

Western's monthly energy efficiency and renewable energy newsletter dedicated to customer activities and sharing information on energy services.

Whole Town Audits jumpstart community energy-efficiency programs

What is good for the building is good for the town—in this case, comprehensive energy audits to show municipalities where they can reduce energy consumption. That's the idea behind a project the Iowa Association of Municipal Utilities (IAMU) is conducting with 17 small towns.

The Whole Town Audit is evaluating each community's energy use as the first step toward developing a plan for future energy and demand reduction. American Public Power Association's (APPA) Demonstration of Energy-efficient Developments Program gave IAMU a grant last year to audit three towns. That funding helped IAMU get a grant from the Iowa Office of Energy Independence to expand the project to more municipalities. "Some of the utilities contributed matching funding, some of which came from Energy Efficiency and Conservation Block Grants (EECBG)," said IAMU Energy Services Specialist Jonathan Roberts. "There was a lot of interest from our members."

One reason for the enthusiastic response may be a new Iowa law mandating utilities to have energy-efficiency plans to reduce energy use during the next three years. Power providers, both public and privately-owned, must set energy savings goals, develop implementation plans, create a budget for energy efficiency and track energy savings. "This is new territory for many smaller municipal utilities," Roberts noted.

Small-town issues

Common barriers to energy-efficiency plans can be even more difficult to overcome in a small community. The nearest trade allies may be located miles away in larger towns, the higher percentage of low- and fixed-income residents may not be able to afford the first costs of efficiency upgrades. With fewer housing starts and fewer industries, small towns miss out on the greater energy savings that come from programs for new construction and high-volume industrial users.

In such settings, community-level energy-efficiency projects promise the most value to taxpayers. The audits are focusing on infrastructure improvements where the energy-saving potential is often overlooked, such as municipal water and wastewater treatment, street lighting and transportation.

The project began with IAMU meeting with town officials to collect



IAMU Energy Services Specialist Jonathan Roberts inspects a heating unit at a school during a Whole Town Audit. School operations, including energy bills, are a big part of small town budgets. (Photo by Iowa Municipal Utility Association)

baseline data and identify limiting factors for implementing energy-efficiency programs. Information included energy use in municipal operations, number and types of residences and businesses and their energy-use index based on square footage.

Once the audits are complete, communities will receive a report with results and recommendations. IAMU will work with participants to design energy-efficiency programs that meet their specific needs and overcome barriers uncovered in the audits. Roberts

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Controlled water heaters, ETS heaters may ‘store’ wind power

While the power industry waits for that silver bullet—the battery that will store electricity from intermittent resources—Steffes Corp. and Dairyland Power Cooperative want to see if a familiar demand-response tool might be able to do the same thing.

As far back as the 1970s, utilities put radio-controlled signal devices or other controls on electric water heaters and electric thermal storage (ETS) heaters so the units could be cycled off during peak demand hours. Consumers who allow power providers to control their heaters often receive lower time-of-use or off-peak electric rates for using cheaper off-peak power to heat water and store heat.

This basic program design provides effective load control for utilities across the country, but Jim Deichart, manager for Steffes’s off-peak heating products division, believes that it can do more. “Renewable integration is creating new opportunities for water and ETS space heating,” he said. “Where you have variable generation resources, you have the need for storage. ETS heating systems are a

proven, low-cost system for storing energy and can serve this purpose very well.”

New technology

With advances in computer and Internet technologies, control systems have grown more sophisticated, offering more value to utilities. The software behind the new Steffes grid-interactive renewable water heater control creates “smart charging” capability. The utility is able to turn the water heater charge rate up or down quickly as needed. The control’s quick response is well suited to integrating wind and solar resources, which ramp up and down very quickly.

“Absorbing green power with non-fuel consuming equipment like ETS is much more efficient and cost effective than trying to regulate for variability with your base-load resource,” explained Ed West, Dairyland’s director of information service.

The electric water heater becomes a “thermal battery,” by storing renewable generation as heat when the wind is blowing. Water heated during peak wind generation is available for consumers to use when they need it.

The new Steffes controls also bring more precision to “old-fashioned” load shaping, making the most of off-peak, as well as renewable generation. “Over the years, the equipment has refined tremendously, and we’ve been able to increase our value with how we manipulate water heaters,” West said.



For the demonstration, Dairyland Power tapped a member cooperative that had already installed Cannon (right) automated meter readers on residential customers. Cannon wanted to learn if the Steffes control unit (left) could communicate with its AMR technology. (Photo by Dairyland Power Cooperative)

Tailor-made for utility

For a co-op with 38 MW of wind power and a load management program that saves more than 150 MW annually, using controlled electric water heaters to “store” wind power was a logical next step. In fact, Dairyland Power was aware of the project before Steffes announced it, recalled West. “Dairyland treats water heater control as an operational tool for our dispatchers, so we’ve been playing with ideas like this one for years,” he said.

One of Dairyland’s member co-ops offered the perfect set-up for the demonstration. “The member was surrounded by wind and had already deployed Cannon automated meter reading (AMR) devices on residences,” said West. “Cannon had expressed interest in testing its equipment for compatibility with Steffes equipment.”

The pilot began this spring with 10 participants. Over the next year, Dairyland hopes to identify the value proposition for the utility and figure out the best way to roll out the program on a broad scale. “We expect the pilot to show that using logic-con-

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Energy Services Bulletin

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Water heaters

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trolled water heaters to store wind power will not only save energy, but make money for the utility and its members as well,” West said.

Field testing space heaters

Steffes has filed an application to partner with Bonneville Power Administration (BPA) on a similar demonstration later this year. Some BPA member utilities will test controlled ETS heaters, as well as electric water heaters. “The ETS heaters have

the ability to be controlled similar to water heaters, and are able to store significant amounts of energy,” said Deichert, “and it is very cost-effective for consumers.”

Deichert referred to a Steffes report, “Wind Assisted Heating,” that compared several systems to ETS heaters and air-source heat pump/ETS combinations heating with off-peak energy or electricity generated by wind. When looking at climate temperature for Eagle, Colo., as an example, there is impressive cost savings and reduced energy consumption, especially compared

with propane or fuel oil.

Power providers, especially those in regions with winter peaks and strong wind resources, will be looking forward to seeing the results from the Dairyland and BPA demonstrations. “The project will give us a tremendous amount of information that we plan to release as it goes along,” West observed. “Wind power and controlled electric heating are well established technologies, but combining them like this could be transformative for utilities,” he added. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/jul/jul102.htm

Whole Town Audits

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said that IAMU intends the project to produce transferable program models that other small municipal utility communities can replicate.

Auditing begins

The first audits indicated that IAMU’s project could have a big impact on the communities. School operations, for example, are a big part of the municipal budgets in Stratford and Lineville, the first towns to be audited, and utility bills are a big part of the school budgets. “One school was using more than 23,000 kW to light its gym with 31 old 750-kW incandescent bulbs,” Roberts recalled. “Right there is an easy, low-cost way to reduce consumption.”

There is still plenty of “low-hanging fruit” to be picked in small towns as Ruth Groth, Anthon city clerk,

readily admitted. “We’re just getting our feet wet. The Whole Town Audit is a good way for us to learn how to improve our municipal energy efficiency and pass those measures on to our residents,” she said.

Outreach included

The towns will share what they learn at community events the grant requires them to hold. Anthon’s event, scheduled during its annual Kids’ Day celebration May 28, attracted about 100 people, who enjoyed grilled hotdogs and picked up free compact fluorescent lights (CFLs).

Groth said that the lighting displays, including one borrowed from Western’s Equipment Loan Program, drew a lot of attention. The displays showed how much power different types of lamps pulled, and citizens took turns pedaling a bicycle generator to power a conventional

light. “The kids particularly enjoyed that one,” said Groth. “When they found out how hard they had to pedal to turn on the light, they realized why their parents were always telling them to turn off lights around the house.”

Many of the parents expressed surprise, too, at the difference in energy use between CFLs and incandescent bulbs, she added. “It was a real eye-opener for them.”

Other Whole Town Audit participants with energy events scheduled include Western Iowa customers Breda on June 12 and Glidden on wAug. 7. Woodbine is planning an event to be the first week in October for Public Power week. Anthon expects to do another event with funding from an EECBG that also includes a community education component. “We are hoping to build on what we’ve learned about energy efficiency next year,” said Groth. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/jul/jul101.htm

Sierra Nevada Region promotes pollution prevention on 40th Earth Day

Employees in Western's Sierra Nevada Region (SNR) Natural Resources department used the 40th anniversary of Earth Day to educate coworkers about personal actions they can take to make a difference, while completing their Pollution Prevention Awareness training.

Like all Federal agencies, Western must comply with several directives to reduce waste, manage hazardous material responsibly and use energy efficiently. These are practices that make sense economically as well as environmentally, and protecting the environment is every Western employee's responsibility. The annual Pollution Prevention Awareness training helps to reinforce that commitment.

Unfortunately, people don't always take their best work habits home with them, and we at Western are no different. So Earth Day, April 22, presented an excellent opportunity to educate employees about ways to save energy and water, and to reduce, reuse and recycle off the job as well as on. One employee likened the event to a health fair for the earth.

Western customers exhibit

Attendees strolled through a variety of booths getting an education in sustainability that went beyond the usual Pollution Prevention Awareness Training.

Role reversal occurred when Western customers Roseville Utilities and Sacramento Municipal Utility District participated in the event. Western employees who live

in the utilities' service territory learned about the residential rebate programs and services their power providers offered. Jim Mills, SMUD Energy Efficiency program manager for home performance and equipment efficiency, answered questions about home efficiency rebates and other programs available to SMUD customers. Roseville Community Relations Coordinator Matthew Davis handed out reusable cloth shopping bags and information about residential rebates the municipal utility offers.

Employees learned where to drop off household hazardous and universal waste, and where to recycle in their own neighborhoods. Sacramento Tree Foundation told attendees how to sign up for free shade trees. Western's own Natural Resources Department booth gave out a bookmark about sustainability, a pocket "green" procurement guide for employees who purchase products for work and a plantable, heart-shaped paper with wild flower seeds embedded in it. Other organizations hosting booths included City of Folsom Hazardous Materials Division and Water Department, Placer County Water Agency, Secure Record Management and RecycleBank.

In addition to the booth hall, participants listened to several speakers present information about residential rebates for water and



Environmental Compliance Specialist Mike Rendon at Western's SNR office recycles an inefficient old fluorescent tube light. (Photo by Lavender Lee, Sierra Nevada Region)

power, and ways to reduce energy and water consumption. "The goal was to meet annual training requirements for pollution prevention, while providing employees with tips on how to be sustainable at both work and at home," explained SNR Environmental Protection Specialist Lavender Lee, who organized the event.

Bring us your waste

Employees not only learned about pollution prevention at the event, they got to practice it, too. The City of Folsom Hazardous Materials Division set up an outside collection point for universal waste, materials that can't be discarded in landfills because they contain hazardous substances. Participants

See POLLUTION PREVENTION page 8



Question:

Is training available for utility staff members who “sell” energy-efficiency projects to commercial and industrial customers? Topics might include the return-on-investment (ROI) criteria CEOs use to evaluate potential projects.

Answer:

Before selecting a training course, evaluate your current program to determine what is and isn't working. If your current program is not meeting your expectations for the program, consider why not. Here are some questions to ask:

- Do we know our market?
- Do we have good relationships with our customers?
- Are people in our service area generally aware of our energy-efficiency programs? If not, why?
- Are we talking with the right people?
- Are we talking with people at the right time? Are energy-efficiency measures sometimes being suggested too late in the project to be implemented? Could we anticipate projects more proactively?
- Are people resistant to talk with us? If so, why?
- If we are talking with the right people at the right time, and our proposals are still not getting accepted, is it something in our approach?

- Is our analysis thorough and sound, and presented in an understandable way?

You will most likely need customized training for what you have in mind. If you can identify specific areas of weakness ahead of time, you can target those weaknesses to make the training more effective.

Cost analysis tools

If, as you mentioned, you are looking for fairly sophisticated financial tools to present the anticipated returns in a clear manner, the Decision Tools for Industry CD, available for free from the U.S. DOE Industrial Technologies Program, may be for you. For example, MotorMaster+ software on this CD includes a complete analysis module that can calculate the life-cycle cost, ROI, net present value and, of course, payback for virtually any energy-efficiency motor project. Energy Experts' Gil McCoy, who designed the MotorMaster+ software, would be willing to develop a workshop for you on this powerful tool.

Rental properties

Tenant-occupied commercial property has traditionally been a challenging sector for utilities to penetrate with significant energy-efficiency measures (programs).

Property managers often have the capital for building improvements, but are typically most interested in reducing their capital and operating costs to maximize

profits. In buildings where tenants are responsible for the utility bills, property owners have little incentive to conserve. Capital improvements that improve the building's appearance or provide convenience for the tenants are often perceived as having higher value than energy-efficiency measures. On the other hand, tenants may be paying utility costs, but they often have very little capital. Also, tenants on short-term leases won't realize a benefit from energy-efficiency measures with long paybacks.

The state of California designed the successful Energy Savers Program in 2002 specifically to serve this “hard-to-reach” market. The Energy Alliance Association (TEEA) runs the program today. These small commercial customers (less than 500 kW) outside major metropolitan areas include both owner-occupied and tenant-occupied buildings. Matt Brost, who is in charge of this program at SBEA, feels it has been particularly successful with customers who are in medium- to long-term leases for their property.

The following steps for successfully replicating the program are from a PowerPoint presentation Brost gave at an American Council for an Energy Efficient Economy symposium. Energy Experts' comments and clarifications are in parentheses:

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Energy experts

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- **Low administrative and overhead costs.**
(54 percent of the program budget goes out in incentives.)
- **Develop network of contractors based on price and quality of service.**
(The program used a list of pre-approved contractors and paid the incentives directly to the contractors. This greatly simplified the process and reduced the risk for customers.)
- **Feet on the street.**
(Most contacts are made face-to-face via cold calls from college students to the target markets. They qualified customers based on their interest and length of the lease [mostly long-term leases]. Personal contact was important to the program's success, according to Brost, who feels that it is about relationship building.)
- **Develop outreach networks.**
(Again, relationship-building is the key.)
- **Coordinate with local government.**
(A different, but also important, relationship.)
- **Select measures that are cost effective; try not to create lost opportunities.**
(Simplifying the process

for customers basically guaranteed success for the first project. Once the relationship is established, you could expand to include more complex, slower-paying projects.)

- **Deliver a quality program and given time—marketing will take care of itself.**

Other programs

The 2001 energy crisis profoundly affected California, driving a state with few utilities to develop 38 separate energy-efficiency programs. California also has a relatively deregulated market and relatively high power rates that include a Public Goods Charge that must be used for energy-efficiency programs. Flex Your Power provides statewide marketing and outreach campaigns for these energy-efficiency programs.

Training organizations

- Northwest Energy Education Institute; Lane Community College, Eugene, Ore. – Focusing mainly on energy management, building operator certification and BPA residential certification. Customized, on-site training available. Contact Director Roger Ebbage at 541-463-3977 for more information.
- APPA Utility Education – Customized, in-house training available. The APPA Key

Accounts Certificate Program may meet your needs.

- Association of Energy Engineers – Online and live courses are available. Many of the live seminars can also be presented in-house. The seminars are quite technical and often expensive, so read the course description carefully before booking.

More resources

- “*Making a More Compelling Energy Efficiency Case to Management;*” Miriam Pye and Aimee McKane (223 kb pdf; pg. 3). Energy Matters, July 1999.
- “*Selling an Energy Project to Management;*” Steve Bolles (521 kb pdf; pg. 3). Energy Matters, July/August 2000.
- “*Presenting an Energy Management Project to Management;*” from Compressed Air Challenge (526 kb pdf; pg. 1). Energy Matters, Winter 2003.

BestPractices - Corporate Energy Management Case Studies. U.S. DOE Industrial Technologies Program BestPractices. Aimed to help corporate-level managers discover the bottom-line benefits of successful energy-efficient practices and technologies. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/jul/jul104.htm

Web site of the month:

National Sustainable Agriculture Information Service

Utilities looking for ways to help agricultural customers cope with energy prices as volatile as Mother Nature should visit the National Sustainable Agriculture Information Service.

Managed by the National Center for Appropriate Technology (NCAT) with funding from the United States Department of Agriculture (USDA), the project seeks to help U.S. farmers increase profitability, provide more healthful food and improve stewardship of America's farmlands. ATTRA, as the service is called, offers a wide variety of information on sustainable agriculture, from horticultural and agronomic crops to livestock and farming systems.

Help for Ag industry

Farmers, ranchers, extension agents, farm organizations and farm-based businesses may call 800-346-9140 toll-free for technical assistance or sign up for weekly and bimonthly newsletters. The website, however, is a portal to white papers, case studies, breaking sustainable agriculture news, funding opportunities, training events and web-based presentations.

The topics covered under publications and resources run the gamut from explaining what sustainable agriculture is to marketing the product. Authors include agriculture specialists from NCAT, university extensions and other agencies that conduct research.

Although there is a strong focus on organic farming practices, visitors will find information on business planning, best practices, crop diversity and more. Most of the publications are available in HTML or PDF files for downloading. Each topic page provides links to non-ATTRA resources, as well.

The big issues

No website designed to assist growers would be complete without extensive resources on energy and water use, issues that are equally important to utilities. ATTRA offers visitors plenty of each.

ATTRA's Farm Energy Alternatives page looks at both energy use in farming operations and the production of energy on the farm. At the top of the page, there is a link to the ATTRA Directory of Energy Alternatives, a database of energy-related equipment, funding and local businesses, searchable by state. Visitors will find publications, success stories and links on how to make farm buildings more energy efficient, use the sun's energy to heat greenhouses and pump water, choose and put up wind turbines, make and use biofuels and much more.

Publications on Water Quality, Conservation, Drought and Irrigation address water use, soil moisture management, water quality and water conservation. Drought, a near-constant threat in the West, is the subject of a resource



Since its inception in 1987, the National Sustainable Agriculture Information Service has responded to more than 300,000 requests for information on a wide variety of sustainable farming topics. (Artwork by ATTRA)

guide and a series of PowerPoint presentations.

Keep on learning

Sustainable agriculture is a relatively new concept to the U.S. farming industry, with a growing body of research and evolving best practices, so on-going education is essential. The education section links to organizations dedicated to teaching children and adults about sustainable farming methods.

To find upcoming workshops nationwide, visit the calendar, where events are listed by date and title. You can also search by key word, or add your own event.

For those ready to make a career move, a searchable database can locate internship and apprenticeship opportunities around the country. This is one of a menu of directories ATTRA offers to help growers find products and services to help them green their operations, reach new markets or learn new methods. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/jul/jul105.htm

Pollution prevention *from page 4*

dropped off compact fluorescent lamps, desktop and laptop computers, DVDs and CDs, 4-foot fluorescent lamps, TV sets and monitors, miscellaneous electronics like printers and cell phones and small universal-waste batteries.

Secure Record Management pitched in on the recycling effort by shredding that eternal office waste, paper, to be hauled away to an off-site recycler.

“I really appreciated that part of the event,” said SN Maintenance Manager Chuck Cooper. “It was very convenient to have recycling on site.”

More info online

Several computers were available on site so employees could search for more environmental information. The Natural Resources staff introduced several websites to participants, including:

- California Water Quality Monitoring Council – Search California water quality conditions
- Earthday Network Footprint Calculator – Find out how many earths it takes to live like you

- Earth911 – Find recycling in your area
- Clean Car Maps – Find alternative fuel stations in California and other western states

More than 60 Western employees participated in the Earth Day event, and Lee reported a lot of positive feedback. It turns out that even people who spend their day studying and complying with environmental regulations want to learn more about steps they can take to protect the environment at home. ⚡

Want to know more?

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