WISCONSIN ELECTRIC AND THE SMART MONEY ENERGY PROGRAM

Thomas E. Hawley
Wisconsin Electric Power Company

The need for a financing program for energy conservation projects was recognized by Wisconsin Electric in 1986, when, in addition to its energy audit and information programs, it implemented a pilot shared savings program for commercial and industrial customers. With a budget of $500,000, the program was successful in encouraging customers to install energy efficient equipment. The Public Service Commission of Wisconsin found this program to be commendable, but felt that more resources were necessary in order to provide a viable least-cost option to power plant construction.

In late December 1986, The PSCW ordered Wisconsin Electric to launch an unprecedented two-year, $84 million energy conservation program--a program over five times larger than the previous year's activity. In addition, the PSCW stipulated that the program be implemented with haste: "Get on with the show!" in their words. Five months after the order was issued, Wisconsin Electric formally announced the Smart Money Energy Program, with about three-fourths of the available funds targeted to commercial, industrial, and farm customers in the form of rebates and loans.

There are many elements to consider in the design of a financing program for energy conservation measures. During the development of the program, we experienced our share of successes and failures. This paper will examine some of the key issues which arose during this period, and perhaps provide some insight on utility-financed conservation programs. Following, then, is a description of the program and results to date, and a discussion of three important issues: Board-Based vs. Narrow Approach, Assessing the Value of Conservation, and Custom vs. Standard Rebates.

DESCRIPTION OF PROGRAM

The Smart Money program for commercial, industrial, and farm customers offers a broad range of rebates and loans for a variety of energy conservation measures. Customers can receive specific rebates for lighting improvements, (such as energy efficient fluorescent lamps, and ballasts, fixtures, current limiters, and reflectors) air conditioning improvements, (such as high-EER equipment, solar films, and efficient chillers) and for improvements in refrigeration, process, and water heating equipment, and control systems. If the specific rebates listed in our program materials do not quite fit customer needs, custom rebates may be available to those customers. In lieu of standard or custom rebates customers may, if they qualify, elect to receive a five year, interest-free loan.

SMART MONEY RESULTS

The Smart Money program for commercial, industrial and farm customers has been quite successful. As of May 31, 1988, over 33 megawatts of demand have been removed from Wisconsin Electric's system peak. We have received applications totaling 59 MW of additional demand reduction. Customers participating in this program will have a collective annual bill reduction of nearly $25,000,000 after all the applied-for conservation measures have been installed. This has been accomplished with a commitment of $42,000,000 in rebates and $9,000,000 in the form of five-year, interest-free loans, of which $15,000,000 in rebates and $2,000,000 in loans has been paid out to date.

There have been other benefits as well. Customer opinion of Wisconsin Electric is as high as it has ever been, with 88% of our customers having a "favorable" opinion of the company. Relations with commercial and industrial customers have benefitted from the interaction resulting from the Smart Money program. Nationally, Wisconsin Electric has been recognized as a leader in energy conservation, as evidenced by a front page article in the Wall Street Journal.

BROAD-BASED VS. NARROW APPROACH

In order to increase the effectiveness of the Smart Money program, it was determined that our efforts should not be focused on just a few key conservation measures but should include a wide variety of measures. While focusing on a few conservation measures would have made the program easier to develop, it would have limited our ability to quickly reach much of the potential conservation market. On the other hand, by considering a broad approach we would be able to maximize the amount of conservation achieved by the Smart Money program in the relatively short period of time allotted. This broad approach was not without difficulties of its own, however.

Each conservation measure was analyzed to determine its installed cost, associated energy savings and other factors in order to gauge its cost-effectiveness. This information was used to estimate an appropriate level of financial assistance, depending on the customer's rate schedule and payback criteria. As the number of possible conservation measures grew, the complexity of this analysis increased. The limited amount of program development time contributed to the problem, as decisions had to be made in the short period of time available. Additional resources were required, in the form of increased involvement of company personnel and our consultant, over and above that which would have been necessary had a more focused approach been chosen.

VALUE OF CONSERVATION

There are a wide range of conservation measures, which, when implemented, result in a reduction in energy consumption. For customers on a time-of-use rate or a rate with a demand charge, energy savings occurring at different times of the day can vary substantially in their impact on the customers electric bill. A kilowatt-hour conserved in an off-peak period, for example, might be worth about two-and-a-half cents to a typical customer, while a kilowatt-hour saved on-peak might be worth anything from three-and-a-half cents to over ten dollars, depending on when that savings occurs.

For electric utilities, the situation is very similar, if not somewhat more complex: While energy conservation at different times of the day can vary significantly in value, energy conservation at different times of the year also varies in value. In order to place a value on various conservation measures with varying impacts on the utility's loadshape, it is necessary to have an accurate method of determining the "value of conservation" for a given measure.

For calculating the value of specific conservation measures, Wisconsin Electric used a formula of $200 per kilowatt and $0.02 per kilowatt-hour of annual energy savings. A "kilowatt" was defined as a kilowatt of reduction in system peak. A factor was applied to a customer's KW reduction to arrive at the KW reduction in system peak. This factor, known as the "diversified demand factor," was a value between zero and one and was an estimate of the probability of the customer's demand reduction coinciding with Wisconsin Electric's annual peak demand.

The value of $0.02 per KWH was applied to the energy savings in each year, depending on the life of the measure, and discounted at a factor of 16.5%. Thus, for a conservation measure expected to produce savings each year for five years, the annual energy savings were valued at $0.075 per KWH. For a measure with a life of ten or more years, the annual energy savings were valued at $0.111 per KWH.

As conservation measures were identified and evaluated, the value of conservation was determined for each. This value set an upper boundary for the rebate available for that measure.

While the formula for calculating the value of conservation is rather straightforward, its application is not. The difficulty can come in determining the demand reduction, the diversified demand factor, the annual energy savings or the life of the measure. For example, rebates for packaged air conditioning equipment were determined using a life of measure equal to ten years. This made sense, because the life expectancy of equipment available today generally exceeds ten years; thus we offered rebates of $50 or $100 per ton for new high-efficiency air conditioners. When we analyzed the program five months after it began, however, we realized that we had over-estimated the life of the measure--not because the equipment would not last ten years but because the energy conservation did not last ten years! We had discovered that much of the equipment which was replaced under Smart Money probably would have been replaced within the next five years anyway. The life of the measure was actually five years or less. As a result, the rebates for packaged air conditioners were reduced from $50 or $100 per ton to $10 to $60 per ton for the 1988 program.

CUSTOM REBATES AND STANDARD REBATES

One methodology for offering financial assistance to customers is to calculate the value of conservation for a customer's specific measure, determine the cost of implementing the measure and the customer's economic criteria (e.g., payback less than 3 years, minimize cash outlay, etc.) and develop a rebate or loan which is within the conservation value and which satisfies the customer's economic objectives. This customized approach offers many advantages due to its flexible approach. Customer contact people have some flexibility in meeting the specific needs of their customers, and customers benefit from having financial assistance tailored to fit their needs. In addition, a program offering custom rebates can be implemented fairly rapidly, because less analysis is required on the front end. Instead, the analysis takes place in the course of determining the amount of the rebate for a given project, and is usually part of the feasibility study that is typically performed when commercial or industrial customers are considering an investment in equipment.

There are some disadvantages to custom rebates. The administration of a custom rebate program is complicated by the fact that each and every rebate carries with it its own set of supporting documentation. Internal review and approval of each rebate can be time-consuming and require significant expertise if these tasks are to be properly executed. Those company personnel involved in calculating custom rebates must be well versed in the guidelines and procedures to be followed, in order to ensure fair and equitable treatment of all customers. These disadvantages can be minimized when rebates are standardized, however.

Standard rebates are rebates of a fixed amount per unit, such as $0.50 per lamp for lamps of a certain efficiency or $15 per ton of air conditioning equipment which meets a certain Energy Efficiency Ratio. They are calculated assuming an average amount of conservation occurs with each unit installed. The value of this average amount of conservation is used as a guideline for determining the amount of the standard rebate. Standard rebates have the advantages of being easier to administer than custom rebates and are easier for customers, vendors, and company personnel to understand and apply. Because they are easy to apply, standard rebates can promote faster response to a conservation program. Contractors and manufacturer's representatives are able to provide estimates of rebates to their customers quickly and without having to consult with a company representative.

On the other hand, because they are meant to be appropriate for the average customer, standard rebates may not be well suited to the atypical customer. Customers with situations that do not fit the standard rebate requirements may not be able to take advantage of a rebate, and an opportunity for energy conservation may be missed. The inflexibility of a standard rebate is its main drawback. Another disadvantage is that customer contact personnel have less flexibility to meet customer needs.

The Smart Money program includes both standard and custom rebates, and we have experienced the advantages and disadvantages of each. It would be difficult to recommend one over the other, as each is desirable in certain situations.

CONCLUSION

In spite of a few mistakes here and there, the Smart Money Energy Program has been very successful for Wisconsin Electric. When implementing conservation financing programs, other utilities are likely to face the issues presented in this paper, whether to a greater or lessor extent. We hope we have provided some insight to these issues, and to possible solutions for the problems they pose.

The views presented in this paper are those of the author and are not necessarily the views of the Wisconsin Electric Power Company.