

Innovative Billing Options: A Tool for Improving Customer Relationships in a Restructured Utility Environment

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Customer retention will be an important goal for utilities competing in a deregulated environment: lost customers represent a greater revenue reduction relative to decreased costs. A proactive customer focus will ensure that once customers are given a choice, they will choose to stay with their current electricity provider. Distribution utilities can respond to competitive demands by providing value-added services. One class of value-added services is bill-based energy information.

The United States Environmental Protection Agency (EPA) has initiated a voluntary program, called Energy Star Billing (ESB), to assist utilities interested in making enhancements to residential customers' bills. These enhancements enable customers to compare energy consumption, both over time and relative to other homes. Utilities may see ESB as a customer service that builds customer loyalty in a competitive market place, thereby allowing the utility to compete on quality of service, not price alone. Bill-based information is also a low-cost energy-efficiency resource. In this paper we describe the potential for innovative billing programs in a restructured utility environment by reviewing the literature on utility-customer relationships, examining the forces and trends shaping the United States utility industry, describing the role of enhanced information in customer service, and summarizing the reactions from customers who already receive Energy Star Bills.

INTRODUCTION

In a restructured utility environment, providing residential customers with useful information about how they use energy may become an important tool for keeping customers happy. Research has shown that customers like energy information that enables them to answer questions about their energy use such as, "How much money did I save this year?" or, "Is my new energy-efficient water heater really saving energy?" or, "How am I doing compared to people in houses my size?" (Kempton 1995). The United States Environmental Protection Agency (EPA) has initiated a voluntary Energy Star Billing (ESB) program to assist utilities that wish to make enhancements to residential customer bills. These enhancements can take different forms, but the focus is a comparative element enabling customers to compare their energy consumption with that of other homes.

The implementation of ESB bridges three important aspects of electric service as viewed by customers: customer service, consumer education and energy conservation (Opinion Dynamics 1995). In addition, ESB may reduce the risks to utilities from DSM investments in a competitive environment.

Assuming that competition exists at the retail level, ESB represents a low cost alternative to conventional DSM. Small

investments in bill enhancements that motivate customer-initiated improvements would avoid loss of investments in residential DSM programs. These losses might occur when customers who participate in programs switch to a different distribution utility before the investment has been fully recovered.

In this paper we describe the potential for innovative billing programs in a restructured utility-environment by reviewing the literature on the shift in utility-customer relationships, examining the forces and trends shaping the United States utility industry, and summarizing the reactions from customers who are now receiving their first Energy Star Bills. To provide context for our discussion, we briefly describe the new EPA ESB program, its goals and status to date.

ENERGY STAR BILLING: PROGRAM DESCRIPTION

The EPA is promoting residential energy efficiency because of its significant potential for energy savings and air pollution emissions reductions (US EPA 1995). The University of Delaware, under a cooperative agreement with the EPA, is working with interested utilities to develop and implement enhanced billing information systems. Bill enhancements give the customer a better measure of home performance

relative to that of other homes. Comparisons can be of two types. Self-comparisons contrast past and present data for an individual customer. Other-customer comparisons show household consumption compared with an average or a range for comparison groups, such as neighboring houses, houses of similar size and appliance mix, or simply all other customers served by the utility. The ESB program aims to stimulate energy-efficiency improvements in existing homes.

Interested utilities sign a voluntary agreement with the EPA and participating utilities, agreeing to include comparative consumption data on their residential bills. In exchange, they receive technical and marketing assistance for their implementation. Partner utilities also get to use the EPA Energy Star logo, which lends credibility to the program and demonstrates that utilities are concerned about their customers and the environment.

Program Status

At the time of this writing, two municipal utilities had signed a memorandum of understanding, and agreed to implement the program by including comparative information on their bill. Traer Municipal Utilities (TMU), in Traer, Iowa, started sending out ESB bills in March of this year, whereas City of Azusa Utility Services, of Azusa, California, is scheduled to start mailing out bills in mid 1996.

Policy Implications of Program

The EPA's ESB program takes an innovative approach to improving the energy-efficiency of the US residential sector. The program is consistent with recent energy policy trends that create incentives for industry and consumers to reduce their long term energy and environmental impact through voluntary agreements instead of purely regulation. It is different from most traditional energy efficiency programs in that it affects the customer, not the house or appliances. It is expected to achieve small savings per house, but is inexpensive and universally applicable. Thus, we expect the cost of conserved energy to be low. By improving the information flow between utilities and their consumers, we expect that the program will deliver cost-effective, lasting efficiency improvements.

ROLE OF CUSTOMER SERVICE IN RESTRUCTURED UTILITY ENVIRONMENT

The US electric utility industry is facing substantial changes. No one knows yet what the future form and regulation of the industry will be. It is likely, however, that instead of an industry dominated by vertically-integrated utilities, regulated primarily by state public utility commissions (PUCs),

the industry will be characterized by increased competition, "de-integration," more participants and less regulation. Conventional wisdom is that competition will result in the break-up of utilities into generation (Genco), transmission (Transco), and distribution (Disco) companies (Warwick & Bailey 1994). The separation of the current integrated utilities into component parts is likely to result in multiple power vendors competing for the same customers. Building customer loyalty, therefore, becomes important to maintain a competitive position in the market. Third-party energy service providers (Escos and Billcos) are also expected to enter the market, posing a competitive threat to established distribution utilities, particularly in the billing and energy services areas. In the face of this uncertainty, the utilities who begin to develop their strategic responses to the forces of change stand the best chance of succeeding in a restructured, competitive environment.

Energy Efficiency Programs in a Restructured Utility Sector

The overall aim of deregulation has been to harness competitive forces to achieve a more efficient electricity supply system (Wiel 1994). In the absence of incentive regulations that will allow utilities to recover investments in DSM, however, it may become more difficult for existing energy-efficiency programs to compete economically with new electricity supplies. The electricity sector structures in many countries have undergone major changes in recent years. It is argued that the deregulation trend makes it increasingly unlikely that electricity suppliers in these countries will adopt energy-efficiency programs similar to those of the regulated US utilities. Experiences in England and Norway provide clear examples of the inherent conflict between competitive retail markets and DSM (Haaland & Wilhite 1994; York 1994; York & Cohen 1994). For example, in Norway post-deregulation DSM investments decreased by at least 50 percent (Haaland & Wilhite 1994). Although it is impossible to extrapolate to the US based on the experiences in these countries, it is plausible that a deregulated US utility industry would reduce or abandon existing DSM programs.

Many proponents of the market-force approach argue that end-use energy efficiency and utility DSM do not fit into a competitive utility structure. Wiel points out, however, that there are compelling reasons for addressing end-use efficiency along with others aspects of efficiency. A review by Wiel (1994) of a full range of restructuring possibilities reveals no incompatibility between restructuring and DSM. He argues that "in all cases, DSM enhances end-use efficiency", and "in all cases, cost-effective end-use efficiency is maximized by using a rate making process for franchise retail service which accommodates DSM and makes it profitable." (Wiel 1994, 251). The challenge to regulators

will be to retain the public benefits of traditional DSM programs in a more competitive environment (Hirst 1994). Hirst (1994, 32) concludes that utility DSM programs in a competitive market will focus more on customer service and less on the system-resource benefits. Regardless of the extent of retail competition, the role of utility DSM will depend largely on the ability of utilities to develop a proactive customer orientation, and to lower the costs of DSM (Hirst 1994, 32). From a resource perspective, DSM will become more cost-effective as utilities identify better ways to deliver DSM services at lower cost. Cross-subsidization will be reduced as utilities increasingly seek to have individual consumers pay for their own DSM services.

Billing enhancements, however, are appealing no matter what the regulatory framework turns out to be. The ESB program expects to be low risk, and achieve low cost as well as long term market transformations, while departing from more capital intensive, hardware focused DSM programs. The benefits of the ESB investment remain with the utility since the program requires no investments in hardware to be made on the consumer end of the meter, such as rebates for the purchase of energy-efficient appliances. If the customer leaves the distribution company, he or she loses the Energy Star service. ESB also represents a tool which the utility can use to defend its market share against new competition by making its services more attractive and economical to consumers.

A Possible Utility Future

It is often predicted that today's vertically-integrated utility companies will be broken up into Gencos, Transcos, and Discos (Tonn and Schaffhauser 1994). Several basic regulatory functions remain, particularly for Transcos and Discos, which retain some degree of common-carrier and 'natural monopoly' status. A number of today's integrated utilities are expected to find Discos, the distribution companies, the most attractive business focus. An expansive Disco would emphasize value-added services, be customer-oriented and compete on quality of service rather than price, especially among core residential and small commercial customers. Industrial and large commercial customers may be more commodity-oriented and seek their services from price-competitive suppliers that can offer both spot and fixed, long term, competitive contracts.

The primary functions of a Disco would be to maintain and expand its distribution network, read meters, handle bill processing, and offer a variety of customer energy services, possibly including DSM. Customer records become a critical, strategic resource for marketing of other services within this scenario. Maintenance of meters and more flexibility in meter reading and billing functions will be critical to future business opportunities. Many utilities do not have extensive

experience with customer energy information processing. A possible threat to competitive positioning of Discos is the entry of third party companies. Non-utility, energy services companies, for example, data processing and billing "Billcos" or energy service "Escos", could enter the market. They may contend that they can better handle new billing-based energy information services, offering better, more readable bills with supplemental information, all at a lower cost. Alternatively, in some situations, it may become attractive for utilities to out-source information processing functions. We believe those are undesirable options from the Disco's perspective: allowing another entity to design, provide, and get credit for energy information services may not be in a utility's interest (Kempton 1995).

Escos could also appear before regulators arguing that increased competition should be introduced for billing services and meter reading functions, creating a situation in which only those Discos that have developed billing information and energy services expertise are able to retain their customers and compete in the long run. Why is billing important to a Disco, or to an integrated utility with increased emphasis on customer service? Customers may want to keep the Disco, or the integrated utility because they perceive the service offering to be of high quality.

DEVELOPING A CUSTOMER ORIENTATION: THE POTENTIAL FOR INNOVATIVE BILLING PROGRAMS

Innovative billing programs may be part of a package of customer-oriented service options, including DSM. The Energy Star Billing program, for example, may give the Disco or integrated utility the image of a high-quality, customer oriented company, and disassociate with the image of a conservative, unresponsive bureaucracy that seems to characterize many of the current utility monopolies. Data show that customers trust utilities' technical ability and provision of service (Kempton 1995). However, in order for utilities to develop effective customer service programs, they need to learn more about their customer, how they use currently available information and what additional information services they want.

Despite an uncertain regulatory environment, some utilities already acknowledge the importance of fostering a stronger energy service relationship with their customers. Programs that enhance energy information flow between consumers and utilities can help a utility prepare for market competition by creating a more favorable view of the utility, and by reassuring consumers that the utility cares about them. Niagara Mohawks' stated vision is to "become the most respon-

sive and efficient energy services company in the Northeast, and the energy supplier of choice in a more competitive environment” (Niagara Mohawk 1995). Utilities are anticipating the impact of a more competitive market by emphasizing service and flexibility for their customers. One utility home page on the World Wide Web reads, “Deregulation is introducing competition into the gas and electric industries, increasing customer choices and making it easier and less expensive to obtain energy. EnergyOne simplifies those choices with a full range of cost-effective energy solutions” (UtiliCorp United 1995). Another simply explains, “Finding new and better ways to serve customers is essential to Com-Ed’s future” (Commonwealth Edison 1995).

Beyond more general bill inserts, utilities have already recognized the value of improving the information provided to the consumer on the monthly utility bill. Some of the information provided by utilities already enters into the consumer’s energy analysis, while some information is less useful. Utilities use both self-comparison and other-customer comparisons to convey information about consumption. Some utilities print a table that compares a customer’s consumption this month with the same month of the previous year. Some utilities print a bar graph of a household’s monthly consumption over the past year and then compare it with that month’s average consumption, in kilowatt hours (kWh), for the entire customer base. Both of these methods allow the consumer to note anomalous bills and perhaps account for them through weather patterns. However, it is difficult for consumers to quantify the effects of weather on their utility bills (Kempton & Layne 1994). Also, a single month’s data limits the ability of the consumer to evaluate consumption over time.

Increased utility visibility from energy feedback programs may enhance consumer confidence in the utility and can motivate consumers to undertake conservation measures of their own. There is already some evidence that customer service is an important benefit of consumer feedback programs, even though the experiences at utilities that implemented periodic utility-bill feedback were motivated by energy and peak load considerations (Harrigan et al. 1995). Program managers often report strong, positive customer reactions to utility bill enhancements (National Fuel Gas as reported by Harrigan, Kempton & Ramakrishna 1995). Customer reactions to an annual report sent out by Madison Gas and Electric (MG&E) found that of the 50 percent of customers who responded to a survey about the annual report, 85 percent were interested in continuing to receive the information, 8 percent were not. In focus groups following the pilot program, MG&E customers said that they would be willing to pay a dollar or two for the yearly report (Harrigan, Kempton & Ramakrishna 1995).

In 1990, Puget Sound Power and Light undertook a concerted effort to increase residential customer participation in conservation programs through a traditional method of communication, an advertising campaign (Auch & McDonald 1994). Prior to investing in the campaign, they researched and evaluated their customer perceptions of the utility and of energy conservation. The pre- and post-test evaluation of the advertising campaign allowed the utility to determine its impact on consumer perception and conservation activities. After the two year advertising program, the utility measured statistically-significant increases in consumers who performed an energy efficiency measure (Auch & McDonald 1994). The campaign also improved the overall image of the utility among consumers (Auch & McDonald 1994).

Based on the advice of residential customers interviewed in focus groups following the intervention, the utility began emphasizing less direct conservation programs and more consumer-driven efficiency improvements through self-administered home evaluations and installations (Auch & McDonald 1994). Although the results of this program can not be extrapolated to other utility populations, the success of this advertising campaign indicate that in this utility’s service territory, general information can affect consumer behavior and perception of the utility. It also suggests that consumers in this region are prepared to undertake household modifications based on increased information about conservation. Improving the quality of information on a more personalized basis, by periodically incorporating comparative consumption data on the bill, may have a similar, or greater impact on consumer behavior.

Unfortunately, no quantitative evaluations of energy savings from enhancements to monthly bills have been completed (in the US). However, data has been collected on pilot implementation of periodic (annual or quarterly) reports. The overall per customer analysis of an annual report sent out by Madison Gas and Electric estimated a \$0.21 startup cost and \$0.35 per year ongoing cost. Their benefit analysis estimated ongoing per customer benefits of \$0.13 per year to the company, plus \$1.66 per year benefit to the customer (Harrigan, Kempton & Ramakrishna 1995).

Innovative billing programs may also serve as a vehicle for developing other energy information services to be offered via other media, possibly electronic. It is a vehicle both because it develops staff expertise, and develops customer identification of the Disco/utility as a competent provider of customer-oriented information. Discos may want to provide energy feedback information services (such as disaggregated appliance consumption breakdowns) in addition to comparative information either because they want to become more service oriented, and/or because they want to achieve DSM energy or peak reductions.

Experience gained from innovative billing programs will assist utilities in making bills easier to understand. This will become increasingly relevant as electric charges offered by utilities become more complex, including time-of-use, different prices for different reliability levels, etc. Innovative billing programs, coupled with other bill improvements, will help Discos or integrated utilities preempt or deflect arguments from third-party Billcos or Escos vying for billing and meter reading functions in a competitive environment.

Keeping customers happy—or keeping them at all

Why alter existing utility-prepared billing services? There is already evidence to support that consumers value energy information. However, information that is currently provided may not be useful to consumers, or may not draw their attention due to its poor presentation. Recent research on consumer behavior and energy analysis suggests that customers are using their utility bills to analyze consumption, determine energy costs, detect changes in consumption patterns and evaluate the impact of conservation measures (Kempton & Layne 1994). The focus is on the monthly reading, which contains feedback information on the customer's own house. By contrast, pre-printed brochures contain generic information of much lower value. In interviews with consumers, researchers found that energy conservation information inserted with the monthly bill is not of great interest to the consumer because it is not house-specific, and can be repetitive (Kempton & Layne 1994).

Although it is too early to evaluate program impacts, a small sample study, involving face-to-face, semi-structured interviews with 18 of TMU's residential customers, was conducted in early May. All 18 respondents reacted favorably to the new ESB graph included in their utility bill, and said it makes them regard their utility more positively. Although responses were collected from a small sample, the findings provide a useful first look at customers' perception of ESB information, and the way it positively influences the way customers think about their electric service provider. The majority of respondents in the Traer study said they would be willing to pay around \$1 per month to receive the comparative energy information on their bills. Traer is not, in fact, charging for the service, but these figures indicate a customer service value far higher than the actual cost of providing this service.

Other research also indicates that customers like and want improved customer services, and bills that emphasize energy feedback information (Brattesani 1995; Kempton 1995; Opinion Dynamics 1995). For example, a study commissioned by Seattle City Light, to investigate customer attitudes toward energy conservation programs, found that respon-

dents from the single-family homeowner focus groups wanted some indication of how their costs compared with others. They felt that the comparative figures must be relevant to their own square footage and size of household. Whatever information was provided, it must be clear in its relevance for the homeowner and how the information is to be used.' Another interesting finding from this study indicate the importance that utility customers place on self-comparison of energy consumption: "The most readily recalled single piece of information on the utility bill was the comparison between the amount of energy used during the current billing period and during the same period of the previous year. Single-family homeowners said they used this information to suggest when they needed to examine their energy habits around the house.'" (Brattesani 1995).

These diverse studies indicate that enhanced, house-specific information, like that provided by Energy Star Billing, is desired by customers, and when received is perceived as being of high value and enhancing the customer's perception of the utility.

CONCLUSIONS

Individuals, utilities and society stand to benefit considerably from the implementation of DSM programs, although the incentives driving them may differ. They enable customers to reduce energy costs. They help utilities provide better customer services, and provide cost effective energy resources that can defer construction of generation plants. Air pollution, such as carbon dioxide, is reduced so as to improve environmental quality. However, the full potential of DSM in a deregulated utility environment is expected to occur only if: (1) utilities pursue innovative programs that focus on the needs of the customers; and (2) if state regulators provide incentive regulation to protect utility shareholders from DSM-induced losses that might otherwise occur in a fully competitive environment. The Energy Star Billing program, and other programs like it, address both of these issues. They aim to improve bill-based energy information, allowing the utility to build its reputation as a customer oriented service provider and emphasizing quality of service rather than price. Secondly, assuming competition exists at the retail level, programs such as EPA's ESB represent a low cost alternative to conventional DSM by avoiding the loss of investments in residential DSM programs that occur when customers participate in programs only to switch to a different distribution utility before the investment has been fully recovered by the utility. The implementation of such a customer service oriented program, emphasizing customer initiated, end-use energy efficiency through improved bill-based energy information, may become central to the restructured distribution utility. In a more competitive environment, bill-based energy information is one of many alternatives in

a package of innovative energy services. ESB and other such programs can provide an important competitive tool to utilities as part of their strategic response to customer wants and the need to develop a proactive customer orientation.

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