, living, and learning experiences and environments that could potentially transform the science, technology, engineering, and math (STEM) programs and make more inclusive spaces for all students that prepare them for the sustainably related challenges they will likely encounter in their future careers. Through the Sino-US Strategic Alliance for Innovation, San Luis Obispo (SUSTAIN-SLO), these researchers aim to break down educational barriers at Cal Poly and create a concept of a "networked learning community," an environment which they believe will foster collaborative learning. The purpose of this network is to bring together learners, educators,

and other stakeholders – such as community partners – in a collaborative process of exploring new ways of creating the social value of a thriving community.

Since the program's inception, SUSTAIN-SLO has seen 45 to 65 students from more than 20 disciplines participate annually. The university's student housing and residential life programs have offered SUSTAIN-SLO a dedicated dormitory for the next school year's participants to further enhance the "living laboratory" experience.

(Source: *Connected Classrooms. International Innovation.* <https://sustainslo.calpoly.edu>)

CAMPUS AS A LIVING LAB

Cal Poly was the recipient of two California State University System Campus as a Living Laboratory grants. The two grants, received by faculty in the Architecture Department within the College of Architecture and Environmental Design, use campus buildings to teach students about energy performance and sustainability.

Professors Ansgar Killing and Barry Williams will be exploring the use of commercial off-the-shelf construction products to create an inexpensive, zero-energy cooling system that may be adaptable to climate zones with diurnal temperature shift. In their proposal titled "Radiant Cooling in Diurnal Shift Climate Environment," they explain: "By using conventional radiant heating components in combination with solar collector panels, the proposed system will leverage the diurnal temperature shift to control the inside temperature of buildings and thus lower the campus greenhouse gas emissions." They received a total of \$33,800, including the \$12,000 CSU Campus as a Living Lab Grant.

Professor Margot McDonald received \$11,600 in CSU Living Lab Grant funds for a proposal titled "Campus



Buildings that Teach Sustainability: Using LEED-rated Buildings and Landscapes as Learning Labs." This project will illustrate how campuses can utilize their LEED-rated buildings as the focal point for student learning across the curriculum from K-12 to community college and university teaching. The project will build a data repository of existing documentation of the building for the recently completed Baker Center for Science, and have students in a second-year environmental control systems class develop and test hypotheses such as daylighting, shading, and energy use in classroom, office, and laboratory spaces, as well as evaluate water use in the landscape.



STUDENT LIFE

CAMPUS DINING www.calpolydining.com/sustainability

CLEAN PLATE, CLEAN PLANET STUDENT INITIATIVE

- A Mr. Eco video campaign to bring awareness to food waste on campus: www.youtube.com/watch?v=lxhc3OnD6Ks
- Helps customers understand the value of reducing waste

ECO TO-GO CONTAINERS & BIO-BAGS

- All freshmen on campus are provided with an eco-friendly to-go food container to use in place of disposable food containers
- Campus Dining voluntarily switched out plastic bags for vegetable based "bio-bags" and reduced the number of places they are available

STUDENT-GROWN ORGANIC PRODUCE www.cafes.calpoly.edu/calpolygrown

- The Cal Poly Organic Farm and various Ag Enterprises sell products in the Campus and Village Markets
- Support Cal Poly students and eat fresh – look for Cal Poly labels on products such as cheese, chocolate, jams, honey and produce

POWERSAVE CAMPUS <http://afd.calpoly.edu/greencampus>

- A group of student interns working in Facilities to promote energy efficiency and environmental stewardship, funded through the non-profit Alliance to Save Energy
- Promote energy conservation on campus with mascot "Polly the Polar Bear"
- Retrofitted the University Art Gallery with LED lighting technology
- Runs awareness month campaigns for energy, water, and alternative transportation

EMPOWER POLY COALITION <http://empowerpoly.org>

- A consortium of humanitarian, environmental and sustainability student clubs
- Hosted 2014 Earth Day Fair in conjunction with the CAFES Center for Sustainability

CAFES CENTER FOR SUSTAINABILITY www.cfs.calpoly.edu/index.html

- Developed the Sustainable Stewards internship program
- Organized the Earth Day Fair/Sustainability Summit with the EmPower Poly Coalition to showcase the collaboration and projects of faculty, staff and students involved in sustainable initiatives on campus



OTHER CAMPUS EFFORTS

Between 2012 and 2014, 43 percent of campus office supplies purchased through Contract & Procurement Services Department (C&PS) were recycled or environmentally preferred products (EPP) and services. They worked with OfficeMax to create an online catalog of EPPs, making it easier for users to choose from more than 450 commonly used office supplies. The EPP catalog promotes bulk purchases, reduced packaging and reusable, refillable and recycled products. C&PS also implemented

auto substitution of OEM printer toners to re-manufactured toner within the online ordering system. Additionally C&PS works with furniture distributors to offer pre-owned furnishings. At times several departments are in the market for new furnishings and have existing furnishing they need to surplus. C&PS encourages the department and furniture distributors to work together to see if the existing furniture can supplement their needs prior to purchasing new furniture.

OPERATIONS SUSTAINABILITY PLAN STATUS AS OF SPRING 2014

LEADERSHIP ENERGY

- Include sustainability in campus Strategic Vision and increase sustainability staffing
- Complete energy/water audit
- Contract to implement conservation projects
- Assess feasibility of new solar, wind or other on-site generation projects

GHG

- Establish baseline
- Monitor per CSU guidelines
- Develop plan for AB32 Compliance by 2020

NEW CONSTRUCTION

- Require energy goal setting with schematic design
- LEED-certify new buildings

BUILDING OPERATIONS

- LEED for Campus
- Continue with retro-commissioning of existing buildings
- Implement Energy Information System

LANDSCAPING

- Install centralized irrigation controls and ET control
- Create Landscape Mgmt Plan for undeveloped, non-ag land
- Develop Drought Contingency Plans for 10%, 20% reductions

WATER

- Continue installing water efficient fixtures
- Meet with City regarding alternate sources of water and emergency measures
- Continue to monitor water quality
- Investigate and ameliorate pollution standard exceedances
- Develop Drought Contingency Plans for 10%, 20% reductions

RECYCLING

- Install additional metering on wells, ag use and irrigation
- Continue to improve diversion rate, including auxiliaries
- Improve procedures for data collection from construction and maintenance projects
- Implement Zero Waste for Open House, SOAR and WOW

OUTREACH

- Support PowerSave Campus Intern program
- Employ student assistants
- Provide open access to plans, provide presentations
- Support senior projects
- Institute "Sustainability Mentors" program
- Extend PowerSave Campus certification to auxiliaries and academic departments
- Create public Energy/Water Dashboard
- Offer Sustainability Orientation to Freshmen

FLEET

- Continue transition to alt fuels
- Right size fleet including vehicle sharing
- Identify next generation of alt fuel fleet vehicles

CAMPUS DINING

- Continue to convert vegetable oil to bio-diesel fuel
- Compost 1500 lbs/day of food waste
- Eliminate Styrofoam containers
- Perform energy/water audit of all food service facilities
- Offer Zero Waste option for Campus Catering

PURCHASING

- Require Energy Star for all appliances and office equipment
- Implement Environmentally Preferred Products catalog for office supplies

HOUSING

- Provide on campus housing
- Design housing with support facilities
- Create a Sustainability-Themed Living Community
- Integrate Sustainability into Orientation and Res Life programs

PARKING

- Continue to subsidize transit for all students/faculty/staff
- Continue OPTIONS program
- Continue to convert campus core to bicycle/pedestrian friendly environment
- Continue to provide discount fares to students on Amtrak
- Research feasibility of providing charging stations for electric vehicles

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