

## California IOUs focus on specialized energy efficiency needs of university campuses

### Company profile

San Diego Gas & Electric (SDG&E), Pacific Gas & Electric (PG&E), Southern California Gas (SoCalGas) and Southern California Edison (SCE) are California's major investor-owned utilities.

### Contact

Aaron Klemm  
Energy Program  
Manager  
CSU Office of the  
Chancellor  
Capital Planning Design  
& Construction  
401 Golden Shore,  
2nd Floor  
Long Beach, CA  
90802-4210  
(562) 951-4121  
aklemm@calstate.edu

The UC/CSU/IOU Partnership, formed in 2004 by California's four investor-owned utilities (IOUs) and two university systems – The University of California (UC) and California State University (CSU) – is a one-of-a-kind initiative that has been delivering increased peak energy and demand savings for its partners. There is no end in sight to the efficiency gains, cost savings and technical innovation that lie ahead for San Diego Gas & Electric (SDG&E), Pacific Gas & Electric (PG&E), Southern California Gas (SoCalGas) and Southern California Edison (SCE), on the utility side, and the University of California (UC) and California State University (CSU) on the university side.

***A groundbreaking energy efficiency partnership that was established in 2004 between California's two university systems and the state's four IOUs swiftly lived up to its promise by delivering immediate peak energy and demand savings for its partners.***

In its first two-year pilot phase of the program, the UC/CSU/IOU Partnership exceeded peak demand reduction goals and saved more than 32 million kWh and 1.5 million therms of gas, according to information from the partnership. Renewed for 2006-08, the successful program's funding levels were more than doubled and energy savings goals quadrupled.

IOUs provide the following services for UC and CSU:

- Incentives – amount to 60%-80% of energy efficiency project costs;
- Energy auditing services – utilized for project development and emerging technology funding; and
- Training and education classes – bring university personnel up to speed on state-of-the-art energy efficiency products and processes.

Prior to the partnership, there were no known programs that targeted the specialized needs of university campuses. "When this partnership was launched in 2004, it was the only one of its kind in the nation; and it still is in terms of higher education," says Paul Browning, spokesman for the CSU chancellor's office in Long Beach.

"The incentives these investor-owned utility companies offer to CSU and UC ... result in significantly reduced energy bills and greenhouse gas emissions. Without these incentives, the CSU and UC would be hard-tasked to develop and conduct many of their existing energy-reducing projects and programs," adds Browning.

The partnership is a melding of the resources and expertise of UC, CSU and the IOUs. It is funded through public goods charges and administered by the utilities under the direction of the California Public Utilities Commission.

As one-half of the university side of the partnership, CSU is no stranger to energy management. In the 30 years of CSU's energy management program, it has reduced the system's energy use intensity by 49%.

But as times have changed, the university needed some means of maintaining and enhancing its technology and energy management practices. In recent years, CSU was able to hold the line, even with the heavy demand for heating and cooling and the dramatic increase in the use of electronics on campus. But to continue effective energy management, the university needed increased IOU support.

"We were using the normal efficiency programs that utilities offer for the private sector. But there's a difference between public works construction and public works buildings compared to private sector buildings," says Aaron Klemm, CSU's energy program manager.

The UC/CSU/IOU Partnership is helping the campuses and their central plants reduce the energy load. "There have been some big efficiency gains there," Klemm states.

The partnership has other high-level goals as well. "One of the intents of the partnership was to have a statewide program ... so that one campus isn't getting a much better deal on incentives than [another], and to have a standardized program that allows the universities to make significant investments in efficiency," Klemm adds. "The IOUs need to deliver avoided energy consumption to the PUC (California Public Utilities Commission), and the universities get lower utility bills as a result."

CSU represents 23 of the 33 campuses that are part of the UC/CSU/IOU Partnership, with UC representing the remaining 10. Klein manages the partnership for CSU. "We develop energy efficiency projects on our campuses and then work with our partners at the utilities to implement those using incentive dollars and campus funds," he explains.

The partnership was created around the time the governor signed Executive Order No. 987, which mandates increased energy conservation, sustainable building practices and physical plant management policies for the university systems. The goal for CSU is to reduce 2003-04 consumption levels by 15% by the end of fiscal year 2009-10. The university was already moving in this direction when the order was issued. "We were on parallel paths," Klemm comments.

### **Strategies cover all the bases**

The program revolves around four strategies:

- Energy efficiency retrofits;
- Monitoring-based commissioning;
- Emerging technology demonstrations; and
- Training and education.

While direct implementation saves energy, reduces the need to build power plants and reduces greenhouse gas emissions, Klemm explains, "monitoring-based commissioning is a variance of commissioning that ensures persistence of savings. It's kind of a hybrid between retro-commissioning and constant commissioning."

Monitoring-based commissioning will play a big role in reducing CSU's energy load by 15%. "This enables us to tune up the buildings and then maintain the buildings at a new highly tuned state, and it is something that was brand new in 2004 and 2005," says Klemm.

The training and education utilities provide to UC and CSU staff – from building service engineers to energy managers and project managers – exposes personnel to the latest technology and energy efficient methods. "A subcommittee runs [the training program], and there are program representatives from each one of the four investor-owned utilities and the two university systems," Klemm says.

Incentives are the engine behind the universities' ability to carry out energy efficiency projects. Incentive amounts are tied to PUC and utility goals for the campuses, he notes. "The incentives currently are expressed to the campuses in terms of 'cents per avoided kWh' and 'dollars per avoided therm,'" Klemm says.

Each campus works individually with the utilities. Some are more autonomous than others, but various levels of utility support are used at the majority of CSU campuses. "For example, at one of our campuses, the gas company came out and did stack gas analysis on every boiler on the campus as part of a service," he says.

This type of project at one campus benefits everyone in the partnership. For example, "SDG&E came up with an approval from the PUC to include steam traps as part of efficiency programs," Klemm relates. "So an innovation in one part of one utility's efficiency programs translated over and has been shared with all the other utilities as well as UC and CSU."

### **IOU know-how benefits campuses**

The partnership grants the university access to technology and know-how that it wouldn't otherwise have. "Utilities are most helpful with innovative ideas like the steam trap project. They're also helpful with specialized tools like stacked gas analysis. Most of our campuses don't have sophisticated monitoring like that," Klemm says.

"The innovative new technologies help us as well. The California Energy Commission (CEC) has a Public Interest Energy Research program ... in which they take emerging technology and try to develop a pathway to market for new prototype products. The most successful one was the bi-level stairway lighting that the CEC and the peer group inside the CEC developed. We've had a lot of campuses retrofit large numbers of stairwells to save energy."

Developing a market for emerging technologies is an exciting possibility for the partnership. "At that point it, would become a three-way [partnership] with the California Energy Commission, the utilities and the universities. The utilities would provide the incentives, the California Energy Commission would provide the emerging technology, and hopefully we would install enough across the two university systems to develop a market so that manufacturers could become sustainable in a profitable business," says Klemm.

This concept creates still another layer in the relationship. "The preamble to the [UC/CSU/IOU] contract is to create a sustainable, long-term framework for working with the utilities. We're hoping that we can popularize emerging technologies and demonstrate that you can keep going with efficiency. We haven't hit the wall yet on cost-effective efficiency projects. With the universities working for the public sector, we have some turnover retention issues with faculty and staff so the continual training and education is important."

The flexibility of the partnership has its limits, however. "Ultimately we're under the grace of the Public Utilities Commission," Klemm notes.

### **Deep pipeline of projects ready to go**

The energy management practices at CSU have already taken a turn for the better due to the partnership. "Prior to the creation of the partnership, the funding was only available in fits and starts. At the beginning [of that process]

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there was a mad rush with everybody reserving their incentives. Then there was no funding for a year. With the partnership, [we are] developing a deep pipeline of projects that are ready to go one after another for the foreseeable future.”

CSU's first budget under the partnership in 2004-05 was \$14.8 million in incentives. “In 2006-08 we went to roughly \$30 million in incentives. We doubled the program size based on the success of the 2004-05 program,” Klemm relates.

The PUC changed the budgeting process for 2006-08, and this has put pressure on the partners, Klemm feels. Previously utilities could take credit at the outset of projects, but now they must wait until project completion. “By moving the finish line that much further out, the utilities are really desperate for quick-term savings because the goal line was moved on them by the PUC. That's one of the challenges. All of the utilities ... in the three-year program ... want to be at 90% of their goal by halfway through a project.”

Working so closely with the utilities has been a positive experience. The only advice Klemm might give any partner is to remember at times “to walk a mile in the other guy's shoes,” he says. “That's my constant advice for our energy managers when they get frustrated with what the utilities have to do inside the partnership because of the rules. Likewise, that is my message when I talk to our utility partners. A lot of the energy managers are great energy guys or they're great mechanics, but they don't speak utility.”

In working with the IOUs, Klemm has noticed that the best, most effective account reps are those who understand efficiency measures, possess interpersonal skills, continue to improve their knowledge and understand the university energy management system. “In one of the bigger utilities, certain account reps just knock them out of the park day in and day out,” he says. As one of many examples, Klemm adds, a campus energy manager had calculated a \$17,000 incentive on a \$150,000 project. The account rep found that the campus was instead eligible for a \$40,000 incentive. In the end, Klemm says, the best reps “have a fierce commitment to doing the right thing.”

Thanks to the UC/CSU/IOU Partnership, CSU should reach 14% energy reductions by 2008. “We're slated to save 102 million kWh per year [for 2006-08],” Klemm says, so CSU is nearing its 15% kWh energy savings goal for fiscal year 2009-10.

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