

Acceptance of Customer Contributions for DSM Among Small Commercial/Industrial Companies

*Elizabeth M. Tolkin, New England Power Service Company
Ellen Ford, HBRS, Inc.*

Customer contributions toward the cost of DSM program measures are often considered to be a means of promoting customer interest in the retrofits provided and a way of ensuring ratepayer equity. Under regulator and intervener pressure to require contributions for a direct installation program aimed at small commercial/industrial customers, the utility in this paper undertook an extensive study of the impacts on participation by different customers. In particular, the question was asked, would acceptance be high enough to maintain the program's societal cost-effectiveness given higher marketing and administrative costs?

The research methodologies consisted of a series of focus groups and a customer survey of approximately 700 nonparticipants. The focus groups identified several factors that would increase participation should a contribution be required. These factors included providing more information on expected energy savings, more involvement by the utility rather than relying on outside vendors, more customer choice on the measures to be installed, and making contributions only when savings materialized on electric bills.

The customer surveys estimated participation rates for different types of customers under different contribution options. The options tested included contribution amount, payment schedule, and contribution type. Two contribution types were tested because researchers had hypothesized that customers would be more willing to agree to a contribution if it was presented as a percentage of estimated bill savings rather than as a percentage of the retrofit's installation cost. However, respondents indicated they were significantly more likely to contribute toward project costs than toward bill savings at every contribution level tested.

Introduction

Customer contribution requirements for DSM program participation are increasingly being considered as a means of strengthening customer commitment to energy efficiency and improving program equity. It has been argued that if customers are required to spend some of their own funds on DSM, they will be more likely to take an interest in the measures installed, understand how these measures work, operate them properly, and perform the necessary maintenance.

The second most-often-cited objective of customer contributions is to improve program equity. Ratepayers who do not participate in DSM programs shoulder a portion of the ever-increasing DSM expenditures. Requiring contributions from participants helps to ameliorate the perception that DSM programs provide excess benefits to certain companies or classes of customers.

Customer contributions have two major drawbacks. First, overall participation rates may decline significantly. Moreover, participation among certain types of customers is likely to decline more dramatically than overall rates would suggest. A common perception is that, among non-residential customers, contribution requirements would disproportionately affect smaller companies, those in certain industries, and nonprofit organizations which do not have large, discretionary budgets for capital expenditures.

The second drawback is that customer contributions raise the program's administrative costs and, very often, its marketing costs as well. Thus, while customer contributions may improve cost-effectiveness from the perspective of nonparticipants and the utility's costs, they decrease cost-effectiveness from a total resource cost perspective,

the latter being the test most programs have to pass. Indeed, some DSM planners believe increased administrative and marketing costs could completely offset any customer contributions collected.

Background

An agreement reached with the Rhode Island Public Utilities Commission in 1991 called for research on customer contributions in a variety of DSM programs, including the Small Commercial/Industrial Program.

The Small Commercial/Industrial Program was established in 1990 to serve small commercial and industrial customers in the three New England Electric System retail companies: Massachusetts Electric, Narragansett Electric, and Granite State Electric. The program initially served customers with average monthly demand under 100 kW or annual electricity usage under 300,000 kWh; in 1991, eligibility was restricted to monthly demand under 50 kW or annual electricity usage under 150,000 kWh. Eligible customers were offered direct installation of lighting retrofits and electric hot water and space conditioning measures, the latter two being appropriate for a small number of the lighting customers free of charge. In practice, the program was delivered by several vendors under contract who called upon customers offering hassle-free installation of measures to those who signed up.

Research Approach

The research approach encompassed both qualitative and quantitative research. First, six focus groups were conducted, two with customers in each retail company. In each case, one group consisted of customers who had already participated in the program free of charge and the other consisted of nonparticipants. Building on the results of the focus groups, 667 customers, all nonparticipants, were surveyed by telephone and offered multiple scenarios for a customer contribution.

Focus Group Methodology

The focus groups, conducted in 1992, offered customers three relatively simple contribution scenarios. The first requested a \$250 flat fee; the second requested the lesser of a six-month estimate of savings from the measures installed or \$500; and the third requested the estimated savings for twelve months. Savings were estimated at 10 percent of the customer's current electric bill. The objectives of the focus groups were to test general acceptance of a contribution and identify the factors, particularly those that could be addressed in program design, that would make participation more likely if a contribution were required.

The three participant focus groups had eleven, eight, and five members. Two of the three nonparticipant focus groups had seven members, and one had four members.

Survey Methodology

The survey, conducted in 1993, was developed to quantify participation rates under several program design options. These rates were to be used to assess program cost-effectiveness under these scenarios. In addition to estimating overall participation and cost-effectiveness, the survey was designed to identify what types of customers would continue to participate in the program and whether any groups would find participation severely restricted if a contribution were required.

The researchers hypothesized that customers would be more likely to accept a contribution requirement if it was presented to them as a percentage of the savings they would realize from the measures installed rather as a portion of the project's cost. The second hypothesis tested was that customers would be more likely to accept a contribution requirement if they could make monthly installment payments over a period of time rather than one lump sum payment. Finally, participation rates were measured for contribution requirements representing 10 percent, 20 percent, 30 percent, 40 percent, and 50 percent of the cost of the measures installed.

The first step in developing the survey was to estimate the cost of the measures each survey respondent would receive through the program and the associated savings as accurately as possible. For this purpose, the survey sample drawn from the utility's files was divided into two energy consumption categories: customers using less than 82,000 kWh per year and those using from 82,000 to 150,000 per year. The sample was also classified by business type into restaurants, educational establishments, and miscellaneous. (Offices, retail establishments, warehouses, and governmental organizations were grouped together in the miscellaneous category because their estimated project costs proved to be similar.)

Project costs were estimated as the average costs for businesses in the same energy consumption and business type category that had already participated in the program. Similarly, expected energy savings were based on the average savings for program participants in the same energy consumption and business type category.

For each survey respondent, a dollar amount corresponding to 10 percent, 20 percent, 30 percent, 40 percent and 50 percent of the project cost was calculated. Over all categories, this amount ranged from \$250 to \$5000, depending on the type of customer and the percentage of project cost. In general, survey respondents faced higher

contribution amounts than focus group participants. Half the survey sample was told the utility would require a contribution that represented a percentage of the project's costs. They were presented with the appropriate dollar amount and told it was an estimate of "the cost of the equipment for a business similar to yours."

For each respondent, energy savings percentages were then calculated by dividing the dollar amounts corresponding to the various percentages of project cost by the estimated savings. Depending on the project cost percentages and the savings expected for the different customer types, the required contributions ranged from 6 percent to 100 percent of five-year savings. Thus, the other half of the sample was presented with the same dollar amount but told that the required contribution was a certain percentage of their expected five-year savings. Respondents were further told that most of the equipment installed would last about fifteen years depending upon use and maintenance, but the contribution was only based on five years of savings.

For both the project cost and estimated savings subsamples, half the respondents were presented first with the contribution requirement based on 50 percent of project cost and, if they did not agree to it, were offered participation at percentages decreasing by 10 percentage points each time down to 10 percent of project cost until they agreed to participate. The other half were started at 10 percent and, if they agreed to that amount, were offered participation at levels that increased by 10 percentage points up to 50 percent of project cost until they refused to participate. All respondents were also asked if they would participate in the program if it was free of charge. This questioning sequence was followed in order to reduce response bias; all the findings presented in this paper combine both groups.

All respondents were first told the contribution would be paid in 36 monthly installments over three years. After an amount was agreed to, they were questioned to see if their willingness to pay a contribution would change if it had to be paid in 24 monthly installments in two years. The same sequence was repeated for 12 monthly installments in one year and a lump sum payment required at the time of the installation.

As previously described, the sample was drawn from a random extract of nonresidential customers with an average billing demand of less than 50 kW per month or annual energy usage less than 150,000 kWh. Customers who had participated in the Small Commercial/Industrial Program at any time in the past were excluded. The sample was stratified by usage (less than 82,000 annual kWh and 82,000 annual kWh or more) and facility type (offices, restaurants, retail, warehouse, schools, govern-

ment and miscellaneous). The use of stratification ensured a wide representation of facility groups and a sufficient number of nonprofits. All findings presented reflect the weighting of the sample to represent the small commercial/industrial population. In total, 667 customers were surveyed, representing 57 percent completion for the valid sample. Of these respondents, 299 responded to the project cost version of the survey and 368 responded to the estimated savings version.

Findings

Customer contribution requirements elicited a strong negative response from the focus groups. Nevertheless, the ensuing discussions identified some factors that might make contributions more acceptable. Compared to the focus groups, the survey elicited a more positive response, finding that over half of the respondents (53 percent) were willing to contribute at least some amount of money to participate in the program, and over one-fifth (21 percent) were willing to contribute an amount equal to 50 percent of project cost. Focus group and survey findings are detailed in this section.

Focus Group Findings

The initial response from all focus group members to the suggestion of a customer contribution was very negative. Some small, single-establishment customers became openly hostile toward the utility. Smaller customers claimed they would be unable to participate in any program that required a contribution. Most of the ensuing discussion and ideas for structuring customer contributions came from the larger customers.

Most focus group members required a two-year payback for any energy efficiency investments and tried to structure the contribution around the savings generated by the measures installed. The most popular options involved shared savings. Customers wanted their monthly bills frozen at preretrofit levels while the utility took the contribution off any decreases in actual bills. This approach involved no risk to the customer.

In a similar vein, focus group members reported that a contribution would lead them to seek more information before deciding to participate in the program. Savings estimates would be carefully scrutinized. Whereas under a free program customers generally sign off on all the measures recommended by the vendor's audit, they would now want to carefully select which measures to install. They felt it would be even better to be given different lighting options to choose from.

It also became clear that a contribution requirement would necessitate more utility involvement. Vendors, who had

been effective in delivering a free program, would not have adequate credibility on expected energy savings to sign up many customers. The utility was expected to use its reputation in assuring the customer that the measures recommended were optimal and that energy savings would materialize.

Survey Findings

The most surprising finding from the survey was that, contrary to the researchers' expectations, customers were significantly more likely to agree to a contribution that was presented as a percentage of project cost rather than as a percentage of estimated bill savings. As Table 1 shows, this relationship holds for every contribution level tested.

The hypothesis that a contribution presented as a percentage of estimated savings would be more acceptable had grown out of the interest in shared savings expressed by the focus group participants. However, the survey involved higher contribution amounts and longer savings periods (five years rather than the six to twelve months presented to the focus groups). The survey also did not allow respondents to brainstorm on acceptable scenarios, so the need for guaranteed savings that had figured prominently in the focus groups did not surface in the surveys.

The researchers believe that, to survey respondents, it seemed fair to contribute a portion of the project cost once they were told how much the utility was likely to spend retrofitting a facility like theirs. In contrast, a contribution expressed as a percentage of energy savings seemed as though the utility was taking back some of the bill savings

that rightfully belonged to customers. It seemed to be a situation where, if customers saved some money on their electric bills, they would have to pay it out somewhere else.

As expected, customers were more likely to accept a contribution due in monthly installments over one due in a lump sum payment. Moreover, as shown in Table 2, acceptance rates were significantly different among all the payment options, except for the lump sum and the 12 monthly installment options. That is, customers required more than one year of installment payments to change their willingness to contribute appreciably. This makes sense as most capital budgets cover one year.

The analysis of contribution acceptance by type of customer yielded both expected and surprising findings. As expected, larger customers, whether defined in terms of electricity consumption, square footage, or number of employees, were more likely to agree to a contribution than smaller customers. Table 3 presents acceptance rates by electricity consumption. Customers who were part of a chain of establishments were also more likely to agree to a contribution at every level than single-establishment customers.

The analysis by business type found most of the differences at the highest contribution level, i.e. 50 percent of project cost (Table 3). At this level, restaurants and government institutions were the most likely to agree to a contribution; offices, retail stores, and warehouses were the least likely.

Surprisingly, nonprofit organizations were significantly more likely to agree to a contribution than for-profits,

Table 1. Willingness to Contribute at Different Levels by Contribution Type

Contribution Level (expressed as a percent of project cost)	Overall	Project Cost	Energy Savings
50 percent	21%	29% ^(a)	14% ^(a)
40 percent or more	27	36 ^(a)	20 ^(a)
30 percent or more	37	46 ^(a)	29 ^(a)
20 percent or more	44	54 ^(a)	35 ^(a)
10 percent or more	53	59	48

^(a) The difference between this proportion and the proportion for the sample as a whole is significant at the .05 level.

Table 2. Willingness to Contribute at Different Levels Under Various Payment Options

Contribution Level (expressed as a percent of project cost)	36 Months	24 Months	12 Months	Lump Sum Payment
50 percent	18%	13%	7%(a)	10%(b)
40 percent or more	24	17	10(a)	12
30 percent or more	32	23	18(a)	16
20 percent or more	41	34	23(a)	21
10 percent or more	49(b)	44	37(a)	33

For any given contribution level, differences between proportions among payment options are significant at the .05 level unless otherwise noted.

- (a) The difference between this proportion and the proportion for the Lump Sum Payment is *not* significant at the .05 level.
- (b) The difference between this proportion and the proportion for the 24 Months is *not* significant at the .05 level.

Table 3. Willingness to Contribute at Different Levels by Type of Customer

	Contribution Amount (Percent of Project Cost)				
	50%	40%	30%	20%	10%
Overall	21%	27%	37%	44%	53%
Size					
Under 82,000 kWh	18%	25%	35%	42%	51%
82,000 kWh or more	35(a)	39(a)	45(a)	53(a)	61(a)
Type					
Office	20%	29%	41%	46%	54%
Restaurant	38(a)	39(a)	46	52	61
Retail	21	22(a)	27	35	52
Warehouse	21	28	38	52	60
School	23	32	39	53	58
Government	34(a)	41(a)	49(a)	55(a)	59
Miscellaneous	14	22	32	39	46
Financial Structure					
For-profit	18%	23%	34%	42%	52%
Non-profit	31(a)	43(a)	48(a)	51	54

- (a) The difference between this proportion and the proportion for the sample as a whole is significant at the .05 level.

especially at the higher levels. (Table 3). This may seem counterintuitive since nonprofits are assumed to have fewer funds available for building improvements. One explanation is that a large number of the for-profit customers were very small businesses, the so-called mom-and-pop establishments, who were even less willing to spend money for energy efficiency improvements. Another explanation is that energy efficiency is often considered to be a worthy objective, particularly for a non-profit that exists to further some altruistic cause.

In summary, the survey provided a wealth of useful data, which set the stage for identifying the cost-effective options and selecting one for implementation.

Outcome

After review of the focus group and survey findings, the utility agreed with regulators and interveners on a contribution requirement of 20 percent of project cost for the Small Commercial/Industrial Program. The contribution, which is presented to customers as a percent of project cost, is due in 24 monthly installments. No interest is charged to customers; however, they receive a 15 percent discount if they make one lump sum payment at the time of the installation. The contribution requirement will go into effect for Narragansett Electric customers in the spring of 1994 and for Massachusetts Electric customers in the summer of 1994.

This contribution scenario has passed cost-effectiveness tests based on participation rates derived from the survey.

The researchers eagerly await results from the implementation to see how closely actual participation mirrors what customers said they would do.

References

- Bohm, P. 1979. "Estimating Willingness to Pay: Why and How?" *Scandinavian Journal of Economics*, pp 142-153.
- Cameron, T. and M. James. 1987. "Estimating Willingness to Pay from Survey Data: An Alternative Pre-Test Market Evaluation Procedure." *Journal of Marketing Research* 24, pp 389-395.
- HBRS, Inc. 1993. *Customer Contribution Study*. New England Power Service Company, Boston, MA.
- HBRS, Inc. 1992. *Gauging the Impact of Customer Contributions on Participation Levels*. New England Power Service Company, Boston, MA.
- Nadel, Steven. 1990. "A Review of the Lessons Taught by a Decade of Program Experience" *ACEEE 1990 Summer Study on Energy Efficiency in Buildings*, pp 8.179-8.205. American Council for an Energy-Efficient Economy.