

SUSTAINABILITY CONFERENCE 2006 – UNIVERSITY OF CALIFORNIA, SANTA BARBARA

JUNE 25-28, 2006

HIGHER EDUCATION ENERGY EFFICIENCY PARTNERSHIP – BEST PRACTICES PROPOSAL FORM for SUSTAINABLE OPERATIONS

CONTACT INFORMATION

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PROJECT CATEGORY

(See attached project category descriptions)

Sustainable Operations

- Best Energy Efficiency Retrofit Practices
 - Lab HVAC Systems
 - Other Building HVAC Systems
 - Lighting and Controls
 - Best Comprehensive Building Energy Retrofit
 - Housing and Dining Best Energy Efficiency
 - Load Management
- Sustainable Purchasing—Buy Recycled
- Innovative Waste Reduction Programs
- ✓ Student Energy Efficiency
- Student Sustainability Programs

PROJECT/PRACTICE INFORMATION

Project/Practice Location: Campuswide

Project/Practice Name: Engineering Services Student Assistant Training Program

Project/Practice Description:

Engineering Services is one of the trades shops within Facility Services at Cal Poly. Engineering Services is responsible for the operation and maintenance of the campus central plant, building HVAC&R systems, cogeneration plant, and building control systems. The Engineering Services shop is made up of 16 journey level tradesmen and a part time crew of six to ten student

assistants. In support of the University's educational mission, Engineering Services strives to recruit students from the various engineering disciplines for part time employment in order to give them valuable hands on experience and training related to their careers and professional development.

Students perform a variety of duties – monitoring the operation of the central boiler plant, chiller plant and cogeneration plant, performing preventive maintenance on building HVAC equipment and systems, development and improvement of the preventive maintenance program in general, monitoring operation of package steam boilers, and performing water testing and treatment of boiler, cooling tower, and closed loop water systems.

Student crew supervisor Tony Garcia has developed a comprehensive training program for the student assistant crew. In every facet of their work, training includes the fundamentals of energy efficiency and sustainability as it relates to the design, construction, operation and maintenance of these systems. Students are exposed to and trained on topics including:

- The importance of boiler combustion efficiency, flue gas analysis, and tuning.
- The effects of proper water treatment on boiler, chiller, and heat exchanger efficiency.
- The impact of proper preventive maintenance of air filters, coil cleaning, lubrication, and maintenance of drive systems on HVAC system efficiency.
- The impact of proper maintenance of HVAC systems on indoor air quality.
- The fundamentals of DDC energy management and metering systems.
- The fundamentals of HVAC equipment and systems including buildings and the central plant.

This training program results in a student crew that has a sense of stewardship of campus equipment and systems, and leads to higher quality work and greater productivity. Development of these skills and knowledge bases, and their subsequent reinvestment into the caretaking of our campus infrastructure results in significant energy savings and improved working and learning environments for the campus community. Such a hands-on learning experience is at the core of Cal Poly's "Learn By Doing" philosophy and directly supports the University's educational mission. Such experiences lead to better qualified graduates entering the workforce and hopefully taking these principles with them.

Describe the features of the project or program that make it a best practice of potential interest to other campuses – e.g. replicability, innovation to control implementation cost, etc.:

This is a program that could easily be adopted by most campuses – especially those with an Engineering curriculum. The program is found to be beneficial in multiple ways:

- The students learn the fundamentals of sustainability and energy efficiency and apply them in the performance of their duties.
- The campus benefits from better operating and more efficient HVAC systems, which positively impacts the working and learning environment.
- The campus O&M staff is invigorated by interacting with and mentoring young enthusiastic engineering students.

- The students gain invaluable real world hands-on experience that becomes part of their professional career foundation.

Approximate Implementation Cost (if any): \$2,500 per year

Estimated Annual Energy Cost Savings: \$50,000

Any additional information for the selection team to consider:

Please provide above information in sufficient detail to assist the selection team in understanding and evaluating the project. Supplemental information (8 ½ x 11 format) in the form of photos, drawings, etc. may also be submitted.

SUBMISSION DIRECTIONS

Please submit project proposals (electronic transmission is preferable) by Friday April 21st to:

Maric S. Munn, P.E., LEED
Associate Director, Energy & Utility Services
University of California, Office of the President
1111 Franklin Street – 6th Floor
Oakland, CA 94607
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HIGHER EDUCATION ENERGY PARTNERSHIP SPRING 2006 BEST PRACTICES CATEGORY DESCRIPTIONS

Maintenance and Operations – Best Energy Efficient/Sustainable Practices

Best Energy Efficiency Retrofit Practices (6 categories):

1. Lab HVAC Systems: Projects in this category should demonstrate leadership in HVAC equipment selection and controls specification appropriate to the laboratory environment. Examples could include: fume hood control innovation, energy efficient equipment selection, maximizing the benefits of local climate, air distribution system innovation and other HVAC innovations.
2. Other Building HVAC Systems: Projects in this category should demonstrate leadership in HVAC equipment selection, distribution system design and controls specification. Examples could include: appropriate equipment sizing, energy efficient equipment selection, maximizing the benefits of local climate, air distribution system innovation and other HVAC innovations.

3. **Lighting and Controls:** Projects in this category should demonstrate leadership in retrofit lighting delivery systems and lighting control systems planning and delivery. Examples could include: energy efficient fixture selection and deployment, utilization of daylighting technologies, use of advanced lighting control technologies and other lighting innovations.
4. **Best Comprehensive Building Energy Retrofit:** Projects in this category should demonstrate leadership in a holistic approach to bringing an existing building up to best energy efficiency practices
5. **Housing and Dining Best Energy Efficiency:** Projects in this category should demonstrate leadership and innovation in installing energy efficiency retrofit projects in housing and/or dining facilities.
6. **Load Management:** Projects/programs in this category should demonstrate leadership in demand responsiveness for existing buildings and systems. Examples could include: deployment and optimized usage of thermal energy storage, on-peak demand response control strategies and other innovative load management projects/programs.

Sustainable Purchasing – Buy Recycled:

Projects in this category should demonstrate leadership in the long term commitment to purchase materials made from recycled materials. Examples could include: policies, programs, partnerships, and implemented funding strategies that create incentives to buying recycled.

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 obtain zero waste goals.

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 in this category 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.

Student Sustainability Programs:

This award will spotlight a program, organization or group that has demonstrated real leadership in student-led environmental sustainability efforts. Award candidates in this category will be engaged in campus activities that seek to leverage student interest and commitment to sustainability.