

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

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

**I. CONTACT INFORMATION**

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Department: Facility Services  
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**II. PROJECT CATEGORY-** see attached category descriptions

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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**

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**A. GENERAL QUESTIONS**

Project/practice name: 135 kW Solar PV Installation  
Project/practice location: Engineering West Building  
Implementation cost: Cost to provider \$1.1M, PG&E rebate \$440K, cost to Cal Poly - \$0  
Estimated **annual** energy savings (as applicable): saves 230,000 KWh per year,  
eliminates 350,000 lb per year of greenhouse gas from the atmosphere  
Estimated **annual** energy cost savings (as applicable): \$5,000 per year

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

Under the State Solar Initiative Program, Cal Poly entered into a Third Party Power Purchase (PPA) agreement with Sun Edison to design and construct a 135 kW solar PV system on the roof of the Engineering West Building. In this 20 year agreement, Cal Poly agreed to license the building roof space to the solar provider at no cost. In return, the solar provider agreed to design, build, own, and operate the solar PV system. Cal Poly purchases all electrical energy generated by the PV system at pre-negotiated fixed rates, with an annual escalation about half what is forecast for utility rates. The rate structure was developed in such a way that the provider gets a reasonable return on investment for the project, and Cal Poly can take advantage of on-site generation using renewable resources, while achieving a cost savings of approximately \$100,000 over the life of the system.

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).

Solar PV systems, even after incentives, typically have a very long payback for an owner – usually over 20 years. This makes justification of the investment difficult on a purely financial basis. Delivering solar PV using a third party PPA allows a campus to achieve an attractive cost savings, show a commitment to sustainability, and reduce their greenhouse gas emissions without consuming precious capital resources that are already overburdened.

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.

This project was extremely collaborative, delivered as a partnership between Cal Poly, the CSU Chancellor's Office, the California Department of General Services, Sun Edison, and PG&E. Design innovation focused on issues such as:

- Maintaining integrity of the roof system and roof warranties.
- Ensuring clear access to roof mounted HVAC equipment and roof drains for maintenance.
- Providing pathways for foot traffic to access all areas of the roof without requiring fall protection safety gear.
- Hinged solar panels to simplify maintenance and cleaning.
- Real time metering available via the web.

This project generated a great amount of interest from faculty, staff, students, and the local community. Numerous classes have taken tours including electrical engineering, construction management, and architecture students. It has sparked development of several other small PV projects that are grant funded, including:

- A 2.5 kW system on the roof of Facility Services for the charging of electric vehicles.
- A 450 W system on the roof of the Science building to study the feasibility of providing 100% of the energy needs of a faculty office using solar energy.
- A 200 W system on the roof of the Engineering III building for use in laboratory experiments.

In addition to these projects, Cal Poly, working with Chevron Energy Solutions, is currently evaluating multiple project sites for a future solar PV project up to 1 MW in capacity.

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

By nature, solar PV generates the majority of its power during mid day hours during peak utility rates. This system reduces our peak demand by 135 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?

#### **IV. ADDITIONAL INFORMATION**

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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**

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

Trista Little  
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**Please visit the UC/CSU/IOU Sustainability Conference webpage at: [geog.ucsb.edu/sustainability/conference2007](http://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.