December 2008

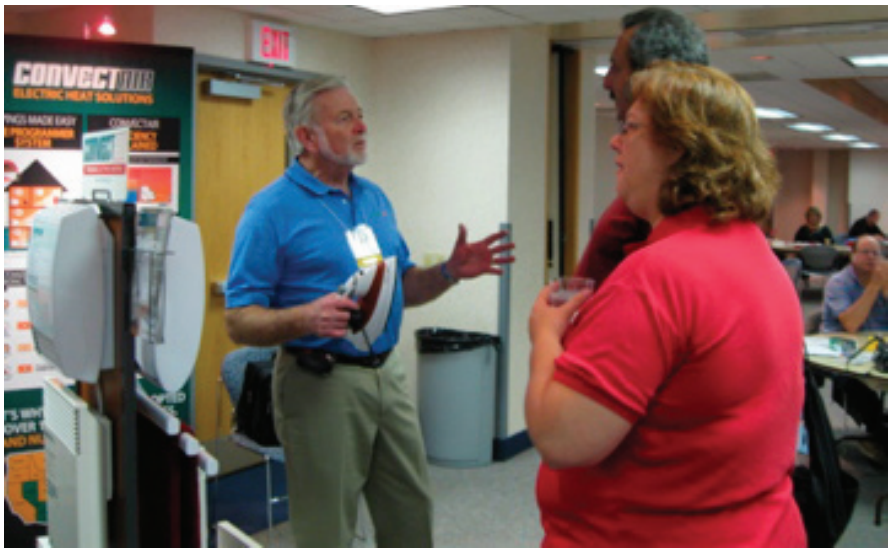
Energy Services BULLETIN

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

Western customers learn from each other at utility exchanges

Utilities are increasingly turning to energy efficiency as a least-cost resource option and, in the process, discovering the value of sharing ideas and experiences. The Utility Efficiency Exchange provides industry professionals with just such a forum to discuss energy-efficiency programs: what works for them, what doesn't and why; how the programs affect customer service, operation costs and the environment.

"Utilities are coming to see that they can take a leadership role in addressing our country's energy issues, and that it is actually good for business, too," said Western Energy Services Manager Ron Horstman.



Lon Garrison of Convectair answers questions about the company's efficient electric space heaters at the Wyoming Home Energy Makeover workshop, held in conjunction with the Wyoming Utility Efficiency Exchange. (Photo by Wyoming Energy Council)

Idea spreads fast

Western co-sponsored the first Colorado Utility Efficiency (CUE) Exchange in Aspen, Colo., in 2007. A group of about 50 utility professionals spent three days talking energy- efficiency programs, comparing notes and hearing about technologies that could enhance their strategies. Before the event was over, participants were asking when the next one would be.

They didn't have long to wait—other regions picked up the format and organized their own exchanges. In August 2008, La Plata Electric Association, Inc., Empire Electric Association and Tri-State Generation & Transmission teamed up with the Colorado Rural Electric Association and Colorado Association of Municipal Utilities to host the Four Corners Utility Efficiency Exchange in Durango, Colo. October saw the first Wyoming Utility Efficiency Exchange at Laramie County Community College in Cheyenne. Both events were followed by Home Energy Makeover workshops open to the public.

The second annual CUE Exchange met again in Aspen later that month to expand upon the topic of Integrating Carbon Footprint and Demand Response with Energy Efficiency. Each event is shaped by the character of the region, and by the experiences and needs of the utilities attending.

The Aspen CUE did not have a Home Energy Makeover workshop. "When LaPlata Electric came up with the idea of adding a consumer aspect to their exchange, our agenda was already set," said Jeff

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What's inside

Utility exchanges

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Rice, efficiency manager for sponsor Aspen Municipal Utilities. "I would like to include in next year's CUE a consumer Home Energy Makeover workshop, along with new workshops on energy efficiency for contractors, developers and businesses."

Thinking, acting locally

Such differences aside, utility efficiency exchanges follow a formula designed to promote dialogue. The events kick off with a meal or a reception where participants have the chance to meet their colleagues and chat in a relaxed atmosphere. Throughout the conference there is plenty of time for networking during breaks, meals and after hours. "These ice-breaking and friend-raising events really accomplish what they are intended to—getting folks comfortable with sharing ideas, programs and needs," said Horstman.

The daily agendas begin with utilities giving short presentations on their DSM, efficiency and conservation activities. Representatives also share their policies on rebates and incentives, and how much participation they experience with each program. The exchanges feature case studies and panel discussions focusing on various program design, implementation and evaluation topics. Utility representatives and government, non-profits and trade allies are among the presenters.

The conferences are small and local in scope, so the exchange of information and ideas is squarely focused on local and immediate issues. "That's the key to success," said Horstman. "It's human nature to pay more attention to people who have had the same kinds of experiences as you than to someone from outside your industry or community."

Each event unique

The conference advisory committees, made up of area utilities and industry partners, tailor each agenda for the audience. For example, building partnerships was a central theme at the Four Corners exchange, where many of the participants already have established energy-efficiency programs. "The exchange emphasized bringing people together, because most of the utilities in this area are pretty small," explained Member Services Manager Doug Sparks of Empire Electric in Cortez, Colo. "If we all go off on our own, we risk creating redundant programs that eat up limited resources."

In Wyoming, where many utilities are taking their first steps with energy-efficiency programs, the agenda focused on helping residential consumers. Speakers from out of state utilities talked about successful programs in their regions. Government and non-profit agencies, including Western, gave presentations on funding and technical resources.

Colorado utilities at the Aspen event focused more on building on existing programs and translating energy efficiency measures into a reduced carbon footprint. "With every segment of the utility industry so intensely focused on greenhouse gas emissions, tying energy efficiency to carbon emission reduction just seemed like a no-brainer," Rice acknowledged.

Demand side management, energy-efficiency technologies, and using carbon reduction strategies to enhance customer satisfaction all found a place on the CUE exchange agenda. A new element was added this year with breakout sessions on residential and commercial energy efficiency programs. The breakout format was designed to allow participants to focus on whichever program area they felt their utility needed to expand. Instead, participants shuttled back and forth between the sessions, trying to absorb as much information as possible.

Inviting the public

One of the biggest challenges facing utilities in implementing energy-efficiency programs is marketing the programs to consumers. The Home Energy Makeover Workshops, held in conjunction with the Four Corners and Wyoming exchanges, proved that area residents are eager for more information. Close to 125 people attended in Durango, and 75 in Cheyenne attended the events to exchange ideas with their utilities and the exhibitors.

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Energy Services Bulletin

The Energy Services Bulletin is published by Western Area Power Administration for its power customers. The mailing address is Western Area Power Administration, P.O.Box 281213, Lakewood, CO 80228-8213; telephone (720) 962-7508.

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Wessington Springs, S.D., welcomes new wind farm

The spotlight shined brightly on Wessington Springs, S.D., Oct. 2 as project partners and state and local officials dedicated the Wessington Springs Wind Farm, marking the end of months of teamwork, and the beginning of the city's role in the new energy economy.

Many parties involved

South Dakota Gov. Mike Rounds was the keynote speaker at the dedication of the 34-turbine wind farm. The facility is expected to annually produce 51 megawatts (MW) of energy, or enough to power more than 17,000 homes. "There is no silver bullet in making it all come together," Gov. Rounds told the crowd of nearly 100. "What you've got is a combination of folks at the local level, at the business level and at the governmental level, all pulling together to make this a reality."

Those partners include Heartland Consumers Power District (HCPD), Babcock & Brown Renewable Holdings Inc. and Western. Babcock & Brown is the project developer and owner, and Heartland and Western co-own the Integrated Transmission System that will deliver the power.

Western built and will maintain the Wessington Springs Switchyard that is interconnecting the facility to the Integrated Transmission System. Heartland is purchasing the wind farm's generation to sell to its customers, including the University of South Dakota (USD) and South Dakota State University (SDSU), making them the first Midwestern universities to be powered with 100-percent renewable energy.

Experienced developer

The idea for the wind farm first came up in late 2005, when Heartland opened the discussion with a company that Babcock & Brown would acquire a year later. Persuaded by strong anemometer data and the Australia-based wind developer's excellent reputation in the industry, Heartland signed an agreement in March 2007 to purchase the output of the facility. "We were looking for a premiere wind developer, and we found that in Babcock & Brown," said Heartland General Manager Mike McDowell.

Members of the Heartland Board of Directors and Babcock & Brown join South Dakota Governor Mike Rounds (fourth from left) to dedicate the Wessington Springs Wind Farm. (Photo by Heartland Consumers Power District)

Reaching an agreement on energy pricing was difficult, McDowell recalled, but Heartland ultimately chose to purchase all of the facility's output for the life of the project. The purchase made Heartland the first utility in South Dakota to get 20 percent of its power portfolio from renewable resources, McDowell noted.

The decision to locate the wind farm near Wessington Springs was easier. The proximity to the co-owned transmission system and the area's Class 6/7 wind resources made the site an obvious choice. The Wessington Wind Farm is Babcock & Brown's 21st installation in the United States, but its first in South Dakota.

Local economic development

Wessington Springs, a municipal power customer of Western and of Heartland is receiving a small amount of power from the wind farm, but many benefits from hosting it. "The contractors and construction crews started arriving early this spring, and a few are still in the area finishing up the construction," said Linda Willman, city finance officer. "This has been a real boost for our local economy."

The project was good for local landowners, too. Babcock & Brown inked land lease agreements with eleven landowners around Wessington Springs. Even the last holdout now agrees that the wind farm will be good for the area, said Willman. "He was concerned about what the construction would do to his property," she explained. "But the developers worked with the landowners, and plan to restore the land around the towers back to the way it was."

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Utility exchanges

from page 2

Local professionals who provide energy related services exhibit at the conferences—and speak, if the topic is appropriate. The public, the utilities and area vendors have the opportunity to discuss ideas and needs, and to formulate an action plans to address those needs. "In many instances, these people know each other and feel comfortable sharing needs and ideas—another advantage of keeping the events local," Horstman pointed out.

Format works anywhere

Of course, anyone can attend any utility exchange if they want to share, or learn. Many Western customers from other regions and representatives from utilities that are not Western customers attended and presented at the exchanges.

Rice, Adam Perry of Platte River Power Authority and Chad Reisenauer, energy conservation coordinator for Basin Electric Power Cooperative, gave presentations at the Four Corners event. Rice and Reisenauer were also speakers in Wyoming. "With 125 member systems, we don't get the opportunity to talk to each other as much as we would like to," observed Reisenauer, who gave Basin Electric's perspective on energy-efficiency programs during the "utility Snapshots" segment. "We all think we are on the right track when it comes to conservation, but it's great to be able to compare notes."

Mutch Usera, energy services director for the South Dakota-based, investor-owned Black Hills Energy, is a familiar speaker at the exchanges. Black Hills has a highly successful DSM program, and has recently added an aggressive push to acquire more renewable energy. Usera commented that he hopes to organize a utility exchange in Rapid City, S.D. Even though he attended as a speaker, "I always learn something at the exchanges," he said.

Michael Volker of Midwest Energy Inc. concurred, adding, "I have more than learned the value of partnerships," he stated. "I would love to see an event like this in Kansas."

Utilities in the Desert Southwest Region and Colorado River Storage Project Management Center service area have also expressed interest in sponsoring exchanges. "Even in tough economic times, utilities should be stepping up their programs because energy efficiency and conservation are the cheapest resource available," said Horstman. "Utility exchanges are a great place to start programs or take them to the next level."

If your utility would like to sponsor or host an exchange in your region, contact your Energy Services representative or Ron Horstman at 720-962-7419.

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2008/dec/dec081.htm

S.D. wind farm

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Babcock & Brown also created a full-time job in Wessington Springs for a field maintenance manager. Every job counts in a rural town with a population of 1011, especially one that brings new skills to the local labor pool. "Our city council recognizes the need to go green, and having a resident who is part of the wind industry could be a great resource," Willman acknowledged.

It doesn't hurt that Wessington Springs students are getting an introduction to wind power technology, either. "The school superintendent has organized field trips to the facility already, and we've had several public tours, as well," said Willman.

With Babcock and Brown eying other South Dakota projects, Heartland looking to add more renewables and residents talking knowledgeably about transmission needs, wind's future in Wessington Springs looks bright. As Mayor Jim Burg told an Ag Week reporter at the dedication ceremony, "The next step is just to keep encouraging these things to happen.

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2008/dec/dec082.htm

Western updates popular DSM guidebook

The way consumers use energy has changed a lot since 1991, so Western's Energy Services decided it was high time that we brought the DSM Pocket Guidebook: Volume I: Residential Technologies into the 21st century.

For years, our customers relied on the guidebook to help them sort through the challenges and opportunities of load management. But science—and the marketplace—don't stand still. Bigger homes and more home appliances are pushing demand ever higher. Consumers today worry about rising energy costs and the environment; yet, they want a new flat-screen TV.

"Appliances and technologies that didn't exist, or weren't widely available to consumers 17 years ago, now have a tremendous impact on loads," said Energy Services Manager Ron Horstman. "Look at how televisions have become the third largest energy user in the household."

Meanwhile, technology continues to improve the energy efficiency of buildings and equipment and gives us new ways to control energy use. Utilities across the country are deploying sophisticated automated meter reading systems that make demand reduction simple and nearly invisible to customers. DOE's Building America program conducts systems engineering research to produce homes on a community scale that use 30 to 90 percent less energy. The technology exists today and by 2020, the marketplace will offer consumers more choices such as "zero-energy" homes with integrated, onsite power systems that produce as much energy as they use.

For customer service, planning

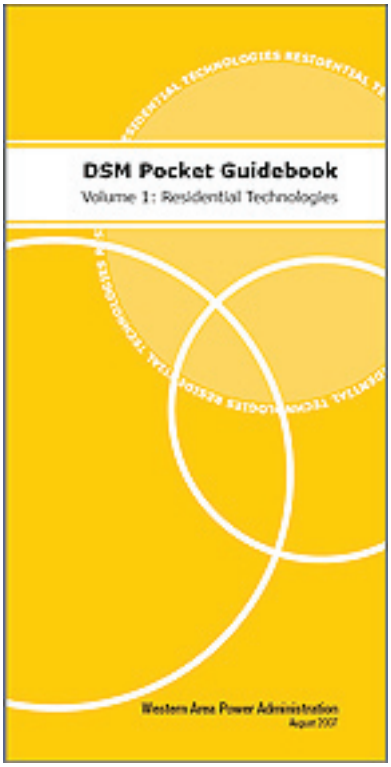
The DSM Technology Guidebook provides a quick reference to help utility staff answer residential consumers' questions about the systems and equipment available today. Utility planners can use the guidebook to get an idea of how those technologies fit their system's specific needs. Although the publication is directed at small municipal utilities and rural cooperatives, larger utilities have also used it as a springboard for developing DSM programs.

In updating the guidebook, the National Renewable Energy Laboratory kept the same concise format that has worked so well. "It provides only overviews of technologies," said Horstman. "Utilities will still need to conduct a detailed analysis to determine what technologies are most likely to benefit their own operations and their end-users."

The new DSM Guidebook covers energy audits, building structure, heating and cooling, water heating, lighting, appliances, home and office electronics and pools. Each section contains tables and formulas to help with analysis, and a list of Web resources under "For more information" where readers can continue their research.

What's new in DSM

The section on energy use and energy audits is a new addition since the last printing. The holistic approach to improving a building's energy use has been around for many years, but was mostly applied to large, commercial facilities. The advice for residential customers previously focused on individual measures, like upgrading windows or adding more



The new edition of the DSM Pocket Guidebook now includes technical briefs on energy audits and home and office electronics.

insulation, noted Horstman. "Now, we encourage homeowners to prepare an energy-saving plan for the entire home—and they are really seeing the benefit of that approach."

Some of the material has been reorganized to make it more logical to today's energy services professional. For example, under "Building Structure," weather stripping and caulking are covered by a single chapter on air sealing.

New chapters have been added on now-common household technologies like programmable thermostats, lighting controls and home and office electronics. "Appliances, in particular, are an area where we have a lot of new information," said Horstman. "There are more options for energy-efficient electronics on the market than ever."

On the other hand, many of those

See DSM GUIDEBOOK page 8

Technology Spotlight:

Ductless mini- and multi-splits for residential applications

Ductless split system air conditioners and heat pumps consist of an outdoor compressor unit and one or more indoor fan coil units. Instead of distributing conditioned air through ducts, refrigerant is circulated between the outdoor and indoor units through standard, insulated refrigerant lines. Indoor units heat or cool the room in which they are located and may be installed on walls, ceilings or floors. "Mini-split" systems have only one indoor fan coil unit. "Multi-split" systems have two or more indoor fan coil units connected to a single outdoor unit and use some method of achieving independent zone control. Different manufacturers of residential multi-split systems accomplish this in different ways, such as having a dedicated compressor for each indoor unit or using a variable speed inverter compressor.

The United States is one of the few countries in the world where ducted systems are more popular than ductless systems. Ductless systems have long been manufactured by Asian and European companies. Popularity has been growing rapidly here, however. Several U.S. companies have entered the market in recent years.

Ductless vs. ducted

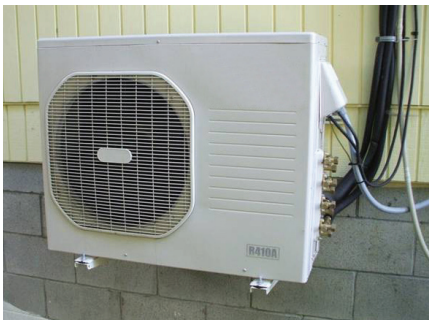
Energy savings are largely due to elimination of duct leakage, which often accounts for 20 percent of a ducted system's energy consumption. The ductless system's inherent zoning capability can also result in significant savings as heating and cooling can be provided only where it is needed. Some models incorporate advanced control systems and variable speed compressors, which improve part-load efficiency and the unit's seasonal energy efficiency ratio (SEER). On the other hand, losses in refrigerant lines (approximately 0.7 to 0.9 percent reduction per 10 feet) are greater than in a conventional system, but these losses are small in comparison to typical duct losses. Ductless split systems do not take advantage of economy cooling during cooler weather, reducing air conditioning savings potential in climates with mild summers.

Retrofit options

Ductless split systems are easy to retrofit in existing homes, requiring a single 2- to 4-inch diameter hole through the outside wall through which pre-charged refrigerant tubing, condensate waste line, power and control wiring is routed. Ductless heat pumps can be used with an existing electric resistance heating system, with the heat pump supplying the bulk of the heating requirement and electric resistance heat supplying supplemental heat during very cold weather and morning warm-up.

Some downsides

As with any technology, there are downsides, too. Although most units are generally quiet, they are not as quiet as a properly designed ducted system because the fan coil is located in the room it serves. Also, some homeowners object to the aesthetics of the units—the fan coil is fairly large and is impossible to hide,



requiring sensitivity on the part of the system designer. Effective cooling depends on proper placement of indoor coils to avoid recirculation of already-conditioned air (short-circuiting). Also, ductless systems have long refrigerant runs, increasing the potential for refrigerant leakage and the volume of refrigerant lost when a leak occurs.

Cost comparison

Ductless units are usually more expensive than an equivalent-sized conventional system partly because they are not considered typical practice in the United States. The ease of retrofitting the system somewhat mitigates cost. Equipment costs are difficult to estimate, since price depends on unit size and features, which, in turn, depend on the particular application. Contractors who have installed small ductless, split-system air conditioners note that these units are as much as 50 percent more expensive than an equivalent ducted split system on a capacity basis. Ductless split systems are most cost effective in new installations or where there is no existing ductwork.

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2008/dec/dec084.htm

Web site of the month

Energy Efficiency Resource Central www.eercnet.org

The American Public Power Association (APPA), a strong advocate for public power providers, just added a valuable new resource for utilities to its Web site: Energy Efficiency Resource Central (EERC). Energy efficiency is a high priority for APPA, and EERC offers a wealth of education, policy and advocacy resources and services to help utilities promote wise energy use.

Resources for all users

Some of the resources are available only to APPA members, but there is plenty of useful information non-members can access, as well. Users may want to start their research with a report on state energy-efficiency provisions to find out what, if any, requirements their state mandates.

Whether or not your state requires utility energy-efficiency programs, check out Starting an Energy Efficiency Program for Your Utility and Community. The explanations here will help you communicate the importance of energy efficiency to customers, and persuade boards that conservation is a good fit with public power's mission. The steps for starting an energy-efficiency program and a downloadable brochure with the same information are also located in this section.

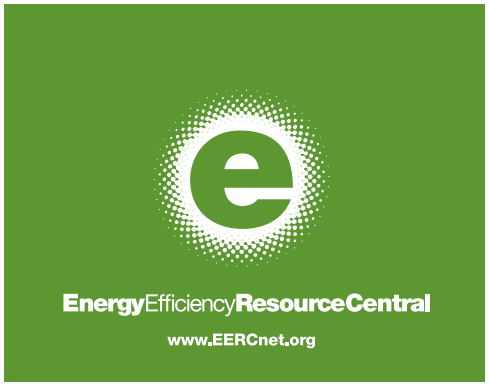
If your utility is not quite ready to launch a comprehensive energy-efficiency program, you can still get some of the benefits from Helping Customers Manage High Bills. APPA members will find tools to help their customers help themselves to a more energy efficient future. There are additional Web resources that any visitor can access.

Business resources

To help smaller utilities increase their investments in energy efficiency, APPA, the National Action Plan for Energy Efficiency, DOE's Industrial Technologies Program (ITP) and Western are hosting a webinar series. Presentations from the first two webinars, Evaluation, Measurement and Verification and Energy Efficiency Best Practice Programs can be downloaded free on the webinars page. There are also links to conference presentations and articles about energy efficiency here.

In addition to co-hosting the webinar series, APPA and ITP are partnering on other resources for industrial customers. There is a list of Top Tips for Saving Energy in Small Businesses, along with tip sheets for industrial customers that can be co-branded with the utility logo.

Utilities can connect to no- and low-cost resources on this page to help their industrial customers improve their bottom lines through energy efficiency. Links to more energy-efficiency resources from APPA and to other related Web sites round out the offerings available to all visitors.



APPA offers a variety of resources on its Energy Efficiency Resource Central Web site utilities can use to build their energy-efficiency programs. (Artwork by American Public Power Association)

Members only

Reports, interactive features and presentations available to APPA members—which include many Western customers—give direction for comparing and refining utility energy-efficiency programs.

Search the Database of Energy-Efficiency Programs to learn what other utilities around the country are doing to save energy. If you have a program you would like to share with colleagues, you can add it to the database.

A measurement component is vital to the success of your energy-efficiency program. The APPA report, Measuring Savings From Energy Efficiency Programs: What It Means, Why It Is Necessary, And How To Do It, explains why it is necessary and effective measurement strategies. Learning from others' experiences can also lead to success. APPA's 2008 Energy Services Survey highlights the

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DSM guidebook

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items have phantom loads—the small amount of power clock displays and remote controls draw when the appliance is switched off. "Phantom loads were negligible 15 years ago, but now they have turned into stealth Energy Hogs for homeowners," Horstman pointed out.

Tools for analysis

In designing a DSM program, a utility must select technologies that support their overall objectives. Ultimately, the goal is to provide customers with the same or expanded cost-effective energy service, smooth out the utility's load curve and delay the need for new powerplants.

To help with technology selection, the guidebook provides formulas for estimating the end user's simple payback for energy-efficient home technologies, and the technologies' impacts on the utility's load curve. "The ideal technology strengthens the utility's ability to provide low-cost, reliable power, while allowing it to recover its fixed and operating costs," said Horstman. "You can't balance those needs without doing the analysis."

The new edition has more flexibility built into the formulas, leaving blanks for specific prices wherever possible. "Energy prices may be the only thing that changes as fast as technology," Horstman admitted. "We wanted the guidebook to remain relevant and easy-to-use. Readers can easily fill in the current prices in their own regions."

Taking it to the Web

That information and more is accessible, thanks to a game-changer that didn't exist in 1991. The Internet has made everyone more savvy about energy use, pricing and environmental impacts.

Computers, along with faxes, cell phones and DVD players, are almost as common in homes as refrigerators. That's why Western put the DSM Pocket Guidebook online instead of printing it. "Utilities can send their customers to the Energy Services Web site to download their own reference copy," he said. "It saves everyone money, it saves a few trees and best of all, it helps to educate residential consumers."

Enlisting customer support is, after all, critical to the success of a DSM program, no matter what technology a utility chooses to make its centerpiece. The DSM Pocket Guidebook, Volume I, gives utilities the information they need to explain to residential consumers how today's energy decisions make the difference in tomorrow's world.

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2008/dec/dec083.htm

Website of the month

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numerous energy-efficiency, demand-side management and conservation programs public power utilities are offering to customers. The report also provides a glimpse into a future where more and more utilities offer these programs to their customers, leading to increased energy efficiency and conservation by customers and utilities alike.

As part of its increased focus on energy efficiency, APPA held an Energy Efficiency Summit in Indianapolis in November. Members who were unable to attend can download the presentations covering innovative programs, leadership, policy, planning, marketing and more.

Because energy efficiency is such a broad topic, and because utilities are at many different stages in developing their programs, Energy Efficiency Resource Central will continue to evolve. APPA wants to hear from members about what could be added to the site, and hopes members will spread the word about public power's energy-efficiency initiative.

Want to know more?
Visit www.wapa.gov/es/pubs/2008/dec/dec085.htm