

California Community Colleges

1. Projected Program Budget	\$	8,985,167
2. Projected Program Impacts		
MWh		24,426
MW (Summer Peak)		5.15
3. Program Cost Effectiveness		
TRC		2.39
PAC		2.32

4. Program Descriptors

Market Sector: Schools and Colleges
Program Classification: Statewide
Program Status: New

The CCC/IOU Energy Efficiency Partnership program is a partnership between the California Community Colleges (CCC) and the four Investor-Owned Utilities (IOUs). The CCC is a two-year public educational institution that composed of 109 colleges statewide and is organized into 72 districts. It serves more than 2.5 million students and represents the largest system of higher education in the world. Southern California Edison (SCE) and the other IOUs (Pacific Gas & Electric, Southern California Gas Company and San Diego Gas & Electric), will collaborate with the CCC to share energy efficiency best practices and to implement energy efficiency projects for immediate and long-term energy savings and peak demand reduction.

This artnership brings a unique opportunity to deliver cost effective energy savings while leveraging the CCC's \$13 billion in local bond funding. Through the partnership, the campuses will be able to build an infrastructure that facilitates project identification and implementation. It will also allow SCE and the utilities to focus on the varying needs of the Community Colleges and opportunities to tailor a program that will be able to capture even greater energy savings while developing long term relationship.

The CCC/IOU Partnership Program will include the implementation of Retrofits, New Construction, and Retro-Commissioning (RCx)/Monitoring-Based Commissioning (MBCx) projects. The Program will also focus its efforts on Training and Education, which will expand existing vocational education programs, while training faculty and staff on best practices on energy efficient technology implementation and energy management.

5. Program Statement

The IOUs and the CCC have embraced the opportunity for a 2006-2008 statewide partnership program. This unique program has proven to be successful with other statewide and local partnership programs for 2004-2005. The California Community Colleges are committed to delivering cost-effective persistent energy savings and are looking to the IOU's for guidance and assistance to ensure program success.

The California Community Colleges are a large, complex organization with a broad set of goals, stakeholders, processes and constituencies. They are diverse from a geographic, climate, and operational needs standpoint. Unlike the University of California and California State University systems, each district or single campus is autonomous from any single governing body. They are each managed by an elected board of trustees and do not have a hierarchy. The Community College System Office provides funding and services, but do not have underlying authority over each of the individual districts or campuses.

With the size and statewide diversity of the colleges, there is a considerable opportunity to save energy use and operating cost on a scale that is meaningful to the colleges, IOUs and the State of California. This partnership is designed to meet these challenges. Many of the campuses have not had the funding to implement energy projects throughout their campus. Those that have are due for updated technology and their stock of existing building can benefit from the commissioning process.

There is also a significant opportunity with new construction. Over 70% of the 109 campuses within the 72 districts, have passed local bonds. These districts have over \$13 billion of funding, statewide, and are focusing on the expansion and modernization of its campuses.

With opportunity come challenges. The colleges have a time and budget constraint that they must work under when delivering their bond funding projects. Some of the energy efficiency opportunities are being value engineered out of the projects because of cost constraints and tight project implementation schedule. This challenge for the colleges presents a great opportunity for the partnership to capture "lost opportunities". The CCC/IOU Partnership can provide incremental funding to ensure that those measures are not left out of these projects and that the colleges can leverage this program to create and maintain a sustainable and long-term energy focus.

SCE's objectives for the CCC/IOU Partnership include:

- Extending the reach and effectiveness of SCE's demand-side management (DSM) programs and garner greater energy savings than would otherwise be possible through traditional methods;
- Positioning the partnership to be strategic partners that help SCE reach additional customers and impact their energy decisions,

- Leverage existing organizational infrastructure to effectively implement programs and projects; 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;
- Leveraging the bond funding available at 70% of the CCC campuses to expand the energy savings potential

CCC objectives for the Partnership include:

- Achieving immediate, cost-effective energy and demand savings;
- Implementing energy efficiency components in new buildings that are currently being valued engineered out of the project due to funding constraints;
- Develop a successful energy efficiency program that will build momentum and create a programs that goes beyond the 2006-2008 program years;
- Improved energy efficient operations and maintenance practices; and
- Training of CCC energy managers to identify and implement energy efficient opportunities while creating vocational education programs that expand to all Community Colleges.

Implementation strategies for the 2006-2008 will include energy efficiency retrofit projects at campuses, New Construction projects, retro-commissioning (RCx) or monitoring based commissioning (MBCx) projects, and a Training and Education element. Details of program implementation strategies are listed below.

6. Program Rationale

The CCC/IOU Partnership will leverage the on-going expansion and modernization of community college campuses. Each campus has a master plan in place or in development. With the partnership program, the IOU's can help develop an emphasis on energy efficiency to incorporate into the overall campus plan. It will capitalize on the vast resources and expertise of the community college system and the California IOUs to deliver a successful and cost-effective program to meets the objectives set forth by the California Public Utilities Commission (CPUC or Commission) as articulated in Decision 03-08-067, the goals of the state Energy Action Plan to optimize energy conservation and resource efficiency, and the Governor's Green Building Action Plan goals by assisting campuses with the retrofit and retro-commissioning of existing buildings.

The new CCC/IOU Partnership will incorporate lessons learned from previous statewide partnership programs in the areas of improved program delivery efficiency and communication between the stakeholders. The timing for delivery of this program is critical; the CCC is embarking on a major construction cycle and needs technical and financial input from the IOUs to ensure that the resulting new and existing buildings are as energy efficient as possible. There needs to be a major focus on energy efficient design for modernization and new construction projects. Furthermore, a solid foundation is required to educate community colleges on

sustainability and persistent energy opportunities through optimizing performance of existing buildings.

7. Program Outcomes

The Partnership will consider the framework and implementation methodology of the existing UC/CSU/IOU Partnership Program. However, the partnership team will tailor its management structure and implementation plans to best meet the needs and uniqueness of the CC system. This program will draw upon the lessons learned from other partnership programs and will improve its design and implementation processes to ensure a sustainable, long-term, comprehensive energy management program at the CCC campuses served by California's four large IOUs.

The following are the desired outcome of the CCC/IOU Partnership :

- Energy efficiency partnership program that is designed to efficiently accomplish immediate and long-term energy and peak demand savings goals.
- Improved communication and collaboration amongst the CCC and four IOUs to delivery energy efficiency programs.
- Effective dissemination of information to increase awareness and acceptance of energy efficiency practices.
- Improved efficiencies in program delivery, sharing of best practices and educational tools, and leveraging of local knowledge.
- Create an infrastructure for the permanent adoption of processes at the campus system level, and
- A paradigm shift at the campus energy manager level for energy planning and decision making.

8. Program Strategy

The program strategy will capitalize on the lessons learned from the current partnership programs. SCE believes considerable energy savings and peak demand reduction goals will result from *multiyear* collaborative partnerships between CCC and SCE. These collaborations will leverage the strengths of campus resources and SCE to carry the message about demand side management and energy savings to educational institutions who are also SCE customers.

This partnership will employ several strategies to capture the energy savings and encourage best practices that will provide persistence in energy efficiency applications and will ensure continued focus on efficient operation. Greater emphasis will be applied to the retrofit element based on preliminary project solicitation from participating campuses. The solicitation provided the partnership with information on the distribution of potential project types. There will be opportunities to work with retrofit and new construction projects as well as applying the retro-commissioning (RCx) or monitoring-based commissioning (MBCx) process to optimize the operation of existing buildings.

In addition, the partners will deliver a two-prong strategy to provide education and training for students and facility personnel. The education and training element will develop workshops, in collaboration with other partnerships, to target campus facility and maintenance staff. These workshops will be a forum for the participants from across the state to learn the latest technologies, to share lessons learned and to gain knowledge of industry best practices in energy efficiency management. The other strategy for the education and training element is the development of an energy efficiency curriculum that will be offered to campus students to equip them with energy efficiency knowledge which they can apply in the industry. Lastly, this partnership will seek opportunities to improve project coordination and communication to strengthen the relationships amongst the partners.

9. Program Objectives

The primary objectives of the program are to produce cost effective energy savings, help develop standard methodologies to identify and implement projects for the Retrofit, New Construction, RCx/MBCx and to develop an education/training program with strategies to share these experiences amongst the colleges and other educational institutions. Specifically, these objectives include:

- Achieve immediate, cost-effective energy savings and demand reduction through Retrofit, New Construction, RCx/MBCx, and Education/Training elements
- Improved energy efficient operations and maintenance practices for campus energy managers and other staff who will be trained on initial and persistence commissioning and will receive tools to reduce energy consumption and peak demand through energy information at the building systems level.
Ensure CCC energy managers are trained to identify and implement energy efficient opportunities. Similarly, this program will provide training for campus energy managers, project managers and other staff in use of a “best practices” methodology for identifying and implementing energy efficiency projects.
- Improved cost effectiveness on a \$/kWh or \$/therm basis for implemented projects.
- Improved partnership coordination and project implementation process.
- Increased transfer of energy efficiency knowledge and implementation experience to community colleges and other educational institutions.
- Increased awareness and knowledge of the benefits of Energy Efficiency initiatives for community colleges and other educational institutions.
- More integrated efforts between partnership activities and utility programs offerings.

10. Program Implementation

The 2006-2008 CCC/IOU Partnership will utilize and build upon the implementation strategies employed in other Partnerships from the last cycle. The implementation plan will be refined to account for lessons learned and will include:

- A more streamlined program management structure
- Coordination with other energy efficiency programs and ongoing statewide and local government partnerships;
- Energy efficiency retrofit program element implementation (including project identification, selection and implementation);
- Implementation of existing building retro-commissioning (RCx) and Facility Monitoring-Based Commissioning (MBCx);
- Energy efficiency education and best practices development and training implementation;

The management structure of the partnership will be customized to allow for more flexibility in overall program administration, in project assessment and implementation and in outreach to campuses within the Community College system. The program will be managed by a management team which consisted of representatives from each partner (CCC and the IOUs). Each program element will be coordinated through specific project teams for Retrofit, New Construction, RCx, and Education/Training. These project teams may involve additional partnership staff, such as engineers and tech specialists, as well as other CCC staff. The partnership management structure is shown in Attachment A.

In October of 2005, the CCC/IOU Partnership developed and implemented a project solicitation process to generate a pool of potential projects for the Retrofit, New Construction, and RCx/MBCx program elements. The project submission process has two phases. Phase 1 include an initial project request (Form 1), that was sent out to all 109 college campuses to request potential project information. There was a high level of acceptance for the process. An overwhelming response rate of 75% was achieved from the campuses statewide. Further outreach efforts are being considered to reach the remaining 25% of the non-responsive campuses. The Form 1 exercise provided an initial list of over 900 potential projects with over 40 million kWh's in potential savings and over \$60 million in projects.

In early December, the partnership had launched its second project phase. A more detailed project request form (Form 2), was distributed to all the participating campuses. Form 2 will provide the Partnership team with enough information to effectively review and perform due diligence on each project application. The process will ensure project compliance with program requirements. The implementation plan and project schedule will be finalized upon completion of the Form 2 evaluation, which is expected by February of 2006. The process of finalizing the inventory and installation of measures will be well documented and passed on for use in the Retrofit, New Construction, and RCx/MBCx program elements.

These program elements will operate on a statewide, integrated basis, providing immediate energy savings and setting the foundation for a long-term program that focuses on the sustainability and best practices.

Retrofit Program:

The Retrofit projects in this program will be implemented by the CCC. The partnership have identified potential projects through the project solicitation process, as noted above, and have a distribution of project types that provided valuable planning information to determine incentive levels, incentive payment structure, forecasting of budget for the each program element and to establish the implementation strategies and schedules for the proposed projects.

The energy efficiency measures identified in the project list includes both electric and gas measures such as lighting retrofits (T5 technology, LED applications, newer 28 watt T-8's), building wide lighting controls, boiler replacements, installation of water heaters, tankless water heaters, HVAC and chiller upgrades/replacements and central plant projects.

New Construction:

New Construction projects will focus on sustainability and long-term energy savings opportunities. SCE will work closely with our Savings By Design program to identify those projects that have already been accounted for while expanding those projects that have not taken advantage of our New Construction programs in the past and use the partnership to leverage those opportunities and energy savings potential. We will utilize the growing bond dollars totaling over \$12 billion within the community college system, to implement those measures that show persistent energy savings and to capture the lost opportunities by those projects that have been value-engineered out of the project scope due to budget and time constraints.

Retro-Commissioning (RCx) / Monitoring-Based Commissioning (MBCx):

This element of the program is a unique approach to obtaining savings that combines the expertise of the community colleges statewide campus facility management staff, utility and subcontractor expertise, and the installation of energy monitoring and metering equipment at the building system level. Through these resources, a systematic, comprehensive RCx/MBCx program will be implemented in existing campus buildings. It will provide a cost effective approach to achieving optimized operating facilities, save both electric and gas energy, reduce operating cost and improve occupancy comfort.

Energy Efficiency Education and Best Practices Development and Training:

The partners will provide education and training for students and facility personnel. The education and training element will develop workshops, in collaboration with

other partnerships, to target campus facility and maintenance staff. It will be a venue for those individuals responsible for managing energy use on campuses to share information and experiences related to facility operations, to gain knowledge of industry best practices in energy efficiency management, and successful energy efficiency project implementation, among other issues. The other strategy for the education and training element is the development of an energy efficiency vocational curriculum that will be offered to campus students to equip them with energy efficiency knowledge which they can apply in the industry. Lastly, this partnership will seek opportunities to improve project coordination and communication to strengthen the relationships amongst the partners.

The primary vehicles 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) to be held in Northern and Southern California. The partners will collaborate with the IOUs technology centers to assist with Course offerings, curriculum and content development and will utilize the existing material and best-practices documentation developed by other partnership programs during the 2004-2005 program cycle.

11. Customer Description

The community college campuses in the SCE service territory.

12. Customer Interface

The 2006-2008 CCC/IOU Partnership will utilize a streamlined program management and team interface structure similar to the one established for the UC/CSU/IOU partnership program. Staff from each utility, the Community College Chancellor's Office, the campuses, along with the Foundation for Community Colleges will be responsible for the successful execution of the program. The partnership will utilize a program consultant to provide overall program management and provide partner interface and communications functions. The program consultant will also coordinate activities with the Foundation for Community Colleges to perform outreach and disseminate program information to The 2006-2008 Partnership will benefit from the significant opportunity within the community colleges and the communication between the many partner organizations.

13. Energy Measures and Program Activities

13.1. Prescriptive Measures

The CCC/IOU Partnership will work with a full range of traditional and innovative energy efficiency measures, as well as many strategies to solicit potential projects from the community colleges. Examples include lighting, controls, HVAC, central plant and steam/chilled water loop retrofit projects. There will be opportunities to influence project design in New Construction projects to include energy efficient measures that were previously value-engineered out of the project due to cost and time

constraints. Furthermore, the retro-commissioning and monitoring –based commissioning process will be applied to existing buildings to optimize the operation of lighting, heating and cooling loads. The measures impacted by these activities may include lighting systems, building-wide lighting controls, control sequence adjustments, cost effective fixes of HVAC duct systems, perform adjustments to supply fans and installation of variable frequency drives. Monitoring devices will also be implemented in some of the building systems to provide system level benchmarks and ensure persistence in the resulting energy savings. Significant savings may be achieved through proper application of the RCx and MBCx process. Many additional retrofit measures may be identified from the RCx/MBCx projects and will be included in the comprehensive portfolio of measures identified during the solicitation process. The information will be provided in the corresponding cost-effectiveness calculator and portfolio workbooks that accompany future detailed program implementation plans. A more detailed cost effectiveness calculator will contain end-use summary measures for the calculated incentive component of this program.

13.2. Energy and Demand Savings

A summary of the E3 calculator results provides the estimated program budgets and program impacts. 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 CCC/IOU Partnership will include non-energy activities such as making presentations, attendance at conferences, meetings, outreach events, distribution of marketing materials, on-site meetings develop and deliver workshops and vocational energy efficiency training classes.

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 retro-commissioning/monitoring based commissioning of campus buildings and central plant infrastructures.

The partnership will utilize a statewide approach to training and building operation so that the best energy practices approach can be incorporated in to the campuses standard operating procedure and will ensure long-term energy efficiency savings. The training and education component will work hand-in-hand with the three of the program elements – energy efficiency retrofits, new construction and retro-commissioning/monitoring based commissioning.

13.4. Subcontractor Activities

Subcontractors will be used to assist in program administration and management, and in each of the three program elements.

A program consultant will assist in day-to-day coordination and communication among the partners (the colleges and four utilities) as follows:

- Provide staffing to the management team and program specific implementation teams.
- Assist in identifying project tasks, establishing a schedule of deliverables and responsibilities, helping to ensure successful program implementation, and obtaining CCC input and decision-making on key program elements.
- Assist in the three program elements, especially in facilitating coordination and communications with and among campuses, providing analytical assistance to the IOUs and to the CC System Office, as needed.
- Provide assistance with successful retention of subcontractors through competitive procurement processes, and helping to track and ensure successful program implementation based on specific deliverables required by the CPUC.
- Assist the IOUs and CCC in CPUC reporting and regulatory communications.
- For the third program component, Training and Education, the consultant may assist in development of workshop agendas and materials, identification of experts, facilitation of workshops and training sessions, and preparation of the minutes.

The campuses will hire energy efficiency retrofit subcontractors to install the energy efficiency measures for the retrofit component, and consultants to assist in the performance of RCx/MBCx projects. Campuses may also hire engineering consultants to assist with project development, as needed.

As seen in other 2004-2005 partnership programs, the campus facilities management staff will play a major role in this program component with the assistance of subcontractors will assist, particularly in campuses in their commissioning efforts. 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 CCC/IOU Partnership team will establish and oversee quality assurance measures for the partnership programs, 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. The partnership will perform due diligence and quality assurance for any energy efficiency offerings, including a representative percentage of pre/post installation confirmation inspections for 25% of the small hardware projects, and pre/post inspections on 100% of the large or specialized hardware projects (installation of energy efficient equipment, facility retrofits, and building commissioning and new construction.)

13.6. Marketing Activities

The CCC/IOU Partnership is fortunate to have a built-in marketing and communication network between the California Community Colleges System Office, the Foundation for Community Colleges, the CC districts, and the campus energy managers. The Foundation for Community Colleges will play a key role, as the CCC liaison, in the marketing and outreach efforts to the college campuses. Due to support from the top of the organization, this “buy-in” opens up communications channels to the whole system. Partnership programs are very visible and provide opportunities to leverage existing CC conferences and meetings to raise awareness among campuses for the program. As an example, in November of 2005, the partnership team used the Community College Facilities Conference (CCFC) to promote the 2006-2008 partnership program. Partnership information and project submission process were presented to the CCC facilities directors and managers from campuses through out the state. With this type of venue, marketing efforts are minimal and are very cost effective.

14. Conclusion

The CCC/IOU Partnership is a new statewide program that will facilitate the improvement of community college facilities while lowering operating costs. The partnership will focus on leveraging the bond dollars and statewide project funding. The program is intended to create additional opportunities, which will capture even greater energy savings and positions this program to be successful in 2006-2008, and beyond.