

BULLETIN

Western's monthly energy efficiency and planning newsletter dedicated to customer activities and sharing information.

EDUCATION OF AN ENERGY-EFFICIENCY PROGRAM MANAGER

Holy Cross Energy recently chose Mary Wiener, a former energy advisor with Boulder County EnergySmart, to head up its energy-efficiency program. Throughout the year, Energy Services Bulletin will follow Wiener in her first utility job, as she develops programs to reduce members' energy use and reach Holy Cross's ambitious goals.

REINVENTING SAVINGS

Utilities with established energy-efficiency programs must perform a balancing act. On one hand, offerings and strategies must be updated to reflect changes in technology, fuel prices and load and market conditions. On the other, few consumers have the time or inclination to follow an ever-changing menu of rebates and incentives.

Holy Cross's carbon reduction program has successfully walked the tightrope since the Glenwood Springs, Colo.-based cooperative



Energy Auditor Eileen Wysocki checks a Holy Cross member's water heater for hot spots. Holy Cross offers residential customers a complimentary walk-through audit with infrared inspection. (Photo by Holy Cross Energy)

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introduced it eight years ago. In the fall of 2012, Wiener joined the utility as its first energy-efficiency program administrator to take the program through its next evolution. "People are familiar with WE CARE, but the rebates are changing," she explained. "We're relaunching the program Jan. 2 with a new marketing plan and logo specifically to communicate those changes to our customers."

The biggest change in Holy Cross's program is its focus on the commercial sector. The utility's plan to save 33,039 megawatt-hours (MWh) over five years is committing 60 percent of the WE CARE funding to an energy efficiency portfolio, and two-thirds of the portfolio funding to commercial programs.

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Program manager

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Holy Cross will continue to offer incentives to help residential customers make their homes more comfortable and efficient, but the commercial sector uses far more energy. "Recreation and tourism are the biggest industries in the Roaring Fork and Vail valleys, and ski resorts are Holy Cross's biggest customers," Wiener pointed out. "If we are going to reach our goal of 6,600 megawatts of incremental savings annually, we have to reduce the biggest load."

OPPORTUNITIES IN BUSINESS

The program takes aim at those customers with rebates for refrigeration, motor and lighting upgrades. "Lighting is a great place for businesses to reduce energy use, and it opens doors to talk about other improvements because it's everywhere," notes Wiener. "Ski resorts, hotels and restaurants may call about lighting upgrades, but learn that upgrading to more efficient motors or refrigeration systems offers even more savings."

ENERGY SERVICES BULLETIN

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Motor loads may not be as obvious to a hospitality business as lighting, but they are just as important to saving energy. Improving motor efficiency in water treatment systems, air handlers, agricultural pumps and even cooling equipment could give Holy Cross a big push toward its goal. Coming from Colorado's Front Range, and EnergySmart's generous rebate for rooftop cooling units, Wiener learned that air conditioning in the mountains in the summer is a bigger load than most people realize.

One issue that is the same on either side of the Continental Divide is that commercial lighting has plenty of room for improvement. Wiener recalled that about 90 percent of the rebates EnergySmart paid out were for efficient lighting upgrades. Lighting became her specialty, and she has applied that expertise to developing more sophisticated incentives for Holy Cross. "Customers can still get rebates for LEDs and controls, but the rebates are for watts saved, rather than one-for-one lamp replacement," she explained.

Wiener added that her experience is also helpful when dealing with contractors. "I can look at quotes and suggest different solutions," she said. "Sometimes, contractors need a little push to think outside the box; for example, using low-wattage 28-watt T8s instead of 32-watt units."

UNIQUE RESIDENTIAL CHALLENGE

Wiener admits to being less familiar with residential efficiency, but is learning fast from Holy Cross Energy Auditor Eileen Wysocki. Holy Cross offers residential customers complimentary walk-through audits with an infrared camera, and she has joined Wysocki on several occasions. The audits will continue to be part of Holy Cross's residential efficiency program.

Even if she had more residential experience, Wiener would be encountering a different challenge in Holy Cross's territory—the large, second-home property. Unlike primary residences on the Front Range, these homes sit unoccupied for long periods. With multiple refrigerators and freezers, entertainment systems, heating and cooling systems, spas, incandescent lighting, heat tape and snowmelt systems, these homes can use more energy than a small business. "It takes more than an understanding of building science to reduce the energy use in big vacation homes," Wiener acknowledged. "We are actively working with property managers and homeowners to help minimize energy use in these homes when they are unoccupied."

ROPES TO LEARN

Wiener has set some other goals for the next year, both personally and professionally. Because she is new to the Roaring Fork Valley, as well as to the utility industry, she plans to get acquainted with as many businesses as possible. "Holy Cross has a reputation as a utility that cares about its customers, and I'm going to build on that," she said.

Another priority is to make it as easy as possible for customers to submit rebate paperwork for prescriptive measures, or to design their own custom efficiency packages. "We're in the market to buy 'negawatts'— or more simply, we are paying for energy savings," she said. "If they are already making the effort to reduce their energy load, they should be rewarded for their efforts."

The biggest hurdle for Wiener, however, is just getting the word out and hitting Holy Cross's goal. Western wishes Mary Wiener and Holy Cross good luck with the new energy-efficiency program and looks forward to following their progress. ⚡

For links to more resources, visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb1.aspx>

HOLIDAY GIVEAWAY KEEPS CORN BELT POWER IN TOUCH WITH MEMBER-OWNERS

The holidays are traditionally a time when friends and family let each other know how they are doing and what they have been up to throughout the year, and so it is for Corn Belt Power Cooperative and its nine member systems. The Humboldt, Iowa-based generation and transmission (G&T) cooperative uses an annual holiday direct mail greeting to ask consumers of its member cooperatives about their concerns and to let them know about co-op programs that can help.

It all started in 2002 with the “Oh Deer” campaign. Corn Belt Power and its member co-ops asked consumers to fill out a survey as part of a special direct mail holiday greeting. Everyone who completed the survey was entered in a drawing for a set of lighted deer lawn ornaments. “Our target marketing committee came up with the idea, mainly as a way to spread good will around the holiday season,” Corn Belt Power Energy Services Director Jim Sayers recalled. “Then we realized that the survey was yielding really useful information.”

Many companies now mine consumer data for potential sales opportunities, but Corn Belt Power began targeted marketing in 1989 to personalize customer service. “Tools like the database survey give member-consumers a way to let us know what they need, so we can let them know how their co-op can help,” said Sayers.

IDENTIFYING NEEDS

The target marketing committee puts together the survey—a mini-survey, really, said Sayers—that asks customers several questions about their interest in products and services Corn Belt member co-ops offer. The responses go into a database used for marketing those programs. For example, a homeowner whose survey indicates that he expects to replace an



This year, Lavon and Loren McEnany of Waverly, Iowa, won a \$100 electric bill credit and strings of LED holiday lights in Corn Belt’s annual Holiday Lights drawing. Members’ names are entered when they respond to a brief survey. (Photo by Butler Rural Electric Cooperative)

old water heater in the next year might receive a follow-up letter or call about rebates for electric water heaters.

Member co-ops can have the surveys tailored to meet their needs, as well. Surveys may target new members or those who filed complaints in the last year or participants in other programs. “If we become aware of changes in the marketplace that could affect our members, we might add a question that puts those issues on their radar,” noted Sayers. “Marketing is about two-way communication.”

CHANGING WITH THE TIMES

In the last few years, member co-ops have asked for more survey questions about energy audits. Energy efficiency in general has become a bigger issue, possibly driven by rapid changes in lighting technology, Sayers speculated. “We gave away our first LED ornament as the drawing prize in 2005, when LEDs were becoming more widely available commercially,” he said.

“Now, most of our members offer some kind of lighting rebate program.”

The holiday light decoration is the one feature of the annual survey that has stayed the same. From the deer to lighted wreaths to LED strings, the festive giveaway still entices customers to send in their surveys. The response rate to Corn Belt’s mailed survey this year was 18 percent, a healthy return by any standard. Among the customers who subscribe to the electronic version of their co-op newsletter, the response rate runs between 9 and 12 percent.

Maybe there is something inherently more personal about a snail-mail holiday greeting that encourages people to participate in their co-op’s holiday tradition. Or it could be that members are just taking a little longer getting used to electronic communication. Corn Belt Power will keep the conversation going in as many formats as possible, since asking someone how they’re doing—and really listening to the answer—never goes out of style. ⚡

For links to more resources, visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb2.aspx>

IN-DEPTH IR WORKSHOP A HIT WITH NPPD MEMBERS

It can be difficult to get busy utility professionals to take any time off for training, but a two-day infrared workshop sponsored by Nebraska Public Power District (NPPD) recently drew 16 participants—and rave reviews.

TRAINING UTILITIES NEED

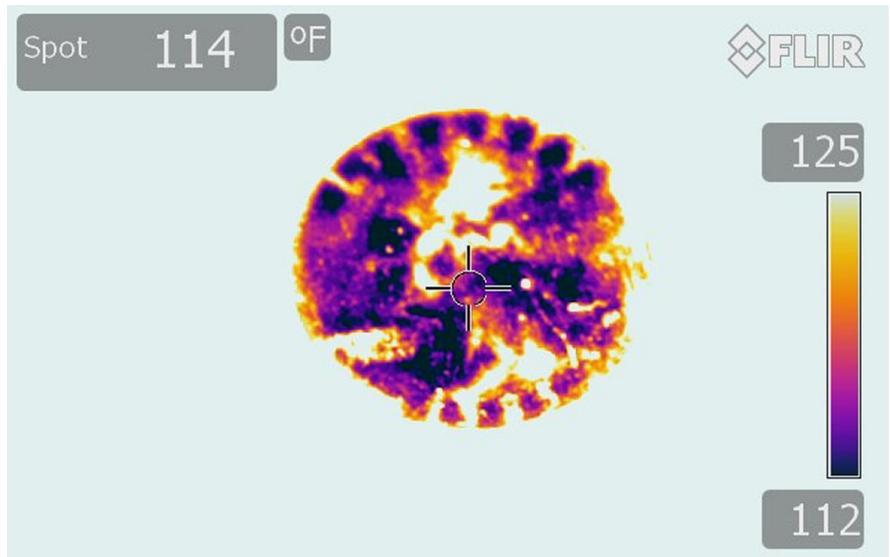
NPPD partner Southern Power District hosted IR for Weatherization and Energy Audits Nov. 28 and 29 at its headquarters in Grand Island, Neb. “A few contractors and representatives came from government agencies, but most of the trainees were our wholesale partners,” said NPPD Business Partner Consultant Roger Hunt, who organized the event.

The idea for the workshop originated with Hunt, who credits NPPD’s strong relationship with its member utilities for uncovering the need. “We knew a lot of our partners had purchased IR cameras, but they weren’t familiar enough with the technology to get the full value from their investment,” he said. “I’ve been through Level I and II IR certification, so I know how important it is to get the right training.”

Hunt chose The Snell Group to present a class aimed at energy auditors, weatherization contractors and home inspectors. He had once attended a similar workshop sponsored by the Nebraska Energy Office, and felt the focus on residential audits would be most useful to NPPD utilities.

LEARN YOUR CAMERA

The course covered all models of thermal imaging equipment and included many hands-on simulations and exercises. “Since Snell doesn’t represent any camera manufacturers, the class was equipment-neutral,” said Western Equipment Loan Manager Gary Hoffmann. “The instructors could explain the capabilities and limitations of different cameras.”



One camera control exercise involved adjusting the focus so the operator could read the date on a heated quarter.

That was good news for Wade Rahn, Customer Service Coordinator at Butler Public Power District, who brought along the utility’s ToughCam from IR Cameras, Inc. “I took the workshop to get better acquainted with using the camera in audit situations,” he explained. “I wouldn’t have gotten as much out of the workshop if the material focused only on the most common models.”

Having worked with IR cameras and taken several classes, Hoffmann

was very impressed with the course content. It offered more background on thermodynamic theory than other workshops he had attended, Hoffmann observed, and he really enjoyed the exercises. For one demonstration, participants were told to point their cameras at a quarter on a hotplate and adjust the focus so they could read the date on the coin. “It was a fun way to familiarize ourselves

See IR WORKSHOP, page 7



QUESTION:

Can you provide information on passive solar heating and its use in optimizing zero-energy buildings?

ANSWER:

Passive solar heating refers to using solar energy (sunlight) to heat a building through orientation, window size and placement and the design of the building (materials used, amount of open space, etc.).

For example, the building's orientation—the way it is situated on its lot—is important because it determines how much sunlight strikes the building face at a particular time of year. In winter, the sun rises further to the south and the angle at which direct sunlight strikes the house is shallower. To gain the most solar energy, south-facing windows and an overhang (if there is one) should be placed to allow sunlight into the interior. During the summer, the sun rises higher and further north, so the building needs an overhang large enough to block direct overhead sunlight from entering the interior.

Passive solar design adds another layer to the already complex task of optimizing residential buildings. In addition to orientation and window placement, the designer needs to consider elements such as thermal mass, which is the use of building material that absorbs and re-radiates heat. Appropriate thermal mass minimizes temperature swings within the building.

To better understand passive solar design, you need to be well versed on the processes of heat and moisture transfer. BuildingScience.com offers digests, insights, primers, reports, case studies and more resources on these and other building science topics.



With careful planning and design, passive solar cooling techniques; such as overhangs and reflective coatings on windows, exterior walls and roofs; can be environmentally friendly and cost effective. (Photo by Department of Energy EnergySavers)

Thermal Mass in Passive Solar and Energy-Conserving Buildings, published by the College of Environmental Design at the University California, Berkeley, offers a great summary of how thermal mass works in a building. It includes an overview of the theoretical and practical aspects of thermal mass, how to calculate its effects and the range of building design strategies that effectively use thermal mass in buildings.

The National Renewable Energy Laboratory (NREL) published “*Analysis of Residential System Strategies Targeting Least-Cost Solutions Leading to Net Zero Energy Homes*” and presented the paper at the ASHRAE 2006 Annual Meeting. The report provides an overview of design and technology strategies leading to net-zero buildings as a basis for analysis of future residential system performance.

MORE RESOURCES

DOE's EnergySavers website posted an article about ultra-efficient home design that outlines technologies that reduce the amount of energy a home uses. It includes a number of links to other online resources as well.

Check out Passive Solar Heating and Daylighting for Homeowners from NREL for publications, workshops and links to information on low- and no-energy housing. The NREL report, *Maximizing Residential Energy Savings: Net Zero Energy Home Technology Pathways*, explores technologies and solutions needed to raise whole-house energy performance to meet Federal goals.

National Association of Home Builders evaluates products and systems designed for Zero Energy Homes in real-world applications. ⚡

For links to more resources, visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb4.aspx>

You don't need to be an expert on building science to capture the rewards of a residential energy-efficiency program as long as you have the National Association of Home Builders (NAHB) ToolBase bookmarked on your computer.

As befits the sector that accounts for about 40 percent of the nation's energy consumption, building science is a vast subject. Whether your utility's goal is energy savings, load management or customer satisfaction, having a comprehensive reference on the topic increases your program's chances for success. NAHB Research Center's ToolBase collects technical information on building products, materials, new technologies, business management and housing systems for builders and remodelers—and utility program managers.

The NAHB Research Center is a product commercialization company dedicated to making housing more durable and affordable. With nearly 50 years of accumulated residential construction and market expertise. Its online ToolBase collects product descriptions, design and construction guides, best practices, performance reports, case studies and more in a single location.

SORTING IT ALL OUT

The information is organized under five umbrella topics: Building Systems, Home Building Topics, Design & Construction Guides, Best Practices and Construction Methods. These topics also appear in the top navigation of the sub pages.

Under each category is a list of related topics that have their own pages. Also, in the "Hot Topic" box in the left-side margin, you can find resources, which are grouped under several headings, including:



- Innovative Products & Processes—a list of technologies that increase affordability, energy efficiency, quality and durability, environmental performance and safety
- Design & Construction Guides—references for designing and building various types of construction
- Best Practices—recommendations and accepted practices relating to the product or measure
- Performance Reports & Case Studies—reports and examples of how products and systems perform in real-life applications
- Questions and Answers—Building professionals respond to questions about materials, equipment and construction methods
- Web Links—additional resources on the internet

FOR UTILITIES

Power providers will likely find the most relevant and valuable resources under Building Systems. This category covers the house inside and out, with information on whole-house systems, building shell, appliances, plumbing, landscaping and siding. Product summaries, attributes, ease of implementation, costs and benefits and code acceptance are among the details that could help in developing an effective incentive program.

Many topics under Design & Construction overlap with Building Systems, but tend to be more focused

on contractors. This section, along with Best Practices, can help when setting standards and communicating with contractors for home efficiency upgrade programs.

PRODUCTS, STUDIES, STANDARDS

Users who simply want to learn more about building products and process that have the potential to improve housing performance can browse the Technology Inventory. This database provides details on more than 160 promising technologies, including manufacturers, testimonials and engineering drawings of materials. Many of the technologies have not reached widespread use, so this is a good resource for researching out-of-the-box solutions.

Field Evaluations allows users to search case studies and reports by building system and region, or by technology. Visitors can study how builders in their area used systems or materials and learn about their results.

Utilities seeking standards and certification for residential retrofit programs may find what they need in the NAHB's National Green Building Certification Program. The consensus-based, ANSI-approved national green standard for residential construction focuses on affordability and durability—priorities it shares with most homeowners. Another service the program offers is the Green Approved Products, which the Research Center has pre-approved as eligible for specific points toward certification to the Standard. ⚡

For links to more resources,
visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb5.aspx>

IR Workshop

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with our cameras," Hoffmann observed.

The IR workshop was a first for Tim Ellis, the new Energy Services representative for the Rocky Mountain Region, so the camera exercises were particularly helpful to him. "It was a great opportunity to learn how to work the camera, where settings were, what they did and how to adjust them," he said.

AUDIT PRACTICE

The longer workshop provided participants with the chance to do a real energy audit on the home of a Southern Power District employee. "The house had a couple of cold rooms, so the homeowner got a free energy audit in return for letting the class practice what they'd learned," said Hoffmann. "The employee joined us to analyze the IR pictures after the inspection, even though he wasn't enrolled in the workshop. It was a good deal for everyone."

The audit included visual and thermographic inspections inside and out, a blower door test and a lot of what Hoffmann termed

"audit etiquette." Nicki White, customer service representative for Cuming County Public Power District, found that part of the training extremely helpful. "It was surprising to learn how much background information auditors need before they go into a home," she said.

Ellis appreciated the reminders about common courtesy and professionalism. "It's important to remember that you are in someone's home," he said. "Auditors need to make sure the homeowner feels comfortable and confident about the inspection."

Tips included everything from not trampling gardens to turning off gas water heaters so the blower door doesn't suck carbon monoxide fumes into the house. Hunt reminds himself to turn the water heater back on before he leaves by putting his car keys on it.

For Ellis, the audit served as a refresher course in building science and the physics behind heat movement through a building shell. "It gave me a

chance to apply what I know to problem-solving at the consumer level," he said. "This would be excellent training for utilities at any stage of developing a home audit program."

WORTH THE TIME

The course would also be good research for utilities that are considering buying a camera, Ellis added, or for professionals looking for a crash course in residential building science. Participants take a written test at the end and receive continuing education credits, another reason to make time for training.

Hoffmann declared that it was the best IR workshop he had ever attended. "We covered a ton of stuff over in two full days," he said. "It was really interesting and never felt like we were rushing through the material."

If your utility is interested in sponsoring an in-depth workshop on infrared thermography or other auditing skills, contact your Energy Services representative for more information. ⚡

For links to more resources,
visit <http://ww2.wapa.gov/sites/western/es/pubs/esb/Pages/esb3.aspx>