

UC/CSU/IOU Energy Efficiency Partnership

1. Projected Program Budget	\$	6,830,972
2. Projected Program Impacts		
MWh		2,596
MW (Summer Peak)		0.55
3. Program Cost Effectiveness		
TRC		2.18
PAC		2.22

4. Program Descriptors

Market Sector: Schools and Colleges
Program Classification: Statewide
Program Status: Existing Renewed

The University of California, California State University (UC/CSU), Southern California Edison (SCE) and other Investor-Owned Utilities (IOUs) Energy Efficiency Partnership (UC/CSU/IOU Energy Partnership) was designed to achieve immediate, long-term peak energy and demand savings and establish a permanent framework for sustainable, comprehensive energy management programs. The partnership program is an existing statewide nonresidential program that will continue in the 2006-2008 program cycle. It will continue to offer incentives for retrofit projects, monitoring based commissioning, and educational training for campus energy managers.

SCE and the other IOUs have implemented the partnership program with the goal of extending the reach and effectiveness of traditional utility programs by using the UC and CSU system communication and outreach channels to achieve broad penetration of energy efficiency services in the local campuses. SCE would like to engage the UC and CSU systems to be strategic partners that help reach campus end-use customers through partnership activities and as channels for the IOUs other energy efficiency and demand reduction programs.

The statewide partnership concept was pioneered during the 2004-2005 program cycle by the four IOUs and the UC and CSU systems and was very successful in achieving these goals. The ten (10) UC campuses and twenty-three (23) CSU campuses are poised to deliver energy savings of almost 25 million kWh, 3.6 MW peak demand, and 1.3 million therms with a total program budget of \$15 million when all projects funded through the 2004-2005 program are completed. The UC/CSU/IOU Energy Efficiency Partnership will build on this success and emulate these strategies for the 2006-2008 program cycle.

The 2006-2008 partnership will leverage the experience gained during the 2004-2005 program to improve delivery and increase participation. This will include:

- Improved outreach to campuses for a more effective training and education program.
- Offering funding levels that encourage campus projects with a higher energy savings and demand reduction potential.
- Capitalizing on the infrastructure built during startup of the 2004-2005 program to reduce administrative costs and improve cost effectiveness

The participating IOUs for the 2006-2008 Energy Efficiency Partnership program will be Southern California Edison (SCE), Southern California Gas Company (SCG), San Diego Gas & Electric Company (SDG&E), and Pacific Gas & Electric Company (SCE).

5. Program Statement

SCE and the other IOUs face the challenge of implementing cost effective energy efficiency programs that will result in immediate, long-term peak energy and demand savings in their service territories. The UC and CSU systems consume vast quantities of energy and, as a combined entity, make up a significant portion of the both the electric and natural gas load in the State of California. They are large, complex organizations with a broad set of goals, stakeholders, processes and constituencies. They are diverse from a geographic, climate, and operational needs standpoint. But with this size and diversity also comes a considerable opportunity to save energy use and cost on a scale that is meaningful to the IOUs and to California. The UC/CSU/IOU Energy Efficiency Partnership program is designed to meet these challenges.

With the 2004-2005 UC/CSU/IOU Partnership, SCE and the other California IOUs embraced a statewide partnership concept in energy efficiency programs. This effort was innovative, very successful, and led to significant energy savings at the campuses throughout SCE's service territory. In addition to the savings achieved, this partnership helped create a new paradigm for energy management at the campus level which has established the infrastructure necessary for long-term, permanent energy savings.

SCE's objectives for the UC/CSU/IOU Partnership include:

- Positioning the partnership as a strategic relationship to help SCE reach additional customers and impact their energy decisions by demonstrating successful implementation of a comprehensive approach to achieving energy management goals;
- Taking advantage of existing organizational infrastructure to effectively implement other programs and projects at the statewide level such as the Green Schools initiative; and

- Engaging the partnership to deliver energy savings and demand reduction both through partnership activities and as channels for SCE's other energy efficiency and demand reduction programs.

UC/CSU objectives for the Partnership include:

- Achieving immediate, cost-effective energy and demand savings;
- Continuing the success of the 2004-2005 program and utilize the momentum of the program to implement the backlog of projects and identify new projects for 2006-2008 ;
- Improving energy efficient operations and maintenance practices at the campuses; and
- Training of UC/CSU energy managers to identify and implement energy efficient opportunities.

Implementation strategies for the 2006-2008 will include energy efficiency retrofit projects, Monitoring Based Commissioning (MBCx) projects, and a Training and Education element. Details of program implementation strategies are listed below.

6. Program Rationale

The UC/CSU/IOU Partnership Program is a unique, statewide energy efficiency program that accomplishes immediate, long-term peak energy and demand savings, and establishes a permanent framework for a sustainable, comprehensive energy management program at the UC and CSU campuses served by SCE and the other IOUs. This program capitalizes on the vast resources and expertise of UC/CSU and the IOUs to ensure a successful and cost-effective program that:

- Meets the objectives of the California Public Utilities Commission (CPUC or Commission) as articulated in Decision 03-08-067;
- Achieves the goals of the state Energy Action Plan to optimize energy conservation and resource efficiency; and
- Addresses the goal of the Governor's Green Building Action Plan by assisting campuses with the retrofit and retro-commissioning of existing buildings.

The program is an extension of the partnership first established in the 2004-2005 energy efficiency program cycle, and will capitalize on lessons learned in the areas of improved program delivery efficiency and communication between the stakeholders. The new program will also address a backlog of cost effective projects that were identified in the previous cycle but could not be completed because of budget limitations. The previous 2004-2005 partnership not only provided a comprehensive energy efficiency program for UC/CSU, but also established a model for statewide IOU partnership programs. Based on this success, and the success of the 2004-2005 Local Government Partnerships, the UC/CSU/IOU Partnership will be renewed, with two new statewide programs for the California Community Colleges (CCC) and the California Department of Corrections and Rehabilitation (CDCR) added. This demonstrates the success and broad adaptability of the statewide partnership concept.

7. Program Outcomes

The Program will continue the progress made with the 2004-2005 UC/CSU/IOU Energy Efficiency Partnership. The desired outcome is the widespread dissemination of energy efficiency information, greater efficiencies in program delivery, sharing of best practices and educational tools, leveraging of local knowledge, and encouraging an infrastructure for the permanent adoption of processes at the campus and university system level. A paradigm shift is desired at the campus energy manager level for energy planning and decision making.

8. Program Strategy

SCE believes considerable energy savings and peak demand reduction goals will result from multiyear collaborative partnerships between UC/CSU and SCE. These collaborations will leverage individual strengths to carry the message about demand side management and savings to government constituents who are also SCE customers.

Like the 2004-2005 program, the 2006-2008 UC/CSU/IOU Partnership program is comprised of three elements, which will operate on a statewide, integrated basis, providing immediate energy savings and setting the foundation for a long-term program focused on sustainability and best practices:

Energy Efficiency Retrofits

Energy efficiency retrofit projects will provide cost-effective energy savings during the 2006-2008 program implementation cycle. The 2004-2005 partnership has identified a significant backlog of projects that are ready for immediate implementation. This will occur in the first quarter of 2006 concurrent with new project development work. This backlog and the momentum of the program will eliminate the typical program start-up delays and result in very efficient program implementation. This inventory will be reviewed and finalized during the initial stages of the program to develop an implementation plan and schedule. The process of finalizing the inventory and installation of measures will be well documented and passed on for use in the monitoring based commissioning element and the development of best practices and training and education in the third element of the program.

Monitoring Based Commissioning (MBCx)

Pioneered with the UC/CSU/IOU Partnership in 2004-2005, the MBCx element is a unique approach to obtaining savings that combines the expertise of the various facility management staff, additional utility and subcontractor expertise, and the installation of energy monitoring and metering equipment at a building's sub-meter or, in some cases, the system level. Until the establishment of this element in the 2004-2005 partnership, almost every retro-commissioning program has consisted of a one-time review of building operations, installation of equipment control measures, one or two training

workshops, and possibly development of commissioning documents. The approach of this portion of the partnership is far different. It includes the usual first step, a review of building operations and installation of equipment. However, it goes beyond the typical project to date in three aspects.

First, the organizations that participate will install sufficient equipment to insure an extensive and comprehensive built-in measurement and verification capability. This approach will enable campuses to continually monitor their energy use at the building or system level and quickly identify issues before they have a significant impact on their energy use. Second, this element will be combined with energy efficiency education and training to become a continuous commissioning effort that becomes institutionalized at each participating institution. Facilities management staff will be sufficiently trained on the philosophies behind MBCx and how to effectively implement MBCx projects at their campuses. In this way, savings will be sustained well beyond those from the more traditional and limited retro-commissioning activities. Third, the component will leverage the information borne out of the monitoring activity to identify additional retrofit opportunities that can be implemented immediately thus providing additional energy savings opportunities.

The Monitoring Based Commissioning projects implemented in the UC/CSU/IOU Partnership during the 2004-2005 program cycle have been thoroughly reviewed and evaluated for effectiveness and best-practices have been documented. Based on the knowledge gained in 2004-2005, processes will be streamlined for MBCx activities during the 2006-2008 program cycle. These processes can be readily adapted to other market sectors and to smaller buildings common to local governments.

Energy Efficiency Education and Best Practices Development

The Energy Efficiency Education and Best Practices Development element of the program will continue the comprehensive program for energy education and information exchange among the UC/CSU campus energy managers, project managers, and facility staff and with the IOUs that began with the 2004-2005 program cycle. This program provides a venue for those individuals responsible for managing energy use on campuses to share information and experiences related to facility operations, best practices, and successful retrofit projects, among other issues. This is an information and education program that develops and shares best practice operating methods and technologies applicable to university campus facilities. The primary vehicle for training and dissemination of information will be a series of training sessions and workshops (covering new construction, building operator training, retrofits, retro-commissioning, and monitoring based commissioning) held in Northern and Southern California. Course offerings,

curriculum and content will be based on extensive material and best-practices documentation developed during the 2004-2005 cycle.

Examples of the Training and Education courses from the 2004-2005 partnership are as follows. It is anticipated that these classes, as well as an expansion of this list, will be offered for 2006-2008.

- A Project Manager's Guide to Building Controls and Energy Efficiency
- A Project Manager's Guide to Exceed the 2005 Title 24 Energy Standards
- A Project Manager's Guide to Integrated Building Design
- A Project Manager's Guide to Labs21 Environmental Performance Criteria
- BOC 102 Energy Conservation Techniques
- BOC 104 Efficient Lighting Fundamentals
- Commissioning Agent Certification for New Construction
- Commissioning for New Construction -Overview for Project Managers
- Labs for the 21st Century Advanced Workshop: Establishing Design Goals
- LEED for Project Managers
- Monitoring- Based Commissioning

Details for the 2004-2005 Program T&E classes can be found on the Program web site: <http://www.uccsuioee.org/te.htm>

9. Program Objectives

Many goals are exclusive to the UC/CSU/IOU Energy Efficiency Partnership, but accomplishing individual goals also achieves the over-arching vision for the partnership effort: The achievement of immediate, long-term energy and peak demand savings and the establishment of a permanent framework for a sustainable, long-term energy management programs for the partnerships.

The objectives of the program are as follows:

A. Immediate, Cost-Effective Energy Savings and Demand Reduction

Retrofit projects will be implemented to meet or exceed all savings goals as outlined in the program economics.

B. Sustainable Energy Management Through Improved Operations and Maintenance Practices

Campus energy managers and other staff will be trained on monitoring based commissioning practices and will receive the knowledge and skills required to implement commissioning programs and effectively interpret building monitoring data thus positively effecting energy consumption and peak demand at their campus.

C. UC/CSU Energy Managers Trained To Identify and Implement Energy Efficient Opportunities

Similarly, this program will fund training campus energy managers, project managers and other staff in use of a “best practices” methodology for identifying and implementing energy efficiency projects.

10. Program Implementation

The 2006-2008 UC/CSU/IOU Energy Efficiency Partnership will utilize and build upon the implementation strategies employed in the partnership from the last program cycle. The implementation plan for this cycle will be refined to account for progress already made and will include:

- Coordination with other energy efficiency programs and ongoing statewide and local government partnerships;
- Energy efficiency retrofit program element implementation (including project selection and implementation);
- Monitoring Based Commissioning (MBCx) implementation;
- Energy efficiency education and best practices development and training implementation;

11. Customer Description

The two University of California and seven California State University campuses in SCE service territory.

12. Customer Interface

The 2006-2008 Partnership will utilize the same program management and team interface structure that was established during the program previous cycle. UC/CSU, SCE and the IOUs have formed a partnership to manage and implement the UC/CSU Energy Efficiency Partnership. Staff from each IOU and from both the UC and CSU will be responsible for the successful execution of the program. Similar to 2004-2005, the partnership will utilize a program consultant to provide overall program management and partner interface and communications functions. The 2006-2008 partnership will benefit from the significant progress that has been made during the previous cycle in developing program processes and improving communication between the many partner organizations.

13. Energy Measures and Program Activities

13.1. Prescriptive Measures

The UC/CSU/IOU Partnership encompasses a full range of traditional and innovative energy efficiency measures, as well as many strategies that were developed and tested during the 2004-2005 program cycle. Examples include lighting, controls, HVAC, central plant and steam/chilled water loop retrofit projects. Significant savings were achieved from laboratory and fume hood energy savings projects as this type of facility is prevalent at the campuses. Many retrofit measures for

2006-2008 were identified from MBCx projects performed during 2004-2005, and this strategy to identify projects will continue to be a focus for the program. A comprehensive portfolio of measures for 2006-2008 is under development, and information will be provided in the corresponding cost-effectiveness calculator and portfolio workbooks that accompany future detailed program implementation plans.

13.2. Energy and Demand Savings

Estimated program budgets and program impacts are summarized in the E3 calculator results. The information has been developed to meet the overall cost effective tests for the partnership program. Assumptions used in the workbooks were consistent with SCE's June 2005 filing. From these workbooks, energy savings metrics and program budget criteria that met the overall cost effectiveness tests were developed and used to estimate the program budgets and impacts.

13.3. Non-energy Activities

The UC/CSU/IOU Energy Efficiency Partnership will include non-energy activities such as presentations at industry and association conferences, attendance at conferences, meetings, community fairs and outreach events, distribution of marketing materials, through sponsorship of Green Campus education programs.

The partnership will also continue the progress made with the establishment of a statewide approach to training and building operation to facilitate long-term energy efficiency savings. The training and education component of the partnership involves training of campus design staff, project managers, energy managers and others in using best energy practices in the construction, retrofit, and monitoring based commissioning of campus buildings and central plant infrastructures. In addition, the Green Campus program activities that were implemented by The Alliance to Save Energy as part of the 2004-2005 non-IOU program offering. The Green Campus pilot program was designed to educate and to train students, faculty, and staff of selected campuses on the value of energy efficiency and to encourage behavior that will contribute to implementation of energy efficiency measures and conservation practices. The partnership has incorporated the Green Campus program as part of its Education and Training element due to its synergy with the strategies of the partnership program.

13.4. Subcontractor Activities

Subcontractors will be used to assist in program administration and management, and in each of the three program elements. This approach was used successfully in the previous program cycle.

An administrative consultant will assist in day-to-day coordination and communication among the partners (the UC/CSU and four IOUs) as follows:

- Provide staffing to the management and executive team and program specific implementation teams.
- Assist in identifying project tasks, establishing a schedule of deliverables and responsibilities, helping the IOUs to effectively deliver the program and assist UC/CSU to ensure successful program implementation, and obtain inputs from the partners and facilitate decision-making on key program elements.
- Assist in the three program elements, especially in the coordination and facilitation of partnership meetings and provide timely and accurate meeting minutes. The consultant will provide communications between the partnership and the campuses, as well as providing analytical assistance to the IOUs, UCOP and the CSU Chancellor's Office as needed.
- Provide assistance to the partnership with successful retention of subcontractors through competitive procurement processes, and helping to track and ensure successful program implementation based on specific deliverables required the Partnership.
- Assist the IOUs and UC/CSU in CPUC reporting by providing timely and accurate program information including program element status, project implementation status, and program element expenditure information.
- Assist in development of workshop agendas and materials, identification of experts, and facilitation of workshops and training sessions.

The campuses will hire energy efficiency retrofit subcontractors to install the energy efficiency measures for the retrofit component, and commissioning agents to assist in the performance of MBCx projects. Campuses may also hire engineering consultants to assist with project development, as needed. The program team will conduct a competitive process to develop a pool of qualified commissioning agents/trainers that will be available to the campuses.

13.5. Quality Assurance and Evaluation Activities

The UC/CSU/IOU team will establish and oversee quality assurance measures for the partnership program, including oversight and verification of subcontractor activities. These procedures and the associated reporting will be developed in more detail as a part of program implementation. In general however, the partnership will continue the level of due diligence and quality assurance of the present IOU energy efficiency offerings,

including a representative percentage of pre/post installation confirmation inspections for small hardware projects, and pre/post inspections on all large or specialized projects hardware projects (installation of energy efficient equipment, facility retrofits, and building commissioning and new construction projects).

The sampling and inspection activities will be developed at a later date as part of detailed EM&V plan for the UC/CSU/IOU Energy Efficiency Partnership. The Commission-mandated EM&V effort will be completed by independent subcontracts managed by the CPUC. If requested, the Partnership will fully collaborate with the EM&V contractor to support the EM&V activities.

13.6. Marketing Activities

The UC/CSU/IOU Partnership is fortunate to have a built-in marketing and communication network between the UC Office of the President, the CSU Chancellors Office, and the campus energy managers. This “buy-in” from the top opens up communications channels to the whole system. Combined with the existing management structure from the 2004-2005 program, this will facilitate marketing activities through pre-established channels for 2006-2008. Due to support from the top of the organization, partnership programs are very visible and provide opportunities to leverage existing UC and CSU conferences and meetings to raise awareness among campuses for the program. In 2004-2005 this was accomplished via the UC Sustainability Conference and the CSU Facilities Conference. As such, marketing efforts are minimal and cost effective.

14. Conclusion

The SCE 2006-2008 UC/CSU Energy Efficiency Partnership Program will continue to build upon its successes from the 2004-2005 program and its cost effectiveness is improved since many of the costs required to start the program will be minimized. Based upon the backlog of projects identified during 2004-2005, it is expected that there is a tremendous opportunity for energy savings in the 2006-2008 program cycle.