

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

Member Services director puts new water heater technology to test

At the recent “Advances in Water Heating Technologies” workshop, the owner of an electric heat pump water heater enthusiastically endorsed the unit as a real money-saver for his family of four. That testimonial should be particularly persuasive to members of Y-W Electric Association, Inc., since the happy owner was their own Member Services director, Andy Molt.

In May of this year, Molt installed a GE GeoSpring electric water heater in his northeast Colorado home as part of a demonstration project by Y-W's power wholesaler Tri-State Generation and Transmission Association. Over the last two years, Tri-State has been placing different makes and models of heat pump water heaters with residential customers to see how the units perform in the field. “I wanted to learn more about the technology before I started suggesting it to customers,” said Molt. “What better way than to try one in my own home?”

How it works

Like the space-heating systems, water heaters heat pump move heat from one place to another instead of generating it directly. A stand-alone air-source heat pump water heater pulls heat from the surrounding air and dumps it (at a higher temperature) into a tank to heat water. “Basically, it's like a refrigerator in reverse,” explained Molt.

This heat transfer is two to three times more energy-efficient than a resistance coil heating water directly. In terms of electricity use, that means heat pump water heaters use about 550 watts to do the same work that a conventional heater does with 4,500 watts.

How the system transfers heat to water differs with each model. The Rheem heat pump water heater, another unit in the Tri-State demonstration, pumps the water through a heat exchanger and back into the tank. Molt's GE system has a coil around the outside of the tank.

Performance

Molt chose the GE water heater because it fit into the basement space that held his old unit. “The efficiency is better if the water heater has breathing room,” he explained. “It requires at least a 10 by 10 by 7-foot space.”



GE's Energy Star-qualified GeoSpring hybrid electric heat pump water heater has been designed with maximum energy efficiency in mind. (Photo by GE Appliances)

Otherwise, the water heater installs and behaves like a standard unit. The connections on the tank are all in the same place as a conventional water heater, making installation easy for any qualified plumbing contractor. The heat pump system makes the water heater heavier, so homeowners will have to be sure that the floor can support the unit. The extra weight is only likely to be a problem when moving the water heater into place, and taking it out. “But if you take care of it, it should last a long time,” Molt said.

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Water heater technology *from page 1*

Because the coil generally doesn't come in contact with the water, the heat pump water heater should not lime up as badly as a conventional model. For maintenance, GE recommends draining a little water from the tank every six months and changing the anode every five years.

For most consumers, their greatest concern about a new water heater is whether it can supply enough hot water to meet the household's needs. Some models do take a little longer to recharge, but the GE water heater is a hybrid model that is able to switch to electric resistance in high demand times. Molt said that in homes with 50-gallon tanks or larger, the air-source water heater's performance will be about the same. "The computer control is sensitive enough that our family didn't notice any difference in the hot water delivery," he noted.

Other considerations

There are other differences that owners may notice. The heat pump is somewhat noisier than a standard water heater, and has to run longer than a resistor unit. "I tell customers that the unit makes a little more noise than a dishwasher, but ours is actually quieter than our dishwasher," said Molt.

Because heat pumps extract heat from ambient air, the space around the water heaters will be cooler. Molt recorded a 2 to 3 degree difference in his basement after installing the water heater. On the upside, however, the heat pump circulates and dehumidifies the air. "The basement doesn't have that musty smell anymore," Molt observed.

An avid sportsman who reloads his own ammunition, Molt discovered another fringe benefit. "The consistency of the gunpowder is better," he said. "My water heater is helping me 'keep my powder dry.'"

The payoff

The first cost of an air-source heat pump water heater is significant, Molt admits, but so are the savings it delivers. After replacing his electric steel-tank water heater with the hybrid air-source heat pump unit, his energy bills went down about \$24 per month.

State and utility rebates can provide more incentive. Y-W Electric offers a \$20 rebate to customers installing electric water heaters of 30 gallons or larger, plus a \$50 wiring allowance for converting from a fossil-fueled unit. The co-op's power wholesaler adds its own \$50 rebate, and another \$25 for water heaters with a lifetime tank warranty.

Molt would like to develop a rebate specifically for the air-source heat pump water heater, because they are more expensive than other high-efficiency water heaters. "But I can tell our customers that the payback is there," he stated. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/oct/oct101.htm

Energy Services Bulletin

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October is
Energy
Awareness
Month

SAVE
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FUTURE

Small conferences answer local wind questions

Across the country, more and more individuals and communities are asking how they can generate locally owned, clean energy. To answer the many questions that arise from the one, the nonprofit Windustry is hosting a series of small conferences entitled Community Wind across America.

The regional conferences will be held in Denver, Colo., Oct. 26-27; St. Paul, Minn., Nov. 15-16; and State College, Pa., Nov. 30 to Dec. 1. Presenters from the surrounding region and states will highlight regional examples and case studies. The agendas will also cover topics that are relevant to all projects, such as Federal incentives and policies.

Over two days, attendees will discuss local, state and national policies, and options for financing community and small wind projects. Industry experts will provide practical information on putting a project together, covering such topics as how to choose a turbine, installation and rebates and grants. Small question-and-answer sessions and networking opportunities are built into the schedule to encourage participants to share information.

Issues at ground level

Windustry is presenting conferences in the Rocky Mountain, Midwest and Mid-Atlantic regions so that the people who want to make locally owned wind projects happen have the opportunity to meet each other where they live.

Large and national gatherings on renewable energy development often—and necessarily—focus on big-picture issues. But before construction can begin, first-time, small-scale



The city of Adams, Minn., sells power from the Garwin MacNeilus Wind Farm to Dairyland Power Cooperative. (Photo by Windustry Archives)

developers need details—about power purchase agreements, interconnection, siting and more. “Politicians, land-owners, developers and many other stakeholders all hold specific and vital information that must be combined in order to go forward,” explained

Mary Anne Welch, Windustry’s Marketing and Community Outreach Manager. “By bringing them together, the Community Wind across America series can lead to genuine groundbreaking.”

See WIND QUESTIONS page 8

Can't make the conference? Let 'Breaking News' take you there

Industry conferences are great places to meet your colleagues, swap war stories or brainstorm new ideas—if you can get away from the office to attend. The Energy Services team knows how busy our customers are, so we picked two events sure to be packed with valuable information to cover live on Breaking News.

Join us Oct. 13-15 for the Colorado Utility Efficiency (CUE) Exchange in Aspen, Colo., and tune in again Oct. 25-27 for American Public Power Association's (APPA) Customer Connections Conference, from Anaheim, Calif. We will be posting regular summaries from presentations at each event, and responding to your comments and questions about the proceedings. If you can spare just a few minutes from your busy day, you can follow the action and even take part in the conversation, without leaving your desk.

Talk efficiency

The CUE Exchange was a logical choice for live coverage since it is all about bringing people—utility professionals, energy-efficiency experts and trade allies—together. Western is a sponsor, so Energy Services Manager Ron Horstman, Rocky Mountain Regional Representative Bob Langenberger and Equipment Loan Manager Gary Hoffmann will be on hand as presenters, exhibitors and gadflies when necessary.

This year's agenda promises to offer lots of food for thought and discussion. The exchange begins by highlighting utility program portfolios and collaborations. Day-long concurrent session tracks are back on Thursday. The morning sessions



Speakers appearing at APPA's Customer Connections Conference include (l. to r.) Mark Crisson, director of utilities for Energy Northwest; Mary Jane Mapes, communications consultant; and author and futurist, Jack Uldrich. (Photos by American Public Power Association)

highlight residential and commercial efficiency programs, with more focus on working with customers to make energy-saving changes. Technology and partnership are the themes for the afternoon tracks, highlighting equipment and collaborations that are helping utilities reach their efficiency goals.

For communicators

Even the most brilliant energy-efficiency program only works if we can communicate its value to consumers and get them to participate. For key account and member services representatives and communications professionals (like me), attending APPA's Customer Connections Conference is a great opportunity to learn new and exciting ways to successfully tell our stories.

Communicating with customers is almost as big a job for utilities now as delivering power. In some ways, it seems more complicated. Hot topics

such as using social media, talking to consumers about the smart grid and pricing services in tough economic times just scratch the surface. The agenda is built around concurrent sessions throughout Monday and Tuesday to cover as many issues as possible.

Get involved

Speaking of concurrent sessions, there is only one of me, but multiple tracks at both conferences, so here is your first opportunity to have your say. Take a look at the agendas, pick the sessions you would most like to attend if you were able, and e-mail me your selections by Oct. 8. The sessions that get the most votes get the most coverage.

If, on the other hand, you are going to be at either event, seek me out and share your thoughts. You might even get to be a guest contributor.

See 'BREAKING NEWS' page 8

Technology Spotlight:

Convert your old building to DDC with wireless pneumatic thermostats

Countless commercial buildings around the country that are more than twenty years old have pneumatic thermostats. Pneumatic thermostats maintain a temperature in the space, but do little more. How can you convert those older buildings to the more efficient and more sophisticated direct digital controls (DDCs)?

Conversion used to require tearing out the entire control system and replacing it with new DDC controls. Now, with the use of wireless pneumatic thermostats (WPTs), pneumatic controls can be upgraded to provide the same functions as DDCs, but at 20 percent of the cost, and in about 20 minutes per zone.

Value of WPT

For more than a decade, energy codes have required setback controls on new construction and major remodels. Setback controls save, on average, about 10 to 15 percent in energy consumption of the HVAC system. For commercial occupancies, energy savings average about 2 percent per degree of setback. The energy savings come from the ability to remotely control the set-point, provide for self-calibration, allow for a heat/cool dead-band—the range in which the temperature may vary without turning on the HVAC system—and allow for programmed setbacks.

For buildings in which the central plant has already been retrofit with DDC, the WPTs provide a central

plant reset that is based on true load. Also, if the local utility has a load shedding program for high demand times, this equipment may allow the building owner to take advantage of reduced energy rates.

Right for your building?

Traditional pneumatic thermostats are manual devices that allow the building owner to set the temperature of their space. WPT allows for remote readings, diagnostics and set-point control – saving energy by reducing the heating and cooling of unoccupied spaces. Traditionally, a building owner had to convert to DDC to obtain these energy and maintenance savings, but the cost of converting to DDC can be prohibitive and is likely to be very disruptive to the tenants.

The WPT is virtually the same as a DDC system but can be installed in a fraction of the time. Furthermore, conversion to WPT can be done piecemeal, unlike DDC. During the short time it takes to retrofit a zone with a wireless thermostat (less than half an hour, typically), the rest of the system can continue to operate without interruption. The WPT can operate as a stand-alone control system, or can be integrated with building automation and control network (BACnet) DDC protocol. The WPT has the following features:

- Remote wireless set-point control and temperature and pressure monitors
- Pager/cell notification of alarms



Wireless pneumatic thermostats, like this unit, can be a very cost-effective way to retrofit a building for greater control over heating and cooling. (Photo by Cypress Envirosystems)

- Automatic self-calibration
- Programmable temperature setbacks
- Occupancy override
- Compatibility with demand response strategies
- BACnet interface for integration with building management systems (BMS)
- About two-year battery life
- Detection of pneumatic leaks and compensation for those leaks

For a 50-thermostat system, including the repeater and transmitter, this conversion would cost about \$600 per thermostat, installed. This technology can be expanded to all gauges, batteries, valves, steam traps, etc. in the building—allowing for comprehensive monitoring and diagnostics.

More resources

“Wireless Automated Thermostat Ideal for Economic Stimulus Plan;” Harry Sim. Automated Buildings, Feb. 2009.

Have an energy question or need more information on this topic? Call Western’s Energy Experts at 1-800-769-3756. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/oct/oct104.htm

Website of the month:

Nevada State Energy Office website redesign

A state with an abundance of natural, renewable energy resources needs an online information resource to match, which is why the Nevada State Office of Energy (NSOE) recently redesigned its website.

The website provides visitors interested in Nevada's energy development with a go-to resource for keeping up with the office's latest activities. Targeting key stakeholders, the website furthers NSOE's mission of stimulating economic development and attracting businesses related to every aspect of energy production and use. Consumers and professionals will find information about energy education, generation and transmission, retrofitting, site development, energy-related recycling and more on the site.

New features

The redesign starts with a more modern look and feel, including easy-to-navigate tabs located at the top of the page just below the banner. Visitors will find the information organized straightforwardly under the categories of Energy Efficiency, Renewable Energy, Education, News & Events and Resources. Each button has a dropdown menu telling users what they will find in those sections.

At the bottom of the homepage are quick links to three hot topics: appliance rebates, revolving loans and energy education. The right side of the page shows a list of NSOE's daily-updated Twitter feeds covering the



NEVADA STATE OFFICE OF ENERGY

latest energy news stories, highlights of the office's activities and random energy thoughts.

Another new addition is a current list of renewable energy projects in Nevada. The link to the pdf spread sheet is located in the permanent navigation bar in the upper right corner of the page. The list is updated monthly with the project name, developer, size, land type, online date, current status, the entity purchasing the generation and more. The other links in this bar are also to pdfs—the Milestone Minder, a weekly update on all American Reinvestment and Recovery Act (ARRA) energy programs, and the Nevada energy economic declaration.

All about Nevada

As the press release announcing the website's redesign states, the content highlights energy activities and information pertaining to the state of Nevada, and it does a good job of it. For example, the Energy Efficiency section covers programs for state buildings, schools and street and traffic light programs. Residents and utilities will find a thorough explanation of appliance rebates. However, information on energy-related codes, funding opportunities, tax abatements and alternative fuel infrastructure will also be valuable to companies considering doing business in the state.

Likewise, information on renewable energy opportunities in Nevada will be useful to developers in the state and elsewhere. Visitors can learn more about the state's revolving loan program, Multi-Agency Renewable Energy RFP and the ARRA-funded Engineering/Feasibility Study.

The education section mainly offers links to other resources—energy saving tips from Nevada's largest gas and electric utilities, Energy Star and Touchstone Energy's Kid Zone. However, the acronym list will be helpful to anyone trying to wade through the "alphabet soup" of energy issues.

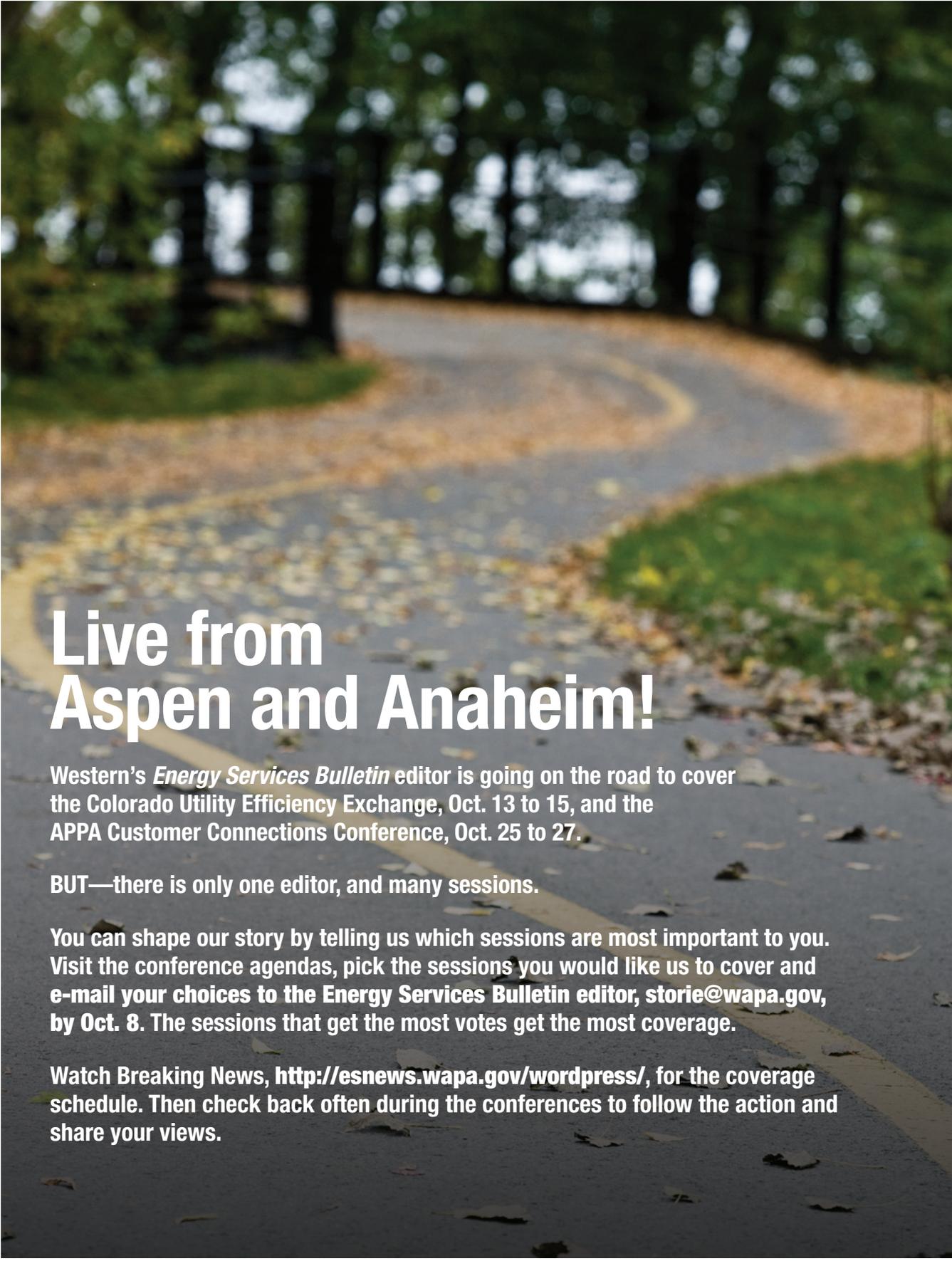
More changes to come

Like all the best websites, the NSOE website is a work in progress, as Director Jim Groth freely admits. "I love the new look of our website, but in no way are we finished with it," he stated in the press release. "We will continue to add features that will make our website the best energy resource in the state. If people have suggestions on what we can add to make it better, let us know."

The Nevada State Office of Energy makes good on Groth's word by providing easy-to-find contact information that includes office phone numbers as well as e-mail addresses. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/oct/oct105.htm



Live from Aspen and Anaheim!

Western's *Energy Services Bulletin* editor is going on the road to cover the Colorado Utility Efficiency Exchange, Oct. 13 to 15, and the APPA Customer Connections Conference, Oct. 25 to 27.

BUT—there is only one editor, and many sessions.

You can shape our story by telling us which sessions are most important to you. Visit the conference agendas, pick the sessions you would like us to cover and **e-mail your choices to the Energy Services Bulletin editor, storie@wapa.gov, by Oct. 8.** The sessions that get the most votes get the most coverage.

Watch Breaking News, <http://esnews.wapa.gov/wordpress/>, for the coverage schedule. Then check back often during the conferences to follow the action and share your views.

Wind questions

from page 3

In the past, Windustry has presented a single, annual community and small wind conference. Presenting the information in a series format focusing on the local perspective should provide rich networking possibilities, added Welch. “We’ve also added a more complete session track on small wind to address the growing interest in residential development,” she said. “People really want to better understand the variety of new products coming on line, their state’s wind ordinances and the economic benefits in developing their own wind projects.”

Leave educated

The conferences have something to offer participants at all levels of expertise and interest, from beginners to experienced developers.

There will be a Wind Energy Basics session before each event. This optional session provides an introduction to the fundamentals of wind energy and an overview of small, mid-sized and community projects. The importance of transmission and policy will also be discussed in this session.

For the people who have already begun to research wind projects on their own, Welch pointed out, Community Wind across America can fill in blanks in their knowledge. “They will get deeper understanding of local issues surrounding development,” she said. “We are really looking forward to helping them find answers to their questions.”

Every session will dedicate plenty of time to Q&A, and there will be lots of networking opportunities throughout the two days. Contact information for attendees will be available after the conference to allow individual follow-up and consultations.

All welcomed

Community and small wind projects offer many benefits to the smaller wind-rich areas around the country that often are most in need of economic development. For farmers, ranchers and other rural landowners, consumer-owned and municipal utilities, school districts, colleges and cities, small wind projects represent entrepreneurial opportunities. Elected officials, town planners, tribal representatives, business leaders, investors, installers, bankers and community leaders may be attracted by wind’s economic development potential. All of these stakeholders will come together at the regional conferences.

With such a wide potential audience, Windustry made the decision to limit registration to 500 participants for each conference. “We want to make sure that attendees have the chance to talk to the people they need to see,” said Welch. “That’s what Community Wind across America is about.” ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/oct/oct102.htm

‘Breaking News’

from page 4

Finding me will be easy at the CUE Exchange—it is a small conference in an intimate setting. I have had the privilege of meeting many Western customers from Colorado in three years of playing roving reporter at the event, so some of you already know me.

Customer Connections is a national conference, so it might be harder to track down one editor in a crowd of several hundred utility professionals. I’ll make it easy by publishing my session schedule—the one you determine with your votes—online. You can also contact me by e-mail from your Blackberry or laptop, and I will tell you where to find me.

Those of you back at the office can bookmark the agendas so you know when to expect a report from a session that interests you. Even if you don’t have time during the day, you can visit Breaking News any time to ask a question or volunteer your expertise on a post. We look forward to hearing from you. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2010/oct/oct103.htm