

ENERGY EFFICIENCY PARTNERSHIP PROGRAM BEST PRACTICE AWARDS APPLICATION FORM

Submission Deadline: March 20, 2015, 6:00 p.m., no exceptions

2015 CA Higher Education Sustainability Conference - hosted by San Francisco State University

This form is only for nominations in the **Water Efficiency/Site Water Quality** category

This category highlights outstanding water efficiency projects that have measurable and documented savings. Additionally, projects that significantly improve or protect site water quality may submit under this category. Applicants with documentation or calculations of associated energy savings will be given special consideration throughout the review process. Examples of water quality projects include bioswales and riparian zone restoration.

I. Contact Information

1. Campus **Cal Poly State University, San Luis Obispo**
2. Department **Facility Services**
3. Contact name/title **Dennis Elliot, Associate Director of Energy, Utilities, and Sustainability**
4. Telephone **(805) 756-2090**
5. Email **delliot@calpoly.edu**

II. Project Information

1. Project name **Drought Response**
2. Project location **Cal Poly State University, San Luis Obispo**
3. Completion date **2015**
4. Brief narrative description of project goals and strategies (200 – 300 words) **In response to the Governor's declaration of a statewide water emergency in early 2014, and the subsequent passage of the new CSU Sustainability Policy in May 2014 mandating water use reductions, Cal Poly convened a Drought Planning Group consisting of representatives from Facility Services (management, Plumbing and Landscape Services), Facilities Planning, Environmental Health and Safety, University Housing, ASI, Campus Dining, Ag Operations, and the City of SLO Utilities Department. A comprehensive investment grade audit of water conservation opportunities in both buildings and landscape operations was performed by WaterSavers LLC (see attached reports). PG&E's Food Service Technology Center was brought in by PowerSave Campus interns to identify conservation opportunities in the main dining facility (see attached report).**

As part of the Drought Plan developed by this group, a number of water conservation measures were immediately implemented out of existing O&M budgets that helped the campus to achieve the 2016 goal of a 10% reduction in water use over a year early. These included:

- Retrofit 954 lavatory faucets with 0.5 gpm aerators in all state and University Housing buildings.
- Replaced 300 shower heads in University Housing Residence Halls with 1.5 gpm units.

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- Replaced 4 cooking steamers at Campus Dining and Vista Grande Restaurant.
- Switched to a high efficiency spray nozzle at building 19 meat storage walk-in cooler.
- Reduced blowdown of Central Plant cooling towers.
- Reinstated use of pool covers at Anderson Aquatic Center.

These measures are saving 18.5 acre feet of water per year, 6.9% of total building water use. The projects had a total cost of \$74,000, and are generating a savings of \$88,000 per year, with a simple payback of 0.8 years.

In response to the CSU Chancellor's Office call for FY 14/15 Energy and Water Conservation Projects, with a total of \$5M in funding available for all 23 campuses, two projects identified by the WaterSavers audit were submitted by Cal Poly: low flow retrofit of plumbing fixtures in eight state buildings and installation of a wireless landscape irrigation control system to serve the largest turf areas on campus.

The low flow plumbing retrofit to install 1.28 gpf toilets and 0.125 gpf urinals will save 9 acre feet of water per year or 3.4% of total building water use, have a capital cost of \$152,000, and generate \$44,000 in annual utility savings with a simple payback of 3.4 years. Funding was approved by the Chancellor's Office in March 2015, and the project will be completed over Summer and Fall of 2015 as a change order to the \$4M campus wide energy project already underway with PG&E and AECOM.

The landscape irrigation control project, using a CalSense ET based control system and wireless communication, will cost \$153,000 and save 25 acre feet of water per year, or 7% of total landscape irrigation use. In addition, the practice of mulching planting beds in campus landscape will be expanded to the entire campus core, utilizing certified organic Cal Poly compost made from Ag Operations animal waste and campus landscape waste. The improved water retention of planting beds due to the mulch will save 13 acre feet of water per year, or 4% of total landscape irrigation use. These projects will be implemented by Landscape Services staff.

On Cal Poly agricultural land, numerous measures were implemented by Ag Operations staff to improve irrigation efficiency. These included:

- Replacement of all existing sprinkler head nozzles with 1/8 inch nozzles at the Crops Unit, Silage Production, Beef pastures, Dairy pastures and Sheep pastures. This resulted in a 33% reduction in water use associated with sprinkler irrigation on approximately 120 acres of irrigated pasture and row crops.
- At the Crops Unit and Mission Avocado operation, micro-emitters have been installed to irrigate all of the orchard crops.

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These measures by Ag Operations resulted in a savings of 55 acre feet of water per year. Combined with the measures implemented on campus, a total of 120 acre feet of water per year will be saved – approximately 11% of the campus' average annual water use.

5. Project budget (please briefly highlight any special/grant funding sources that were obtained for the project, if applicable) Total cost \$421,000 – \$116,000 funded from existing operation and maintenance budgets, and \$305,000 funded from the CSU 14/15 minor cap energy /water conservation program.
6. Estimated annual water savings and/or estimated annual amount of water treated (in gallons) 120 acre feet per year – 11% of total campus usage.
7. Estimated annual cost savings (please state assumptions used for these calculations) These measures produce \$149,000 per year in annual utility savings, with a simple payback of 2.8 years. Calculations are based on costs of \$3.86/CCF for water and \$7.05/CCF for sewer. Hot water savings also include energy based on costs of \$0.10/kWh for electricity and \$0.76/therm for gas.
8. Relevancy to the Best Practice Program – Please provide a detailed narrative of the project or practice, highlighting those features that qualify it as a best practice readily replicable on other campuses (800 word limit). Every campus should be in the process of developing, refining, or implementing their drought response plan. This portfolio of projects is a good example of the effectiveness of stakeholder engagement, collaboration, and planning. Sometimes the simplest solutions are the best and exotic technology or complex solutions are not necessary. By using two experienced and capable firms for auditing purposes (WaterSavers and the FSTC) Cal Poly was able to put a plan together rapidly and immediately move to implementation. With the project plans in hand, Cal Poly was ready when the CSU call for water conservation project submissions came out.
9. Collaborative design and implementation – Describe the way in which this project incorporated stakeholders from multiple departments across campus and the local and regional off-campus community. Describe how collaboration produced sustainable solutions and improved the project's performance (300 word limit). The team that was assembled for this effort was critical to its success. The Drought Planning Group included:
 - Dennis Elliot, Associate Director of Energy, Utilities, and Sustainability
 - Scott Loosley, Director of Facilities Operations
 - Ron Hostick, Manager of Landscape Services
 - Mario Rivera, Plumbing Shop Supervisor
 - Joel Neel, Director of Facilities Planning and Capital Projects
 - Julie Moloney, Campus Planner
 - Kim Porter, Water Quality Specialist

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- Scott Bloom, Director of Facilities - University Housing
- Ron Skamfer, Director of Facilities - Associated Students Incorporated
- Mike Thornton, Director of Campus Dining
- Michael Albright, Executive Chef - Campus Dining
- Kevin Piper, Director of Ag Operations
- Wade Horton, Water Division Manager - City of SLO
- Cal Poly Landscape Advisory Committee
- Cal Poly PowerSave Campus

This group met biweekly for months to discuss strategy, opportunities, operational impacts, options, and to collect and share data. Various tasks and research assignments were split up among the team to maximize productivity and buy-in. A number of ideas were contributed by City of SLO staff and incorporated into the plan.

10. Describe how this project has been communicated to and received by campus stakeholders. Describe what has been met with satisfaction or dissatisfaction, and why (300 word limit). Due to the level of awareness on the Cal Poly campus regarding energy and water issues and the state of the drought, campus stakeholders were unanimously supportive of the measures proposed and implemented. The only negative feedback received occurred at the beginning of fall quarter in 2014, when faculty, staff, and students returned to find faucets performing differently than they remembered. Facilities received several calls reporting “low water pressure” in buildings due to the laminar flow 0.5 gpm faucet aerators that had been installed over the summer. A campus wide email notifying returning faculty, staff, and students of the results of the summer work solved this.

III. Additional information

Please provide any additional information necessary to assist the selection committee in understanding and evaluating the project. See attachments: WaterSavers reports (2) and FSTC report.

IV. Speaker bio

Speakers will present at the Sustainability Conference if their project is selected for a best Practice Award. Speaker bios will appear in the conference program. Please submit the following for each speaker (limit of two speakers per project).

1. Name and Title (should include name, acronyms (PhD, LEED AP, etc), job title, department, and institution) Dennis K. Elliot, PE, CEM – Associate Director of Energy, Utilities, and Sustainability – Facility Services – Cal Poly State University, San Luis Obispo
2. Email delliot@calpoly.edu
3. Phone Number (805) 756-2090

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4. **Bio (100 word limit)** Dennis Elliot is the Associate Director of Energy, Utilities, and Sustainability for Facility Services at Cal Poly SLO, and a part-time lecturer in the Mechanical Engineering Department. He is a registered Professional Engineer and a Certified Energy Manager. Dennis manages the University's utility procurement, energy and water conservation programs, and acts as the University Engineer for operations and new construction. Dennis also mentors the PowerSave Campus intern program, and serves on all three campus sustainability committees. Dennis has served in a variety of energy related positions at the University over the course of his 30 plus year career.

At least one of the speakers listed here must be a student, staff, or faculty member. Co-presenters from non-campus entities (e.g. architecture firms, consultants, etc.) are permitted. Please note that if the campus speaker cancels, a co-presenter not affiliated with a campus may no longer be allowed to present.

V. Nomination submittal

Send completed Nominations to Janika McFeely, Sustainability Specialist at the University of California Office of the President (janika.mcfeely@ucop.edu). **All submittals must be received by 6:00 p.m. on March 20th, 2015, no exceptions.**

Answers to frequently asked questions can be found at: <http://chesc.org/awards/faq.php>. Please direct any other questions to Janika McFeely, (510)987-9896.