Regional Resource Efficiency Program for Public Buildings

Gwen Haynes, Washington State Department of General Administration
Debby Dodds and Carolyn Dasher, Portland Energy Conservation, Inc.

ABSTRACT

School districts face unique challenges in developing and implementing long-term, sustainable resource efficiency programs. Some of the issues and barriers facing schools are:

- Districts don't recognize their property management role
- Short tenures of school superintendents and board members hinder long-term program support
- State policies rarely encourage school energy efficiency
- Accessing sufficient start-up funds is difficult
- Districts lack information on energy efficiency
- Educational and facilities programs do not coordinate their efforts
- School districts do not believe they can save money through avoided costs

A regional team is developing an enhanced resource efficiency infrastructure for schools, which can be expanded to serve other public buildings. The team is working to expand the set of tools, information and educational resources available to the Northwest Resource Conservation Manager network in Washington, Idaho and Oregon. Thirty-nine districts have participated in the Resource Conservation Management (RCM) Program since 1995. Our goal is to expand the existing program into a self-sustaining program that demonstrates how school districts can save their limited dollar resources through improved operation and maintenance (O&M) practices, reduced energy use and better resource efficiencies. The barriers above will be addressed with practical action plans, appropriate management techniques, technical tools, and facilitated access to resources and service providers. This program will eventually be expanded to include all public buildings in the region.

This paper describes the evolution of resource efficiency activities in Northwest schools, lessons learned, and strategies for ensuring a strong, integrated, regional network, peer exchange, and a clearinghouse of ideas and technical information.

Introduction

Public sector organizations and school districts face a unique set of challenges to developing and implementing long-term, sustainable resource efficiency programs. Some of the issues and barriers facing schools are:

- School districts don't recognize themselves as property managers
- Short tenures of school superintendents and board members hinder long-term program support

- State policies often do not encourage school energy efficiency
- Finding sufficient start-up funds is difficult
- Districts lack information on energy efficiency
- Educational and facilities programs do not coordinate their efforts
- School districts do not believe they can save money through avoided costs

A team of representatives in the Northwest is working to design and implement a Regional Resource Efficiency Program. The team's goal is to design and implement a self-sustaining program that demonstrates how public building owners and operators can save their limited dollars through improved operation and maintenance practices, reduced energy use and improved resource efficiencies. A successful program must be designed to meet the needs of each barrier listed above with practical action plans, appropriate management and technical tools, and access to resources.

This regional effort is modeled after the popular Washington State Resource Conservation Management Program. This program consists of Resource Conservation Managers employed by school districts or utilities whose primary purpose is to enhance the energy and resource efficiency of their facilities. Based on their focused attention, Resource Conservation Managers save their districts an estimated ten percent of their total utility costs. This savings goes right back into the program and is shared with the schools that are contributing to the effort.

The Washington State model strives to facilitate strong communications among the Resource Conservation Managers through peer exchange and by providing access to technical support.

What is Resource Conservation Management?

Resource conservation management is a coordinated effort to manage the resources consumed, services used, and waste generated at facilities. Efficiency and cost reduction with care for the environment are the goals of an RCM Program. It is also a management tool that provides more control over the operating costs of a facility by reducing costs, increasing efficiency, and promoting environmentally friendly operations.

An RCM program involves careful tracking of resources and attention to operational efficiency. The program focuses on occupant comfort, cost-effectiveness and assurance that equipment is used only when needed. Operational savings are gained through improved organization, data analysis, and communication.

With a comprehensive RCM program in place, a facility can expect to see quantifiable results in the first one to six months. Most RCM programs achieve 10 to 15 percent savings on utility bills within the first year – depending on the number of facilities involved and level of management commitment.

RCM strategies have been used in industry and large corporations for many years. As markets become more competitive and public-sector budgets shrink, RCM-like programs are cropping up in many organizations – both large and small.

What are the Benefits of an RCM Program?

Resource Conservation Management can offer an organization numerous benefits, both in the short- and long-term. A successful RCM Program will:

Reduce energy, water and solid waste costs through low- or no-cost measures. The RCM program will save money for the organization. Operational changes and low-cost projects resulting from resource conservation management have proven to reduce resource costs 10 to 15 percent. Some of the funds that once went to pay for garbage disposal, energy, water and sewer can be redirected to deferred maintenance projects, capital projects, efficiency incentive programs and other needs.

Track resource use, costs, and revenues promptly. A primary responsibility of the Resource Conservation Manager is to itemize and track resource use in all aspects of the organization. Using resource accounting software, the Resource Conservation Manager can analyze billing data to identify billing errors, select better rate schedules, track down inefficient equipment, locate hidden water leaks and institute efficient operational procedures. Once established, resource accounting can also be used to set savings goals for the organization and forecast resource budgets.

Stimulate resource efficiency interest among staff and occupants. Efficiency thrives on good communication. Resource Conservation Managers use proven in-house communication and education strategies to heighten efficiency awareness among operations staff, management and occupants.

Identify cost-effective and efficient capital projects. Through resource tracking, facility audits and a good understanding of each facility's operations, a Resource Conservation Manager can help to identify cost-effective capital projects. The RCM can also simplify budget forecasting because anticipated savings can be calculated in advance and documented during post-project operations.

Prepare for purchasing electricity and gas in the deregulated energy market. Low-cost deregulated purchases of gas and electricity will be options for organizations that understand their operating characteristics and load demands. Resource tracking and RCM-directed efficiency efforts will help position the organization to take advantage of the economies of the deregulated energy market.

Demonstrate responsible resource use to the public. When budgets get tight an RCM program can demonstrate to its constituents examples of how an organization is carefully and successfully managing resources efficiently. Resource tracking will document the progress of the efficiency efforts. The RCM program can show how the improvements benefit the general public, too.

Leverage human resources. Utilities, local government services, state government and federal agencies all have tools, services, and, in some cases, funding that can be used in RCM program efforts.

What is Required for an Effective RCM Program?

As RCM programs have evolved, some key elements for success have revealed themselves. The applicability of these elements varies according to the need and culture of the particular organization. The following should be considered flexible yet significant:

Common Characteristics of a Successful RCM Program

- Strong policy outlining RCM goals and responsibilities and highlighting management commitment
- Qualified person, properly equipped to act as the Resource Conservation Manager
- An administrator or manager who helps navigate the RCM program through policy/management channels – a "champion" for the program
- Buy-in and support by facilities and maintenance staff and occupants
- A recognition program with awards for occupants and staff
- Patience by all – to allow the work to be done correctly and consistently

What is the Role of the Resource Conservation Manager?

An RCM program needs support and cooperation from staff at all levels. But its initial development and implementation requires the dedicated efforts of one person or a small team. The most effective RCM programs typically are initiated and implemented by a single leader known as the Resource Conservation Manager.

A Resource Conservation Manager can be a retired principal or superintendent, a teacher, or a private party. The position can be funded by the school district directly, or through a partnership with the local utility.

During the first months of a program the Resource Conservation Manager will conduct and organize data, conduct surveys, make recommendations, draft reports, set schedules, and communicate to all levels of the organization. Successful programs hinge on active participation from management, other staff, building operators and occupants. All of these people will be involved in carrying out the program's recommendations.

Management Commitment

The willingness of management to invest in and maintain an RCM program is vital to its success. Commitment may be shown in a policy statement and implementation plan supporting the goals and strategies for the program. The policy should be combined with a management "champion" who shepherds the Resource Conservation Manager's efforts through administrative channels.

An RCM program strives to:

- Reduce the waste of energy and water through low- or no-cost efforts
- Identify billing errors
- Promote recycling and composting

- Modify purchasing practices to reduce garbage
- Track resource consumption and revenues
- Identify and implement cost-effective capital projects
- Monitor efficient activities and communicate program status
- Recognize and reward effective participants

What are the Key Elements of a Successful RCM Program?

Resource conservation management is not new. Successful RCM programs have been implemented in schools throughout Oregon and Washington with new programs starting in Idaho, California, and British Columbia. Similar efforts have also been developed in other states such as Texas, Pennsylvania, and Ohio.

These programs and their guidebooks have a common set of criteria, which are considered critical to the success of an RCM Program.

A New RCM Program Consists of the Following Tasks:

- Identify the Resource Conservation Manager
- Build top-level administrative support
- Organize and analyze resource consumption and services data (energy, water, garbage, sewer, recyclables)
- Cultivate the support of maintenance staff
- Develop RCM teams within individual facilities and at the organizational management level
- Set clear goals
- Conduct audits and surveys of building resource consumption and use
- Provide all staff with resource conservation awareness training
- Support "idea champions" at all levels
- Provide incentives and recognition
- Make the program visible
- Monitor program effectiveness and communicate progress

How Long Does it Take to Implement an RCM Program?

Resource conservation management is an on-going process. But the bulk of the work occurs during the startup phase, which normally lasts one to three years. This is the period when policies, guidelines, and components of the program become a part of day-to-day operations. Capital projects are also identified and scheduled for implementation during this phase.

After implementation is complete, an RCM program can move into a sustained program mode. Although this stage requires considerably less effort, it is critical for the long-term benefits of the program.

Key Elements of a Sustained RCM Program:

- Consistent tracking and analysis of resource consumption and services
- Monitoring deregulated energy purchases and facility operations
- Monthly/quarterly monitoring of program components (recycling efforts and facility surveys)
- Semi-annual or annual awareness training for facility operators and occupants
- Promotion and communication of program status (newsletters, bulletin boards, presentations, reports to facility operators and administrators)
- Recognition of efforts (awards, certificates of achievement, acknowledgement in newsletters)

Without this minimum level of effort, the efficiencies gained by an RCM program could soon be lost. Changes in key personnel as well as reorganization or changes in management can also greatly impact an RCM program.

What Lessons Have Been Learned From Past Experiences?

Programs similar to the RCM program currently operated by the Washington State Department of General Administration have come and gone over time. Although this program is only six years old, it continues to gain momentum. There are many reasons for this steady growth many of which are based on lessons learned from past experiences both positive and negative.

In the 1970's, energy conservation programs focused on turning down thermostats and constructing airtight buildings. Not only were the occupants uncomfortable they were getting sick from lack of fresh air and they were quickly installing mini-space heaters under their desks to stay warm.

The 1980's brought about the U.S. Department of Energy's (DOE's) Institutional Conservation Program and the Bonneville Power Administration's Institutional Buildings Program. These programs provided funding for energy audits, technical studies and retrofit improvements. A lot of these studies didn't make it off the shelf. Although energy improvements were installed many building operators did not know how to operate the high tech improvements such as energy management control systems and soon many of the control systems were disconnected and often left running 24 hours a day.

Also in the 1980's the Washington State Energy Office (WSEO) created Energy Networks. These were designed to bring local building operators together regardless of their employer. School, city, county and private businesses met to get to know each other, learn from and support each other. The idea was to get these groups started and then "let them take the ball and run with it." The WSEO took the lead in getting the groups off the ground, often involving the local utility. WSEO scheduled the quarterly meetings, facilitated meetings, and provided follow up as needed. Once the groups were up and running, WSEO phased out. Even though they were very popular and well attended, no one had the time to organize the regular meetings and one by one these Energy Networks faded away.

In the 1990's the Environmental Movement took off. Global warming became a hot issue. Budgets were cut, classrooms were overcrowded and the first RCM pilot project got underway in Oregon.

The Oregon Pilot Project

In 1992 North American Energy Services Company initiated a two-year RCM Pilot Project. Seven school districts participated in this initial project. The concept was to help schools achieve energy and other resource savings. There were 121 schools in seven school districts, containing seven million square feet of building space. Results of the project showed ten to fifteen percent reductions in school energy and resource costs, resulting in $1.2 million in savings.

Washington State Experiences

In 1994, based on Oregon's success, WSEO followed their lead. After a few fits and starts, in 1995 there were seven school districts in Washington State with active Resource Conservation Management programs. Meanwhile, in Oregon the two-year pilot program had come to an end and with no support, the participating organizations slowly stopped implementing the efficiencies gained during the pilot. Savings decreased, energy, water and garbage costs increased - back to pre-pilot project levels.

The combined experience with the Energy Networks and the results of the pre-and post Oregon two-year pilot project led the Washington State Department of General Administration to believe the secret to an on-going successful RCM program was the behind the scenes support. This is one of the secrets to the success of the current RCM program.

Today there are over twenty-five school districts in Washington State with active RCM programs as well as RCMs at one university, a military installation, and seven state and local governments. In addition, RCMs are springing up in Idaho, new RCMs in Oregon, and RCMs in British Columbia as well as three new RCMs in California.

For the past four years, GA has developed a strong leadership role in this effort. GA holds quarterly RCM Network meetings throughout the state where attendance is reaching 40. GA also hosts an electronic RCM list serve. This is accessible by all active RCMs and is designed to provide an avenue for RCMs to communicate with each other on a daily basis. Issues such as milk carton recycling, indoor air quality, computer shutdown policies, and rate increases are addressed by fellow RCMs or by technical experts within GA or a utility rep or other expert. These support mechanisms have been extremely valuable to the RCMs by providing peer support and additional technical expertise to help them implement their programs.

Where Do We Go From Here?

While current RCMs find value in the existing program, it is difficult to meet all of their needs and accomplish all their requests for support. Today, GA is working closely with a group of interested organizations in the Northwest (including the Oregon Office of Energy, the Idaho Department of Water Resources, and Portland Energy Conservation, Inc.) to create a regional RCM program to enhance the RCM infrastructure. The overall goal of this partnership is to design and implement a self-sustaining regional program that demonstrates to public building owners and operators how they can save their limited dollar resources

through improved operation and maintenance practices, reduced energy use and better resource efficiency.

Regional RCM Program

The expanded Regional RCM Program is designed to meet these needs and stems from the growth of resource efficiency activities in Northwest schools. Resource Conservation Managers and other district personnel responsible for improving resource efficiency appreciate the current program offerings but need more organized tools and resources specifically dedicated to their efforts. They have expressed the need for a "one-stop shopping center" to access program and training information and tools.

These professionals have already formed a strong network and need more direct avenues to access relevant tools and resources. In addition, because some RCMs focus on technical strategies (energy measures, controls, performance contracting), some focus on numbers (data collection), and others are more focused on behavioral strategies, the region needs a flexible, modular program that meets a variety of user needs. The regional initiative will build upon the work previously developed by each of the state partners, incorporate tools from the successful regional Resource Conservation Manager program, and develop new tools and regional educational information.

The expanded program will also integrate resources available from such regional programs as the Northwest Energy Education Institute and the Building Operator Certification program as well as national programs such as DOE's Rebuild America (including its Energy Smart Schools campaign) and EPA's Tools for Schools. Although the program initially targets schools, municipal governments will be able to access its services as well.

Regional Program Components

The Regional Resource Efficiency Program will develop and implement the following program components:

Toolkit. The program Toolkit will contain informational publications and forms assembled specifically for program participants. The Toolkit includes sample procurement Request for Information, Request for Qualifications and contracts, sample policy language for resource-efficiency practices, technical tips for RCMs, strategies for gaining administrative buy-in, sample reports, and program data collection forms. Some of these resources are already provided in the Resource Conservation Management Guidebook. Some still need to be developed.

Catalog of Products. This on-line catalog will include equipment, tools, materials, software and other items that participants could purchase and use to reduce operating costs and environmental impact. Each product listed will be annotated with a description approved by the program.

Services/Providers. The program will provide an on-line list of people and firms to hire to help reduce operating costs and environmental impacts. Each firm will complete a standard form to provide information for their listing. Links to company websites are provided.

Mechanism for tracking/sharing savings. RCMs are as interested as the program partners in accessing information on program savings. The program will collect, aggregate and compare data collected on specific types of programs. Districts that complete the forms and submit their savings information will have access to aggregate data and analysis.

Enhanced RCM networking. Regional RCMs already enjoy two networking opportunities: Quarterly meetings and the regional RCM list serve. The program will provide additional networking opportunities via an on-line forum. This peer-to-peer interaction allows RCMs to gain valuable, tried-and-true information about resource efficiency strategies.

Publications. The program staff will research and compile a list of references available free or for purchase. This list will be organized by subject with information on how to access each publication and a brief description of it contents and focus. Participants will be able to provide and read on-line reviews of the publications.

Topical information and resources. RCMs are aware that a vast amount of information on resource efficiency topics is currently available. However, they lack time to gather and sift this information to select the relevant pieces for their districts. The program staff will collect, categorize and annotate information on subjects of interest to RCMs, including such topics as indoor air quality, student energy audits, classroom curricula, recycling and waste disposal strategies, existing energy and water efficiency programs.

Newsletter. This downloadable periodical may also be mailed. It will be published at least quarterly in conjunction with the quarterly RCM meetings. The newsletter will contain the latest resource-efficiency information about and for regional readers.

Case studies. Program participants can submit their success stories using an on-line template. The templates allow the collection of standardized data, so that participants can compare results across projects.

Training. At a minimum, the program will provide participants with a calendar of regional courses and seminars that cover resource-efficiency topics. Depending on need and demand, the program may also develop and offer seminars on specific resource efficiency topics and possibly a regional conference.

Regional Program Delivery

The program delivery vehicle for the Regional Resource Efficiency Program will be the Resource Efficiency Information Center website. This site, which will be up and running within the next two years, will provide an on-line avenue for Resource Conservation Managers to access current resources in a number of subject areas. It also provides a forum where these professionals can exchange ideas and discuss future needs. All of the program

components described above will be accessible via the website. Over time the tools and information placed on the site will evolve to meet these future needs.

This website will provide regional RCMs with a "one-stop shopping center" for their program needs. It will allow the program to provide RCMs with existing information, already sorted and categorized. It will also allow RCMs to communicate with one another about various resource-efficiency strategies and problems. In addition to serving RCMs, the site will also benefit service providers who are interested in promoting their services to this market niche.

The site will be staffed full-time with a program team that continually researches and updates site information to keep it relevant and who respond to user requests for information. The manager of this program team is familiar with the RCM program and with program objectives and needs.

At a minimum the site will include information on the following resource efficiency topics:

- Obtaining school administrative buy-in of efficiency programs
- Identifying and prioritizing training for building operators
- Identifying operation and maintenance procedures such as holiday shutdown and daily operational strategies that can effectively save dollars
- Identifying and implementing behavioral programs for building occupants and staff
- Identifying and implementing curricula programs for school students and teachers
- Conducting student energy audits and other methods for involving students in resource efficiency
- Addressing indoor air quality issues
- Identifying financing mechanisms for energy conservation measures
- Obtaining ongoing support for resource efficiency in the event that the RCM leaves the district and is not replaced
- Documenting savings and benefits
- Organized links to other relevant websites with annotated descriptions of their focus and content

Benefits to Everyone

The Washington State Department of General Administration and its partners in this effort are very excited about this endeavor. Not only will it enhance the resources available to school districts and municipalities with existing Resource Conservation Managers in the Northwest it will greatly benefit new districts as they begin to realize the benefits of resource conservation management.

Schools and communities throughout the country share many of the same issues and can all benefit from lessons learned from one another. This Regional Resource Efficiency Program provides the mechanism to support this exchange of ideas and information. Because the emphasis of the Regional Resource Efficiency Program is centered around a highly interactive website, the information will be easily accessible to school districts and municipalities throughout the country and the world.