BEST PRACTICES 2014

Cal Poly Sustainable Energy and Infrastructure Initiative

Integrating academic and facilities planning, Cal Poly San Luis Obispo is taking advantage of sustainable energy and infrastructure projects on campus to benefit the teaching and research curricula. This synergistic and collaborative approach serves as a valuable model for other departments and campuses.

Award Category
Sustainability Innovations

Green Initiatives
Bringing together sustainability curricula and campus projects

Joint project leadership includes engineering faculty and facilities staff

Combined funding from College of Engineering and administration

Campus-wide outreach to connect to wide range of stakeholders

Planning workshops with charette-style brainstorming sessions

Prioritized among five sustainability areas to guide and monitor progress

Identified opportunities to use campus as living laboratory

Budget
$34,600

Completion Date
September 2014

A unique collaboration between Cal Poly Facility Services and the College of Engineering brought together academic and facilities planning in order to improve curricula on sustainable energy and infrastructure, and to integrate campus projects as learning opportunities. Originally, the planning exercise was to be led by a single faculty member within the College of Engineering. However after interviewing candidates for the position, Debra Larson, Dean of the College of Engineering, decided to expand the initiative into a much broader effort led by two co-coordinators, combining the knowledge of an academic leader with the experience of a seasoned facilities manager. Dale Dolan, Associate Professor of Electrical Engineering, and Dennis Elliot, Assistant Director of Energy, Utilities, and Sustainability with Facility Services, were hired as the two part-time coordinators.

The coordinators facilitated interdisciplinary dialogue and engaged a broad cross-section of campus stakeholders.

By creating a dual position, the college hoped to find synergies among groups that have not typically done joint planning, and to create new opportunities to link teaching and research with energy and infrastructure projects on campus. The two coordinators began work on the initiative early in 2014, and have conducted their work over three quarters. The Sustainable Energy and Infrastructure Initiative received $17,300 from the College of Engineering and an additional $17,300 in matching funds from Administration and Finance, for a combined budget of $34,600.

The specific goals of the initiative were to enhance collaboration and strengthen connections between faculty in different departments related to energy and sustainability, to further infuse sustainability principles across the College of Engineering curriculum, to increase opportunities for hands-on learning through involvement with student sustainability projects, and to use the campus buildings and infrastructure as a living laboratory. Additional longer-term goals are to create a new center (or re-direct an existing one) around the area of sustainable energy and infrastructure, and to attract increased grants and donor contributions through the university's advancement campaign.

Students testing donated photovoltaic panels prior to installation. Photo: CPSLO.

The coordinators have engaged a broad cross-section of faculty, staff, and administrators — including department chairs, research center directors, and advancement staff. Student groups, utility representatives, corporate partners, industry advisory board members, and regional leaders have also participated. The coordinators organized a range of outreach activities including meetings, informational interviews, and two planning workshops based on a design charrette process.

The initiative has organized its planning around five areas related to energy and sustainability, which align with existing programs and efforts on the campus, particularly within academic units of engineering, architecture, construction management, and

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More Information

http://issuu.com/calpolyengineering/docs/cal_poly_engineering-2014

http://afd.calpoly.edu/sustainability/docs/metrics/2014_sustainabilityreport.pdf

http://ceng.calpoly.edu/news/cal-poly-students-install-solar-photovoltaic-syste/

http://afd.calpoly.edu/sustainability/

also with facility services. Based on a prioritization exercise at the design charrette, two areas — energy efficiency and renewable energy — were identified as first priorities. Additional broad areas of focus include materials and waste, water, and transportation. One outcome from the discussions was to pursue creative solicitations for power purchase agreements (PPAs) for renewable energy in ways that incorporate teaching or research components. Other ideas that emerged from the workshops included building a campus micro-grid, using solar panels to power electric-vehicle charging stations, and funding faculty to collaborate with student club projects.

This Cal Poly electric vehicle is parked where twelve level-two charging stations will be in place by early 2015. Photo: CPSLO.

Some of the initiative's efforts are already showing results. For example, as part of a new course on photovoltaic (PV) engineering design, students began installation of more than 1,000 PV panels on campus buildings. Future projects to follow the living lab approach include the CalWave Wave Energy Feasibility project, and installation of an electric vehicle charging station using recent funding from the California Energy Commission.

The final phase of this initiative was conducted over the summer of 2014, and involved documenting the ideas and outcomes of the workshops and other outreach efforts, and identifying potential corporate and regional partners for public-private partnerships. The project leaders also prepared a sustainable energy and infrastructure vision document.

The initiative has identified numerous opportunities to use campus facilities as a living laboratory.

The coordinators report that the initiative has been met with support and excitement, sparking engaging dialogue and debate. Students expressed a strong interest in having sustainability and renewable energy topics integrated into their required engineering courses, as they feel that good engineering requires an understanding of sustainability. Top administrators have expressed a desire to see the initiative grow beyond the confines of the College of Engineering, and to involve other colleges, such as Architecture & Environmental Design, and Agriculture, Food & Environmental Sciences.

LESSONS LEARNED

Prior to this initiative, academic planning activities were detached from facilities planning, missing potential opportunities. Reflecting on the work completed, Dennis Elliot feels that this unusual and innovative collaboration resulted in projects and programs that would not have been developed had these divisions continued. Bringing together diverse perspectives through these activities has led to broadly supported outcomes.

Dale Dolan says that it was challenging to incorporate all of the potential areas that stakeholders identified, but by focusing on common recurring themes the co-coordinators could help shape a vision that builds on much of the activity that is already occurring on campus. He notes that building on existing strengths is important to identify goals that are actionable and measurable.

Best Practices case studies are coordinated by the Green Building Research Center, at the University of California, Berkeley.

The Best Practices Competition showcases successful projects on UC and CSU campuses to assist campuses in achieving energy efficiency and sustainability goals. Funding for *Best Practices* is provided by the UC/CSU/IOU Energy Efficiency Partnership.