

# **Lightening the Load: Promoting Utility Rebates to Boulder's Businesses**

*Carolyn Brouillard, City of Boulder/Minnesota Environmental Initiative*

## **ABSTRACT**

Boulder is a town of 100,000 people in Northern Colorado. In May 2002, the Boulder City Council passed a resolution to reduce greenhouse gas (GHG) emissions to seven percent below 1990 levels by 2012. The greenhouse gas emissions inventory indicated that the commercial buildings sector is the largest source of GHG emissions in Boulder. To address emissions in the commercial sector, the city of Boulder's Office of Environmental Affairs (OEA) participated in Xcel Energy's Custom Efficiency program between October 2003 and the program's conclusion June 1, 2005. The Custom Efficiency Program was a demand-side management (DSM) program that awarded rebates for the installation of energy efficient measures, such as efficient lighting and HVAC upgrades, in order to reduce summer peak electric demand. Through business outreach and contractor education, thirty-eight businesses received rebates totaling \$187,000 for energy efficiency projects that will annually save over 1.4 million kWh a year, 1,107 mtCO<sub>2</sub>e, and \$160,000 in energy costs. This level of participation among Boulder businesses had not been seen prior to OEA's involvement. Important lessons learned include: Dedicate enough staff time; Involve local contractors; and Target everyone.

## **Introduction**

Boulder is a "college town" in Northern Colorado with approximately 100,000 residents, including resident students. Boulder is also home to many federal laboratories, high-tech companies and natural lifestyle companies. The community has a strong interest in environmental protection, as is shown by its commitment to preserving open space, recycling, promoting the natural and organic products industry, and maintaining a high quality of life.

In May 2002, the Boulder City Council passed Resolution 906 setting a community goal to reduce greenhouse gas emissions to seven percent below 1990 levels by 2012. This resolution, also known as the Kyoto Protocol goal, builds on environmental policies and goals found in the Boulder Valley Comprehensive Plan (BVCP) and the City Council's Environmental Goal. Specifically, the BVCP has policies on energy conservation, encouragement of energy alternatives, city leadership in resource conservation, energy-efficient land use and energy-efficient building design and construction. This goal also stems from concerns about the potential negative impacts of climate change on the Rocky Mountain region and beyond.

In 2004, staff in the Office of Environmental Affairs hired a consultant to develop a greenhouse gas (GHG) emissions inventory, including historical data and a projected trend line to 2012. It was estimated that the community would need to reduce current greenhouse gas emissions by roughly 350,000 metric tons to achieve the Kyoto Protocol goal. This represents a reduction of approximately 24 percent from current levels. The existing commercial buildings sector is the largest contributor to total emissions at 30 percent. While emissions reductions must occur across all sectors, the availability of utility rebates and the large energy efficiency potential of the commercial sector make the commercial sector a primary target for emissions reduction programs.

Due to current budgetary constraints and the lack of a long term funding source, funding for Boulder's GHG emissions reduction programs is limited. As a result, utility-funded energy efficiency and conservation programs are of critical importance. They enable the city to leverage its limited funds and offer an important service that otherwise could not have been provided with current budget. The city also benefits from the utility's energy experience and from not having to create and launch an entirely new program. The utility benefits by having a third party actively marketing its programs and helping to meet its targets.

## **Boulder's Energy**

Xcel Energy provides electricity to all sectors in Boulder. Xcel provides natural gas to Boulder's residential sector, as well as to many commercial customers. However, the natural gas market is deregulated and some of Boulder's larger companies contract for natural gas through other providers. The city of Boulder operates eight hydroelectric plants and sells the generated electricity to Xcel Energy. The price of electricity for Boulder's businesses (and Colorado in general) is fairly low, relative to the other regions. The aggregate charge per kilowatt-hour, including the demand charge, is around \$0.08.

In July 2000, the PUC adopted a Stipulation and Settlement Agreement for the DSM portion of Xcel Energy's 1999 Integrated Resource Plan. The settlement required Xcel Energy to spend up to \$75 million to achieve 124 MW of cost-effective DSM resources by the end of 2005.<sup>1</sup> As a result, Xcel Energy developed the following programs:

- Custom Efficiency
- Recommissioning Program
- Energy Design Assistance
- Residential Saver's Switch
- Business Saver's Switch
- Central AC Rebate Program
- Evaporative Cooling Program

As a result of a more recent settlement between environmental advocates and Xcel Energy over a proposed 500 MW coal-fired power plant in Pueblo, CO, Xcel is required to spend up to \$196 million on DSM and energy conservation programs from 2006 through 2013, achieving a total of 320 MW of peak demand reduction and 800 GWh/yr of electricity savings. Xcel Energy is currently in the process of developing new commercial and residential DSM and energy conservation programs to comply this settlement.

## **The Office of Environmental Affairs**

The Office of Environmental Affairs (OEA) at the city of Boulder is responsible for implementing many of the city's environmental policies and programs. OEA currently addresses the following program areas: recycling, green building, integrated pest management, and energy/greenhouse gas emissions reduction. When OEA began its involvement in the Custom Efficiency program, an intern from the University of Colorado working ten hours a week for

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<sup>1</sup> "Xcel Energy DSM Roundtable Discussion." Feb 15, 2005, Denver.

PACE had primary responsibility for recruiting businesses and managing projects. The intern became a full-time OEA employee in May 2004.

### **The Partners for a Clean Environment (PACE) Program**

The PACE Program is a cooperative effort of the city of Boulder's OEA, Boulder County Public Health, cities of Longmont and Louisville, towns of Erie and Superior, and Boulder Chamber of Commerce. PACE is a voluntary, non-regulatory recognition program that offers free pollution prevention education and technical assistance to Boulder County businesses. Because PACE had an established framework for business outreach, the rebate program was initially marketed under the PACE Program. However, businesses did not need to be PACE certified to receive rebates.

### **The Custom Efficiency Program**

As mentioned above, the Custom Efficiency Program was a DSM program designed to reduce summer peak demand by providing rebates for customers that reduced demand. Demand reductions could be achieved through improvements in efficiency, a shift in load, or fuel switching. The program did not specify eligible measures, but required that the measures yield verifiable and persistent demand reduction during the summer peak period. Lighting projects were most commonly implemented through the program. The program was open to contractors, energy service companies (ESCOs), architectural, design and building firms, individual customers installing measures in their facilities, and local governments.

Xcel Energy released RFPs for each of the seven bid cycles. The final bid cycle, Cycle 7, concluded June 1, 2005. Qualified entities, such as those listed above, were invited to submit bid prices for incentives (\$/kW) and bid target demand reduction (kW). Maximum bid price for energy efficiency and fuel switching projects was \$530/ kW. Incentives were awarded based on the accepted \$/ kW bid for projects in the respective bid cycle. For example, if a project was projected to save 10 kW and the bid price was \$500/ kW, the rebate would be \$5,000.

The program was administered by Nexant—an international engineering firm with an office in downtown Boulder. All paperwork was submitted to a specific program manager at Nexant and any necessary inspections were performed by the same person. In order for projects to receive a rebate, a Pre-Installation Report (PIR) had to be filed. A PIR consists of a signed Host Customer Acknowledgment form, which formalizes the client's intention to complete the project and a form table outlining the existing and proposed equipment. The form is a spreadsheet designed by Nexant that automatically calculates the average peak demand reduction and rebate, based on user inputs. The project also had to be entered into the program's online database, Traksmart. The database tracked all project submittals and approvals.

After the PIR was submitted, Nexant occasionally required a pre-inspection of the site, particularly on projects exceeding ten or twenty kW of peak demand reduction. Nexant then released an approval letter authorizing the project to proceed. The approval process timeline ranged from less than a week to over a month, depending on the complexity of the project and the program manager's current workload. After the project was completed, Nexant required a Post-Installation Report reflecting any changes to the initial project work scope. Nexant would then decide whether to inspect and issue a final approval authorizing the participant to invoice Xcel for the first rebate installment.

The structure of the Custom Efficiency Program had advantages and disadvantages. The bid structure allowed the city to take a more active role in the Xcel program and better track projects by requiring that all projects go through the city to receive the rebate. The Nexant staff was very responsive in helping city staff evaluate more complicated projects and offered technical assistance to customers, which helped lend credibility to the city's efforts. However, the response time from Nexant for project approvals was sometimes slower than contractors and clients expected and sometimes exceeded three weeks. Another challenge with the program was the uncertainty around the final rebate amounts. The final rebate amount was often different from the initial estimated rebate, which confused contractors and clients and angered some clients when the final rebate was substantially lower than what was initially estimated. This could occur if Nexant found errors in lighting counts or equipment specifications or if what was actually installed differed from what was initially reported. A prescriptive incentive program would address some of these concerns. Xcel has switched to a prescriptive approach for its new DSM programs launched in January 2006.

## **The Process**

This section will outline the process that OEA followed to recruit businesses and complete projects. In total, OEA facilitated the completion of 38 projects for a total average peak demand reduction of 378 kW. All but two of the projects were lighting retrofits; the others were a chiller replacement on a city facility and installation of HVAC controls at a local hotel.

## **The Beginning**

The PACE Program supervisor at OEA submitted a bid for Bid Cycles 6 and 7. For Bid Cycle 6, beginning October 2003, PACE bid \$480/ kW for 80 kW. The demand reduction estimate was largely based on speculation on how many small to mid-sized lighting projects OEA could expect to complete by the cycle deadline of February 1, 2005. Staff decided to focus on lighting retrofits, because the projects were simple enough for the intern to be trained relatively quickly on how to identify potential projects, make recommendations on upgrades, and calculate energy savings and payback. In addition, lighting projects were anticipated to be the easiest sell because of the energy savings potential, relatively quick payback, and the improvement in lighting quality. For Bid Cycle 7, beginning February 2004, PACE submitted a bid for \$500/ kW for 150 kW. Growing familiarity with the program gave staff greater confidence that enough projects could be secured to meet the target.

Because neither OEA nor PACE had previously participated in a utility DSM program, they sought partnership with a contractor familiar with the program's rules and forms. Historically, no Boulder contractors participated in the program, presumably due to a lack of marketing and contractor outreach in Boulder by Xcel. As a result, PACE contacted Denver area contractors listed on Xcel's Custom Efficiency website. A contractor from Commercial Lighting and Electric was the only contractor to show interest in partnering with PACE. It is possible that the prospect of completing small and mid-sized projects was not attractive to many of the larger companies. Some companies may also have had reservations about working with a government entity new to the energy service field.

In the early days of PACE participation, the intern contacted target businesses and arranged for site visits. Primary targets were businesses with long operating hours and a large

lighting load. The intern cataloged the existing lighting equipment and operating hours and submitted the information to the contractor. The contractor would then enter the existing lighting equipment and the proposed retrofit equipment into the Nexant form. The form automatically calculated the average peak demand reduction and the rebate. The contractor submitted the form, along with an estimated project cost and payback to PACE. PACE contacted the business and tried to get a commitment and signed Host Customer Acknowledgment form from the company in order to proceed. The customer was given the option to contract with the partnered contractor, use in-house labor, or seek competitive bids from other contractors. The majority of the early projects were completed by the partner contractor.

As the intern became more comfortable with the program, she took over the responsibility of completing the form. Having the intern complete the form made it easier for the contractor to respond more quickly with project cost estimates. This helped reduce the amount of time between the initial site visit and delivery of estimate results. The intern also took responsibility for entering the projects into Traksmart and accompanying the Nexant representative on inspections.

The only city budget allocated to the program was for staff time and advertising. The contractor did not bill OEA for time, as OEA's efforts helped secure projects for the contractor.

### **Staff Tasks & Responsibilities**

Providing one-on-one assistance and “hand-holding” proved to be very important in seeing projects to completion. Many clients appreciated having someone besides the contractor to answer questions and coordinate the process. As mentioned previously, an intern working for PACE and OEA coordinated the projects. The intern had the following responsibilities and tasks associated the rebate program:

- Solicit interest from businesses
- Conduct initial site visit
- Complete Nexant form
- Work with contractor(s) to develop cost estimate
- Report cost, rebate, and savings results to client
- Have client sign Host Customer Acknowledgment form
- Submit pre- and post-inspection reports to Nexant
- Enter projects into Traksmart
- Coordinate necessary inspections with Nexant and client
- Follow up with client after installation
- Market the program
- Maximize contractor and business participation
- Meet Performance Milestone
- Track program results
- Manage all invoicing and payments through city and Xcel accounting processes

The most time consuming tasks were typically contacting the businesses and soliciting interest, getting the business to sign the Host Customer Acknowledgment form, and offering general customer assistance. In general, small businesses owners completing retrofits tended to

request the most assistance. This was particularly true for small restaurants and retail spaces, where the owners had specific lighting requirements. Many business owners were initially skeptical of the quality of light output from energy efficient bulbs, particularly compact fluorescent bulbs. Clients with larger projects tended to work with the contractor more closely, as opposed to PACE staff. However, getting initial interest and commitments from the larger companies tended to be more time-consuming, i.e. required more contacts, than with the smaller clients.

Site visits typically lasted between ten and forty-five minutes, with the average site visit lasting around twenty minutes. Staff did not require a representative of the business to escort her around the building. However, some clients preferred to accompany staff on the walkthrough to discuss the retrofit and/or to avoid security concerns. Completing the Nexant form typically required around ten to fifteen minutes depending on the complexity of the project. On average, completing the rebate and installation process, including invoicing and payment, but excluding marketing, for each business required around three hours of staff time. Some projects required considerably more staff time. These projects tended to involve reluctant and busy clients for who repeated phone calls and visits were necessary.

## **Program Marketing**

Staff used the following tactics to recruit businesses: cold-calling, door-to-door outreach, presentations at business group meetings, announcements on property manager and business association list-serves, press releases, newspaper and website advertising, water bill inserts, a targeted retail campaign, contractor education, and word-of-mouth. Staff also relied on Boulder County PACE staff to evaluate lighting during their site visits. The most effective means of soliciting businesses were cold-calling, referrals from County PACE staff, the targeted retail campaign, and word-of-mouth from participating business owners. Published press releases generated some interest. Newspaper advertising was the least effective marketing method and was deemed not to be a good use of city funds. Figure 1 shows an example of newspaper advertising.

The participation rate increased as the program progressed. In the final three months of the program, fifteen businesses participated in the program. In comparison, the first three months of the program yielded two projects. The retail flood light campaign, “Stop the Flood,” was very successful and would likely have attracted more clients if begun sooner or if the program deadline was extended. A total of nine projects were completed as part of this campaign. Staff developed a flyer announcing the program and delivered it along with product samples of energy efficient flood lights to downtown businesses. One reason for its success was that the rebate exceeded the project cost, due to the large savings potential resulting from replacing incandescent or halogen flood lights with compact fluorescent flood lights. As a result, all of a business’ flood lights could be replaced for free. For larger jobs, contractor installation was included free of charge, provided it was covered by the rebate. For many businesses, this proved to be of great value. However, a few businesses were not satisfied with the quality of light from the compact fluorescent floods and chose not to participate in the program. Staff recognized that CFL’s were not appropriate for all applications and did not try to force people to accept them.

Figure 1. Newspaper Ad Promoting the Program

**lighten your load.**

“Our investment in lighting upgrades will pay back in less than two years!”

– Susan Graf, President,  
Boulder Chamber of Commerce

The Partners for A Clean Environment (PACE) Program has rebate funding to reduce the initial cost to install efficient lighting in commercial buildings. Average payback is less than two years. For information call or visit:

**www.pacepartners.com**  
**303.786.PACE**  
Partners for A Clean Environment

### The Message

The program was marketed under a variety of names. For example, the program was sometimes referred to as the PACE Commercial Lighting Rebate Program and the PACE Energy Efficiency Rebate Program. In most cases, PACE was mentioned in the name and Xcel Energy and Custom Efficiency were omitted, though all press materials explicitly mentioned that the rebate funds were from Xcel’s program. PACE was included in the name to link it to the established business outreach framework and capitalize on any name recognition. While linking it to the PACE Program was helpful in many circumstances, it was also a source of confusion for others. Since the PACE Program is primarily staffed through Boulder County Public Health and serves all of Boulder County, it was sometimes confusing that it was city of Boulder staff managing the rebate program and marketing it primarily to city of Boulder businesses. It was marketed to city of Boulder businesses almost exclusively in order to maximize greenhouse gas emissions reduction in the city of Boulder and to justify the amount of city staff time spent on the program. Ultimately, PACE ended up sponsoring five projects outside of Boulder, as a result of Xcel allowing all program participants to issue unlimited rebates until the Bid Cycle 7 deadline.

PACE’s primary marketing message focused on the energy cost savings potential of lighting retrofits. It was expected that the cost savings would be the primary motivation for business participation. Nearly all businesses wanted to know the payback period before they agreed to complete a project. For retail businesses, reducing the amount of heat generated in a store during the summer was also an attractive benefit. Energy efficient flood lights produce far less heat than standard incandescent or halogen bulbs. Businesses also liked that PACE offered occasional free advertising for program participants, though it was likely not a significant factor in businesses choosing to complete projects. PACE also tried to promote the higher quality of energy efficient bulbs, particularly T-8 tube fluorescents over T-12 tube fluorescents. Xcel did not contribute any funds for PACE marketing efforts.

## Contractor Relations

As mentioned above, PACE partnered with a Denver-based lighting contractor. The contractor's willingness to take small jobs and provide estimates for numerous projects was very important for the success of the program. However, hiring a non-local contractor proved to have some unforeseen implications. First, the travel time resulted in it sometimes being difficult to coordinate site visits and work schedules between the client, staff and the contractor. This led to delays in completing projects. Second, although no local contractors submitted bids to Xcel, many were aggravated that local projects were going to a non-local contractor. They were concerned that PACE was intruding on their market-base and "stealing" potential clients.

Involving local contractors was an important contribution to the program's success. Six months away from the program deadline, PACE organized a meeting for local electrical contractors. At the meeting, PACE invited them to participate in the rebate program. As participants, PACE listed their contact information on the rebate website and referred them to potential clients. PACE also made rebates available for projects they were bidding and working on. By being able to offer rebates to their clients, they were not at a competitive disadvantage to non-local firms participating in the Custom Efficiency program.

Five local contractors and three Denver area contractors attended the meeting and signed up to participate. In the final months, PACE helped four of the contractors offer rebates to their clients. For the retail flood light campaign, all light bulbs were purchased through a local distributor. These efforts helped to resolve any contractor concerns about PACE's practices or intentions. Because the contractors were actively soliciting projects and promoting the rebates, awareness of the program increased and additional projects were completed.

## Results

This program generated benefits far greater than the costs. In total, businesses are expected to save approximately \$160,000 a year with lifetime savings of over \$1 million. The vast majority of the savings were from lighting projects. The kW savings were roughly evenly split between retail/restaurants, office buildings, and hotel/living facilities. The only costs to the city were for intern labor, advertising, contractor workshop, and light bulb samples. The intern provided free labor for the first four months and was paid a small wage to continue working after the internship ended. When the intern became a full time employee in April 2004, she continued to work on the rebate program, though it comprised a relatively small portion of her work plan. Newspaper advertising was minimal, as it did not seem to generate interest from the business community. Table 1 summarizes the benefits and costs of the program.

**Table 1. Summary of Program Results**

| <b>Avg Peak Demand Savings</b> | <b>Total Rebate Awarded</b> | <b>Initial Business Investment</b> | <b>Annual Savings</b> | <b>Annual CO<sub>2</sub>e Prevented (mtCO<sub>2</sub>e)</b> | <b>Cost to City</b> |
|--------------------------------|-----------------------------|------------------------------------|-----------------------|---|---------------------|
| 378 kW                         | \$187,442                   | \$162,482                          | \$160,881             | 1,107   | \$4,200             |



To put the energy and carbon savings into context, the commercial sector annually spends over \$50 million dollars on energy and emits over 550,000 metric tons of carbon dioxide. It is instructive to note that a January 2006 workshop to promote Xcel's new suite of rebate programs was attended by over seventy people, many of whom were contractors, facilities managers, and business owners. This is almost a ten-fold increase in attendance over OEA's first workshop. Though the bidding structure of the program was replaced by a prescriptive approach and OEA is no longer a direct participant in the program, staff is actively promoting the rebates through OEA's other programs. It appears that many more Boulder-based contractors and businesses are utilizing the rebates.

The Xcel rebate program was a very cost-effective way for the city to achieve greenhouse gas emissions reductions in the community. The rebates reduced project costs by an average of 40%. In projects where only screw-in light bulbs were included, there was no cost to the business. Many businesses had returns on investment of close to 100%. Many of the small businesses were particularly satisfied with the program, since they had neither the financial nor time resources to evaluate and pursue energy savings opportunities in their businesses. Additionally, the projects completed under the program created additional work for local contractors.

## **Lessons Learned**

1. **DEDICATE ENOUGH STAFF TIME.** It is important to recognize that successful DSM programs require a significant amount of staff time and dedication, particularly for recruiting and follow-through. It was helpful to start with a relatively small bid and allow time to become comfortable with the technologies being promoted.
2. **DEVELOP CASE STUDIES.** Having local examples of completed projects and statements from satisfied customers helped to promote the program. The Chamber of Commerce was the first target, because the building was open to the public and the organization respected by the business community. This case study helped create credibility.
3. **INVOLVE LOCAL CONTRACTORS EARLY IN THE PROCESS.** More projects would likely have been completed if staff had involved contractors earlier in the process. It would have been helpful to have a contractor meeting or workshop at the beginning to build support, increase participation, and take advantage of local expertise and experience. Tensions with the local contractors would likely have been avoided.
4. **OFFER FREE LIGHTING EVALUATIONS.** Staff visited around 90 businesses offering lighting counts and savings estimates. Of businesses visited, roughly 40% chose to complete a lighting retrofit. Many businesses were not even aware that more efficient products existed or had never seriously considered the existing lighting. Offering a free service helped get a "foot in the door" and sometimes allowed staff to offer recommendations for other energy improvements.
5. **TARGET EVERYONE.** Some business types have better efficiency opportunities than others, such as convenience stores versus bank branches, but staff received interest from a wide variety of business types and sizes, including hotels, assisted living facilities, restaurants, retail, offices, and churches. A number of small projects (under 5 kW) were completed that did not yield large energy savings, but helped raise awareness about energy efficiency and the city's goals among the small business community. Targeting

- only the largest energy users would have reduced the visibility and success of the program, particularly since larger users can be harder to reach.
6. **TRACK YOUR RESULTS.** Staff tracked the kW saved, rebate awarded, initial business investment, annual energy savings, simple payback, reduction in project cost from rebate, and the GHG emissions reduced for each project. The information was useful for updating City Council and presenting the program to business and media groups. It also provided a measure of program success.
  7. **BE CONSISTENT WITH PROGRAM NAME AND MARKETING.** While running the program from within the PACE framework may have been beneficial in some circumstances, it was confusing in others. It may have been better to establish a new and independent name for the program that more explicitly connected it to the city of Boulder.

## **Conclusion**

Cities without a municipally owned utility or a systems benefit charge typically have few options for funding and initiating their own energy efficiency programs. As a result, utility programs provide one of the only avenues for impacting energy efficiency in the commercial sector and as such, represent a significant resource for the community. OEA saw its role as trying to make best use of the utility resources by directing as many rebates as possible to businesses in the Boulder community. It seemed that little effort had been made by Xcel to involve local contractors or promote the program to local businesses. OEA and PACE's efforts brought eight contractors into the program and issued over \$187,000 in rebates to Boulder-area businesses. The businesses are expected to save over \$160,000 a year in energy costs. It is reasonable to assume that without the city's involvement and the utility rebates, many of these projects would not have been completed.