

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

Online Key Account Tool Box supports public utility programs

Public utilities now have a powerful information resource to serve their key customers. The online Key Account Tool Box is a portal to thousands of resources about energy efficiency and renewable technologies, utility programs and best practices for businesses. The data is timely and accurate, the sources are objective and the links are selected and regularly reviewed by a national team of energy experts.

Imagine a utility key accounts representative checking in with a key industrial customer finds the plant manager in crisis mode, because a major motor failed today and they are scrambling to replace it. The utility rep finds a tool on the Key Account Tool Box that lists the efficiencies of suitable motors. The plant manager chooses a motor from that list, and

later realizes a 20-percent efficiency increase. This quick solution strengthens the relationship between the utility and the key customer, opening the door for the utility rep to promote other utility programs.

This scenario is realistic. A business customer with a quick source of reliable information on a product or technology can make profitable purchasing and management decisions. Those decisions lead to increased productivity and reduced operating costs for the business, clearly a competitive advantage. If the business's utility provides this information, the utility becomes a responsive and valuable partner. Such partnerships lead to customer retention and community revitalization. That is what the online Key Account Tool Box strives to achieve.



The Key Account Tool Box is an Internet-based resource utilities can use to help their key accounts operate more efficiently.

public power utilities in their region. “APPA and the Federal power marketing administrations share a mission to help utilities operate as efficiently as possible and one of the ways to do that is to help their end-users,” said Peggy Plate, Energy Services representative for Western’s Rocky Mountain Region.

Plate represented Western on the development team. “The Key Account Tool Box meets the needs of both the power provider and the consumer. The Internet is a very effective way to deliver that service,” she said.

The sponsors premiered the resource at the APPA Customer Connection Conference in San Antonio, Texas, in early November. “We gave a presentation, and the room was full,” said Western Energy Services Representative Ron Horstman. “Judging from the number of questions, the Tool Box will be meeting a real need.”

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Collaboration

The American Public Power Association’s Demonstration of Energy-Efficient Developments program sponsored the Key Account Tool Box project. For 26 years, DEED has supported activities that promote energy innovation, improve efficiencies and lower energy costs to public power customers.

Western, Southeastern Power Administration and the EnergyIdeas Clearinghouse collaborated on the development and operation of the Web site. Each of these organizations supports the information needs of

Fuel cell plant joins Alameda County renewable energy collection

Alameda County, Calif., recently laid claim to the greenest county facility in the United States when it fired up the state's first megawatt-class hydrogen fuel cell cogeneration plant on its Santa Rita Jail.

A dedication ceremony in August brought together representatives from state and local government, business, academia and environmental organizations. Alameda County, Chevron Energy Solutions, the designer and installer, and FuelCell Energy, Inc., the manufacturer, led tours of the new DFC 1500 fuel cell cogeneration plant following the ceremony.

"Alameda County has demonstrated the feasibility of combining alternative power technologies and energy efficiency measures in one facility to reduce costs and help the environment," commented Keith Carson, president of the Alameda County Board of Supervisors. He added his hopes that other counties would be encouraged by the project to consider installing fuel cell technology.

Other municipalities will certainly notice that the fuel cell is expected to save county taxpayers \$260,000 per year. Combined with the jail's 1.2-MW

solar power array and previously installed energy efficiency upgrades, the jail has reduced its energy bills by more than \$700,000 annually. The environment will benefit, too, from the prevention of more than 3,200 tons of greenhouse gas emissions annually.

Self-generation, efficiency

The project provides about half of the facility's base load needs. The hydrogen and solar systems together will shrink Santa Rita's power purchases by as much as 80 percent in the summer months when temperatures in Dublin, Calif., where the jail is located can top 110°F. During peak-demand hours between noon and 6 p.m., the solar system generates the most power. "Because of the solar array, the electrical summertime demand on the jail's PG&E meter is now peaking at 10 p.m.," said County Energy Manager Matt Muniz. "A lot of the savings come from shifting the peak."

Efficiency improvements ensure that the facility uses its power wisely. At the same time the PV system was installed in 2002, Muniz's energy team replaced an old inefficient chiller with a new 850-ton high efficiency chiller and attached variable speed drives to the new chiller, chilled water pumps and cooling towers. In the early 1990s, energy efficient T-8 lamps and electronic ballasts installed in more than 12,000 fluorescent light fixtures and innovative lighting controls throughout the jail increased savings. Muniz plans further improvements to the lighting with a "next generation" T-8 retrofit, using full spectrum lamps, in phase two of the fuel cell project.



This 1-MW hydrogen fuel cell supplies 50 percent of the electricity for the Santa Rita Jail in Alameda County, Calif. With a 1.2-MW solar array on its rooftop, the jail generates up to 80 percent of its electricity from onsite ultraclean and renewable resources. (Photo by Alameda County)

Capturing the fuel cell's waste heat for space and water heating was another way to increase efficiency. "The molten carbonate fuel cell operates at a temperature of 1,100° Fahrenheit, so it's a good match for a facility with a large heat load," explained Muniz. "The jail has a big kitchen and laundry and there are daily showers for 4,000 inmates. None of that excess heat is going to waste."

A combination of grants, incentives and performance contracting funded the project's \$6.1 million price tag. Pacific Gas and Electric Company's self-generation incentive program provided \$1.4 million, and \$1 million came from the U.S. Department of Defense Climate Change Fuel Cell Program. The remaining cost of \$3.7 million — \$2.8 million of which was financed through a California Energy Commission Energy Partnership Program Loan — is being funded entirely by the project's energy cost savings under a performance contract with Chevron Energy Solutions and FuelCell Energy.

See FUEL CELL PLANT, page 3

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) 962-7065.

The mention of any service, product, or technology does not constitute an endorsement of same and Western, the Department of Energy, or the United States Government cannot be held responsible or liable for use thereof.

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Visit www.wapa.gov/es/pubs/esb/2006/dec/dec062.htm

Fuel cell plant

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Successful PV projects

The fuel cell plant is only Alameda County's latest accomplishment in its Climate Change Leadership Strategy to reduce greenhouse gas emissions. The county board of supervisors adopted the resolution establishing the strategy in June. In a press release, Board President Keith Carson commented that addressing climate change could reduce current costs of delivering services as well as future costs of adapting to global warming.

Since the county first installed the Santa Rita solar power system in

2002, the savings have supported that assertion. The PV array generates as much as 915 kW at midday and saved the county about \$410,000 in its first year of operation, exceeding expectations for both generation and savings. The project also earned Alameda County its first EPA Green Power Leadership award.

Success moved the county to double its solar energy capacity. By 2005, the county had installed five more rooftop arrays on county-owned buildings, plus two innovative, 250-kW solar tracking carport systems, and received its second Green Power Partnership award. "We now have 2.3 MW of solar, plus one MW from the fuel cell," Muniz stated proudly.

And Alameda County won't stop there. The energy team continues to explore opportunities for small-scale generation opportunities, building efficiencies and renewable power purchase agreements. The county's new juvenile justice facility, scheduled for completion in March 2007, will have an 880-kW system and be completely powered by renewable energy. "The building is going for gold LEED certification, too," Muniz said.

As long as generation and efficiency technologies keep improving, as long as there are state or utility incentive available, as long as "good ol' conservation" can save a watt, Alameda County will be finding new ways to go green. ⚡

Tool box *from page 1*

Resources for all

The Key Account Tool Box is about good sustainable business practices for people at every level in an organization. Search it for studies outlining proven energy management strategies, building benchmarking data, product reviews, financial assistance programs, or free expert resources.

Decision makers and facility managers will benefit from the latest information on regulations, program evaluation reports and project case studies. Users will find outreach materials, networking listservs and RSS feeds to strengthen communications programs, or job listings, training calendars and online courses to build their workforce. There are more resources and tools for customer service, planners and executives.

When first visiting the Key Account

Tool Box, search the Tool Box database by keyword, or review the Tool Box Top Picks that feature specific sectors, technologies or professionals. The Ask An Expert feature gives users access to expert advice specific to a region or nationwide. A menu of relevant Listservs provides links to industry networks and news resources.

Member benefits

More tools and features are available to public power utilities served by the sponsoring organizations through the Members Only section. As a member, key account representatives are able to forward pertinent links to their account customers, or subscribe account customers for full member access.

Members can browse the Tool Box Library with a guided topic search, and save items to a Library Cart. From here, the links can be sent directly by email to key customers.

If a utility enrolls a key account as a member, the customer will have the same access.

First time users—public power utilities associated with DEED, Western, SEPA or Bonneville Power Association—will want to join now for full access to the site. There is no membership fee, but the Members Only section is customized for public power utilities and their key customers.

The benefits of energy efficiency and renewable technologies are far reaching. With this online tool you can offer quick and convenient solutions to businesses in your community, and support your key account strategy.

For more information about this online resource, contact your Energy Services representative, or call Western's Power Line at 800-769-3756. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2006/dec/dec061.htm

Revitalized communications promote efficiency, ease rate hikes

The daunting task of explaining a steady stream of rate increases to its members turned into an opportunity for Continental Divide Electric Cooperative to strengthen its ties to the community and educate a new generation about public power.

It is a critical time for the 61-year-old, northwestern New Mexico co-op and its power wholesaler, Tri-State Generation and Transmission Association, explained CDEC Member Services Representative Mac Juarez. Tri-State plans to build new generation and transmission to meet growing demand, but the projects are still several years from completion. In the meantime, member co-ops must buy expensive supplemental power, while the future holds rate increases to pay for construction of the new facilities.

“We have to prepare our customers for that, and tell them what they could do to help control the costs,” said Juarez. “That’s going to take a larger presence in the community than we’ve had for several years.”

Annual meeting

To start the ball rolling, Juarez brought back CDEC’s monthly newsletter. This gave the co-op a way to communicate directly with its members and begin the process of consumer education. “I remember seeing it when I was a kid, but it hadn’t been published since the early ‘80s,” he said.

The newsletter’s first mission was to promote CDEC’s annual meeting. It was part of an intensive three-month outreach campaign to reverse a history of poor attendance. It had been 10

years since enough members attended the meeting to achieve quorum.

The previous year, fewer than 225 members showed up—far short of the 501 needed to conduct the business meeting and vote for long-overdue changes to the bylaws.

Along with the newsletter, TV, radio and newspaper ads targeted new co-op members. “There’s a whole generation of members that don’t know the history of the rural electric co-op,” said Juarez. “I think we were able to introduce them to what co-ops stand for.”

Personal contact played an important role in establishing the utility’s identity. “Attending town councils and public meetings helped to put a face on CDEC and reminded members that we are part of the community, too,” Juarez acknowledged.

The meeting itself was scheduled on a Saturday afternoon instead of the evening to make it more convenient to attend. Members enjoyed family activities including a ring toss, jumping castle, face painting and photo ID kits for kids, a craft fair, hotdog lunch and entertainment. CDEC gave away a trip for two to Las Vegas, Nev., and goodie bags containing compact fluorescent lights, among other things.

The value of outreach became clear when registration ran through 515 goodie bags. Almost 900 members attended the meeting, achieving quorum for the first time since 1995 and rebuilding lines of communication with the community. “That’s when our communication strategy really began to change,” Juarez said.



CDEC General Manager Richard A. Shirley and Member Services Representative Mac Juarez developed a successful outreach campaign to build member participation. (Photo by Continental Divide Electric Cooperative)

Pushing wise energy use

CDEC did not wait to capitalize on its new rapport with its members. In July, the co-op launched Operation Eff-Con — efficiency/conservation — a program to educate consumers about wise energy use and promote peak-shaving technologies.

A one-page Home Energy Savings Guide is the central piece of the educational component. CDEC drew the information from several resources, including a multi-page guide produced by Touchstone Energy Cooperatives. “We couldn’t afford to mass produce Touchstone’s booklet, so we whittled it down to one page of facts that fit in with the electric bill,” said Juarez.

The mailer tells consumers about Operation Eff-Con and gives tips for managing home energy use. “The emphasis is on what members can do

See REVITALIZED COMM., page 8

**Want to know more?
Visit www.wapa.gov/es/pubs/esb/2006/dec/dec063.htm**

New cooling technology aids South Dakota's pursuit of efficiency

Cooling represents as much as one third of the electricity costs for commercial buildings, so why wait until summer when HVAC installers are really busy to think about controlling that load? The good news is that cooling technologies are getting more sophisticated, from modular systems designed and built off-site to the frictionless compressor chiller the state of South Dakota recently installed in its capitol building.

Affordable performance

It sounds like science fiction: magnetic bearing technology levitates the rotor of the shaft, resulting in a highly-efficient, super-quiet compressor. Without metal-to-metal contact, there are no high-friction losses, no oil to contaminate refrigerant and no oil-handling equipment to use energy or break down. "It eliminates all maintenance associated with oil migration" noted Rich Ivey, project engineer with the Office of the State Engineer.

Reduced maintenance, however, is only a fringe benefit of the technology. Significant avoided costs were the big motivation for replacing three existing chillers and seven rooftop air conditioners on the capital building with one frictionless chiller plant. "Generally, when you replace a rooftop unit with a chiller, you are going to improve efficiency," said Ivey.

Greater efficiency, so important in holding the line against volatile energy prices, did not come with the higher first costs usually associated with an advanced technology. The state looked at bids for conventional systems, as well as another system using magnetic

bearing technology, and, Ivey observed, "The prices were comparable. If a new solution can significantly improve efficiency, especially at similar cost to a conventional system, we'll look for an opportunity to deploy it," he said.

Encouraging innovation

The Office of the State Engineer makes it a practice to encourage its architectural and engineering firms to think outside the mainstream. "We expect them to look at new strategies and it's always exciting to implement creative solutions," he added.

The frictionless chiller system, for example, is one of the first to be installed in South Dakota, Ivey said.

Another creative solution that is getting a lot of attention at the engineer's office is the geothermal heat pump. "The system has a lot of potential to maximize our facilities' energy budgets," said Ivey. "We're looking for suitable projects, particularly on a campus-wide scale."

The office is also pursuing retro-commissioning projects at state higher-education facilities. Most of the projects involve lighting, boiler and variable air volume systems, said State Energy Manager Michele Farris. "Evaluations on cost-effective energy-saving measures are conducted and those with the most potential rise to the top," she said.

Commitment to efficiency

Ivey praised Farris for her leadership on energy-efficiency projects. "South Dakota is a small state, so we have only one person in that position, instead of an office full of people," said Ivey.



Project Engineer Rich Ivey, right, shows Energy Services Representative Greg Vaselaar the touch-screen controls on the new chiller in the South Dakota capitol building. (Photo by Michele Farris)

The small staff may actually help the engineer's office keep its focus on energy efficiency, or maybe the state government's history of commitment to energy conservation is the secret. In 2003, Western gave the state energy team the prestigious Administrator's Award for developing a strategy for planning and funding energy efficiency improvements.

Then-State Energy Manager Tracy Thorne, who is now a Western's Upper Great Plains Field Representative, worked with the Board of Regents, Department of Corrections, Department of Human Services and the Capitol Complex on the plan. "Those agencies have shown the greatest interest in getting the most out of their operations budgets through efficiency improvements," acknowledged Farris.

Improvements may be made to lighting, heating, cooling or some other system; they may target a summer or winter load. At the South Dakota Office of the State Engineer, it is always the season for wise energy use. "As energy costs continue to rise, facilities managers are evaluating energy-saving technologies," said Ivey. ⚡

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2006/dec/dec064.htm

Fort Mojave tribal casino gets cooling system makeover

The calendar says winter, but some of Western's customers, like the Fort Mojave Indian Tribe, contend with year-round cooling loads. During the expansion of its successful Avi Resort and Casino in Laughlin, Nev., the tribe evaluated several efficient cooling strategies and settled on the whole-system approach.

Chill-water plant

The complex is one of the top two energy consumers at Fort Mojave, with 800-plus slot machines, three restaurants, a food court, movie theater, bingo hall, bar and additional gaming and meeting areas.

According to an energy audit of tribal buildings done by the Council of Energy Resource Tribes in 2005, cooling is the facility's only space-conditioning need. The report also noted that using 25 rooftop air conditioning units to do the job was a big waste of energy, said Bill Cyr general manager of the tribal Aha Macav Power Service.

"The casino expansion gave us a chance to correct that," said Cyr. "We were increasing the casino's floor space by 33 percent, adding 300 guest rooms and doubling the size of the conference facility. The scope of the project made it practical to install a central chiller plant."

"It's common for casinos to go through expansions," said Jim Riesenberger, western regional sales manager with TAS, a company that specializes in designing, manufacturing and installing modular chilling plants. The tribe contracted with TAS to provide the casino's new cooling system, rather than hiring one vendor to design the new cooling system and another to build it.

"That's one of the reasons a modular chill-water plant is a good fit for casinos," said Riesenberger, who worked with Aha Macav on the project. "The systems can easily be expanded to accommodate facility additions."

Integrated approach

That integrated approach makes a big difference in energy performance, said Riesenberger. "It doesn't matter how efficient a plant is on paper, the design changes when it gets into the contractor's hands," he asserted.

When a system is designed and built by the same company, Riesenberger continued, the manufacturer can look at how components function together. For example, TAS designers determined that increasing the water temperature a few degrees reduced the amount of work the pumps do by 40 percent. "It more than offsets the extra work the chiller has to do," he insisted. "If you are just looking at the efficiency of individual components, gains like that get overlooked."

TAS has an established relationship with equipment vendors and rarely substitutes components in any of its 22 platforms, according to Riesenberger. "That consistency allows TAS to offer guarantees on the plant's energy performance," he said.

Depending on local conditions, a TAS chill-water plant uses 0.6 to 0.8 kW/ton, compared to 1.2 to 1.4 kW/ton for rooftop units and 0.8 to 0.9 kW/ton for even the most efficient "stick-built" systems, said Riesenberger. If a plant under-performs, the company calculates what



A modular chiller plant replaced 25 rooftop air conditioning units on the Avi Resort and Casino, reducing the energy costs and allowing for future facility expansions. (Photo by TAS)

a kW is worth to the business over 20 years and pays that amount to the system owner.

Tribe spreads word

The guarantee, combined with the fact that a modular system can cost up to 20 percent less to install than a "stick-built" plant made the chill-water plant a cost-effective choice for the Avi Casino. "The cost analysis on the payback for installing the chiller plant showed that it was definitely worth the investment," said Cyr.

Beyond energy efficiency, the chill-water plant offers other benefits of particular interest to casino operators. "The ventilation is much better than with rooftop AC. The smoke on the gaming floor has noticeably decreased" said Cyr. "Good for business and good for the lungs."

The tribe was so satisfied with its new chill-water plant, that it recently organized a conference on chillers with CERT. Cyr said that 15 tribes, many of them with casinos, attended the event. "The Fort Mojave Tribe believes in sharing, and we believe that this information will help others in Indian country make solid business decisions," he said. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2006/dec/dec065.htm

Brigham City bike promotion raises energy efficiency awareness

There are a lot of good reasons to save energy, such as reducing your electric bill, protecting the environment or, for customers of Brigham City, Utah, Light and Power, the chance to win a new mountain bike.

Residential customers who had made an energy-efficiency improvement in their home were eligible to enter the drawing. At the end of October, Energy Awareness month, Brigham City Mayor Lou Ann Christensen drew the winner from 360 entrants and Lori Metcalf received the bike.

The goal of the give-away was to acknowledge citizens who participated in conservation and to raise awareness about energy efficiency. "Bicycles are 100-percent efficient, after all," Energy Conservation Specialist Tom Ammons pointed out.

Qualifying measures

Entrants had until Friday, Oct. 27, to complete the upgrade, said Ammons, but they could get credit for any improvement made over the last two years that they had not reported. Measures included:

- Upgrading or replacing an appliance with an energy-efficient model
- Installing compact fluorescent lights in the home
- Repairing or having maintenance done on a central air conditioner
- Using a swamp cooler instead of a central air conditioner
- Discontinuing the use of space heaters in the winter

- Participating in Brigham City's refrigerator recycling program
- Making building envelope improvements (sealing, insulation, new windows)
- Replacing an electric heating or electric water-heating system with natural gas
- Any other efficiency measures that lowered kWh usage

Switching to CFLs was the most common measure, Ammons noted, helped along, no doubt by a promotion the city launched in 2003. Residents who asked for an energy-efficient light received an 11-watt and a 15-watt bulb. "The program has been very successful for raising awareness of an easy way for consumers to reduce their electricity use," he said.

Refrigerator and freezer recycling came in a close second, also thanks in part to a city program. Metcalf replaced her old freezer with new efficient freezer, in addition to installing CFLs in her home.

The most unusual efficiency measure was reported by a resident who said he no longer slept with the television on. "I found that one interesting," commented Ammons.

Spreading awareness

Registration for the give-away began in August at an annual community event called Nights Out, sponsored by the Brigham City Police Department. The city electric department used the opportunity to give a safety presentation and talk about conservation. Fire Safety Week presented another opportunity to discuss conservation measures with



Energy Conservation Specialist Tom Ammons presents a new mountain bike to drawing winner Lori Metcalf. The drawing was open to any Brigham City utility customer who had completed an energy efficiency upgrade in the last two years. (Photo by Brigham City Light and Power)

residents and register them for a chance to win the bike. Residents could also register on the city Web site. "The page received more than 600 hits," Ammons said.

Newspaper ads, posters and flyers promoted the contest, as did hanging the bike from the ceiling in the City Hall lobby. "People ask what it is doing there and that gives us an opening to talk about energy efficiency," Ammons explained. "It also gets kids excited."

The utility took the relaxed approach toward documentation, Ammons admitted. People presented receipts for light bulbs or for work done on their homes. If service crews were in an area, they might drive by a house where an entrant had installed energy-efficient windows to see if the windows looked new. Appliance purchases were cross-checked with dealers, although Ammons said, "We mainly relied on the honor system. The most important thing was to get

See BIKE PROMOTION, page 8

**Want to know more?
Visit www.wapa.gov/es/pubs/esb/2006/dec/dec066.htm**

Bike promotion

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residents to think about measures they could take to save energy.”

Estimating the savings from the measures for residents entering the give-away helped to put conservation into terms consumers understand. For example, a flyer Ammons distributed at events showed the savings in dollars from replacing one incandescent light with a compact fluorescent light. “Showing people how much they could be saving encourages them to do more,” said Ammons, “or to complete upgrades they have just been thinking about.”

Experience in efficiency

Brigham City Light and Power has had almost 15 years of practice motivating people to use energy wisely. “We started the conservation program in 1993 after some of our employees attended an integrated resource planning workshop sponsored by Western,” Ammons recalled. “The city has been actively involved ever since, trying out different measures to get residents to participate. Over the years, more citizens have taken an interest in conserving our resources.”

Past promotions have included the CFL give-away, refrigerator/freezer recycling program and free energy and lighting audits for small

business and residential customers. The city buys T-8 lighting fixtures and passes them on to customers at cost when they retrofit their lighting.

The secret to a successful promotion is to find out what the customer wants, Ammons said. “Then put it out there for them, and let them know about the benefits. It’s about making the effort, and Brigham City is willing to do that.”

The effort paid off with the bike give-away, and Ammons would like to repeat the drawing next year with an energy-efficient freezer as the prize. “An appliance would attract a different audience,” he said, “but we won’t be able to hang it from the City Hall ceiling.” ⚡

Revitalized communications

from page 4

to reduce energy costs—theirs and ours,” Juarez stated.

Touchstone provides other outreach material that Juarez was able to brand for CDEC’s campaign, including TV, newspaper and radio ads. Although the co-op is using Touchstone TV ads for the first time—“They were too ‘Midwestern’ in the past,” Juarez noted—radio is CDEC’s main medium. “It’s more cost-effective, and the coverage is much wider in our service territory,” said the member services representative.

Three measures targeted

Operation Eff-Con focuses on three measures to help homeowners reduce their consumption: compact fluorescent lights, electric thermal storage heating and time-of-use rates.

CDEC has partnered with 14 schools in its territory for a CFL fund-raiser. Students sold the energy efficient lights for \$3.50, and the school got two dollars, one from each sale and a matching donation from the co-op. “The schools raised \$6,300 by selling more than 3,100 bulbs, helped raise awareness about energy efficiency and saved families money on their electricity bills,” Juarez said. “The promotion was a winner for everyone.”

The electric thermal storage promotion encourages co-op members to install the highly efficient heaters and take advantage of CDEC’s time-of-use rates. Although the units will increase the utility’s load, they will shave its peaks, which will help CDEC control costs. And, of course, “They save our members money, too,” Juarez pointed out.

When members win, the co-op wins—and vice versa. That’s a message that Continental Divide will continue to share with its members as it meets new challenges in the months and years ahead. It is easier to win the game when everybody knows the game plan. ⚡

Lompoc LED light rebate promotes efficient holiday decorating

The tradition of brightening our homes with holiday lights during the darkest days of the year can add strain to a winter-peaking utility's load or, in Lompoc, Calif., it can be an opportunity to introduce customers to a festive way to save electricity.

Residents of the central California coastal city enjoy cool summers thanks to ocean breezes and low electric rates thanks to Lompoc City Electric Utility. "We don't really use air conditioning here," said Energy Conservation Manager Mary Kammer. "Our load has more in common with San Francisco than our inland neighbors. It peaks in the winter—Dec. 16, at 6 p.m., to be specific."

Innovative rebate

That date just happens to coincide with the city's annual Christmas decorating contest, which inspired the municipal utility's latest energy efficiency rebate. In October 2005, the city council approved one of the nation's first incentive programs for decorative LED lights. Customers could receive \$4 for up to a 70-foot strand or \$8 for a longer strand.

LED lights are more expensive than conventional lights but cost pennies, rather than dollars, to operate over the holiday season. According to the Energy Services Holiday Lighting fact sheet, an 8-foot tree lighted with LED lights for five hours a day would add only 12 cents to a monthly electric bill, compared to \$7.09 for traditional lights. Also, the lights last up to 100,000 hours indoors and will remain cool to the touch no matter how long they are on.

The rebate is well-suited to a city with only 13,000 meters and very little local industry. Demand-side programs that help small business and residential customers control costs can be a very effective tool for managing the load of a small municipal utility.

Local retailers

The small-town atmosphere made promoting the offer easy. The utility sent postcards announcing the rebate to past participants in the holiday decorating contest. Newspaper ads and a short story in the Lompoc Record helped get the word out. "And word of mouth has always been good for letting customers know about a new program," Kammer observed.

The Lompoc WalMart posted signs that the utility provided near the product and offered the personal touch as well. "When I bought a strand for my home, the clerk told me about the rebate," said Kammer. "WalMart was very supportive."

The local hardware store also carried the energy-efficient lights. Kammer noted that Lompoc doesn't have a lot of retail outlets, but that didn't deter some determined residents. "They drove 30 miles to get their LED light strands," she recalled, adding, "This year, our Home Depot will be stocking them."

The city paid out a total of 190 rebates on the lights. "Requests for rebates kept coming in through March," recalled Kammer.

Latest of rebates

Lompoc has a history of responding to resource shortages with



Shimmering LED light strands turn a house plant into a festive—and energy-efficient—holiday decoration for the office. (Photo by Lompoc City Electric)

programs that promote community action. The city's first rebate program, launched in 1990, addressed California's drought conditions with rebates on low-flush toilets.

Deregulation and the 2001 power shortages spurred the city's first electric efficiency rebate program. Funding for incentives for energy-efficient refrigerators and lighting came from California's Public Benefits Fund, Kammer stated. The city also pays \$35 for old refrigerators and provides pick-up and disposal at the landfill for replaced units.

Customers replacing old washing machines and dishwashers with Energy Star models became eligible for rebates in 2003. The city offers a \$100 rebate for converting electric

See REBATE, page 11

**Want to know more?
Visit www.wapa.gov/es/pubs/esb/2006/dec/dec067.htm**

Dairy, utilities learn from South Dakota's first digester

Minnesota has Haubenschild Farms, Colorado has Colorado Pork Growers, Nebraska has OLean Energy, and now South Dakota joins those states with a biogas generation project of its own.

Like most livestock operations that get into the renewable energy business, the Midwest Dairy Institute near Milbank, S.D., was motivated by odor control issues. The Milbank Community Foundation, which owns the dairy, wanted to expand from 1,400 to 2,400 head and needed an effective way to manage the additional manure. The foundation board decided that a digester project would provide a valuable demonstration for South Dakota's dairy industry. The electricity it generated was a value-added product, explained dairy Energy Maintenance Manager Jeff Loutsch. "This kind of system offers a lot of potential benefits for a dairy but first and foremost, it's an odor control strategy," he said.

Uses for processed waste

The huge digester—85 feet wide, 163 feet long and 20 feet deep, with a 1.2 million-gallon capacity—began producing methane in January 2006. The gas fires a boiler, which maintains the waste solution at a constant 96-degree temperature, the optimal conditions for the bacteria to break down waste and produce methane. The boiler also provides hot water for heating more than 5,000 feet of in-floor heat and hot water," Loutsch said. "The gas replaced propane as our heat source, so there was a significant savings right there."

The remaining digested solids are separated into gray water and fiber, which is sterilized and used as bedding for the cows. The farm has cut its bedding costs by \$32 per cow or \$45,000 a year.

Gray water can be recycled for nonpotable uses, said Loutsch, cutting down on the dairy's consumption of fresh water. There are many such uses in dairy operations, he added. "We use it to flush pipes, thin the contents of the holding pit and, in winter, thaw the pit."

Local farmers buy the excess liquid to use as fertilizer.

Electric generation

In August, the dairy flipped the switch on a generator that turned the digester's surplus methane into another product—electricity. The 375-kW Caterpillar engine is capable of supplying electricity for 250 average homes, about 0.3 kW per cow. Waste heat from the generator supplements the boiler system, heating the digester, the in-floor heating system in the parlor and holding area and some domestic hot water.

The dairy is selling electricity from its grid-connected system to Basin Electric Power Cooperative through its utility, Whetstone Valley Electric Cooperative. Whetstone Valley was the institute's point of contact for getting approvals from the regional reliability council, helping with interconnection requirements and arranging the power purchase contract.

East River Electric Cooperative, a Basin member co-op, helped with the



Midwest Dairy Institute's covered digester, above, collects and processes waste from 1,400 cattle into bedding, fertilizer and biogas to power a fuel cell, below. (Photo by Midwest Dairy Institute)



project on behalf of Western, Basin and Whetstone Valley. "The digester was only a small project compared to other Basin resources, but it touched all three cooperatives and Western, too," said East River Power Supply Specialist Jeff Rud. "Our job was to pull all those parties together and make sure that all requirements were met. We learned a lot about the dairy business, and the dairy learned a lot about the power industry."

"The hardest part was that we were all doing a lot of things for the first time," said Whetstone Valley General Manager Steve Ahles. "East River really helped get the permitting organized."

East River and a company in Florida have also expressed interest in buying green tags from the digester project. The power purchase agreement allows the dairy to reevaluate that possibility in one year.

See DIGESTER, page 11

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2006/dec/dec068.htm

Digester

from page 10

Experience biggest benefit

Even with the electricity sales and other benefits, institute engineers have estimated a payback period of five to seven years. Funding for the \$5.8-million digester came from a private grant. “The capital investment is probably the biggest obstacle to private dairies,” acknowledged Loutsch.

Ahles pointed out, “The start-up costs are very high for a small resource. Some are the same as they would be for a much larger generator.”

To the Milbank Community Foundation, the digester project’s

main value is as a demonstration. Part of the institute’s mission is to investigate technologies and develop best practices to keep the industry profitable.

Ahles commented that the institute’s experience would be valuable to dairies considering digester technology, but warned that some of the lessons learned applied only in South Dakota. “Each state has different regulations, so every project will face unique hurdles,” he said.

In South Dakota, regulations covering interconnection and distributed generation are still evolving. “While we were negotiating our agreement, new legislation passed and changed our options,”

observed Loutsch, “and the debate about net metering is going on.”

Still, the digester seems to be fulfilling its educational purpose very well. Loutsch said that large dairy owners and people interested in building dairies have toured the facility. The vendor who built the system also brings groups through. When it comes to increasing the value of agriculture operations, meeting environmental regulations and generating renewable electricity, both the dairy and the power industry may have something to learn from the Midwest Dairy Institute. ⚡

Rebate

from page 9

clothes dryers and water heaters to natural gas, and there are programs to help low-income customers with their utility expenses. “Since we implemented the rebate programs, the average monthly residential load dropped from 389 kWh to 349 kWh,” said Kammer.

Lompoc City Electric recently implemented a program to encourage customers to generate their own power. Solar systems complying with the city’s interconnection agreement and California Energy Commission requirements may receive a rebate of \$3.50 per watt up to half the cost of the system or a maximum of \$15,000.

With all those programs, a few energy-efficient Christmas lights may seem like only a drop in the bucket. Kammer noted, “This LED light program is more about raising awareness than saving energy, but it helps customers save a little on their electric bills when they need it most. Even small gains add up.”

And that is something to celebrate. ⚡

Calendar of events

Visit Western’s regularly updated Energy Event Calendar for a complete list of seminars, workshops and conferences.

<http://www.wapa.gov/es/pubs/esb/2006/dec/dec06coe.htm>

Outreach programs help busy utilities educate consumers

Short on time and resources but long on good intentions, utilities that believe a well-educated consumer is a powerful energy-conservation tool can choose from a number of excellent, ready-made programs to communicate that message.

Professionally-produced outreach packages may focus on a specific subject or provide a broad overview of electricity or energy. Some are designed for use in the classroom, while others target adult consumers. They may come from partnerships between power providers, professional associations and government agencies, or from private production companies. With a little research, a utility should be able to find an outreach program, or several, that meet its communication needs and budget.

School-utility partnerships

Moore Syndication is a communications company that specializes in safety education programs for the utility industry. Its popular "Louie the Lightning Bug" program has been teaching safety to school-age children for more than two decades. Last year, the company introduced the new Power Bandit Tracker 2.0 for teaching electricity, natural gas and water conservation in the classroom.

The interactive CD teaches contains program lessons on basic science concepts relating to the nature, generation and distribution of electricity, the formation and distribution of natural gas, and safety rules. "We tied the content to core

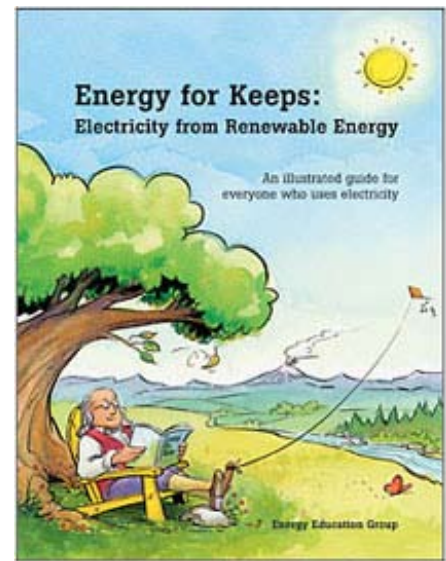
curriculum requirements, because that's how classroom time is spent," said Pam Moore. "Schools are always looking for tools that will help them teach the requirements."

Moore Syndication developed the program at the request of Memphis Light, Gas and Water with a grant from the APPA Demonstration in Energy Efficient Development program. DEED members can request a complimentary copy of the Power Bandit CD from APPA and the CD is available at a discount to APPA members. "Programs like the Power Bandit provide an opportunity for utility-school partnerships," explained DEED Program Manager Michele Suddleson. "It meets the utility's need to teach wise energy use by meeting the school's need to teach science concepts."

For member needs

APPA is an excellent resource for educational materials, for commercial, residential and student audiences. Members can customize a wide variety of bill stuffers, guides, promotional items and planning aids. A DEED grant funded the development of the new online Key Account Tool Box to help utilities provide their large customers with the latest energy-efficiency strategies.

"Our goal is to make it easier for APPA members to communicate the value of public power to the community," said APPA Marketing Director Jeff Haas. "One way we do that is by providing them with timely, relevant, well-designed and affordable promotional material."



Energy for Keeps is one of many communication tools available to utilities that want to educate consumers about energy conservation. (Art by Energy for Keeps)

This year, in conjunction with Public Power Week, the association partnered with Project Energy Savers to offer award-winning, energy-efficiency promotional items. "The Energy Savers calendar has been very popular since its introduction," said Haas. "We believe that the new Energy Savers tip book and children's activity book will build on that momentum."

Haas said that APPA would like to add more materials for children and students to its product line. "We are open to suggestions from members," he said. "We would like to hear from them about the resources they would find most useful in their outreach programs."

Primer for wider audience

For a crash course on energy issues for middle school students to adults,

See OUTREACH PROGRAMS, page 14

**Want to know more?
Visit www.wapa.gov/es/pubs/esb/2006/dec/dec069.htm**



TOPICS from the POWER LINE

Editor's note: The Energy Services Bulletin features real answers to real questions posed to our staff at the Energy Services Power Line. We hope you find it useful.

Radiant heater a good choice for auto repair shop

Question:

An auto body repair shop wants to add heaters for worker comfort in their 32' x 48' open-space building. They don't want a forced-air system so they are considering radiant (infrared) heaters. Can you recommend any specific radiant heating systems, and advise us on sizing and positioning the heaters?

Answer:

Most radiant heating system manufacturers will provide information about distributors in your area. Online directories, such as infraredheaters.info and infraredheaters.net, are a good place to begin your search for manufacturers. These companies often provide the layout support your customer will need. Heating contractors can also provide assistance. Call four to five contractors and ask them about their experience and the number of radiant heater jobs they have done. Try to visit the sites where they installed systems.

Radiant heaters work particularly

well in applications such as garages because they warm people and objects in a space without heating the volumes of air in between. Infrared heaters can also be used for freeze protection by focusing the heaters on areas where freezing could cause damage. This direct heating saves a considerable amount of energy, too.

Designing an infrared heating system for comfort control is subjective—it depends on the degree of comfort that you want and the size and layout of the garage. Infrared heaters can be cycled to run only when cars are being repaired, and be locked out through thermostats to turn off when outside temperatures are high enough to maintain comfort. A heating contractor might be able to give you more specific recommendations for locations and sizes of heaters.

If energy conservation is one of the reasons for installing a radiant system, it is important to be aware of control strategies. Various reports suggest using conventional setback thermostats to reduce the temperature by 5 to 10 degrees during unoccupied hours. Also, using ceiling fans to control thermal stratification enhances comfort and saves energy. Make sure that thermostats are not located within the “radiant zone,” so as to provide a true measure of air temperature.

Articles, fact sheets

- *Radiant Floors Create More Comfort, Use Less Energy* Energy Source Builder article: radiant floor heating
- *Research Supports Benefits of Radiant Ceiling Panels* Article describes the research and benefits of radiant ceiling panels.
- *Thermal Energy Storage for Small Commercial Buildings* (.pdf) A fact sheet on thermal energy storage from the Energy Center of Wisconsin.

Organizations, programs

- *Radiant Panel Association* A trade organization for the radiant panel industry – contractors, wholesalers, manufacturers, and designers. Offers tech notes, publications, design guidelines, membership information and an education program.
- *Energy Star-labeled heating and cooling products* Official Energy Star Web site from the U.S. Environmental Protection Agency.

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2006/dec/dec0611.htm

Outreach programs

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utilities may want to consider Energy for Keeps. Published by the Energy Education Group with seed funding from the California Energy Commission and the Bonneville Power Administration, the user-friendly book covers electricity technology, renewable energy, energy efficiency and utility basics. It comes with a glossary, student activity CD (on request) and eight pages of information resources. The Web site also provides teacher support.

“Utilities can buy the program in quantities so they have something to give schools when teachers call,” said Marilyn Nemzer, editor and co-author. “And since the book has found a much wider audience than schools, utilities may want to give copies to public libraries in their service area.”

The book explains commonly-used terms like time-of-use and renewable portfolio standards that may be confusing to people outside

the industry. Because it covers the basics of generation and distribution, energy companies give Energy for Keeps to their non-technical employees, said Nemzer. “Utilities have given it to legislators, too. It gives people who don’t have an energy background information to help them make sound energy decisions.”

Energy for Keeps earned the 2004 Innovation Award from the Interstate Renewable Energy Council, and Nemzer updated the book last year. Contributors and reviewers included more than 75 energy experts from agencies such as Western, Sacramento Municipal Utility District and the National Renewable Energy Laboratory.

More resources

The programs mentioned here barely scratch the surface of outreach resources available to utilities and consumers. The DOE Office of Energy Efficiency and Renewable Energy offers training and publications for teachers and parents, students, school

administrators, energy professionals and homeowners.

The Energy Hog campaign teaches children how to save energy in the home through an online interactive game. The Energy Hog Challenge is an educational program that covers science, math, technology, language arts and social studies, and meets national learning standards for third through eighth grades. The guides can be downloaded for free on the Web site.

Of course, Western’s Energy Services provides fact sheets on energy efficiency topics that utilities can download and imprint with their own contact information. Western can also customize fact sheets for our customers. Contact your regional Energy Services representative for more information.

Consumer education can make a big job a little easier. With ready-made outreach programs, utilities can keep their customers well-informed, stretch their marketing dollars and focus on what they do best—keeping the lights on. ⚡



Energy Shorts

Go Solar California! Web site unveiled

The California Public Utilities Commission and the California Energy Commission launched the new Go Solar California! Web site Oct. 19, reinforcing the state's dedication to solar power. Coming about two months after SB 1 was signed into law, Go Solar California! marks the official start of the state's plan to bring 1 million solar roofs to California by 2017.

Go Solar California! aims to simplify the process of finding and enrolling in solar energy programs. It is a one-stop information center for new or existing home owners, businesses, schools, public buildings, farms and others to learn about solar power. Users can get answers to frequently asked questions and learn how to take advantage of both Federal tax credits and California's \$2.8-billion incentive program.

"California leads the nation in aggressive policies that promote renewable power and decrease greenhouse gas emissions," said PUC President Michael R. Peevey, "The state is offering nearly \$3 billion in incentives for consumers and businesses to invest in solar power. Go Solar California! offers tools and information to streamline the solar process and educate on the benefits of this renewable resource."

WGA gets grant to the explore West's bioenergy potential

The U.S. Departments of Agriculture and Energy awarded the Western Governors' Association \$290,000 to explore the potential of bioenergy as an energy resource and a boon for rural economies in the West.

The grant will fund the development of policies and strategies to further bioenergy research and demonstration projects. It was one of 17 awards totaling \$17.5 million for research, development and demonstration projects intended to help make bio-based fuels cost-competitive with fossil fuels in the commercial market.

Earlier this year, the WGA launched its Clean and Diversified Energy Initiative, which focused on electricity generation. The Federal grant will enable the WGA to expand the initiative's scope to include transportation fuels and thermal energy development.

The WGA plans to build on the work of its Clean and Diversified Energy Advisory Committee's Biomass Task Force, working with a team of bioenergy experts from academia, the private sector and the Federal government. The proposed team will determine the contribution bioenergy can make to the use of alternative energy sources by 2015.

That will include assessing barriers to biofuel resource development and identifying potential policies

and incentives needed to encourage development. The team will also look at the cost-benefit ratio of bioenergy resource development and analyze the West's bioenergy potential in relation to its potential in other regions of the country. Bioenergy development's likely impact on the goals of the Bush administration's Healthy Forest Initiative is another concern for the WGA.

Google corporate headquarters goes solar

Google recently joined the growing number of California businesses jumping on the solar bandwagon with its plans to install a 1.5-megawatt solar array on its Mountain View headquarters.

The announcement came at the opening of Solar Power 2006 solar industry expo in October. The industry pointed to the project as proof that solar is becoming a more mainstream energy resource and that high profile businesses see the value in such a move. The project calls for more than 9,000 Sharp solar panels to be installed on rooftops and parking lots at the Googleplex. Most of the panels will be placed on building rooftops, but some will provide covered parking in existing company parking lots. Pasadena-based EI Solutions designed the project for Google, and Sharp Electronics will provide the panels for the project.

The planned system is larger than most corporate installations, such as the 675-kW array on San Francisco's

Energy Shorts

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Moscone Center or the 904-kW system on FedEx's Oakland airport hub. Although the array will supply only 30 percent of the company's electricity needs, David Radcliffe, Google's vice president of real estate, estimates a payback of 10 years.

Utah rail facility explores geothermal heating

Geothermal energy may soon be heating the Utah Transit Authority's commuter rail service center if a study shows the project to be economically feasible. The U.S. Department of Energy provided UTA with \$15,000 to study the use of naturally-occurring underground energy to help heat the 165,000-sq. ft. facility.

UTA hopes to tap hot geothermal water to provide heat to the working areas of the repair and maintenance facility. The resource thought to be located below the site is not expected to be able to heat the whole facility. However, it could greatly reduce the use of natural gas for heating. It is anticipated that the use of geothermal energy will significantly reduce use of natural gas. Without geothermal

energy, UTA estimates that it could spend up to \$15,000 per month heating the commuter rail center.

The Utah State Energy Program, part of the state geological survey, requested the funding from DOE's GeoPowering the West program. Engineers from the Geo-Heat Center at the Oregon Institute of Technology are conducting the study. Results are expected by the end of this month.

Report says farms, forests can help reduce global warming

America's farms and forestlands have a major role to play in reducing the threat of climate change, according to two reports released by the Pew Center on Global Climate Change.

By changing agricultural practices and foresting marginal agricultural lands, the United States could offset up to one fifth of its current greenhouse gas emissions, and create potential new sources of farming income. In addition, replacing fossil fuels with biofuels made from agricultural crops could further reduce emissions by 10 to 25 percent.

The two reports are Agriculture's Role in Greenhouse Gas Mitigation by Keith Paustian, John M. Antle,

John Sheehan, and Eldor A. Paul; and Agricultural and Forestlands: U.S. Carbon Policy Strategies by Kenneth R. Richards, R. Neil Sampson, and Sandra Brown.

In Agriculture's Role in Greenhouse Gas Mitigation, the authors make the case for "suitable payments" to encourage farmers to adopt new emission-reducing management practices. They also recommend policy incentives to reduce costs of producing biofuels and accelerate key technologies. Access to financing, changes in economic conditions and technologies and policies will be key factors that will affect farmers' willingness to play a part in climate solutions.

The second Pew Center report, Agricultural and Forestlands: U.S. Carbon Policy Strategies, considers a range of policy approaches that would ensure a prominent role for U.S. agricultural and forestlands in national climate mitigation plans. Potential policies could include changing practices on public lands, land use regulations for privately owned forestlands and incentives designed to promote climate-friendly practices on agricultural lands. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2006/dec/dec06es.htm