Seattle MeterWatch: Using Customer Feedback to Build an Internet-Based Energy Use Service

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ABSTRACT

Seattle City Light (SCL) rolled out its first online energy consumption information service, Seattle Meter Watch (SMW), to larger business customers in July of 2001. Authorized users are each given a user ID and password to access the Web site where they can view, graph, and download electrical consumption, cost, and power factor data measured in 15-minute intervals from their facility's billing meter. The initial SMW application was a basic prototype that needed customer testing and feedback. Two focus groups and an emailed survey were conducted in December 2001and January 2002 to gather customer evaluations and the additional service features they would find most valuable.

Feedback from the users (building engineers, energy managers, and business managers) confirms that the SMW service has high value to their business for troubleshooting, energy conservation, budget monitoring/forecasting, and insight into energy issues (Lockwood, Egziabiher, Pearson & Sommer 2002). Our surveys also show that users with phone lines believe their phone line costs are more than offset by the benefit of having their load profile information updated daily. An exploratory savings analysis revealed that a small sample of SMW participants saved significantly more energy one year after enrolling in SMW than a small control group of non-participating commercial buildings. However, the preliminary nature of the scope and methodology of this savings analysis makes it difficult to completely separate the effects of the SMW service from non-programmatic influences.

Based on customer comments, the research also established a prioritized list of enhancements to complete the application. Budget cuts resulting from the energy crisis have slowed our ability to build these enhancements, but the path of future development is clear, and the evidence suggests that customers are using the service to save energy, time and dollars. Today 92% of the target group is enrolled and marketing efforts continue.

Introduction and Service Development

Purpose and Design of Service

The primary purpose of the SMW service is to give users of the service timely information regarding their consumption and cost of electricity. SMW was designed to provide users with information they can employ to make intelligent business decisions regarding their use and cost of energy and determine the effect of their conservation actions.

SMW allows users free access to a password-secured Web site to graphically view or download their meter's 15-minute interval kWh usage, power factor, and cost data. Users can track their facilities' hourly, daily, and weekly electricity use patterns and estimated costs, identify problem areas, and take appropriate action to cut costs. The service requires a computer with Internet access and a standard browser.[1]

[1] Requires Netscape 4.5 or later or Internet Explorer 4.0 or later.

"Daily update" meters are those connected to a phone line and read nightly. Each day's interval data is available on the Web site at the beginning of the next business day. All other meters provide the same interval data but with a "monthly update." When there is no phone line connection provided by the customer the interval data is retrieved by meter readers on regular monthly routes.

The service package includes support and training from the SMW Project Manager, who is available during business hours to enroll new users, answer questions, and help troubleshoot any problem customers may have in using the application. Users are also invited to attend a two-hour SMW Customer Training Workshop that is given monthly. The workshop includes an online tour of the application for new users, and tips from an energy management engineer on how to profile a facility's energy use and look for ways to save money. A brief update on current offerings from the Commercial/Industrial conservation program concludes the workshop.

Examples of SMW Screen Displays

Figures 1 and 2 are just two examples of the many ways SMW data can be displayed. The first graph compares the hourly kWh load profile for two meters with a third "meter group" showing the combined use of the two meters (the uppermost profile on the graph). The second graph provides a visual comparison between a building's daily kWh consumption and the hourly temperature. This building shows both summer and winter peaking patterns in response to very hot and very cold temperatures.

Target Audience

Currently the SMW service is offered free to customers having facilities with one or more billing meters in the Large General Service/High Demand (LGS/HD) rate classes. The SMW Internet service displays data from "load profile" meters that record consumption and demand every five minutes (converted to 15-minute intervals for storage in the database). Interval metering is a standard requirement for the LGS/HD rate classes, which have demand charges that vary by time of day (peak/off peak hours) and a peak demand in excess of one megawatt.

The SMW service goal is to enroll 100% of customer sites having these LGS/HD billing meters. Each enrolled building or industrial site has one or more authorized users. Each new authorized user is given a user ID and a password to access the SMW site and can view the data only for his/her own building. Users include Engineering Directors, Chief Building Engineers, Energy Managers, Building Operators, Plant Managers, Maintenance Superintendents, Business Managers, Electrical Consultants, and Accounting staff of these larger businesses.

SCL staff who work with customers or customer data are a secondary target audience. SCL staff may view the data for any enrolled customer, allowing them to work with their customers on the phone and simultaneously bring up the same screen the customer is viewing. Staff or customers may also use the SMW download feature to move the 15-minute or hourly interval data into a spreadsheet or other tool for further analysis.

Figure 1 SMW Example 1 – Hourly kWh for Two Meters and Their Sum for One Week

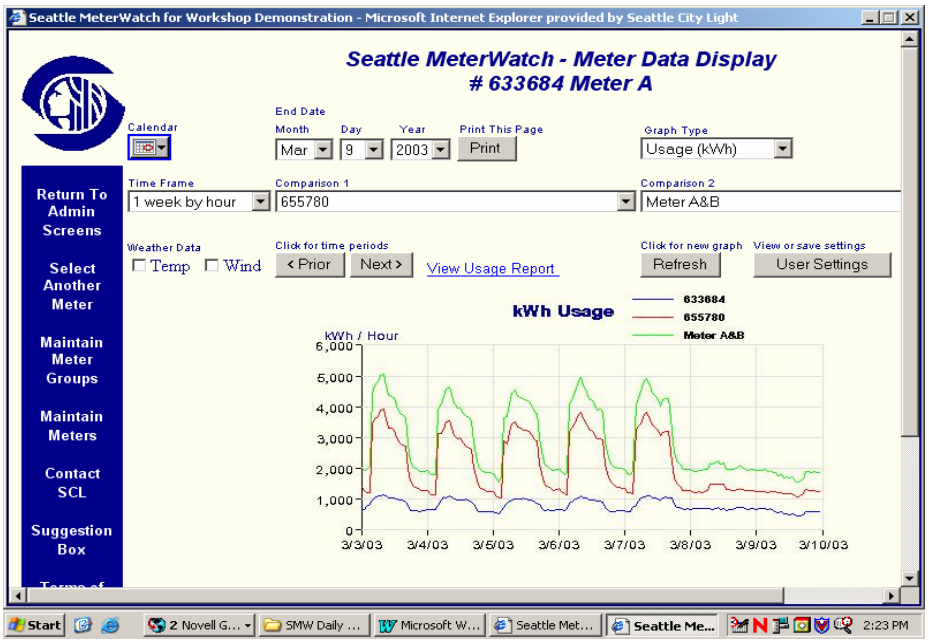
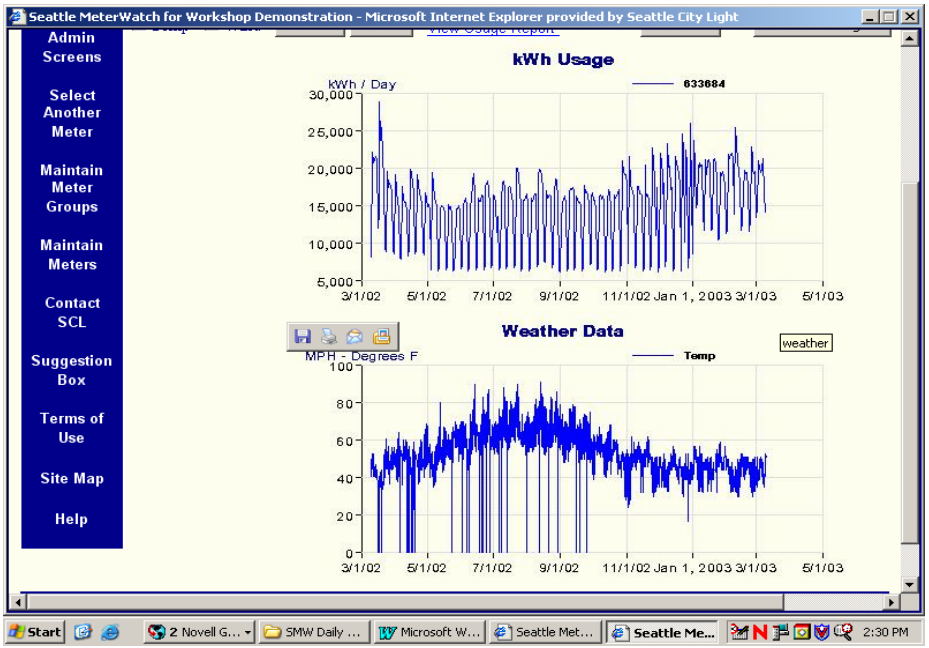


Figure 2 SMW Example 2 – Daily Energy Use and Coincident Temperature over One Year



Marketing and Enrollment

As of the SMW launch date (July 2, 2001) there were about 175 LGS/HD buildings/sites with load profile billing meters.[2] The decision was made to offer the first basic version of the service free for

[2] Number of sites changes frequently due to construction additions/removals and rate class reviews that drop or add meters to the LGS or High Demand classifications.

all business customers having LGS/HD billing meters, in order to get maximum acceptance and use of the service. Beyond the initial promotion by letters (SCL Superintendent to company CEOs) and email, one-on-one contact was required to make sure the enrollment offer got into the hands of the personnel responsible for energy management decision-making within the firm. With key account managers and utility conservation staff helping to identify and contact the decision-makers and very persistent efforts on the part of the SMW program manager, the offer is now delivered to 99% of the eligible customers, with 92% acceptance. One customer site has no contact person identified yet, a few industrial sites do not have Internet access for their plant managers or are in the process of going out of business, and a few have not yet made a decision to participate. Time is money to these business engineers and managers, and getting their attention, even for a free and beneficial service, often requires a careful and deliberate strategy. See Table 1 for a summary of SMW enrollment since the service became available in July 2001.

Table 1 Progress of Enrollment and Usage of Seattle MeterWatch Service

Activity During Period	**2001 (last 6 months)**	**2002 (12 months)**	**2003 YTD (3 months)**	***Program Status as of 3/31/03 (a)***
Number of customer sites enrolled during period	87	57	13	155 92%
Number of authorized users enrolled during period	100	118	13	210
Number of customer users @ training during period	64	42	4	92
Number of "hits" on SMW Web site during period	771	1,955	489	1,956 (annualized)

(a) Current number in program, net of changes in eligibility over time.

Evaluation Purpose, Methods and Results

Purpose of Focus Groups and User Survey

The initial SMW application was a basic prototype that needed customer testing and feedback. Thus, SMW service administrators wanted to gather feedback from customers relatively early after service launch to answer these general questions:

1. What is the business value of having access to load profile information on the Internet?
2. What is the added value of having the information updated daily? Does the value exceed the cost of providing a phone line to the meter?
3. What added features will make the tool more valuable from a business perspective?

To answer these basic questions, SCL and a consulting firm conducted two focus groups and SCL program evaluation staff designed and fielded a web-based user survey about six months after service launch.

The focus group discussions provided an opportunity for experienced SMW users to share their experiences and opinions in an open forum. The focus group setting allowed the users to express their thoughts and provide more in-depth information to service administrators than is typically available in a mailed or emailed survey.

Drawing from SMW users who did not participate in the focus groups, the web-based survey supplemented the information acquired during the focus group sessions. The specific purposes of the survey were to:

1. Determine the primary reasons users access SMW,
2. Measure users' perceived value of SMW features,
3. Determine how users are applying the information they gain from SMW and the relative value of each of those applications,
4. Assess the relative value of the service and its application for those who receive daily updates compared to those receiving monthly updates of their 15-minute interval kWh data,
5. Determine if the value of the SMW service exceeds the cost of the needed phone line,
6. Ask if users have noted energy or non-energy savings as a result of using SMW, and
7. Assess the relative value to SMW users of potential SMW improvements identified in the focus groups and rank order their perceived importance.

Purpose of Exploratory Energy Savings Analysis

One of the primary purposes of SMW is to provide detailed energy use data to building managers to help them spot potential energy savings opportunities and, given sufficient building management motivation and opportunity, take actions to help reduce energy use. Because of this, it was decided to conduct a preliminary, exploratory analysis of energy savings for a small sample of participants to determine if SMW users are realizing savings greater than those of a small sample of non-participants. The purpose of this exploratory analysis was to provide an indication of the relative advantage of SMW participation over non-participant buildings (see *Exploratory Energy Savings Method* for a description of the limitations of this savings analysis).

Focus Group Method

Focus group participants were chosen from among the most experienced users of SMW to ensure more informed opinions and suggested improvements (Lockwood, et al. 2002, Part II 2-21). Selected companies represented varied business types and job responsibilities to provide a more representative and well-rounded perspective.

At the time of the two focus group sessions (December 2001 and January 2002), there were 106 users of the SMW service. Sixty-seven of these were active users (accessing the service one or more times each month.) The seventeen focus group participants included facilities and property managers, building engineers, electricians, and general managers from large downtown office buildings, federal facilities, telecommunication facilities, large medical research centers, and an aircraft manufacturer.

Focus Group Results

Focus group participants stated that SMW is a valuable tool in the management of their business' energy use and cost. There was unanimous agreement that with proper use and training, this tool can help them save significant costs. They saw value for trouble shooting, energy conservation, budget/forecasting, supporting management and corporate leadership with insight into energy issues, and many other uses. Table 2 summarizes the key values SMW participants are realizing as revealed in the two focus group sessions (Lockwood, et al. 2002, Part II 5-8).

Table 2 Value of SMW – Focus Group Participants

Value Center	Key findings
Business value	• Provides essential and immediate tool to take proactive cost and energy savings steps • Serves as an excellent trouble shooting tool to find and correct energy use problems quickly • Improves building efficiency and business's bottom line • Supports and monitors conservation efforts • Provides energy cost direction and control • Enables energy use trending • Saves time and money researching and reporting on energy use • Allows building operations staff to research energy use anomalies before their cost accountants ask 'why'
Benefactors – Who benefits?	• Gives graphic depiction and understanding of energy use information to engineering and facilities management and to other audiences who may not otherwise understand • Helps building engineers and facility managers give recognition of improved energy efficiency to others in building management and tenants
Financial value	• Daily updates provide value that offsets the cost of the required phone line • Assists in the management of building overhead expenses and lease fees
Relative value of daily or monthly data updates	• Daily data updates are essential to rapid trouble shooting and energy cost management, even if only used once or twice a month – whenever it's needed, it's up to date • Monthly data updates are valuable, but less so than daily updates

Focus group participants were asked, "If you could have anything in the SMW product that would make your work easier, what would it be?" The general categories of SMW enhancements mentioned by the focus group participants are listed below in descending order of frequency (Lockwood, et al. 2002, Part II 9-13):

1. **Improved graphics output and comparisons –** SMW users wanted the ability to compare current and comparable time periods in the past, to overlay multiple graphs, and see the percent change from previous years. Users also wanted to have a wider selection of graphic output; including, graphs of energy cost by selected time period, graphs displaying data by billing period and graphs of energy use vs. temperature.
2. **Usability –** Participants wanted a more user friendly service; including more flexibility in graphics and user-defined time periods, more intuitive naming and management of meter and account numbers, the addition of a "Back" button to each screen, easier copying and pasting of output, and the availability of a building management support tools menu.
3. **Access performance –** Participants wanted faster access to the website data and improved refresh speed of each output screen.
4. **Training –** Users professed a general need for hands-on SMW training and user-group information exchange.
5. **Data –** Some users wanted real-time data (as opposed to the current one day or one month time lag). Others want to display kWh per sq. ft. or per occupant, heating and cooling degree data, and easier downloading of data to Excel.
6. **Built-in alerts** – Some SMW participants had a need to be automatically alerted if energy/demand exceeds user defined norms.

7. **Filtering –** There was also some need for enhanced filtering. One example would be the option of only including weekdays in graphic output.
8. **Exact billing correlation –** A few users wanted the option of grouping and aligning SMW and billing period kWh and KW data.
9. **Historical averages -** Some users stated a need to look at average kWh over several years.
10. **Meter reading -** A few participants thought that on-demand, real-time meter reads would be useful to quickly determine the effect of recent changes to their buildings**.**
11. **Troubleshooting –** Some users wanted help in interpreting data and identifying and resolving energy use anomalies.
12. **Budget forecasting –** Others indicated a need for improved energy cost reporting and energy cost forecasting.
13. **Power factor diagnosis –** Some users with power factor problems wanted tools to help determine which side of the meter power factor problems originate.

Customer Survey Method

In January 2002, 24 SMW users completed a brief web-based user survey. The survey was sent to a total of 89 SMW users who had not participated in the focus group sessions. These 24 survey respondents represented 27% of the 89 SMW users, or 36 % of the 67 active users of SMW. Those in the survey sample were sent an emailed invitation containing a link to a secure Internet survey service ("Zoomerang.com") where respondents completed the survey using their personal computers. The data were maintained in a password-protected area of the web-site where SMW and evaluation staff could access real-time summaries of survey responses.

In addition to the survey participants, focus group participants were asked to complete a brief user survey and their responses were added to those responding to the web-based survey. Together, the 17 focus group participants and 24 survey respondents constituted 61% of active SMW users at the time of the focus groups and surveys (41 of 67 active users). The advantages of a web-based survey are:

- No postage, paper or envelope costs as in a mailed survey,
- Reduced labor and cost of conducting telephone surveys and compiling the results,
- Instant, real-time availability of individual and summarized survey results, and
- Storage of data on a password-protected portion of the service web site.

A disadvantage of using a web-based survey is the extra time it took to learn how to navigate through the process of designing, editing, fielding, and accessing the completed survey data. To aid in this process, the service provides built-in tutorials and help screens. Another disadvantage to web-based surveys is that they require all people in the survey sample to have email addresses and access to a personal computer to complete and submit the survey. However, this was not a problem in this particular survey, since all SMW users have email addresses.

Customer Survey Results

The survey found that the SMW participants primarily use SMW to: 1) prepare reports and answer management questions, 2) support saving energy and energy costs, and 3) troubleshoot energy use problems in their facilities (Lockwood et al. 2002, Part III 21).

1. Listed below are the nine most highly valued features of SMW revealed in the user survey, listed in descending rank order. These nine features were rated 'high' or 'very high' by 91% to 59% of the

web-based survey (Lockwood et al. 2002, Part III 23-25). Beside each of the rated service features is the percentage responding 'high' or 'very high'.

- Access to 15 minute interval kWh data (91%)
- Ability to compare current and past energy use (82%)
- Ability to display graphs of energy (kWh) use (82%)
- Ability to download kWh data and estimated costs for a chosen time period (77%)
- Ability to quickly access to SMW whenever the customer needs it (73%)
- Ability to see a report of what we're paying for energy usage during a chosen time period (73%)
- Ability to display graphs of energy costs (64%)
- Ability to view up to three years of historical data (59%)
- Ability to display graphs of power factor (59%)

2. Below are the six most highly valued uses of the load profile data accessed from SMW, listed in descending order of value (Lockwood et al. 2002, Part III 26-27). The percentage figures refer to the proportion of the survey respondents who rated each SMW use 'high' or 'very high'.
    - To identify unusual patterns or spikes in energy use (77%)
    - To correlate energy use with equipment on/off cycles (59%)
    - To save time in collecting energy use and cost data (59%)
    - To compare energy use before/after equipment modification or replacement (59%)
    - To save time in providing information on energy use and cost (59%)
    - To help reduce energy use and cost to building owners (50%)
3. Daily update users tend to value SMW features more than do monthly update users. This was particularly so for the ability to access 15-minute interval kWh data, to view hourly temperature and wind data, and the ability to see a report of what their building is being charged for energy during a chosen time period (Lockwood et al. 2002, Part III 25).
4. Of the SMW users surveyed who receive their facilities' energy use data on a daily update basis, 60% said that the value of the benefits gained by using SMW is greater than the cost to install and maintain the needed phone line. The remaining 40% indicated that they did not know if the value was greater than the cost of the phone line.
5. About half of the email survey respondents indicated that they have gained some dollar benefit by using SMW, but weren't certain of the amount of the savings (Lockwood et al. 2002, Part III 28-29). The remaining half indicated that they haven't experienced any dollar benefit to date. This low awareness of the dollar benefit of SMW could be partially due to the fact that the survey was fielded just six months after the launch of SMW and some of the respondents had used SMW for less than six months when they responded to this question.
6. Respondents to the email survey were asked to rate the value of additional SMW features suggested by the focus groups (Lockwood et al. 2002, Part III 29-30). The six desired new features listed below received a 'high or "very high' rating by 50% or more of the respondents. Beside each feature is the percentage of respondents choosing the "high" or "very high" value:
    - Ability to view all the billing meters in their facility and in other buildings their company owns or operates (87%)
    - Ability to see the effect of pending rate changes on their energy cost (77%)
    - Ability to compare two time periods for the same meter on the same graph (68%)
    - Being alerted when energy use exceeds normal daily range (64%)
    - Easier site navigation (63%)
    - Faster screen display time (59%)

Exploratory Energy Savings Method

SMW is an informational service, where customers access and interpret their facility's energy use data and decide whether or not to make operations and maintenance or occupant behavioral changes to improve building efficiency and occupant comfort. Any energy savings associated with participation in SMW are a result of actions the building operations staff and tenants have taken, whether or not the decisions were supported by information gained through SMW. In short, access to SMW data does not, in and of itself, "cause" energy savings, but its use supports participating customers in their own need to lower building operating costs (Lockwood et al. 2002, Part III 26-27).

The scope of this exploratory savings analysis did not encompass large sample sizes and a broad array of explanatory variables in the regression analyses. The primary intent of the limited scope of this energy savings assessment was to simply employ a small sample of participant and non-participant control buildings to acquire an indication of the relative energy savings in these two sample groups.

A sample of 15 SMW participant buildings and nine non-participant buildings was used. The majority of participant and non-participant buildings were downtown office buildings. In addition, one hospital, two medical research lab/office buildings, one performance hall, and one museum were also included in the samples.

The available pool of non-participating large general service buildings to draw the comparison group from were generally smaller than participating buildings, with average annual pre-period energy consumption 30% less than the participant group. This difference in building size between the two groups made it necessary to make pre-post SMW comparisons of participant and non-participants' energy use on the basis of the proportionate change in energy use. Adjusted ('net') participant energy savings were calculated by subtracting the percentage change in the non-participant group energy use from the participant group proportionate savings (see Energy Savings Results below).[3] The exploratory energy savings analysis consisted of three phases:

1. Phase I - The PRISM program was used to weather-adjust pre and post-period consumption data for each building in the participant and control groups (Fels & Reynolds 1991; Kissock & Fels 1995).
2. Phase II – Separate regression analyses were performed on each participant and non-participant sample building to determine the explanatory value of SMW participation on energy savings.
3. Phase III – Unadjusted and adjusted ('net') participant group savings were calculated and a comparison of pre and post period mean consumption for each participant and non-participant building was completed.

The period from January 1999 through June 2001 served as the pre-SMW period and the post-SMW period extended through the first year of SMW's operation, July 2001 through June 2002. The daily kWh consumption data were aggregated into weekly totals for the PRISM and regression analyses.

The PRISM program's weather-adjusted MWh/wk consumption data served as the dependent variable in the regression analyses. Separate regression analyses were run for each participant and non-participant building because the individual building regression models explained a much higher level of variation of energy use than was obtained in the combined sample regression. The explanatory variables used in the regression analysis were SMW participation (0=pre, 1=post), the number of monthly and

[3] The common method of normalizing energy use in commercial buildings is to make comparisons on the basis of kWh/sq. ft. Due to uncertainty in the accuracy of the available square footage data for these buildings, normalizing the change in energy use on the basis of the proportionate change in pre-post consumption was used instead. This eliminates the effect of inaccuracies in the estimates of building square footage, while allowing for determination of adjusted energy savings (participant savings as the % of pre-SMW consumption) – (control savings as a % of pre-SMW consumption).

cumulative SMW logins, heating and cooling degree days, cumulative electricity rate changes over the pre and post SMW periods, and participation in SCL incentive conservation programs. Seattle City Light imposed a series of four rate increases in 2001 to help offset the budget deficit caused by the unprecedented market price of energy in 2000 and 2001. The first two of these rate increases occurred prior to the SMW service launch date and another two followed the SMW service offering. Together these four rate increases raised the large general service energy rate by 63%.

Economic variables (i.e., unemployment rates or percent of building occupancy) were not explicitly included in the analysis. The use of the control sample offered some level of control for variation in these factors, as changes in these factors would also simultaneously affect the control group buildings' energy consumption. Other factors that were not included were the type and duration of changes in building electrical equipment and operation over the pre and post-SMW periods.

Exploratory Energy Savings Results

Total unadjusted savings for the participant sample of 15 buildings was 19,031 MWh/year, or 10.1% of pre-period energy use (see Table 3). Unadjusted savings are total savings prior to subtracting the proportion of savings in the control group sample. During the one-year post-SMW period, the non-participant control group experienced energy savings of 3.05% of their pre-SMW consumption. Adjusted participant group savings were (10.1%) – (3.05%) = 7.05% of the pre-period energy use, or 13,284 MWh/yr. Both unadjusted and adjusted participant group savings were significant at $p < .000$.

At the individual building level, 12 of the 15 (80%) participant buildings' post-period adjusted energy use was significantly lower than their respective pre-period mean consumption ($p < .05$). The estimated bill savings associated with the adjusted energy savings for this sample of 15 participant buildings is $736,099/year, based on first year savings. In the control group, 55% of the buildings (five of nine) experienced significantly lower post-period energy use.

Table 4 displays the average percent of explained variation in energy use for each independent variable in the regression model. This table illustrates that although HDD and CDD accounted for 67% of change in R^2, these two factors contributed only 4% of total adjusted MWh savings. This was due to the fact that the majority of coefficients for these temperature variables were positive; that is, they were associated with increased, not decreased energy use. The majority (92%) of adjusted participant savings was associated with SMW participation (enrollment in SMW and frequency of SMW logins). Less than one percent of the variation in energy use as associated with the cumulative rate increases occurring during the same year the SMW began, accounting for 529 MWh/yr. of total adjusted savings.

Table 3 SMW Participant Sample Energy Savings

Sample Group	Unadjusted Savings (MWh/year)	Adjusted savings (MWh/year)
SMW participant sample (N=15 buildings)	19,031 MWh, 10.1% savings mean savings = 1,269, S.D. = 1,359	13,284 MWh, 7.05% savings, t = 5.70 (p <.000) mean savings = 886, S.D. = 948
Non-Participant Control sample (N=9 buildings)	2,415 MWh, 3.05% savings mean savings = 268, S.D. = 757	- -

Table 4 Regression Analysis – Explanatory Value of Independent Variables in Participant Group

Independent Variable	Percent of explained variation in energy use (change in R^2)	Associated MWh of Adjusted Savings (MWh/yr.)
• SMW participation	30.6	12,286
• Heating degree days	20.6	60
• Cooling degree days	46.4	441
• Cumulative rate Increases	0.1	529
• ESS participation	0.1	-32
Total R^2 :	97.8	Total: 13,284

As stated earlier, these results do not mean that SMW participation, in and of itself, caused these energy savings. More likely, it means that those facility managers who participate in SMW are more motivated to take actions that reduce energy use and costs and SMW is a tool that assists them in realizing a higher level of savings than occurred in the non-participant group. The fact that these SMW participants achieved adjusted savings over twice as great as the control group provides evidence of the added value of the SMW service, but this analysis cannot prove that all of the adjusted savings were the result of SMW itself.

Conclusions

Customers Say the Service is Useful

Customers tell us that they like the SMW service because they can use it to save time, reduce their energy use, and save on their electricity bill. Our exploratory energy saving analysis revealed adjusted first-year energy savings of 7% in the participant sample. We cannot conclude with certainty that SMW caused all of these savings, but it likely contributed to the participant group's relative energy savings advantage over the non-participant group.

Encouraging Phone Lines for Daily Updates

There was consensus among the survey participants that when meters are read every day, the SMW service provides more than enough value and savings to offset the cost to customers of providing the phone line. Phone company charges for installation and monthly phone service averaged $290 and $39, respectively, in the summer of 2001. Energy managers use the data to identify unusual patterns or spikes in energy use, and to correlate energy use with equipment on/off cycles. Immediate availability of the data is necessary to diagnose and rectify the problem. SMW customers said that real-time data is best, if cost were no issue, but that at a minimum, daily updates are required for such troubleshooting. They suggested that while this was certainly true in their own large facilities, there is probably a point in size or complexity of the facilities below which this is not true. (This point probably reflects the availability of energy managers or building engineers with time to spend on energy efficiency and equipment tuning.) SCL continues to promote the benefit of phone lines for daily updates to SMW users. The number of LGS/HD sites with customer-provided phone lines has risen from 28 in March

2001 before the service launch, to 53 a year later, and since then has continued to rise for other reasons as well as the SMW benefit.

Priorities for Completing and Enhancing the Application Features

The energy crisis and the drought struck Northwest utilities particularly hard during the winter of 2001. In better times, the decision to build and support the SMW application in-house would certainly have fared better. To buy the energy it needed to keep the lights on, SCL had to increase rates and short term borrowing and incur deep budget reductions. Under these conditions it has been difficult to maintain the schedule for upgrades to complete and enhance the features according to the customer feedback we requested. The first enhancement version is now underway, with a reduced budget, in the spring of 2003. The enhancements will be carefully prioritized according to the customer feedback, to complete the original design features, to maximize the value of the service to existing users, and to facilitate cost-effective expansion to additional customer groups. Not all of these priorities can be achieved within the available budget.

Giving Users Access to all Their Meters

Customers already using SMW for their "largest" meters want to view their other meters as well. The potential enhancement that survey respondents ranked the highest was "ability to view all the billing meters in my facility and in other buildings my company owns/operates." This request leads in two directions. A first logical step in this direction would be to reprogram SMW to display all the contributor channels of a totalizing meter. About 50 LGS/HD sites have totalizing meters. For each of these totalizing meters, the database contains data collected from two to five subsidiary meters contributing to the total energy use. To simplify the initial SMW release, we elected to show data only from the totalizing channels, but the data from contributing channels could be made available to customers with a programming change to the SMW application. The cost and benefit of displaying contributor meter data will be considered in the upcoming enhancement, along with customer willingness to pay for this additional information.

A second step would be to extend the SMW service to meters in the Medium General Service (MGS) rate classes. Interval metering is currently not needed for billing MGS accounts because their demand charges do not vary by time of day. The original intent was to target the Downtown Network MGS customers (about 20% of the MGS meters), upgrade to load profile metering, offer the SMW service, and ask these users to determine its value. For this purpose the 500 Downtown Network MGS meters were upgraded to load profile meters and the interval data is being collected. The enrollment offer was delayed pending stabilization of the service and completing enrollment of the LGS customers. Before proceeding we need to identify appropriate marketing methods that are both cost-effective and equitable. We also need to enhance the administrative functions of the application to reduce the workload involved in service delivery and customer support before scaling up the number of users.

Target the Right People and Provide Assistance

One of the measures of success of the program is active users, those who establish a regular and continuing pattern of accessing the Website over time. It's important to target the right people in the business, the ones responsible for keeping the building systems optimally tuned and operating efficiently in terms of energy use. Giving them assistance in getting started using the SMW tool and showing them tips and tricks for troubleshooting and tuning their facility helps too. Most of our new users had never seen their building's load profile or energy "footprint" before. Our customer training workshops offering

this assistance received high marks from the attendees. Unfortunately less than half of the authorized users accepted the workshop invitations. In the future we may provide "mobile" training at customer sites to encourage more active use.

Provide Links to Billing Histories

Customers also want to be able to view and compare their monthly bills, for all of their accounts, on the Internet. That's a different tool, which we had also planned to develop. Without it, many customers try to use SMW to recreate or check their bill, and it isn't designed for that. Ideally the product suite would include both tools, with automated links, on the same Web site.

Use the Service to Foster Good Customer Relations

The last three years have been an era of substantial rate increases, which rose by an average of 58% during 2001. Seattle City Light expects its debt from the energy crisis to be repaid by 2004. But in the meantime, it has been good to be able to give our largest energy users a tool that helps them view and manage their energy use and lessen the impact of the rate increases.

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