On-Bill Financing of Small Business Energy-Efficiency: An Evolving Success Story

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ABSTRACT

Although small businesses present significant barriers to adopting energy efficiency, programs have been designed and implemented successfully to overcome those barriers. This paper, based on the process evaluation of a bistate energy efficiency program for small businesses, identifies key factors that contributed to the success of this EnergyStarTM award-winning program. It also describes continual enhancements that build on the program's previous successes to keep the program relevant to its target market.¹

In the early 1990s, one utility introduced the turnkey installation concept for small customers and retained a contractor to implement the program. Two more utilities joined this program in 2000/2001 when it became a bistate program in which project financing and software-driven implementation features were introduced. The process evaluation of this program found that the turnkey installation approach, contractor relationship and zero percent on-bill financing were the major program strengths. The program did have a few limitations: difficulty in serving very small customers cost effectively, encouraging the installation of nonlighting retrofits, and certain differences in the policies and processes of the sponsoring utilities. The utilities have since narrowed these differences and introduced nonlighting measures, reworked the loan payment period and streamlined the inspection process. This program's design and implementation can be a model for other entities to follow, provided appropriate adjustments are made to account for corporate culture, administration practices and operating environment. This paper will present major findings of the process evaluation, discuss key success factors for program performance, describe the program evolution and demonstrate a proven strategy to help small businesses become energy efficient.

¹ For the purpose of this paper, success is defined as consistently and cost-effectively accomplishing resource acquisition goals, keeping loan default rate below industry standards for commercial loans. Per personal communication with Mr. Hank Ryan of Small Business – California on April 28, 2008, there are few on-bill financing programs for small businesses in the United States and Canada. Mr. Ryan's review of on-bill financing programs showed that UI's small business program pays only about 30 percent of a project cost as incentives as compared to 75 to 80 percent paid by National Grid in a similar program. The CL&P and WMECO programs pay up to 50 percent of project costs as incentives. Another on-bill financing program is being implemented by the Sempra Utilities in which 60 participants of San Diego Gas and Electric and 7 participants of Southern California Gas Company were provided financing, according to Mr. Frank Spasaro who believes that their program is shaping up to be a successful one. The Sempra programs do not have sufficient history of participation and loan recovery; therefore, it might be too early to use those to compare with the UI/CL&P/WMECO programs.

Introduction

The United Illuminating Company (UI) and the subsidiaries of Northeast Utilities (NU)—the Connecticut Light and Power Company (CL&P) and Western Massachusetts Electric Company (WMECO)—are implementing the Small Business Energy Advantage (SBEA) program in their respective service territories in Connecticut and Massachusetts.² In order to support regulatory and operational needs and to improve the SBEA program, these utilities jointly commissioned a process evaluation of the SBEA program implemented in 2004. A description of the program, evaluation methodology, key findings and conclusions are presented next.

Program Background

In the early 1990s, UI started the SBEA program to introduce the turnkey installation approach for small customers and retained a contractor to implement the program. The intent of the program was to address the needs of this difficult-to-reach market segment and learn about making small customers more energy efficient. UI and CL&P launched a joint SBEA program in 2000, and WMECO adopted the SBEA program design in mid-2001. The SBEA program has since been available to small customers, except during a brief period from July 2003 through September 2003, when conservation and load management programs were suspended in Connecticut. Over the years the utilities have adjusted their program design based on experience, available budget, cost-effectiveness and their own needs.

Since its inception, the SBEA program has reduced electric usage by about 200 GWH from installation of 7,995 projects (Table 1).

Utility	Number of Projects	MWH Savings
United Illuminating	2,350	48,560
CL&P ³	5,038	129,893
WMECO ⁴	607	21,129
Total	7,995	199,582

 Table 1. Historic Program Accomplishments

Program Description

The objective of the program is to provide cost-effective, turnkey energy efficiency services to small customers who do not have the time or in-house expertise to analyze and/or modify their energy usage. The program is available to all commercial and industrial customers whose peak demand over the past 12 months averaged less than 150 kW for UI, and 200 kW for CL&P and WMECO. The peak demand qualifying criterion was increased from 100 kW to 200 kW for WMECO in January 2004. In July 2004 UI increased it from 100 kW to 150 kW and CL&P increased it from 100 kW to 200 kW. These changes were made to make the program

² Collectively referred to as "the utilities." WMECO and CL&P are part of Northeast Utilities headquartered in Connecticut. WMECO's program administration is partly supported by the Northeast Utilities. The SBEA program implemented in Connecticut is funded by the Connecticut Energy Efficiency Fund.

³ CL&P's accomplishments are from program inception through December 2007.

⁴ WMECO's and UI's accomplishments are from program inception through March 31, 2008.

available to somewhat larger businesses that need the same energy-efficiency services that were available to smaller customers (100 kW average peak demand or less).

The SBEA program assists small business customers by improving the energy efficiency of their operations with almost no action or cash outlay on their part. The utilities pay incentives for approved energy efficiency measures within their own cost-effectiveness constraints. The customer's share of the project costs after incentives is financed by a zero-percent loan, offered to creditworthy customers, to be repaid over a maximum of 24 months (UI and WMECO) or 30 months (CL&P). Customers who do not qualify for a zero-percent loan are offered incentives, but they have to finance their share of the project costs.

The repayment term is determined based on the simple payback period of the project, which cannot exceed 3.5 years for UI and 4.4 years for CL&P and WMECO. In 2004, UI restricted the total incentives paid for a project to 12 cents per kWh saved. The monthly loan installment is calculated so that it is about the same as the monthly electric bill savings that a customer would realize after installation of energy-efficient retrofits. One of the utilities estimated that only 20 percent of projects were cash negative, while 80 percent were cash positive. The utilities qualify retrofits for incentives that pay up to 30 to 35 percent of project costs for project costs for nonlighting measures.

Program marketing. The utilities primarily relied on approved installation contractors (also known as contractor arrangers) to market the SBEA program. UI and CL&P marketed the program through approaches such as trade show participation, chamber of commerce presentations and a direct-mail campaign targeted at customers in southwestern Connecticut. WMECO's program administrator accompanied contractors on their sales calls to train them. Contractors were selected through a biennial request for proposals issued separately by each of the utilities to meet their own contractor performance requirements and reflect current pricing of retrofits.

Program operation. Utility-approved contractors market the program to customers and those leads are then qualified by the applicable utility. The screening process determines program and loan eligibility. The contractor then conducts an on-site assessment (energy audit) of each approved customer and submits the project assessment to the program administrator for approval. UI and CL&P may randomly inspect the customer's facility before approving a project assessment to ensure that the collected data is accurate. WMECO does not conduct preinstallation inspections. The utilities inspect a sample of completed projects.

After the program administrator approves a project, the contractor obtains the customer's written agreement to participate in the program and begins installation of the approved energy-efficiency measures. A sample of completed installations is inspected and the contractor is paid for the approved installations. The utility sends a bill to the customer for its share of the project cost, which is repaid over a specified loan term. UI includes the loan payment on a customer's monthly electric bill (single bill). CL&P and WMECO, whose billing systems are not yet capable of including the installment loan as part of the monthly electric bill, send a separate invoice.⁵

⁵ CL&P's new C2 system will allow billing single monthly bill beginning in October, 2008.

Process Evaluation Objectives

The primary objective of the 2004 SBEA process evaluation was to assess the effectiveness of the SBEA program design and its execution. This was the first process evaluation of the SBEA program. The utilities wanted to answer the following research questions:

- Is the current program design capable of accomplishing the program goals?
- What are the strengths and weaknesses of the program, and what are the barriers to program participation and implementation?
- What are the potential target markets, and what marketing methods should be used to increase program awareness?
- What improvements to the program design and implementation can be made to enhance program productivity and success across the entire breadth of the customer population?

The process evaluation methodology is briefly described next, followed by key findings and changes that have since been implemented in the SBEA program. Conclusions are then presented that discuss key success factors and their relevance to other utility-sponsored energy efficiency programs.

Process Evaluation Methodology

Qualitative and quantitative research methods were used to collect and analyze data to answer the research questions. The program staff, participating contractors, and participating and nonparticipating customers were interviewed. Of the 31 contactors active in the program across the three utilities in 2004, detailed and focused telephone interviews (20–30 minutes) with 12 participating contractors were conducted to assess program procedures and learn about their experience of working with customers and the utilities. A total of 153 program participants and 111 audited nonparticipants were surveyed. A nonparticipant was defined as an audited customer who did not proceed to participate in the program. Topics addressed in participant and nonparticipant surveys included source of program information, motivations and barriers to participation, satisfaction with program processes, and future interest in energy efficiency programs.

Key Evaluation Findings and Program Changes

The following are key evaluation findings.

Program Design Is Robust and Focused

The basic features of the SBEA program and the program's goals and objectives have been clearly and consistently identified in all program documents. The utilities have not changed the basic features of the program (i.e., providing turnkey installation services through contractors and making zero-percent loans available to qualified customers). The program goals and objectives have been inculcated into contractors and program staff through years of experience and commitment to the program, and the program design leaves no room for misinterpretation. The utilities use program manuals, contractor meetings, contractor training and ongoing personal communications to communicate their goals and objectives to the contractors. Since many of the contractors have been with the program for several years, the communication focus has shifted from an emphasis on overall program objectives to fine-tuning procedures and methods to meet the goals. All the contractors, new and old, understand the basic features of the program. The program design features that directly address the market barriers are shown below in Table 2.

Market Barrier	Design Feature	
Low motivation to reduce energy costs	Financial incentives and neutral cash flow	
Low motivation to reduce energy costs	financing	
Inadequate time and technical expertise to decide about energy-	Turnkey installation approach through	
efficiency investments	contractors	
Insufficient financial recourses to invest in anorgy officiency	Zero-percent financing and attractive	
insumcient infinition resources to invest in energy enficiency	incentives	
Difficult to reach	Aggressive, contractor-led marketing	
Lack of understanding of energy efficiency	Education and case studies	
Performance concerns	Utility oversight and backup support	

 Table 2. A Comparison of Market Barriers and Program Features

At each utility the program offers financial incentives to improve project economics and encourage appropriate retrofits for small customers. Further, the program staff and contractors have not reported any difficulty in selling the program or achieving the program kilowatt-hour savings goal. The program has met the participants' expectations in terms of reduced electric bills and improved quality of light. For these reasons, the program design is robust and capable of meeting program goals.

Program Processes Are Working Well

The program staff and contractors unanimously stated that all program processes were working well. No evidence was found that showed that a specific program process was a significant barrier to accomplishing the program goals. Some contractors reported disappointment with delayed payments from one of the utilities, and one utility expressed concerns about failed inspections and incomplete/inaccurate project data provided by contractors. None of the contractors mentioned the rigor of the inspection process or project documentation requirements as problem areas. The contractors and the program staff cited issues that were important to them and appeared to want to increase the sensitivity of other side about those issues. However, both sides expressed overall satisfaction and it seemed that those were typical issues that were being resolved through ongoing discussions and meetings.

The utilities use slightly different software to support program implementation. UI uses an internet-based approach, whereas CL&P and WMECO previously used a remote file upload and download software design. CL&P has implemented a web-based software April 28, 2008. Program contractors have mastered the use of the SBEA software that allows them the flexibility they need to address changes and implement projects on time. While program contractors offered suggestions to improve both versions of the SBEA software, they were satisfied with the software functionality.

Turnkey Installation Is a Program Strength

The program staff and contractors considered the turnkey installation approach a major program strength. They could not identify a single weakness in the program. The Connecticut version of the program did have two limitations: (1) difficulty in cost-effectively serving very small customers and businesses owned by non-native English speakers and (2) encouraging the installation of nonlighting retrofits. WMECO already offers nonlighting retrofits in their program and does not have a large population of businesses owned by non-native English speakers. UI and CL&P were aware of these limitations and had been exploring changes that would address them. The customers did not have any strong recommendations regarding these two issues.

The Connecticut utilities have since retained bilingual contractors who have been very successful in increasing program participation of targeted businesses. While the installation of lighting retrofits still dominates the program, the utilities have expanded the list of eligible measures to include LED fixtures for refrigerated case lighting, microprocessor-based controls to control refrigeration cycle time, programmable thermostats, night covers on open produce cases, and refrigeration controls.

Door-to-Door Sales Calls Are Effective

The primary responsibility for marketing the program belongs to contractors, while the utilities provide limited marketing support. A majority of contractors used cold calls effectively to secure leads. Historically, the utilities have been able to convert 30 to 35 percent of available leads into projects and had a sizable backlog of leads available at the time of evaluation. The program staff reported that they never had the need to launch aggressive marketing efforts to meet their resource acquisition goals. The utilities have since implemented certain marketing efforts to improve the quality of leads and the lead conversion ratio and those efforts have helped them meet their goals. While contractor marketing appears successful, a major reason nonparticipants cited for choosing not to participate in the program was lack of follow-up from contractors. Nonparticipants indicated that contractors did not respond to their request for additional information. This was perhaps due to the overwhelming volume of leads that the contractors and the utilities had to handle. The utilities now have better tracking of the disposal of leads.

Satisfied Customers Provide Referrals

The program staff and contractors stated that customers were satisfied with the program. Their assessment is corroborated by the low number of customer complaints that needed to be resolved and the high referral rate reported by the contractors and utilities. More than 90 percent of participants indicated that they would recommend the program to others, and nearly 60 percent of participants have already done so since participating in the program. Surveys of participants indicated that about 15 percent of UI and CL&P participants and 33 percent of WMECO participants had heard about the program from a friend or previous participant. As the program matures, marketing costs as a percentage of acquired savings are likely to decline as word-of-mouth referrals increase.

Reduced Electric Bill Motivates Customers and Zero-Percent Financing Enables

Contractors believed that the interest-free loan, neutral cash flow, energy savings and improved quality of light from retrofits motivated customers to participate in the program. Program staff considered zero-percent financing as an important motivating factor. Participants confirmed these notions but predominantly cited the financial aspect of the program, i.e., reduced electric bills, as the primary motivator and improved lighting quality as a secondary motivator. In other words, zero-percent financing and cash-neutral payments were important in closing the deal, but that would not have happened if the contractors had not demonstrated that bills would be reduced significantly and lighting quality would be improved.

The utilities have continued to offer zero-percent financing with cash-neutral or cashpositive design. The loan term has not been changed from 24 months for UI and WMECO; CL&P increased the repayment period from 30 to 36 months in 2006. UI offers a 36-month repayment period in exceptional cases when the project payback period is longer. With this flexibility, UI has been able to recruit nonprofit organizations that need a longer time frame to pay back the loan. WMECO has started offering an additional five percent incentive to customers who forgo the loan and make a full payment of their share of the project cost. This approach has been implemented to reduce the burden of loan management.

The utilities attempt to limit loan defaults by better screening of customers. UI qualifies customers for a zero-interest loan if there is no unpaid electric bill in the most recent six months, and the customer must have an electric bill history of at least six months. CL&P and WMECO qualify customers for a zero-interest loan if unpaid electric bills do not exceed one past-due bill plus the current bill on no more than three occasions over the last 12 months. Customers that do not qualify for an interest-free loan are eligible to receive cash incentives. UI has now implemented a policy to defer a project until a customer meets the creditworthiness requirement. CL&P uses Dun & Bradstreet credit reports for customers who were late in paying their electric bills more than four times within the past year. The utilities have reviewed their creditworthiness criteria and adjusted these as necessary to minimize loan defaults.

UI and CL&P have reported a loan default rate of less than one percent over the life of this program. That is less than the typical default rate of four to five percent seen by commercial banks for business loans. WMECO has a default rate of about eight percent since its service territory is in an economically depressed area. The utilities have found that follow-up with customers helps control loan defaults. For CL&P, the delinquent loan amount was nearly \$300,000 in late 2003 when CL&P hired an employee to trace and collect payments. The amount of delinquent loans decreased to \$140,000 as of February 2005. CL&P classifies delinquent loans into three categories: promised payment, follow-up and disputed. The program administrator follows up with nonpaying customers who dispute savings to prove that they have saved on electric bills. To minimize loan default, UI now allows a new occupant to assume the loan payment when a participant moves out of premises that were retrofitted with energy-efficient technologies.

Some of the program staff felt that one of the main reasons for nonpayment of loans could be that CL&P and WMECO send a separate invoice for the monthly loan installment. The evaluation findings were not conclusive about a separate bill being the main reason for nonpayment of loan installments. It is likely, however, that when the loan installment is included on the electric bill itself, customers give the same priority to both the electric bill and the loan installment. The main reason for nonpayment is a customer going out of business, according to

one utility. Other reasons for nonpayment of loan could be a change of address or a lack of observed savings (which the program staff does not believe is the true reason for nonpayment, because some nonpaying participants have saved as much as 75 percent on their electric bills).

Customer Skepticism Is a Major Participation Barrier

According to the program staff and contractors, a major barrier to program participation was customers' lack of understanding about the way loan financing works and skepticism on the part of some customers that the program "*appears too good to be true*." To address concerns of skeptical customers, the utilities have prepared case studies and are providing sales tools to contractors to explain the financing part of the program. Additionally, the program administrators provide sales support when needed. While the process evaluation did not extensively explore free-ridership, the nature of the program design and customer responses suggest that free-ridership is likely to be less than 20 percent. In another regional free-ridership and spillover study conducted of New England utilities' energy efficiency programs, the overall free-ridership for the 2004 SBEA program was estimated at less than two percent for CL&P and less than one percent for UI and WMECO. The regional study estimated free-ridership for the lighting retrofits (0.2 percent for UI, 0.5 percent for CL&P, 0.7 percent for WMECO), refrigeration/HVAC retrofits (zero percent for both utilities, not applicable for WMECO) and refrigerator (not applicable for UI, 16 percent for CL&P, zero percent for WMECO) replacement.

Other barriers cited by the program staff and contractors were negative cash flow, long payback, expiring lease term and difficulty in identifying the decision maker. Some of these barriers were confirmed by nonparticipants while others were not. A major reason for nonparticipation was that nonparticipants were still deliberating, which suggested that closing a deal takes a longer time for some customers. Other important reasons for nonparticipation were an expiring lease or impending move, project cost, and lack of follow-up from contractors. The utilities have now instituted a practice to hold an annual contractors' meeting to discuss program operation. Continual dialogue with contractors, training and improved marketing materials now better explain the way the program works.

The program staff did not cite ongoing organizational barriers in working within the respective departments or in coordinating the program with other departments. Communications between contractors and program staff is candid and frequent. Certain aspects of the support systems, program processes and program features might be somewhat inefficient but did not appear to affect program participation.

Program Continuity Is Critical

CL&P and UI program staff and two contractors cited the abrupt cancellation of conservation and load management programs in July 2003 and the restart later that year as major disruptions that affected them in different ways. CL&P's program staff did not have experienced personnel to guide them during the restart phase because most of the Conservation and Load Management department employees were laid off in 2003. The events of 2003 were unusual, nevertheless, these might suggest the need for knowledge-management systems so that newly hired employees have access to resources to perform the assigned tasks. Another lesson learned is to ensure that programs are funded with a longer-term view to ensure continuity and allow

building of program implementation infrastructure. It is difficult to ramp up programs of this nature where the administration infrastructure plays an important role in its success.

Conclusions

The key success factors for the SBEA—zero-percent financing structured to provide cash-neutral or cash-positive repayment with the monthly electric bill, contractor-utility relationship and administrative infrastructure—have certain enabling requirements in order for this program to be replicated elsewhere with a similar success.

Financing, Repayment and Billing

The zero-percent financing feature is a strong enabler that makes a deal go through because it may not cost customers anything to participate in the program and become energy efficient. In order for a project to be cash positive for customers, the payback period has to be short and the savings large. These requirements may not always be met unless the incentives are somewhat generous. Program designers will need to analyze program participation, retrofit costs, the loan period and the incentive levels annually to ensure that cost-effective participation is achieved.

A major consideration in offering a financing program is delinquent loans. A system to track payment collection and delinquent loans is required. The program tracking system would also require accurate customer contact information and a link with the billing system so that a program manager knows when a participant moves. For an on-bill finance program to work successfully for small customers, it appears that the method of billing may be important, but it is unlikely to replace sound tracking and follow-up practices used by lenders.

Contractor Relationship

The utilities have established a solid working relationship with program contractors over the last eight or more years. This relationship has strengthened over the years and both parties appreciate respective viewpoints and objectives and work to resolve issues diligently. Contractor performance is monitored closely and nonperforming contractors are promptly replaced. The utilities have made significant improvements in the quality of work performed by contractors as well as in the quality of data they provide. The utilities are satisfied with the performance of contractors; likewise, contractors are happy working for the utilities in this program. The utility program administrators provide significant marketing and sales support. The level of support varies among the utilities but includes site visits and phone consultation with customers. These relationships and the level of support the utilities have provided are some of the reasons for the success of the SBEA program. Alternate program frameworks in which such support is reduced or eliminated may not show the same results as the SBEA program. The contractor-utility relationship has been a long-term development process. Therefore, a long-term commitment to the on-bill financing approach using the SBEA model is more likely to replicate its success.

Implementation Infrastructure

The SBEA program has developed extensive infrastructure to respond quickly to contractors' requests, approve changes, and track projects and leads. This would not have been

possible without the SBEA software. As the program settled down into a steady-state phase, the utilities have developed more formal performance standards and benchmarks for program operation. Establishing appropriate benchmarks and improving program procedures have helped the utilities build the more robust program infrastructure necessary to attain possible increases in program goals and to better manage program resources. For example, UI has been able to reduce the inspection rate by closely monitoring the quality of the contractors' work and training them as needed. Without the software-driven, semi-automated project processing, it would be difficult for others to service a large number of participants in a cost-effective manner.

Customization Considerations

The SBEA program has evolved over time. It has been adjusted as needed and has won the ENERGY STAR[®] award. Program designers interested in adopting key success factors of the SBEA program should consider their own administrative practices and corporate culture. Utilities such as UI and WMECO operate in a small geographic area and their program managers know their customers and service territory in great detail; therefore, they are able to provide sales support to contractors and customers. The utilities have developed processes to select contractors, monitor their performance, control or standardize retrofit costs, and oversee their implementation activities. CL&P introduced fixed pricing of retrofits in 2004 which allows customers to receive the same price from any contractor they select for implementation. Many utilities take a hands-off approach to program implementation, and administrative and legal considerations might not allow uniform retrofit costs.

The evaluation findings did not observe a clear relationship between program performance and the size of a utility. UI has about 16,000 commercial and industrial customers with an annual average peak demand of less than 150 kW. CL&P and WMECO have approximately 57,000 and 12,000 commercial and industrial customers respectively, whose annual average peak demand is less than 200 kW. While smaller utilities such as UI and WMECO are likely to be nimble, CL&P was not at a significant disadvantage due to its larger operation. All utilities have accomplished their goals over time. The number of customers of a utility might not influence program performance as much as corporate culture, marketing orientation, planning horizon, infrastructure and capability to integrate feedback into program design.

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