Implementing a Resource Conservation Manager Program at Puget Sound Energy

Bill Younger, Lori Moen, Ted Brown, Bobbi Wilhelm, Puget Sound Energy

ABSTRACT

Building operations staff have long recognized the potential of reducing energy costs and usage by focusing on improvements to operational and maintenance (O&M) practices. Although many large customers can benefit from these actions, financial obligations, time and staffing constraints, and reluctance to change institutionalized practices can create significant barriers to implementation. Utility companies have traditionally focused efficiency programs on installation of capital measures to help customers reduce consumption, leaving responsibility for operational and maintenance measures to the facility operators. Recognizing that O&M practices not only affected the persistence of savings of installed efficiency measures but also represented additional untapped savings potential for most customers, Puget Sound Energy (PSE) expanded its commercial and industrial energy efficiency programs to provide financial and technical assistance to customers to improve O&M practices, and attribute energy savings to behavioral and operational based programs. Puget Sound Energy's Resource Conservation Manager (RCM) Program is designed to obtain energy savings through behavioral changes, operational improvements, facility maintenance, and utility cost and usage accounting in large commercial organizations. Energy savings are achieved by providing portfolio customers with the resources needed to fund a position that focuses on mitigating the customer's use of natural resources, including electricity, natural gas, oil, propane, water, sewer, garbage and recycling. It is the intent of this paper to provide information regarding the RCM program design and offerings provided by Puget Sound Energy.

Introduction

PSE's Resource Conservation Program began in 2002 to provide both strategic guidance and financial assistance to help customers utilize the skills of an RCM to better manage resource usage. The program is available to any school district, public-sector government agency, or commercial or industrial customer, with a focus on larger customers with multiple facilities.

The program provides support in overcoming organizational, financial, and technical barriers to developing an RCM program by providing grants, classes for the RCM and facilities staff, and on-site technical assistance. Additionally, the program provides assistance with initial program organization, savings projections and goals, job postings, interview and hiring, and resource accounting software support.

The value of the RCM program comes from making many small changes with little to no investment in equipment. These types of RCM operational changes can result in 10% to 15% reductions in energy usage, and dollars saved from these programs are often redirected to other needs such as maintenance projects, critical equipment repair or replacement, and efficiency retrofit measures. While behavioral and operational change is at the core of the program, RCM activities often lead to identification of additional capital measures and offer participants an

opportunity to take advantage of PSE's commercial and industrial efficiency grant programs for qualifying retrofit and new construction projects.

Qualifications and Application Process

To be considered for the RCM program, customers are required to submit an application which includes facility portfolio information used to evaluate the level of support that PSE can provide to the customer. The basis of the evaluation is to determine the level of savings that the customer can reasonably expect by implementing the program. It also allows PSE to provide the customer with a staffing recommendation that can be entirely self-supporting through savings over the three-year term of the agreement. Customers who meet the minimum qualification are offered a Grant Agreement with PSE and begin the process of participating in the offerings PSE provides.

To qualify for funding of a full-time Resource Conservation Manager, organizations generally need at least 2,500,000 square feet of conditioned space or an annual resource budget of \$2,500,000. Interested customers with smaller portfolios who do not meet these criteria may qualify for funding of a part-time RCM. Once staffing levels are determined, participants are required to hire an RCM, or dedicate existing staff to serve as the RCM, at the agreed staffing level and complete other program deliverables to receive program incentives. PSE does not fund RCM positions at less than .25 FTE, but we will provide resource accounting software and technical assistance to small organizations interested in implementing the RCM concept.

Program Incentives and Support

PSE offers a comprehensive package of monetary incentives and program support services for RCM participants. The financial incentives provide support to get the program up and running, purchase and maintain the resource accounting software package, and help maintain momentum and support on-going staff salaries through annual performance bonuses. A salary guarantee clause is also included in the grant agreement to help decision makers overcome the perceived risk of implementing a new approach to resource management.

A detailed description of each incentive item, the services it provides, and the required deliverables are listed below.

Initial Start-Up Cash Incentive

This is a one-time incentive that pays for approximately 35% of the time spent on establishing an RCM program during the first year of implementation. The actual grant amount will be determined by evaluating the customer's organizational profile including total utility budget, annual energy usage, and facility square footage. The Start-up incentives can be prorated for smaller organizations, down to a minimum of .25 FTE.

The start-up incentive will be paid provided the customer completes the following deliverables:

- Hires an RCM or dedicates staff time to RCM activities as prescribed
- Completes set-up and begins populating a resource accounting database
- Completes a Resource Management Plan for the organization

• Demonstrates a Facility Action Plan process is in place for evaluating buildings

These deliverables are outlined in the scope of work for the grant agreement and are estimated to be completed in the first six to nine months of the program. The incentive can be paid at the end of the first six months provided the scope of work has been completed.

Resource Accounting Software

PSE will purchase and set-up a resource accounting software package, pay annual technical support maintenance fees, and provide monthly PSE billing data in an electronic format for import into resource accounting software. The customer, in return, agrees to provide assistance with the set-up process, maintain the system by entering monthly utility billing and usage data going forward, provide annual consumption reports, and submit a copy of their database to PSE on an annual basis. The grant is paid upon completion of software set-up with organization structure, building information, utility company information, and account and meter numbers for all electricity, gas, water, wastewater, and solid waste accounts.

Performance-Based Incentives

PSE will provide a cash incentive, equal to the RCM start-up incentive, to customers who achieve a pre-established targeted amount of energy savings in years two and three of a threeyear program. The savings must relate to occupant and behavioral practices and improvements in operational and maintenance (O&M) practices. Energy savings targets are established each year and are based on a five percent reduction over the previous 12-months energy profile. Actual savings are calculated and verified by PSE staff, adjusted for weather, area changes, and installation of capital efficiency measures prior to bonus payment.

Salary Guarantee

The final monetary incentive is the Salary Guarantee. In the contractual agreement between PSE and the participant, PSE guarantees the participating customer's total resource bill savings, achieved by the RCM through behavioral changes and operational practices will exceed the salary of the RCM. If the organization does not achieve such savings, as determined by normalized energy usage, PSE will pay the difference, up to a sum that is no greater than the value of electric and natural gas savings achieved. To receive the Salary Guarantee, the customer must submit an up-to-date resource tracking database as proof that achieved savings did not cover the RCM salary. The Salary Guarantee is only available to participants with a full-time RCM. To date, none of the participating organizations have challenged their program energy savings, resulting in no requests for payment of the Salary Guarantee.

Program Renewal

Customers can choose to renew their RCM program with PSE for a second three-year term. By signing a Renewal Contract, the customer can continue to receive all value-added PSE RCM support services and have the opportunity to receive additional cash incentives for energy reductions beyond their initial third-year baseline.

Program Deliverables

Hiring the Resource Conservation Manager

Program participants represent a wide variety of facilities, with different needs and skill sets required for the RCM they hire. Many organizations select RCMs with a technical background to primarily focus on facility operations, while other organizations choose to hire an RCM who can support behavioral-based program initiatives. Realistically, many RCMs serve multiple roles by reviewing and entering utility bills, working with the utility to investigate metering and billing issues, conducting building audits, assisting facility and maintenance staff with implementing operational improvements, pursing development of capital efficiency measures, and leading behavioral-based initiatives.

A qualified Resource Conservation Manager is self-motivated, well organized, and a good communicator. In our experience, prior knowledge of the organization and its structure increase the Resource Conservation Manager's effectiveness in designing and implementing programs and projects. Successful RCMs include engineers, teachers, administrators, maintenance staff, lead custodians or consultants. Above all, the Resource Conservation Manager should be observant, thoughtful and have the ability to communicate effectively.

Different organizations may also have institutional barriers that will dictate how the position is funded and managed. In an effort to recognize organizational restrictions and barriers associated with adding staff members, PSE has developed four basic methods to help customers meet the deliverable of hiring the RCM.

Create and Hire a New RCM Position

Many organizations choose to hire an internal staff person to act as the Resource Conservation Manager. Because the program is largely dependent on implementing behavioral changes with existing staff, many organizations have found it essential to fill the position internally to build credibility and secure staff buy-in. PSE provides assistance with developing the job description, establishing the salary range, providing sample classified ads and interview questions, and participating in the interview and candidate selection process.

Utility Provides Contracted RCM Support Services

Some organizations often have limitations on increasing staff head count which prevent them from directly hiring an RCM to implement a program. With this option, the utility provides the RCM services under contract with the customer. The utility will hire the RCM as a contractor, with approval of the customer, and bill the customer for services. The billing is subsidized by 35% for the first year as part of the start-up incentive and is 100% pass through in the following years. This model has been used successfully to leverage the utility's reputation as a known service provider to help convince the board of directors to approve the position. This method also has a unique advantage of keeping the funding in the resource budget as the monthly billing is in the form of a utility bill. If the program is truly self-supporting through savings, the resource budget should be able to absorb the position.

Customer Contracts with a Third Party Firm Specializing In Resource Management

Customers who chose this option contract directly with a service provider that has a proven track record in resource management. The contractor may have additional support mechanisms and tools that compliment the utility offerings. This option works well with regional customers with facilities outside the utility service territory. PSE helps fund efforts for sites within the service territory; the contractor can also provide services for the entire portfolio regardless of location. This option has been used successfully for JC Penney and led to the first Retail Energy Star award in the country. Their award-winning effort was entirely a result of the RCM program without installation of capital improvements.

Customer Assigns Existing Staff Member(s) to Fill the RCM Role

PSE has worked with customers to "build" a position from portions of existing staff. For example, 25% of an administrative assistant to enter utility bills and maintain the database, 50% of an HVAC technician or custodial position to perform site inspections and implement operational improvements, and 25% of an administrator to provide program oversight, guidance, and communication with the organization. While generally not as effective as a dedicated position or contracted service provider, this option has worked to get a program started and has been good for smaller customers that do not require a full time RCM. The organization must make a commitment to allow time for RCM focus and not just add additional tasks to already busy positions.

Resource Management Plans

The completion of a Resource Management Plan clearly outlines the organizations commitment to conservation, facilitates a means of communication and agreement among decision-makers, and provides an avenue for discussion when implementing and supporting conservation initiatives. The Resource Management Plan provides a guideline for effective and efficient management of all utility resources including electricity, natural gas, water, wastewater, refuse, and recycling. These plans also define RCM program roles and responsibilities and provide a plan for implementation procedures and resource conscious building operations. They are typically developed by a team of participant stakeholders and serve as a framework for implementing a successful program.

A well written Resource Management Plan should include:

- Statement of support from the superintendent, president, CEO, and/or board of directors;
- List of staff dedicated to the implementation of the RCM Program;
- Budget for both staffing and operational and maintenance upgrades;
- Resource savings goals for each resource managed by the RCM;
- Detailed description of how the utility accounting software will be used to track resource costs and usage;
- Details on how savings will be measured and reported to the organization;
- Process that will be put into place to adopt and implement the resource policy and resource use guidelines;

The completion of a Resource Management Plan is key to obtaining buy-in from decision makers and motivating maintenance staff and building occupants to change behavior related to resource usage. The importance of a formal Resource Management Plan was validated through the 2006 RCM Program Evaluation conducted by KEMA for PSE. During both telephone interviews and on-site case studies, RCMs indicated that their work is more easily conducted when there is an existing document validating their actions. The Resource Management Plans are of particular importance when RCMs face challenges to obtaining buy-in from various groups within the organization.

Facility Action Plans

Facility Action Plans are required to be completed to demonstrate that the organization has a process in place to evaluate each facility and communicate recommendations to the appropriate audience for implementation. The Facility Action Plan provides specific action items to be implemented which will reduce resource use in each facility. These items are identified through energy data analysis, building walk-through audits, and interviews with staff and occupants.

The Facility Action Plan should address the following issues:

- Inform occupants of their baseline energy use index, usage profiles, and resource reduction goals
- Verify the facility is aware of and following the organization's operating guidelines;
- Identify guidelines that are not being implemented;
- Identify additional operational and behavioral opportunities that could be addressed;
- Identify opportunities for installation of energy efficiency measures which could also qualify for utility efficiency grant funds.

Like Resource Management Plans, Facility Action Plans are vital to achieving energy savings. Facility Action Plans provide detailed goals for improving building operations, outline opportunities to achieve savings, and provide a timetable to complete energy projects. In addition, they clearly outline intended actions to decision-makers, facility maintenance staff, and building occupants and assign responsibility for completion and follow-up.

Measuring Savings

Unlike traditional energy efficiency projects, determining savings from RCM initiatives is not a clear formula of multiplying a change in efficiency or run hours to calculate estimated savings. Traditionally, RCM program savings are determined by measuring annual changes in the usage at a facility or portfolio level, and comparing to the established base year. While this method is often employed at the customer level to justify the program over time, PSE's program has treated the savings as a one-time annual amount by always comparing to the previous 12-month period rather than to a static base year. This method is consistent with treatment of other efficiency measures, such as lighting or equipment installations, and allows the utility to report annual savings just as it does any other efficiency measure. Treatment of RCM savings as an

efficiency measure also requires that it be assigned a measure life. RCM savings measures are assigned a three-year measure life, shorter than a capital improvement but consistent with other operational and maintenance measures and observations and analysis of post RCM program customer data.

Another distinction of RCM savings calculation methodology is that it is based on actual metered data rather than a calculated estimate. An annual true-up process is completed on each customer portfolio which accounts for area changes in the portfolio, weather effects, and installation of efficiency measures that would have reduced the consumption irrespective of the influence of the RCM. This method has also provides solid verification that installed measures are working as planned. The following steps are followed for the annual true-up process:

- Request updated Utility Manager Database from customer
- Verify that energy consumption data is complete
- Analyze energy use, area changes, and weather effects in base year (previous 12-month period) and comparison year using regression analysis
- Determine gross (corrected) annual savings
- Collect savings data from energy conservation measures (ECM's) completed by the customer in the comparison year
- Subtract energy savings already claimed for ECM's and other RCM program measures previously claimed
- Calculate annual documented Net savings

Value Added Services

There are a number of support activities that PSE also provides to each RCM customer as a part of their RCM agreement. While these program elements do not relate to a cash incentive, they are specific project-oriented tasks that relate to a value of service that can be quantified for each customer based on their organization profile. A description of each major service is provided below.

Utility Manager Database Set-Up

PSE staff will work with the customer to develop a comprehensive list of the customer's sites and PSE gas and electric accounts. PSE will associate all accounts and meters to the correct facility and complete the initial setup of Utility Manager database.

Historical PSE Billing Data

PSE staff will pull historical billing histories for the customer's PSE accounts and will populate the initial UM database with this information. Once the database has been populated with PSE data, the file will be transferred to the customer for their completion and ongoing maintenance.

Monthly PSE Data Downloads

Once the customer has possession of their UM database, PSE will begin the process of sending monthly updates on PSE billing data. These files are transferred to the customer via email in a format that is ready to import into their Utility Manager database. The files are meant for energy management purposes and are not intended to facilitate payment of any PSE invoice.

Energy Interval Service

The PSE Energy Interval Service offering is an Internet-based energy information and management tool that helps customers see and interpret utility-use patterns using interval data from gas and electric revenue meters. The system provides timely access to meter and cost data any time of day, seven days a week over a secured website. The value of this service is that customer can identify how much, how often, and when power or gas is used at given intervals of time. Data is typically available for viewing the following day.

Annual Savings Analysis

PSE will work with the customer to calculate O&M savings after each 12-month period of their RCM contract. Adjustments will be made for major capital improvements, change in use, weather, and other factors that may have had a significant impact to facility energy use.

Energy Center

An on-line technical support and materials center has been developed to help RCMs with their Utility Manager Software and program implementation. Each customer with an active RCM agreement will be provided with a username and password for access to this secure website. The site hosts all PSE program materials that have been developed for implementation and reference and allows for RCMs to communicate with each other in a chat room like setting. To view the public portion of the Energy Center, visit http://psetech.newenergytech.net/.

Three for Free Audits

For each RCM FTE, PSE will provide an initial three (3) facility audits to jump-start the customer on the process of completing their Facility Action Plans. The site visits will act as both training and technical assistance such that through this process, and along with the RCM training series, each RCM will gain the knowledge necessary to perform their own detailed facility audits. During these first walkthroughs, the RCM will learn how to gather the information necessary to complete the second deliverable of the Start up Grant, their Facility Action Plans. The number of site visits will be prorated for based on FTE

RCM Training Series

To additionally support customer's RCM program efforts, PSE has designed a series of courses to educate staff about building energy and resource consuming systems and the tools that will help them be effective in their role as a Resource Conservation Manager. There are eight (8)

core classes offered and a number of advanced and specialized courses. The following is a list of courses currently offered for RCM support: A list of courses and course summaries are provided below.

- Introduction to Resource Conservation Management:
- Provides an overview of resource savings opportunities, implementation strategies, and assists with development of the Resource Management Plan
- Fundamentals of Energy Accounting: Energy Accounting is a one day course that provides skills that allow participants to assess building energy use by tracking and graphing energy consumption.
- Introduction to Utility Manager Pro: A one-day class that provides an overview of the key components of setting up and using Utility Manager Pro.
- Building Systems Overview: Provides an overview of energy usage in institutional buildings. Topics include an overview of mechanical systems in commercial building, maintenance, operation, comfort, and indoor air quality.
- Lighting Fundamentals: Teaches fundamentals of lighting technologies and applications. At the end of the course, participants should have the knowledge to improve lighting operations within their facilities.
- Energy Auditing for RCMs: Provides fundamentals for conducting preliminary energy audits. Participants will learn how to identify conservation opportunities and estimate energy savings.
- Water Saving Opportunities in Commercial Facilities: Discusses topics such as water and wastewater billing, indoor and outdoor water uses, and appropriate consumption level, and conservation opportunities.
- Solid Waste Management: Provides the information and tools needed to effectively assess and manage solid waste and establish successful recycling programs.
- Energy Management for Maintenance and Custodial Staff:
 - Provide tips to help maintenance and custodial staff recognize actions they can take to improve the efficiency of building operations.
- Energy Interval Service: Introduction to PSE's web-based Energy Interval Service. This seminar will help RCMs and HVAC technicians more effectively analyze electric and gas interval data to evaluate performance of buildings and develop action items leading to more effective management of mechanical and lighting systems.

Conclusions

With the recent focus on greenhouse gas emissions, utilities can play a significant role in helping customers organize to address these issues while achieving utility energy conservation targets. The Resource Conservation Manager program provides a solid platform that allows customers to take immediate action to reduce energy use by 10 to 15% and can be expanded to meet broader goals and sustainability initiatives.

Now in its seventh year of operation, the program is helping more than 50 organizations manage over 75 million square feet of commercial and institutional space. Program participants include school districts, community colleges, hospitals, state and local government agencies, military bases, retail stores, grocery market chains, large corporate campuses, and property management firms.

Energy and resource accounting is the core of the program, helping customers collect and organize resource data needed to determine their carbon footprint, benchmark efficiency of their facilities, and track progress of their efforts. Using the resource accounting tools, the RCM program can be used to generate measurable savings for the utility as well as provide validation of estimated savings of installed capital measures.

Puget Sound Energy's Resource Conservation Management Staff is continuously trying to improve program offerings by better understanding both the needs of program participants and barriers that participating organizations face when implementing a program in their own facilities. Although the development and implementation of an active RCM program can be quite complex, the benefits are very rewarding.

We certainly hope this overview provides an insight into the tools that assist in designing an RCM program for your utility, organization, or school district. Please feel free to visit our website at <u>www.pse.com</u> for additional information on the program.