

**SUSTAINABILITY CONFERENCE 2007 –
UNIVERSITY OF CALIFORNIA, SANTA BARBARA**
June 24-27

**ENERGY EFFICIENCY PARTNERSHIP PROGRAM
BEST PRACTICE AWARDS APPLICATION FORM**
Due Friday: March 9th 2007

I. CONTACT INFORMATION

Campus: Cal Poly SLO
Department: Facility Services
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II. PROJECT CATEGORY- see attached category descriptions

NEW CONSTRUCTION

- Best Overall Sustainable Design
- HVAC Design
- Lighting Design/Retrofit

SUSTAINABLE OPERATIONS

- HVAC Retrofit (labs included)
- Renewables/Innovative Energy Generation or Procurement
- Monitoring Based Commissioning
- Water Efficiency/Site Water Quality
- Innovative Waste Reduction
- Student Energy Efficiency
- Student Sustainability Program

III. PROJECT/ PRACTICE INFORMATION

A. GENERAL QUESTIONS

Project/practice name: Low Flow Plumbing Fixture Retrofits
Project/practice location: Campuswide
Implementation cost: \$238,000
Estimated **annual** energy savings (as applicable): Reduced total campus potable water consumption by 15% - saved over 39,000 CCF or 29 million gallons per year.
Estimated **annual** energy cost savings (as applicable): Annual avoided cost for water and sewer charges of \$240,000 per year.

Description- Provide a detailed narrative describing the project or practice.

Along with other water conservation efforts, this project involved the retrofit of over 700 plumbing fixtures with low flow fixtures, waterless fixtures and touch free sensors. Campus plumbers, in the course of routine preventive maintenance, replaced the following fixtures over a period of 4 years:

- over 200 standard urinals were replaced with low flow urinals, many with sensed flush valves
- over 200 standard toilets were replaced with low flow toilets, many with sensed flush valves
- over 300 standard lavatory faucets were replaced with low flow sensed faucets
- all residence hall shower heads were replaced with low flow heads
- 30 waterless urinals were installed as a pilot program to test waterless technologies

Relevancy to the Best Practices program- Describe the features of the project/practice that qualify it as a best practice of potential interest to other campuses (eg. replicability).

Cal Poly Facility Services strives to create a culture in which conservation becomes a natural part of operations and maintenance. In this spirit, the Cal Poly Plumbing Shop has proactively pursued opportunities to replace or upgrade fixtures to improve services to campus while conserving water. This has resulted in a significant savings in both water and sewer costs for the University, and has had a profound effect on new capital projects and the Campus Master Plan. As Cal Poly prepares to bring a new 2700 bed housing complex online in 2008, we had to review our available campus water and sewer capacity and how our agreements with the local municipality would be affected. The original CEQA analysis showed that additional capacity in the sewer treatment plant would have to be purchased at a cost of \$2,000,000. Due to the cumulative effects of conservation efforts, more recent analysis showed that our existing water and sewer capacity were adequate not only for the current housing project, but would serve the full campus master plan build-out through 2020. The \$2,000,000 was returned to the project to offset the cost of additional sustainability design features such as cogeneration and more energy efficient lighting.

Design integration- If appropriate, describe the ways in which this project/practice incorporated multiple disciplines and/or stakeholders into the design process. Describe how collaboration produced sustainable solutions or improved the project's performance.

The plumbing shop worked proactively with the Housing Office to develop retrofit plans that served the resident students' needs, the needs of the custodial staff, and delivered savings to Housing management. In the classroom buildings on campus, feedback from staff and faculty was encouraged and incorporated, as was participation by custodial staff and Facilities management. Lessons learned from these efforts have led to development of a campus standard for fixtures to be used in renovations and new capital projects, as well as measures that will be implemented in the LEED EB certification of the Faculty Offices East building.

Load management- If appropriate, describe how the project/practice provides on-peak electricity demand reduction, or demand response capability.

While water conservation does not appear to have an obvious savings of electrical energy or peak demand reduction, it indirectly has an enormous impact. Approximately 20% of all energy consumed in California is used for the pumping of water. By reducing our campus water consumption, we reduce the amount of energy used for transmission of water from the local municipal reservoir to the campus, and the amount of energy used at both the city's water and sewer treatment plants. By programming our main campus water pumps to fill our storage reservoir at night, we achieve a peak demand reduction of 60 kW.

B. DEPENDENT QUESTIONS- This section contains questions that are relevant ONLY for certain awards. If the award you are submitting under is listed, please address the question that follows.

Best Overall Sustainable Design:

Please describe the design of the building envelope, focusing on its effect on the facility's overall energy-efficiency.

Best Overall Sustainable Design; HVAC Design; HVAC Retrofit; Lighting Design/ Retrofit; and Water Efficiency/ Site Water Quality, if applicable:

Please describe how the project/practice has been received by building occupants. What has been met with satisfaction or dissatisfaction, and why?

Our water conservation efforts have been met with very positive responses from faculty, staff, and students alike. Improvements to systems like this are highly visible and utilized on a daily basis - this increases awareness of conservation efforts and sustainability issues in general. In some locations, stickers or signage are used to communicate the impact of these conservation efforts. Users especially like the implementation of automatic touchless fixtures and the resultant improvements in restroom hygiene.

IV. ADDITIONAL INFORMATION

Please provide any additional information necessary to assist the selection team in understanding and evaluating the project. Supplemental information in the form of photos, drawings, etc. may be submitted.

V. SUBMISSION DIRECTIONS

Please submit proposals (electronic transmission is preferable) by Friday, March 9th to:

Trista Little
Sustainability Analyst
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390 Wurster Hall # 1839
Berkeley, CA 94720-1839
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**Please visit the UC/CSU/IOU Sustainability Conference webpage at:
geog.ucsb.edu/sustainability/conference2007 for information about this year's conference.**

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PROJECT CATEGORIES

NEW CONSTRUCTION/MAJOR REHABILITATION

1. **Best Overall Sustainable Design** - This category is for best overall sustainable design for a new building or major building renovation. The building should show outstanding implementation of sustainability principles and energy efficiency measures. The building design must have been completed between January 1, 2003 and January 1, 2007. Building must not be a previous recipient of an Energy Efficiency Partnership Program award.

2. **HVAC Design** - Projects in this category should demonstrate leadership in HVAC equipment selection, distribution system design, and controls specification. Laboratory designs are included in this category. Examples include: appropriate equipment sizing; energy efficient equipment selection; maximizing the benefits of local climate; air distribution system innovation; and fume hood control innovation.
3. **Lighting Design/ Retrofit** - Projects in this category should demonstrate leadership in a new design or retrofit of lighting delivery systems and lighting control systems. Examples include: energy efficient fixture selection and deployment; utilization of daylighting technologies; and use of advanced lighting control technologies.

SUSTAINABLE OPERATIONS

1. **HVAC Retrofit** - Projects in this category should demonstrate leadership in HVAC equipment selection, distribution system design and controls specification. Laboratory retrofits are included in this category. Examples include: appropriate equipment sizing; energy efficient equipment selection; maximizing the benefits of local climate; and air distribution system innovation.
2. **Renewables/ Innovative Energy Generation or Procurement** - Projects in this category should increase the campus' consumption of renewable energy through the installation of alternative energy technologies or renewable energy procurement.
3. **Monitoring Based Commissioning** - Projects in this category should optimize building operations and secure long-term energy savings through a MBCx program. The program should include a review of building operations; the installation of comprehensive equipment control measures with built-in measurement and verification capability; and appropriate operational adjustments.
4. **Water Efficiency/ Site Water Quality** - 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. Water efficiency 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.
5. **Innovative Waste Reduction Programs** - This award will spotlight a program, organization, or group that has demonstrated significant leadership in waste reduction and recycling efforts. Award candidates in this category should be engaged in campus-wide programs that seek to leverage student, staff, faculty, and community interest and commitment to reduce waste and increase recycling. Programs should be able to demonstrate innovative strategies and programs in reducing waste while maximizing their collections of recyclables to lead the campus to achieve zero waste goals.

6. **Student Energy Efficiency** - This award will spotlight a program, organization, or group that has demonstrated real leadership in student-led energy efficiency and conservation efforts. Award candidates will be engaged in campus activities that seek to leverage student interest and commitment to sustainability in order to increase energy awareness on campus; realize environmentally-friendly campus policies and commitments; and involve students in efficiency activities that compliment their campus' goals and that result in measurable energy savings.

7. **Student Sustainability Programs** - This award will highlight a program, organization, or group that has demonstrated real leadership in student-led environmental sustainability efforts. Award candidates will be engaged in campus activities that seek to leverage student interest and commitment to sustainability.