

ENERGY EFFICIENCY PARTNERSHIP PROGRAM
BEST PRACTICE AWARDS APPLICATION FORM

Deadline: March 6, 2009

I. CONTACT INFORMATION

Campus: Cal Poly San Luis Obispo

Department: Facilities

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II. PROJECT CATEGORY- see attached category descriptions

NEW CONSTRUCTION

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

SUSTAINABLE OPERATIONS

- Water Efficiency/Site Water Quality
- Innovative Waste Reduction
- Student Energy Efficiency
- Student Sustainability Program

III. PROJECT/ PRACTICE INFORMATION

A. GENERAL QUESTIONS

Project/practice name: "Greenwashing"

Project/practice location: California Polytechnic State University, San Luis Obispo

Implementation cost: \$70,000

Estimated annual energy savings (as applicable): 9,321 Therms

Estimated annual energy cost savings (as applicable): \$8,762.02

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

In 2008 Interns with the Alliance to Save Energy's Green Campus Program at Cal Poly San Luis Obispo instituted The Greenwashing project. The goal of this effort is to implement energy efficiency measures in dining operations. Here we report on the success of our effort to foster the replacement of a large, centralized dishwashing machine that has washed 80% of campus dishes for the past 50 years.

In the fall of 2008 Green Campus interns worked closely with Campus Dining to identify higher efficiency models that could meet or exceed the demand on the existing machine. Campus Dining selected two new dishwashers one made by Jackson and another made by the Stero Company, that fit their needs and handed their choices over to the Green Campus interns to analyze and compare their energy and water usage. With assistance from Campus Dining, Interns analyzed the existing machine to measure energy and water consumption and to estimate savings, payback and rebate based on the models chosen by Campus Dining. Interns investigated electrical usage from the pumps and conveyers, water usage for all stages of the dishwasher and gas used to heat the water to the temperature required for industrial dishwashers. Gathering this information involved cooperation from both competing companies as well as the Campus Dining maintenance staff, who provided access and information on the old dishwasher.

The result showed that in fifty years, the electrical usage of industrial dishwashers has not changed very much at all; however, big savings came in the form of water and water heating. The more efficient of the two dishwashers, the model built by the Stero Company, used about one-third of the 180°F water used by the old machine. Due to the high water temperature, the savings from the gas used to produce the hot water was greater than the value of water saved by itself. The results of the analysis can be seen in the attachment section.

After a dishwasher was selected, an application for a rebate from the UC/CSU/IOU Energy Efficiency Partnership was submitted. The rebate resulting from this program was estimated to be \$8,762.02. Since the dishwasher serves so many locations on campus, it has to be installed at a time when there are no students living on campus and all of the food locations are closed for at least two consecutive days. This has pushed the installation date of the dishwasher back to spring break, March 21-29.

This project had a high initial cost, but given the inefficiencies of the existing machine at Cal Poly the project had a simple payback of only three years and seven months, these calculations can be seen as the second attachment in the additional information section. The replacement yields such high annual savings that it is worth investigating on all campuses including campuses that may utilize many smaller dishwashers instead of one centralized machine.

Project/practice name: Green IT

Project/practice location: California Polytechnic State University, San Luis Obispo

Implementation cost: Free after rebate

Estimated annual energy savings (as applicable): 116,666 kWh

Estimated annual energy cost savings (as applicable): \$14,000

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

As a Polytechnic University, the campus demands vast amounts of resources and information for use by students. Computer labs provide students with a place to work on projects, conduct research and collaborate with others. Throughout campus there are over 20 computer labs consisting of Macs, PCs and laptops.

Large numbers of computers, often entire labs, are being left on through out the night, typically with out hibernation or sleep settings enabled. This practice is very inefficient in the use of energy. Departments on campus do not pay energy bills, therefore are not attracted or have little incentive to adopt energy management software.

In 2008 Interns with the Alliance to Save Energy's Green Campus Program initiated a project collaborating with Central IT to develop an implementation plan for power management software. The first steps were to conduct research into existing power management products and present the findings to IT, Facilities, and administrative stakeholders. This included organizing webinars with product representatives to better educate stakeholders on the pros and cons of each product. Interns then worked with IT stakeholders to implement several rounds of pilot tests to ensure the software chosen would integrate into the existing network without any problems. Based on Interns' initial research and the pilot tests, Facilities then had to choose whom to sign into contract with. The contract was assigned to BigFix, who provide high performance security and systems management capabilities on top of power management capabilities.

BigFix is unique in that it operates like the wheel of a bike. Central IT is in the middle and holds over- riding administrative capabilities. Each department's lab will operate as a spoke, configuring their department needs while meeting the requirements of Central IT. This will ensure the system is being properly managed and maintained and that energy savings are optimized.

Each computer lab on campus is operated by a LAN coordinator. This individual is responsible for the purchasing and maintenance of software in the labs. The Green Campus in coordination with Facilities, has agreed to supply the software and two years' worth of upgrades for free to campus departments. This is possible due to the current rebate incentives through the UC/CSU/IOU Energy Efficiency Partnership. The package will cost \$9.70, but the rebate may be received on it can be up to \$10. This allows the

purchase of the software for labs at no cost to the departments, placing an incentive for the LAN coordinators to adopt BigFix (currently there is no policy at Cal Poly SLO requiring the adoption of network based power management). Starting Spring Quarter Green Campus interns will conduct an aggressive campaign to educate LAN coordinators and department heads about the opportunity and to secure commitments to adopt the tool.

The energy savings created from the project are demonstrable. With the installation of the software on 630 machines in five departments to date, consisting of Macs and PCs, Facilities has already assessed a savings of \$14,000 annually.

The documents attached are the work order for the initial 630 software licenses and the technical support package. The technical support package describes in depth the installation and set up process for the software.

	Amount	\$/ machine
Software	630	6.50
Yr 2-3 upgrade	630	3.20
Total	1260	9.70

Table 1: Cost chart of first three years of service and upgrades

Project/practice name: Dorm Energy Competition

Project/practice location: California Polytechnic State University, San Luis Obispo

Implementation cost: \$400.00

Estimated annual energy savings (as applicable): 61,176 kWh

Estimated annual energy savings (as applicable): \$10,000.00

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

In 2009 Interns with the Alliance to Save Energy’s Green Campus Program organized its second annual dorm energy competition to educate incoming freshmen on energy efficient lifestyle choices. This competition is meant to broaden their spectrum of knowledge in energy efficiency to foster long-term behavioral change. Through a competitive atmosphere the students collaborate and bond to compete for the lowest energy and water usage.

The competition took place in six red brick dorms, which included a total of 1450 students and 24 staff members. Residents competed to reduce their total amount of water and electric usage. Green Campus interns read electric and water meters every other day to monitor consumption. These readings were posted in the form of graphs and charts in the common rooms of the residence halls and then uploaded on the Cal Poly Green Campus Program website

(<http://cpgreencampus.googlepages.com/dormenergycompetition2009>). This allowed students to easily view and understand their savings, compared to other competing dorms.

Prior to the competition, informational sessions were held in each dorm to explain and educate students on the competition rules, tips to save energy, and the implications of their energy savings. These sessions included root beer floats, an educational video, “The Phantom Hunter”, and a short discussion on energy saving tips. The ultimate goal of these

sessions was to decrease the divide between energy user and energy payer. The result was an increased knowledge and action orientation towards ways to save energy and money in the following years. (View attachments for results of the competition). Throughout the competition, interns continued to engage residents through various social and marketing efforts. For example, Green Campus interns created and posted “Potty Talk” savings tips in dorm restrooms and energy and water savings posters in laundry rooms and other common areas. See attachments for examples of these marketing pieces.

Green Campus interns coordinated an important collaboration between Facilities and Housing that led to achievements beyond the estimated goals. Housing helped by informing the students of their progress and suggesting future improvements. Facilities enabled the Green Campus team to monitor the savings by granting access to electric and water meters. This growing relationship has allowed for the institutionalization and future expansion of the competition to include several other student-housing facilities.

Post competition discussion led to a possible intercollegiate competition between Cal Poly, SLO and Cal Poly, Pomona. This university was chosen due to the similarity between dorms. There has also been discussion with other schools to develop a state-wide competition. In other words, this competition may be applied to any campus with on-site student housing.

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.

Water Efficiency/Site Water Quality:

Green Washing: 736,920 gallons of water saved per year.

Water Efficiency/Site Water Quality:

Dorm Energy Comp: 299,544 gallons of water annual savings

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.

Green Washing Attachments:

YEARLY DISHMACHINE OPERATING COST						
	BASED ON 12 HOUR OPERATION PER DAY					
ENERGY CONSUMPTION	JACKSON		STERO		Current	
	JFT-21		STPCW-ER-21		Washer	
	USAGE	COST	USAGE	COST	USAGE	COST
ELECTRICAL ENERGY - Motors (KWH)	26,241	\$2,886.53	18,523	\$2,037.55	18,523	\$2,037.55
Primary Water Heat (Therms) 60 to 160 degrees F.	6,042	\$5,679.79	4,230	\$3,975.85	11,912	\$11,197.30
Secondary Water Heat (Therms) 160 to 180 degrees F.	1,289	\$1,211.69	902	\$848.18	2,541	\$2,388.76
TOTAL ENERGY COST	\$9,778.01			\$6,861.59		\$15,623.61
Rinse Water	579,600	\$2,666.16	405,720	\$1,866.31	1,142,640	\$5,256.14
Sewer Charge	579,600	\$3,535.56	405,720	\$2,474.89	1,142,640	\$6,970.10
TOTAL WATER COST		\$6,201.72		\$4,341.20		\$12,226.25
ESTIMATED OPERATING COST PER YEAR		\$15,979.73		\$11,202.79		\$27,849.86
ESTIMATED ENERGY SAVINGS (KWH)	-7,718		0		-	
ESTIMATED ENERGY SAVINGS (Therms)	7,122		9,321		-	
ESTIMATED WATER SAVINGS (Gallons)	563,040		736,920		-	
ESTIMATED SAVINGS PER YEAR	\$11,870.13		\$16,647.07		-	

SIMPLE PAYBACK

STERO STPCW-ER-21	
Purchase Price:	\$70,050.00
Estimated Rebate:	\$8,762.02
Total Capital Cost:	\$61,287.98
Savings Per Year:	\$16,647.07
Simple Payback:	3.68 Years

Dorm Energy Competition Attachments:

Competition Final Results

	Electric (kWh)	Water (gallons)	\$/Student	Rank
Trinity	73.25	1112	\$ 15.27	1
Sequoia	74.15	1138	\$ 15.54	2
Muir	79.34	1154	\$ 16.24	3
Fremont	79.67	1240	\$ 16.80	4
Tenaya	83.31	1264	\$ 17.37	5
Santa Lucia	92.58	1242	\$ 18.30	6

**Based on energy usage per student for every value.*

Competition Total Savings

	Electric (kWh)	Electric (%)	Water (gallons)	Water (%)
Trinity	10,903	37.4%	63,579	18.7%
Sequoia	11,617	38.9%	101,320	26.6%
Muir	8,640	30.9%	45,602	13.9%
Fremont	10,480	34.9%	38,072	11.1%
Tenaya	9,983	33.1%	25,325	7.6%
Santa Lucia	9,553	29.7%	25,646	7.8%
Total:	61,176	34.1%	299,544	14.6%
Total Energy and Water Savings: \$9,990.37				

V. SUBMISSION DIRECTIONS

Please submit proposals (electronic transmission only) by **March 6, 2009** to:

Andy Coghlan
Sustainability Specialist
University of California, Office of the President
Email: andrew.coghlan@ucop.edu
Phone: 510.987.0119

**Please visit the UC/CSU/CCC Sustainability Conference webpage at
<<http://sustainability.ucsb.edu/conference/index.php>>
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, 2004 and January 1, 2008. Building must not be a previous recipient of an Energy Efficiency Partnership Program award.
2. **HVAC Design/Retrofit** - Projects in this category should demonstrate leadership in HVAC equipment selection, distribution system design, and controls specification. Laboratory designs and retrofits 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. **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.
2. **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.

3. **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.
4. **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.