

USING THE WEB FOR PROGRAM SERVICES: ONE UTILITY'S EXPERIENCE

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Abstract

The Internet and the World Wide Web (Web), which have been widely discussed over the past year, offer unprecedented promise as a method of true two-way communication between utilities and their customers. Many utilities have established a presence on the Web, but very few have applied the technology as a means of providing information to customers and increasing their programs' participation. This paper will provide a brief evaluation of how one pioneering utility used the Web to accomplish these goals.

In March of 1996, Commonwealth Edison decided to enhance its Web presence with interactive content for its residential customers. The project team developed a pilot Web-based bill disaggregation service to test the market for energy information services among targeted segments of ComEd's residential population, while gathering valuable market research information about these customers. The service consists of a self-administered energy audit customers fill out in order to obtain customized information about the energy costs of specific end uses in the home as well as energy saving tips. The audit not only asks questions that help model the energy usage of major appliances (including demographics, house and appliance characteristics, and behavior patterns), but asks questions that indicate willingness to purchase other products and services offered by ComEd. While paper-based bill disaggregation services can cost \$10 to \$20 per completed survey for processing and reporting alone, ComEd's Web-based service has essentially no per-unit costs.

The ComEd Pilot home energy audit went on-line to its customers on August 1, 1996. This paper will present results of the responses obtained from the on-line home energy audit. Participation at the pilot Web site has exceeded expectations. The paper will also provide an assessment of the willingness of customers to participate in residential energy audit services over the Web, based on the volume of traffic and stated interest of visitors in the pilot Web site. In addition, the paper will provide cross-tabulations of responses to a few key questions. This will provide "profiles" of customers who do and do not value ComEd's Web-based information services.

This paper will report results-to-date of a pioneering, interactive, Web-based energy-efficiency service. The Web is rapidly becoming a communication channel that customers expect from their utility, and is an excellent medium in which to pilot new programs and services. Inter-

active information services bring customers to a Utility's web site, enhance the value of the utility's brand, and get customers in the habit of exchanging information with their utility using the Internet. The primary value of this paper will be a "proof of concept," demonstrating the use of the Web as a distribution channel for ComEd's information and energy-efficiency services. Given the level of discussion about the Internet today, this paper should be of considerable interest to utility program planners and evaluators.

Introduction

There are a number of advantages of using the Web to implement services such as the home energy audit piloted on ComEd's Web site.

- Stimulates true two-way communication between a utility and its customers
- Provides useful information to customers while collecting valuable market research information about them
- Increases customer interest in the Web site and enhances the value of a utility's brand
- Increases awareness and participation in utility programs
- Web-based audits are cheaper, more flexible, and more efficient than the paper-based audits used by most utilities today

The Web is a one-to-one channel of communication between a utility and its customers; it is not really a broadcasting medium. It can be used that way, and has been for the past two or more years by many organizations. However, the Web has potential to be a much more interactive medium, with information flowing both ways. A Web site can facilitate answering customer questions in a far more effective manner than dumping a truckload of brochures onto their screen. Truly interactive applications request input from customers before deciding on what information to provide to them. Thus, the customer sees not just whatever generic data he or she could receive from existing brochures, but information directly relevant to his or her own needs. By making use of the mountains of raw data on customers, utilities can present information that is unique to each visitor to their Web site. This can help dis-

tinguish a utility's site, and make it stand out from the ordinary.

This interactive approach allows a "conversation" between the utility and its customers. The customer tells the utility more about himself his specific needs and, in turn, the utility can provide specific information on utility products and services that address those needs. The utility gains information it can use to improve products and services, as well as a valuable leads for marketing future products and services. The customer gains insights into his or her own usage patterns, and customized advice on how to change his or her behavior to save energy and money.

Interactive content also is a means of bringing more customers to a utility's site. They will see what a particular utility has to offer, even beyond the information service that brought them there. Further, if customers are pleased with the interactive service, they will have a more favorable association with the value provided by a utility, increasing the value of its brand. Branding of utility services has become a hot topic, and this is one method for increasing the association of high-value, non-commodity service with a utility's name.

On Line Advantages

The Web-based home energy audit can provide considerable cost savings over comparable existing paper and phone systems. While paper-based residential energy audits can cost \$10 to \$20 per completed survey for processing and reporting alone, ComEd's Web-based service has essentially no per-unit costs. Although there were fixed costs to establish the Web-based home energy audit, the service can support tens of thousands of incremental survey completions from the initial investment.

Paper-based systems are inherently inflexible; once thousands of surveys are printed for such programs, changes can only be made at great expense. The Web-based service is inherently easier to modify throughout the life of the project, so that new features can be added to the service, as needed, at a low cost. For instance, this flexibility allowed ComEd to analyze an initial batch of survey data and revise the survey to maximize its effectiveness for future respondents. ComEd was also able to make revisions based on participating customer feedback.

The turnaround time between survey completion and receipt of a home energy usage report for a paper-based system can range from weeks to months. ComEd's Web-based service provides a customized home energy usage report—in seconds. This rapid turnaround allows for a conversation between ComEd and its customers. The Web is a method for getting ComEd customers into the habit of exchanging information with them. Both the customer and the utility get useful information out of the exchange: Not only does the customer receive far better service from an immediate analysis of his or her bill, ComEd receives

valuable market research information in electronic form for future applications.

Service Description

The on-line home energy audit developed for ComEd consists of the following elements.

- **Introductory Access Pages** - A series of screens that include: a greeting to customers, an explanation of the audit, instructions on how to complete the audit, and an input field into which a ComEd customer enters his or her account number. Software developed for the audit first verifies the customer name and account number, then accesses his or her billing information, stored in ComEd's billing databases.
- **Home Energy Usage Survey** - A point and click survey form consisting of questions designed to field information about the following end uses: Cooling, heating, water heating, refrigerators, freezers, clothes dryers, clothes washers, miscellaneous appliances, cooking, pools, hot tubs, indoor and outdoor lighting, and other usage. A feedback section for customers to enter comments is also included here. The survey takes approximately 20 minutes for the average customer to complete.
- **Home Energy Usage Report** - A multi-page report including a breakdown of the customer's energy usage patterns which is processed from his or her survey responses and billing data in approximately 60 seconds. Results produced by a disaggregation algorithm are presented using colorful pie and bar charts, and a detailed table showing the following:
 - Bar chart of average monthly kWh usage and costs for one year
 - Pie chart of annual electricity costs by appliance type
 - Pie chart of average appliance costs for a typical summer month
 - Pie chart of average appliance costs for a typical winter month
 - Table showing average costs of electricity usage by appliance type for the following: A typical summer day, a typical winter day, and on an annual basis
- **Energy-Saving Tips** - A list of ways for customers to save energy, based on their usage patterns and responses to survey questions.

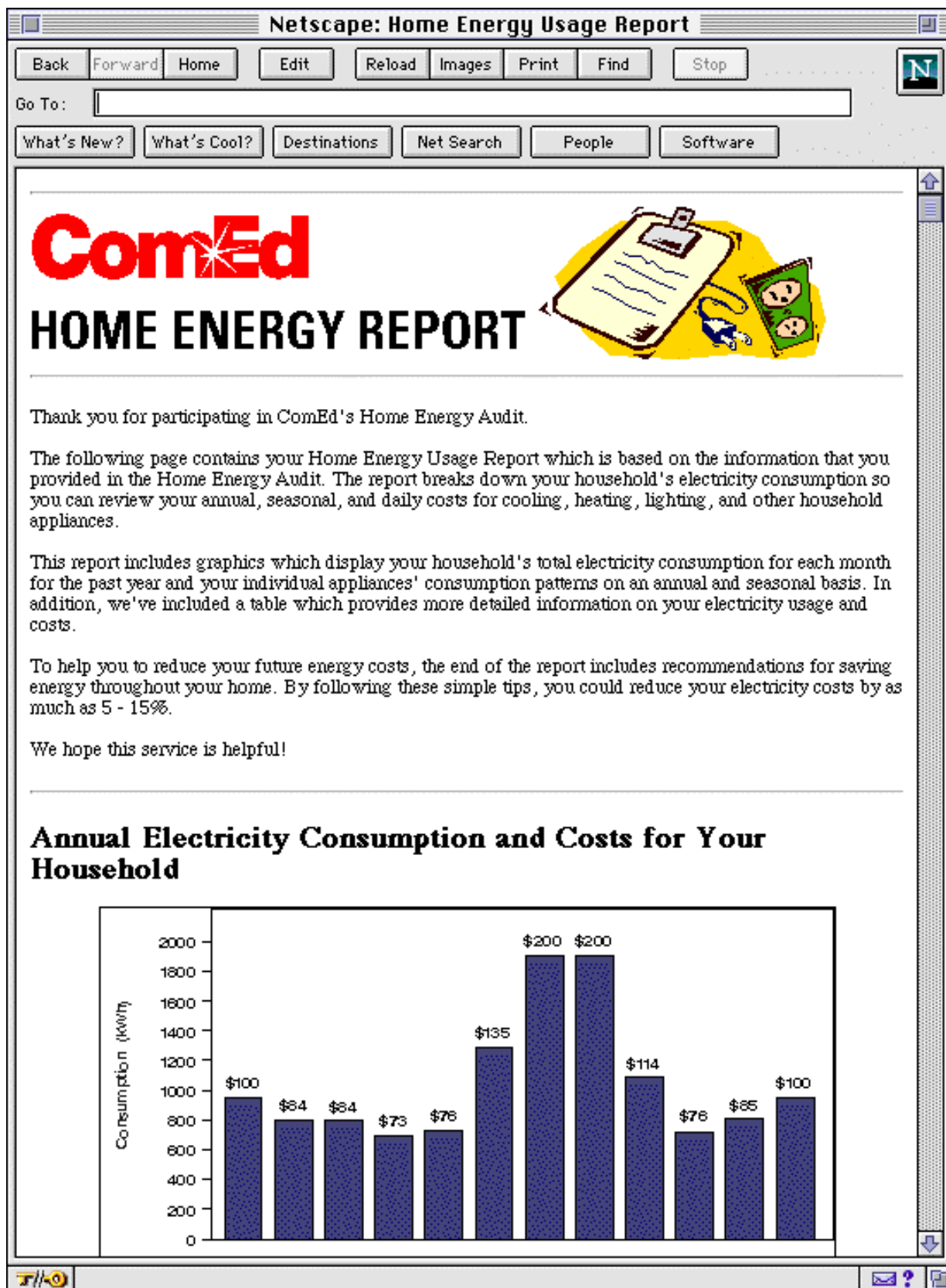


Figure 1. Home Energy Usage Report Example Section

The following figure provides a flow-diagram of the ComEd's Pilot Home Energy Audit.

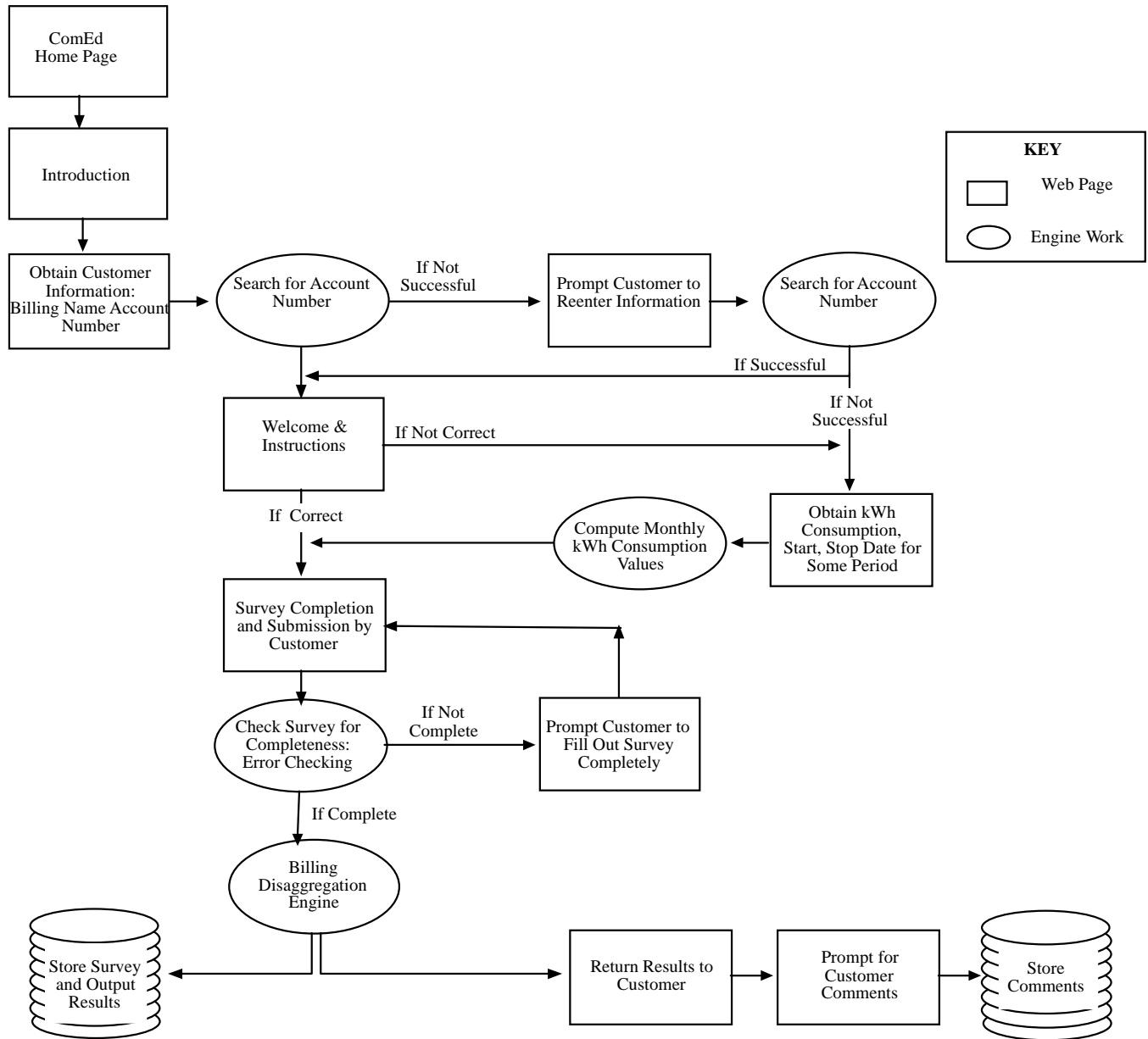


Figure 2
Home Energy Audit Site Diagram

Research Findings

The ComEd Pilot home energy audit went on-line to its customers on August 1, 1996 as the first Web-based interactive energy audit service ever offered by a utility for its customers. Initially, 67,000 specifically-targeted customers were notified about the service with a bill insert. Of these initial customers, approximately 500 customers participated in the service. These initial customer responses were used to refine the service. After the service had been on-line for several months, ComEd's Home En-

ergy Audit was mentioned in the monthly newsletter included with residential customers' bills. The response was impressive: To date over 5,000 customers completed the on-line audit. This participation demonstrates that customers valued the service. Even more telling, customers exhibited an interest in the interactive nature of the audit by expressing their opinions to ComEd in the form of electronic mail. Of the 5,000 audit completions, over 1,000 customers returned specific comments about the service. This feedback was mostly positive, as fewer than 1 percent of these customers expressed dissatisfaction with the service or ComEd. In fact, most of the customer responses re-

ceived included requests for additional information on saving energy and on existing and potential ComEd products and services. Audit participants specifically requested information about products and services such as: energy-saving ComEd programs and measures, alternative rate structures, account adjustment services, and high bill resolution services.

Based on the cumulative home energy audit data, ComEd was able to gather detailed information about its customers. As shown in the following example, the customer data collected in the audit includes the amount of customers owning certain types of appliances, and who

among them plan to purchase appliances within the next few years. Having such specific data greatly increases the accuracy with which ComEd can market new products and services while reducing the amount of time and money spent on the process. Also, all data collected from the service is stored electronically. ComEd did not have to spend any time or money inputting the thousands of customer responses into electronic form before being able to analyze the data.

The following figure provides some insight into the type of data that ComEd's Home Energy Audit is able to deliver.

Table 1
Potential New Appliance Purchases
(Based on ComEd's Cumulative Home Energy Audit Data of 2/12/97)

Appliance/Measure	Customers who Plan to Purchase Appliance within the Next Few Years		Additional Customers Likely to Purchase Appliance within the Next Few Years*
	Number of Customers	Percent of Respondents	Number of Customers
Room Air Conditioner	263	6	182
Central Air Conditioning System	505	11	742
Heat Pump	53	1	226
Other Heating System	231	5	226
Water Heater	480	11	165
Refrigerator	735	16	173
Freezer	329	7	469
Oven or Range	517	11	
Dishwasher	542	12	
Clothes Washer	448	10	
Clothes Dryer	495	11	
Window (s)	707	16	
Insulation			581

*All of these numbers are based on survey responses relating to the age of the existing appliance with one exception: customers with partial or no insulation were included in the "Insulation."

Conclusion

A Web-based audit gives residential customers instant gratification 24-hours a day. In minutes, customers receive meaningful, detailed information from their energy provider. With minimal effort and a small investment of time, customers receive information tailored to their individual needs. Customers never hear frustrating busy signals, never wait on hold for the next available customer representative, never have to sort through heaps of general information to get answers to their questions, and never have to wait days or weeks for information to reach them through the mail. Also, customers can begin to implement

energy-saving solutions immediately after taking the survey.

In the next version of ComEd's on-line home energy audit, customers not only will be given energy-saving tips, but will be pointed toward products and service descriptions on the site, based on their survey answers. Customers will have the option to request products or energy account services from ComEd directly over the Web through the use of on-line forms, instead of having to spend time shopping around.

Offering on-line services such as ComEd's home energy audit is much more cost-effective and rewarding for both the utility and customer than any other alternative to date. Using traditional methods, it would be a Herculean

task to give residential customers this much on a 24-hour per day basis. Huge new phone centers with enormous staff support, massive delivery systems, and teams of analysts would have to exist—for starters. As the industry changes into a competitive environment, customers' need for answers about energy issues will increase. Utilities that form truly interactive partnerships with their customers through on-line technologies will have a considerable advantage over their competitors. This type of relationship secures customer trust and satisfaction in their energy provider while supplying the utility with detailed market data, as shown by ComEd's home energy audit results.