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Western customers show leadership in green power programs

The National Renewable Energy Laboratory recently released its annual ranking of leading utility "green pricing" programs, and several Western customers made appearances in each of the four categories.

More than 500 utilities in 33 states now offer voluntary programs that allow customers to support additional electricity production from renewable resources such as solar and wind. NREL used information from utilities to rank the top 10 green programs in total sales of renewable energy to program participants, total number of customer participants, customer participation rate and the lowest price premium charged for a green pricing service using new renewable resources. "We developed the rankings to provide utilities with benchmarks for evaluating their programs as well as performance targets to aim for," said NREL Principal Policy Advisor Blair Swezey.

The number of utilities offering green power programs and the number of customers buying clean energy has grown steadily since NREL began ranking programs in 2000. The number of kilowatt-hours sold through green pricing programs in 2003 increased to 1.2 billion, up more than 30 percent from 2002.

In the category of total renewable energy sales, Sacramento Municipal Utility District followed the growth trend, selling 143.2 million kWh of certified green energy in 2003, the third highest sales in the nation. SMUD was the only utility to rank in all four categories. "We've worked really hard to diversify the marketing mix, and it shows in the numbers," said SMUD Greenergy Program Coordinator Jim Burke.

An important factor, Burke believes, is the ongoing evaluation of the Greenergy marketing program. "We've learned that there are lots of reasons people buy green power, and that changes all the time," he said. "So it's worth testing a strategy to see if what worked last year is delivering this year."

Those strategies include billing statements, direct mail, promotions with business partners like Starbucks and the Sacramento Kings basketball team and an inbound contact center where customers calling to establish service can learn about the green energy program. "That has been our lowest-cost, most reliable tool for delivering new subscribers," said Burke.

Los Angeles Department of Water and Power's Green Power for A Green LA program placed sixth

See GREEN POWER, page 2



NREL ranked Lenox, Iowa, Municipal Utilities' version of Green City Energy No. 1 in customer participation in the nation. Iowa Association of Municipal Utilities created the adaptable program to help the state's municipal electric utilities increase their use of renewable energy. (Artwork courtesy of IAMU)

Green power

from page 1

on the list with 87.8 million kWh. Both utilities' green power offerings pre-date NREL's rankings and have consistently appeared among the top 10 in one or more categories.

New approach

The number of customers participating in green power programs is another area that showed significant growth in 2003. LADWP reported 29,677 customers paying premium prices for renewable energy. Only investor-owned Xcel Energy had a greater number of participants at 43,039.

SMUD rose from fifth place to fourth in 2003, adding more than 5,000 customers for a total of 24,542. The 30-percent increase was not unusual for the program over the last few years, said Burke, but the growth in the commercial sector was enormous. "We started the year with 30 commercial subscribers and ended with 344."

He attributed that 1,000-percent jump to a fresh perspective. "There's

a perception that business customers never pay more than they have to, so we tend to automatically offer them the lowest-priced package," he said.

That changed when a residential representative who took a temporary position in the commercial contact center thought that business owners would be just as interested in green energy as homeowners. The representative turned out to be right, and others in the commercial division stepped up their promotion of the Greenergy program. "It was a great lesson in how to expand commercial sales," Burke admitted.

Small utilities score big

Utilities serving large cities naturally tend to dominate in the number of total participants, Swezey noted, so NREL also ranks programs by percentage of customer participation. This category allows smaller utilities to strut their initiative and marketing expertise. "Small co-ops and municipalities often do a better job of communicating with their members or customers," he explained. "They know their audience well and often have the advantage of a greater sense of community."

Lenox, Iowa, Municipal Utilities, with 550 meters and the highest customer participation rate in the nation, certainly makes the case for community. In fall 2003, the town commissioned its own 750-kW wind turbine as a part of the Iowa Association of Municipal Utilities' Green City Energy program to help municipal utilities and cooperatives meet the state's green energy option requirement. In a few months, 11.1 percent of Lenox residents signed up to purchase 100-kW blocks of power from the generator.

General Manager Dave Ferris be-

lieved that customer support was as strong for the local project as it was for the principle of renewable energy. "When people look up at that 50-meter turbine spinning, they know what their money is paying for," he added.

Larger than LMU by 27,000 residential and commercial customers, the second-ranking City of Palo Alto Utilities also launched its green pricing program only last year. Since June 2003, 2,200 residential and commercial customers—8 percent—have enrolled in PaloAltoGreen.

In an innovative move, CPAU contracted with the renewable certificate marketer 3 Phases Energy to assist in designing, developing and marketing the program, and to manage purchases for the utility. The program built participation through community and environmental publications, direct marketing efforts, special events, and one-on-one contact with individual and commercial accounts. Earth Day offered an opportunity for a big enrollment push, as well. "Being present in the community is a critical distinction of our program," said Anthony Enerio, Manager of Utility Marketing Services. "We believe that commitment, along with customer choice and easy enrollment will move us into first place next year," he added.

Green power support

The third and fourth highest participation rates belong to Moorhead, Minn., Public Service and Holy Cross Energy in western Colorado.

Both small utilities offer locally generated renewable energy. Moorhead's Capture the Wind program replaces coal-generated power with clean energy from two 750-kW wind turbines the city commissioned in

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2002. The municipal utility has ranked high on NREL's list since 2001, and currently, 5.5 percent of its customers subscribe to Capture the Wind.

Holy Cross buys 5 megawatts from Xcel's Ponnequin Wind Farm to supplement green power blocks from its Local Renewable Energy Pool program. Although the community undoubtedly feels some ownership toward the two locally sited, small hydroelectric units supplying the pool, Marketing Manager David Church thinks the utility's 5.1-percent participation rate has more to do with local culture. "People move here for the quality of life," he said of the mountain communities Holy Cross serves. "Naturally, they are concerned about protecting the environment that is so much part of that."

In eighth place with 4.6 percent participation, SMUD was the only utility that ranked in both total number of customers and in participation rate. With more than 500,000 customers—100 times more meters than Lenox—Greenergy could coast on numbers alone. "But our management and administration has more than just a token interest in renewable energy," Burke insisted. "They deserve a lot of the credit for the program's success."

Green pricing premium

The fourth category ranks utilities by the lowest premium charged for renewable resources developed specifically for green power programs. "It's a way to measure the development of new sources that customer contributions are funding," explained Swezey.

The national average green pricing premium, according to NREL, is 2.82 cents per kWh. "We've seen a slight drop since the ranking started," the policy advisor said.

He attributed the decrease in part to rising natural gas prices. "Greater use of renewable energy can help utilities stabilize electricity rates for their customers. Ultimately, what determines the market is how well renewables compete against conventional energy sources," Swezey added.

In keeping with that assessment, the three Western customers tied for fifth place, with a rate of one cent per kWh, focused on keeping their green price premiums affordable. "Our surveys showed that customers get excited about green power, but they still want a competitive rate," said SMUD Greenergy Program Coordinator Jim Burke. "Our goal is to maintain that rate as long as we can."

SMUD delivers low premiums by carefully managing its green portfolio, which mixes delivered power with green tags. "Long-term contracts have been a big help," Burke observed. "We have a flat-rate agreement with the landfill powerplant that supplies 69 percent of our green power."

Utility-owned renewable energy projects are a small but growing part of SMUD's portfolio. In 1999, the board of directors voted to match 40 cents for each dollar Greenergy subscribers paid to create a fund for developing new renewable sources. The fund has helped the utility purchase three wind turbines and build solar array-covered parking at a Sacramento mall.

Self generation is the key to Southern Minnesota Municipal Power Agency's low premium. When SMMPA brought two 950-kW wind turbines online last June, its wholesale price for wind power to its members dropped from \$2.90 per 100-kWh block to \$1. The effect on the wholesaler's green power program was enormous. "Our subscription rate tripled," recalled Member Support Program Manager Dan Hayes.

Siting the turbines at member utilities helped SMMPA avoid most costs associated with putting renewable energy onto the grid. However, the agency's main interest was in keeping the cost to its customers as low as possible, said Hayes. "It's not a money-making proposition," he explained. "We offer renewable energy for the reasons it should be done."

Roseville Electric, at No. 5 on the NREL list, keeps its green energy affordable with a mix of geothermal energy from established steam fields in northern California and small generation projects. Customers support renewable energy development by donating one cent per kWh used to the RE-New Green Fund. The utility matches all customer contributions dollar for dollar and uses the money to help build clean energy systems in Roseville. A PV array on the rooftop of the Ray Sharp Memorial Fire Station #6 is an example of a project that received funding from the program. ⚡

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2004/june/jun041.htm

'Do-it-yourself' heat pump promotion a big success for co-op

Delta Montrose Energy Association proved that if you want something done right, the best way is to do it yourself—especially for a rural electric co-op hoping to sell its members energy-efficient electric technology and build “good load” in the process.

The board made a strategic decision in 1998 to market energy services to its members that ultimately led to more than 300 geothermal heat systems being installed on Colorado's western slope. “We wanted to create a financing program that would provide residential members conditioned space at a fixed monthly fee,” explained Marketing and Member Services Manager Paul Bony. “The concept is called ‘chauffage,’ but our members said it sounded too French and too expensive, so we renamed it the Co-Z Energy Plan.”

Through the Co-Z plan, members' monthly payments on their electric bill cover energy cost for heating and cooling, and the costs of installing and operating a geothermal heat pump. Initially, the program targeted GeoExchange technology “because it fit our goals really well,” said Bony.

Competitive technology

Those goals were to develop a long-term revenue stream; build a profitable, stable electric load; cultivate member loyalty; promote energy-efficient technology; and educate local contractors. In a market where existing homes were mainly heated by propane and builders were installing natural gas heat in



The Co-Z Energy Plan started as a way to sell DMEA members energy services—hot water, cold beer and comfort—and turned into an award-winning program promoting GeoExchange technologies. (Artwork courtesy of Delta Montrose Energy Association)

new homes, DMEA recognized that it would have to remove the barriers associated with adopting green, electric powered technologies.

For most consumers, high first cost is the biggest obstacle to installing energy-efficient systems. DMEA's solution was to offer members long-term loans to finance complete ground-source heat pump systems, including installation and all equipment, for up to 30 years. Participants also enjoyed a “lock” on their energy rates for a total monthly heating and cooling bill that was competitive with propane and natural gas prices using conventional equipment. Members who purchased the geothermal installation outright or those who have paid off their systems early may also purchase service and maintenance agreements.

The energy services staff manages the program with help from the co-op employees' credit union, which is located in DMEA's lobby.

Adaptable program

The Association of Energy Services Professionals International honored DMEA's initiative and innovation with its 2003 Award for Achievement in Energy Services. The award recognized not only the success of the Co-Z Energy Plan but its flexibility. Utilities and energy services companies throughout the country could adapt elements of the program, such as its choice of energy-efficient technology, to meet customer retention and load-building goals.

Meanwhile, DMEA is adapting its promotion of GeoExchange systems to reach small commercial and institutional markets. In early 2004, Intermountain Energy, working with Par Mechanical and EnLink Geoenery Services, Inc., installed 120 tons of GeoExchange capacity in the Montrose County Health and Human Services Facility, the equivalent of 30 residential units.

Businesses, after all, can benefit at least as much as homeowners from year-round comfort and low energy costs. If there is one conviction guiding DMEA, it is that every member should be able to enjoy the benefits of energy-efficient technology. Even if the co-op has to start a few new businesses to make it happen. ⚡

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2004/june/jun042.htm

Burke, S.D., enjoys 50 years of hydropower

Before Burke, S.D., population 800, celebrates its centennial in August, Western would like to congratulate the little town near the Nebraska border on another milestone—its golden anniversary as a Federal hydropower customer.

Although the 50th anniversary of Federal hydropower allocations will not be observed with the parade, barbecue or street dance planned for the town's 100th birthday party, residents might pause when they turn on a light to reflect on the meaning of the occasion. "The Western allocation helps us keep the costs to our customers down," said Jerry Jones, Burke's finance officer and acting utilities superintendent.

The municipal utility receives about 70 percent of its power from Western, and buys the remainder through Missouri River Energy Services.

Clean hydropower

Before June 1954, two diesel-powered generators produced about 600 kW to meet Burke's energy needs. But the generators were wearing out, recalled retired Utilities Superintendent Richard Bailey. "It would have cost \$20,000 to rebuild the motors, which was a lot of money then. It made more sense to purchase Federal power instead."

Burke purchased all its electricity from Federal sources until 1977, when Federal caps on hydropower allocations forced the town to find a supplemental provider. Missouri Basin Municipal Power Agency, which later evolved into MRES, stepped in to make up the difference. "Western power is still our best buy," stated Jones.

Ensuring reliable delivery

"Over the years, Western helped us maintain the distribution system, building and repairing substations and monitoring our power factor," Bailey said.

At one point, testing indicated that the power factor had dropped to 40 or 50 percent. With technical assistance from Western, the utility installed three new banks of capacitors, bringing the power factor up to 97 percent.

When Western launched the Equipment Loan Program in 1986, Burke was one of the first utilities to schedule an infrared scanning inspection of its electrical system. "That first inspection, we found a transformer with its bushing almost burned in two, right in one of the substations," Bailey said. "If we hadn't caught and repaired it, it would have knocked out the whole town."

Even though the town now contracts out system maintenance, Jones carries on the tradition Bailey began, scheduling a thorough infrared inspection every two years. "We always find something that we need to fix or to plan for in the future," said the finance officer.

"And we always include the substations in the inspection," added Bailey. "We learned that the first time."

Both Bailey and Jones spoke highly of the utility's relationship with Upper Great Plains Energy Services representatives. Jones noted that Greg Vaselaar has been a big help with the scanning program. Bailey remembered that Dick Siebert, Vaselaar's predecessor, always came

to town to go over the purchasing contract and to see if the utility needed any assistance.

Early efficiency program

Another program that Burke took up in its early days was compact fluorescent light promotion. In 1989, the utility partnered with Western, the South Dakota Public Utilities Commission, the Burke Jaycees and the *Burke Gazette* newspaper to distribute the energy-efficient light bulbs to residents.

In an interview for Western's June 1991 *C&RE Bulletin*, Bailey called the promotion an amazing success, with more than half the utility's customers showing up to collect a complementary CFL.

"Those bulbs are great," said Jones. "I installed several when I bought my house in 1992, and most of them still work."

Jones's enthusiasm for technologies that last is understandable, since maintaining the utility infrastructure of a century-old town is an ongoing challenge. The city, which provides water and sewer service in addition to electricity, is currently putting in four blocks of new water main and updating fire hydrants.

The work should be done in plenty of time for festivities honoring Burke's 100th birthday. On the other hand, the city's 50th hydropower anniversary will probably pass unnoticed. If that is because residents know they can count on clean, reliable and affordable electricity, Western doesn't mind our customers forgetting our anniversary. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2004/june/jun043.htm

Small-town wind garden grows from large-scale wind farm

Like an enormous tree sending out roots, the 162-MW Colorado Green Wind Farm, in the southeastern part of the state, caused the nearby city of Lamar to sprout its own small wind project.

The four 1.5-MW turbines of the Lamar Wind Energy Project may look like a mere window box garden next to Colorado Green's 108 units, but Lamar Light and Power expects them to supply about 14 percent of the city's electricity by year's end. "We commissioned three of the turbines Feb. 27, and we've been resolving some start-up issues," said Electricity Superintendent Rick Rigel. "The turbines are expected to produce some power about 90 percent of the time."

Rigel and his predecessor, Leon Sparks, agreed that Lamar owes its status as a clean power producer in large part to the construction of the Colorado Green Wind Farm. "When [initial developer] Enron came into the area, we started to wonder why we couldn't do the same thing," recalled retired Superintendent Sparks.

In February 2001, the municipal utility borrowed an anemometer from Western's Equipment Loan Program to collect wind data with an eye on adding up to 5MW. Obstacles arose, however, when the city learned it would have to pay a wheeling fee to get power from the site being studied. Then Enron dropped the project.

Wind farm brings resources

The idea "really grew legs again," according to Sparks, when Xcel Energy and General Electric Wind signed a contract in October 2002 to build



Contractors install the blades on Lamar's first wind turbine. The city commissioned the 1.5-MW unit on Feb. 27. (Photo courtesy of Lamar Light and Power)

the nation's third largest wind farm in Prowers County. "Wind development is a very specialized field, and all of the sudden, this project brought a lot of specialists to our area," he stated. "We couldn't mistake opportunity knocking."

"Coat-tailing on Colorado Green gave us the economy of scale we needed to make our own project feasible," concurred Rigel. "GE doesn't sell just three or four turbines."

Coat-tailing also meant working within the wind farm's schedule. Lamar stepped up testing and found a site on private land within three miles of the distribution system, closer by six miles than the original site choice.

SeaWest Windpower, a consulting firm working on Colorado Green, bid the construction contract for Lamar, and GE sold the city three turbines. ARPA bought a fourth unit to install on the site. GE also provided maintenance contracts, a critical consideration for any utility thinking about building its own wind project, said

Rigel. "If our turbines malfunction, the repair crews are close by."

Supplier's support

Keeping the turbines online is important not only for generating energy but for recouping the city's investment. To finance the equipment and construction, Lamar Utilities Board sold \$6 million of revenue bonds. The bonded indebtedness is for 20 years with annual payments in excess of \$400,000.

"Good performance and longevity are the biggest part of making wind energy affordable," said Rigel. "Our fuel costs are fixed—we don't have any. But we are paying on the bonds whether the turbines are generating or not."

"There's strong support for wind here because our customers see it as a local product," said Sparks. "Our surveys showed that a lot of them would be willing to pay a premium for it."

Instead of charging a green tariff, though, ARPA blends Lamar's wind energy into the generation mix and sells it at blended prices. Rigel praised ARPA, adding that utilities needed to work closely with their suppliers when setting up renewable generation projects.

The biggest incentive was the opportunity to stabilize the city's energy supply in a way that might benefit the community. By taking a few "clippings" from the nation's third largest wind farm, Lamar found an economical way to start its own energy plot that may yet grow into victory garden.



Want to know more?
Visit www.wapa.gov/es/pubs/esb/2004/june/jun044.htm

Mesa, Ariz., rolls out green barrels

America's love affair with lawns generates approximately 32 million tons of green waste—grass, leaves, plant trimmings, tree branches and prunings—each year, which might be viewed either as a huge municipal nuisance or in the case of Mesa, Ariz., as a recycling opportunity.

Mesa's Green Waste Barrel Program annually collects more than 15 thousand tons of organic yard waste and sends it to the Tri-Cities Landfill, where it is turned into mulch instead of garbage. "Anything we can do to extend the life of the landfill is going to be good for the environment," said Outreach Specialist Mariano Reyes, "But the short-term benefits make it work. The program saves the city \$3.50 per ton in disposal costs, and it can lower our customers' trash bills, too."

Arizona's third largest city provides trash collection to 110,000 households. As part of standard trash service, residents receive a black barrel for garbage and, since 1994, a blue barrel for recyclables. Refuse customers can pay an additional \$4.40 per month for a green barrel for yard waste only, or those with more than one black barrel can exchange the extra trash can for a green barrel. About 29,000 customers currently participate in the voluntary green waste-recycling program.

Landfill closure

The Green Waste Barrel program started in 1997, but its origin goes back to 1993 when a new state law



Mesa residents place their tree clippings in a green barrel provided by the city for recycling yard waste. (Photo courtesy of City of Mesa)

forced the Salt River Landfill, which received all Mesa's solid waste, to move to a smaller site. Siting new areas for a landfill is always difficult, Reyes acknowledged, so the city wanted to do its part to keep the new site functional as long as possible. "Since we already had the curbside recycling program in place, it was natural to think about what else we could recycle," he said.

Having an established recycling program meant that there was no need to add staff or create a new administrative system. A grant from the Arizona Department of Environmental Quality Recycling Program covered the purchase of the barrels, a dedicated pickup vehicle and educational materials.

The city surveyed residents with two black trash barrels to learn if they would be interested in a green waste-recycling program for part of their trash, and selected Dobson Ranch—"A mature area with a lot of yard waste," said Reyes—for the pilot project.

The initial response was positive enough to warrant introducing the program to more neighborhoods, a few at a time. The gradual rollout was an important part of Green Barrel's success, the outreach specialist recalled. "We took our time to implement the program to make sure that it made economic sense," Reyes explained. "There had to be enough participation to cover overhead costs. Otherwise, it would not be financially reasonable to offer the service."

It paid to be cautious, he noted, pointing to another Arizona city that tried to launch a citywide yard waste recovery program all at once. Starting on such a large scale, the program didn't have time to build sufficient support to keep it going. "The result was that it folded after a short time," Reyes stated.

Partnership necessary

The other necessary component in any successful recycling program is a place to send the collected material. Mesa approached the Salt River Pima-Maricopa Indian Community, owner of the Salt River Landfill at both its current and previous sites. "In the long run," Thomas insisted, "recycling is about saving 'air' space."

Judged by that standard, the Green Barrel waste program is a success for Mesa and for the Salt River Landfill. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2004/june/jun045.htm

SRP adds geothermal to portfolio

While many utilities offer their customers green energy from one or two sources, the Salt River Project's EarthWise Energy program seems to approach renewable resources with the eye of a collector.

The Phoenix-based power supplier's most recent acquisition is 50 MW of geothermal power and credits from geothermal plants in California's Imperial Valley. The agreement with TransAlta Energy Marketing, US added to a portfolio that already included solar, landfill gas, wind and low-impact hydroelectric generation. "When we launched EarthWise Energy, the focus was on a mix of renewable technologies to make the most of the environmental benefits," said Environmental Initiatives Manager Lori Singleton.

EarthWise Energy was launched four years ago when SRP's board of directors approved \$29 million to fund a renewable energy program. Standard electricity rates remained the same, but customers could opt to spend an extra \$3 per 100 kWh on their monthly bills to fund the development of additional renewable energy sources.

Large purchases

The program's first renewable kilowatts came from two 100-kW photovoltaic stations on SRP's Santan Generating Station. SRP later built another 200-kW system at its Agua Fria Generating Station. The Santan system was recently relocated and another 200 kW array was added to it. PV panels atop the City of Mesa

library and the City of Phoenix Park 'n' Ride add another 125 kW to the agency's solar holdings for a total of 725 kW of installed power.

The Tri-Cities Landfill Gas Generating Facility went online in July 2001, providing SRP with 4 MW of power from a resource that would otherwise be burned off and released into the air. Located at the Salt River Pima-Maricopa Indian Community, the facility was the first of its kind in Arizona and the only one in the country on an Indian reservation.

The unique low-impact hydroelectric plant SRP built on the 130-mile Arizona Canal Network generates 750 kW and takes renewable energy back to its roots. The site generated power more than 100 years ago. A hydroelectric turbine installed at the Arizona Falls site harnesses the power from the canal's natural 20-foot drop in elevation.

Wind power, like geothermal, is a recent addition to SRP's renewable energy collection. Last October, SRP contracted with Public Service Company of New Mexico to buy 50 MW of power from PNM's New Mexico Wind Energy Center. "SRP has a longstanding relationship with PNM so that made it easy to put together the deal," Singleton said.



Arizona Falls, a low-impact hydroelectric facility built on the Arizona Canal Network, contributes to Salt River Project's renewable portfolio, and demonstrates renewable energy in action. (Photo courtesy of SRP)

Both the wind and geothermal are unique in that they are firm power purchases, she added. Such contracts help to mainstream renewable energy into the resource mix and help meet peak power needs in the summer months.

Customers' motives

Currently, more than 4,500 SRP residential customers pay the small premium for clean energy from SRP's assortment of renewable resources. Also, 35 Phoenix businesses participate in the program, including one Maricopa County court facility and the Phoenix Zoo, which runs its holiday light display on EarthWise Energy.

A true connoisseur, Salt River Project understands the value and uniqueness of each renewable resource and will continue to share its appreciation with EarthWise Energy customers. ⚡

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2004/june/jun046.htm

Compressed air audit improves efficiency record

To the truly committed, there is always room for improvement. That is why New Belgium Brewing Company staff attended a Western workshop on compressed air systems and scheduled an audit of its plant.

From its companywide recycling program to the many water- and energy-saving features built into its facility, the Ft. Collins, Colo., craft brewery is a model of environmental responsibility. It runs on 100-percent renewable energy, buying wind power from Platte River Power Authority and capturing methane gas from its process water treatment plant to fire a cogeneration plant that heats water and produces electricity.

Having gone to such lengths to be a good corporate citizen, most companies would rest on their laurels, but New Belgium's staff is always on the lookout for new ways to improve efficiency. Last summer, for example, Process Design Engineer Bryan Hermann explained, "We started working on the utilities to accommodate growth at the brewery, and it never hurts to have an outside party check your work."

"Also, some of the compressed air equipment had recently jumped from a normal load to a maximum load, and it was causing production upsets. We wanted to get the existing system in shape before we moved forward with expansion," he added.

Western workshop helps

New Belgium contacted its power provider, Ft. Collins Electric Utility, and Key Accounts Manager Dennis



Scott Stroup, President, Airometrix Manufacturing, Inc., explains air compressor performance testing techniques during a two-day workshop sponsored by Western, Platte River Power Authority and Ft. Collins Electric Utility.

Sumner suggested a compressed air systems workshop scheduled in August for industrial customers. "It was a good opportunity for customers with compressors, because the inefficiencies aren't all that evident," Sumner explained. "Then, all at once they realize they are paying much higher energy costs."

The municipal utility cosponsored the workshop with Western Energy Services and PRPA. "Western's energy outreach is an extremely valuable service," said Sumner. "We want to give our key accounts the technical assistance they need, but it's tough for a small utility by itself to come up with the funds to do something like this."

Airometrix Manufacturing Inc., an air compressor performance testing company, presented an introductory luncheon and two day-long workshops for Ft. Collins' key accounts. "There was so much interest in the topic, we had to do two sessions,"

said Airometrix President Scott Stroup.

The workshop focused on helping operations and maintenance personnel improve compressor energy efficiency, which usually involves testing individual air compressors in the field. Without tests, explained Stroup, operators have no way of knowing what their systems are capable of. "An audit establishes a baseline performance, so operators can quantify a system's energy consumption and air leaks," he said.

On-site equipment tests

That's what the brewery needed, Hermann decided after attending the workshop, and scheduled an audit with Airometrix. "We needed to quantify loads for the system, either to determine whether we could fix it or to justify the capital investment for replacing it," said the process design engineer.

The audit took place over two days—first with the plant operating normally, so Stroup could familiarize himself with the system, and then with everything shut down for testing. "The plant shuts down one day a month for routine maintenance, so we scheduled the audit for that day," said Hermann.

"The great thing about the audit is that it is both addressing our current needs and helping us plan for the future," Hermann said. "We know New Belgium will be growing, and now we've got a direction for the changes we'll need to make to accommodate the growth." ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2004/june/jun047.htm

Green building movement grows momentum

When construction and interior design professionals hear the word “green,” a growing number think not of a color but of a concept, and one that may be the next big trend in their industry.

“Sustainable” or “environmentally friendly” also apply to the movement employing the latest energy- and resource-saving technologies to build homes, offices, industrial facilities and public spaces that use energy, water, materials and land more efficiently than traditional buildings.

Agencies set standards

At the forefront of the movement is the U.S. Green Building Council, dedicated to promoting the adoption of sustainable construction practices. Its membership draws from a cross section of related fields including contractors and builders; design, engineering and architecture firms; and product manufacturers and utilities.

In 2000, USGBC established the Leadership in Energy and Environmental Design program to evaluate and recognize green building projects. Through LEED, council members developed a voluntary Green Building Rating System based on specific criteria. The system awards credits within six environmental categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation and design. Based on the total credits earned, a building may receive a bronze, silver, gold or platinum level green building certification.

In three years, the U.S. Green Building Council has certified 89 of office or apartment buildings, manu-



The Sundeck restaurant at Aspen ski resort was one of the first green building projects in the world to receive LEED certification. Aspen Ski Company hopes its recently completed Snowmass Golf Club will earn a gold certification. (Photo courtesy of Hal Williams)

facturing plants, condos, convention centers, schools and libraries. National participation in the LEED program has increased from 1 percent in 2001 to a predicted 7 percent of new-building construction for 2004. More than 1,100 buildings have applied for the council’s Good Housekeeping-type seal of approval.

The U.S. Department of Energy supports the development of energy-efficient, healthy and comfortable commercial buildings with the High Performance Building Initiative. National laboratories, building owners and professionals in commercial construction work with the program to reduce buildings’ energy consumption and improve their quality, occupant comfort, and cost-effectiveness. The initiative’s Web site offers information on design and technologies, training opportunities and a searchable database of high performance buildings.

Public sector leads the way

Seeing an opportunity to save energy and money, and to set an example for the private sector, a growing number of government and non-profit agencies are insisting on green features in buildings. Foundations are making green design a condition for grants, while the Federal government requires its new buildings to meet green standards. As of October, the General Services Administration, builder of non-military Federal buildings, requires LEED certification on structures that cost \$2 million or more.

At least 10 states and 23 cities and counties — Los Angeles; Seattle; San Diego; Dallas; Kansas City, Mo.; San Jose, Calif.; Chicago and Portland among them — require or are considering requiring a LEED rating for all public buildings. Local governments are adding sustainability planners and managers to their staffs.

Several LEED-certified projects in Western territory fall into the category of municipal, civil or non-profit facilities. The council bestowed green certification on the California Department of Education building in the state's five-building East End project, along with two State Capitol office complexes. In fact, there are currently 75 green projects in northern California with Sacramento boasting the largest concentration.

Not to be outdone, the Audubon Center in Los Angeles is the National Audubon Society's first nature center in California to be constructed from the ground up using environmentally sensitive design techniques. It was also the first building in the United States to achieve a platinum certification under version 2 of LEED's rating system. Using more than 50 percent locally manufactured materials in its construction and generating all its own power made the Los Angeles Audubon Center one of the most environmentally friendly buildings in the nation.

Practicality, idealism

The premium builders pay for green construction can start at less than two percent and increase depending on design features. Commercial developers, however, are recognizing the long-term benefits, including indirect ones such as improved employee health and retention, and responding to a growing market. An up-front investment of \$100,000 in green building features on a \$5 million project would save at least \$1 million over 20 years' occupancy, according to the California

Sustainable Building Task Force.

Sacramento Municipal Utility District helps to make sustainability more attractive and contribute to the green building boom in the region with incentives for energy-saving businesses. For some companies, however, commitment to the environment is the main motive for building green. A pioneer in sustainable operation, Aspen Skiing Company is the only ski/snowboard resort with a climate protection policy. That corporate culture drove the resort's decision to build one of the first LEED-certified buildings in the world.

The Sundeck restaurant boasts energy-efficient lighting and uses wind power for 30 percent of its needs. Also, ASC recycled almost every part of the original restaurant when it was demolished to make way for the new energy-efficient building. The cost to tear down the old Sundeck was \$93,000, compared to \$135,000 for conventional demolition, proving again that even the purest of motives do not exclude good business sense.

ASC is hoping to achieve a Gold LEED rating for its second recently completed green building project, the Snowmass Golf Clubhouse.

New standards

Because green building as a movement is still relatively new, LEED standards continue to evolve. On the horizon, three pilot programs may dramatically increase the number of green buildings in the future.

Last fall, USGBC certified the first LEED-EB projects, a rating for retro-

fitting existing buildings. The LEED Rating System for Existing Buildings targets a market that is 80 times bigger than the one for new buildings, according to the council. Criteria include whole-building cleaning and maintenance issues, ongoing indoor air quality, energy and water efficiency, recycling, exterior maintenance and systems upgrades to meet green building standards.

LEED's commercial interiors program, released to the public this year, evaluates tenant improvements to a building site. This segment of the building industry is five times larger than new construction. The ratings address selection of sustainable tenant space, efficient water usage, energy performance optimization including lighting and lighting controls, resource use for interior systems and furnishings and indoor environmental quality.

Complementary to the interiors rating, the core and shell programs currently under development are aimed at developers who have put a building shell together, but haven't finished the interior for tenants. Together, the two rating programs will set green building standards for commercial office real estate for use by developers, designers and tenants. ⚡

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2004/june/jun048.htm

NMPP, Western awards spotlight achievements

It could have been synchronicity or mutual admiration or the power industry's version of award season when Western and Nebraska Municipal Power Pool celebrated a long-standing and fruitful relationship with a sort of award exchange at NMPP's annual meeting.

On March 30, the power provider presented Western Energy Services with a "Special Friends" award for outstanding service and technical support. Upper Great Plains Representative Craig Knoell accepted the award on Western's behalf. Rocky Mountain Regional Energy Services Representative Peggy Plate also received one of the awards for individual service.

Later in the program, NMPP Energy Key Accounts Representative Jim Keeler and Utility Services Representative Bob Meade received Western's Competitive Edge award. The newly created regional award recognizes individuals, groups or organizations for specific energy efficiency and renewable energy efforts.

Not surprisingly, each agency spoke highly of the other. "Because NMPP Energy serves 185 Western customers, our partnership has allowed Western to reach more local utilities with energy services," said Plate. "Bob and Jim especially are champions at looking for energy efficiency opportunities."

"We came up with the award last year to thank Peggy for helping to develop all our different training opportunities," said Keeler, returning the compliment. "No matter what we asked her, she was willing



At Nebraska Municipal Power Pool's annual meeting, NMPP Energy CEO Dick Duxbury (left) presents the Special Friends award to Western for outstanding technical service and support. UGP Representative Craig Knoell accepted the Special Friends award on Western's behalf. (Photo courtesy of NMPP Energy)

to make it happen, and, as a result, the training has been a huge success. She really deserves this type of award."

Cosponsored seminars

A shared commitment to solving problems and training local utilities to improve efficiency led to both awards. For example, Keeler found that many NMPP members had steam systems and needed to learn more to maximize their operations, so he contacted Plate about setting up a workshop. Plate used Western contacts and Department of Energy funding to put together a seminar that 40 NMPP members including many key accounts attended. "We beat the bushes to get the word out and got a lot of positive feedback for the effort," said Meade.

"Once we scheduled the workshop, it turned out that a lot of people had the same need," said Plate. "These collaborations help DOE, too. It has the resources and the tools, and they are looking for

an audience. Western can deliver that."

A similar joint effort introduced one of those tools to more than 70 NMPP member utilities and key accounts last winter. Keeler helped to coordinate three training sessions for Motor Master software. Part of DOE's Industrial Technology Motor Challenge program, the software allows motor users to select the best motor for a specific application, and track maintenance, operation, and replacement details. Keeler's support of the Motor Challenge program and his promotion of public power to key accounts were among the accomplishments the Competitive Edge award recognized.

NMPP uses Western's tools

The joint award honored both employees for their dedication to saving NMPP members energy dollars and power outages. Their positions grew directly out of Western's cost share arrangement with NMPP Energy in the 1980s to test the "circuit rider" concept for bringing technical support to local utilities and their consumers. That job keeps Keeler and Meade on the road six days a week, noted Plate. "Maybe we should give an award to their families, too," she added.

Meade, long known as a leader in infrared scanning services, has performed as many as 50 energy audits in one year, and recently completed 23 audits in three days for small commercial customers in Kimball, Neb. Characteristically, he shared the credit. "The Equipment Loan Program has been a big

See ACHIEVEMENTS page 14

Path 15 Project breaks transmission bottleneck

A historic partnership is moving steadily toward the cure of an 84-mile headache that has plagued the California electric transmission grid for nearly two decades, and that cure may save the state's electricity consumers millions in energy costs.

Western has teamed with the independent transmission company Trans-Elect, Inc., and investor-owned Pacific Gas and Electric Company to upgrade Path 15, as the transmission corridor is known. This critical section moves power between northern and southern California

More transfer capacity needed

The problem with Path 15 is that it narrows from three to two 500-kV transmission lines between Los Banos and the Gates Substation near Coalinga, limiting much-needed transfer capacity. Factoring the effect of temperatures, load, generator shedding and Pacific Northwest power imports on available transfer capability, available capacity can range from about 3,700 MW to as little as 900 MW.

Studies done by the California Independent System Operator showed that congestion on Path 15 cost the state's electricity consumers \$221.7 million in additional energy costs between Sept. 1, 1999 and Dec. 31, 2000. "And that bottleneck contributed to the northern California blackouts," added Sierra Nevada Regional Public Affairs and Energy Services Specialist David Christy.

The upgrade will add a third transmission line and modify substations at either end of the sec-

tion to allow for the transfer of an additional 1,500 megawatts across the state.

Partnerships could reduce upgrades costs

The California energy crisis highlighted the need to relieve the long-standing congestion caused by Path 15. In May 2001, Secretary of Energy Spencer Abraham directed Western to explore an upgrade and to determine whether non-Federal parties would be interested in helping finance and co-own the system additions. The result is a partnership in which Western is managing the \$306 million project, Trans-Elect is funding the 500-kV line and PG&E is financing and doing the substation work.

The Path 15 Upgrade Project is one of the largest projects Western has undertaken since the California-Oregon Transmission Project was completed in 1992, and represents the first public-private partnership to undertake such a project. Western will own the line and retain a 10-percent share of its transmission capacity. For its investment in substation improvements, PG&E initially will receive approximately 18 percent of the new transmission capacity, depending on actual costs. Trans-Elect is providing the balance of the funding for the project and will receive approximately 72 percent ownership of the new transmission capacity. The additional capacity will be made available to all transmission users through the ISO.

Both the utility industry and the investment community are watching the project to see if it offers a



A helicopter lifts a bridge section into place during the construction of the Path 15 Upgrade. The project is on schedule for completion in late 2004. (Photo by Dave Christy.)

model for other transmission improvements. So far, the reviews are favorable. In 2003, Project Finance International magazine awarded it the Infrastructure Deal of the Year for the Americas and Project Finance magazine named Path 15 its North American Power Infrastructure Deal of the Year.

Planning, design choices

On Dec. 30, 2002, Western, Trans-Elect and PG&E signed a Construction and Coordination Agreement, spelling out project terms and conditions in detail. Western selected contractors Maslonka & Associates the following May, and broke ground on the upgrade in September. The new line is scheduled to go online late this year.

Most of the planning for the upgrade was completed in the mid-'80s as part of the California-Oregon Transmission Project. Although the Path 15 upgrade was not built in the final COTP, Western was able to build on that effort.

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Path 15

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The Path 15 Upgrade Project runs through the foothills of the San Joaquin Valley in the corridor west of Interstate 5. Much of the transmission line runs through farmland, sensitive wildlife habitat and historical and cultural resources. The Final Environmental Impact Review adopted by the California Public Utilities Commission determined that the proposed route west of the freeway was an environmentally superior option.

Western signed a plan to minimize adverse environmental effects and, with other agencies, an agreement for addressing the treatment of historical, cultural and Native American sites. Design measures taken to protect the area's unique features include rerouting an access road to avoid sensitive plant life. Engineers used steel poles in some

areas because they have a smaller footprint than lattice towers and because they accommodate anti-perch devices to discourage raptors from landing on them.

Project on schedule

Careful planning has enabled project partners to keep construction on schedule while protecting the corridor's ecosystem. Through April 15, the contractor had completed access roads to all 343 tower sites; completed 244 lattice tower foundations (99 percent complete); completed 64 steel pole foundations (65 percent complete); erected 53 lattice towers (21 percent complete); and erected 31 steel poles (31 percent complete). When the Path 15 partnership commissions the upgrade in late 2004, both public and private power customers will benefit from the more reliable transmission system. "The fact that Western is moving ahead with construction will benefit all of

California's electricity consumers," said California Energy Commissioner John Geesman.

The upgrade will save Californians money—\$100 million in energy costs during a normal year and more than \$300 million during a dry year, the ISO estimated. Just as important for the state's long-term energy needs, "It will be an extremely valuable highway for moving renewable energy to both northern and southern California," Geesman stated.

California's experience with Path 15 shows that transmission constraints can affect the reliability and cost of power and present an obstacle to developing new resources. Correcting the problem is a complex and costly chore that technical expertise alone cannot complete. Western has welcomed the opportunity to join a partnership that may point the way toward a new solution to maintaining our nation's transmission system. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2004/june/jun0410.htm

Achievements

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success story for both NMPP and Western," he said of the service developed during the circuit rider project. "It gave us the tools to solve problems on site for businesses and homeowners. The infrared camera particularly gives instant feedback, and lets us be proactive instead of reactive."

For example, he recalled an audit of a Ft. Morgan client that uncov-

ered a service transformer so damaged that, "We didn't even close the door on it. It was an outage waiting to happen. They shut down the plant the next day and replaced it."

The Competitive Edge nomination praised Keeler and Meade for supporting Western services and using the Web site and Powerline to find energy efficiency solutions for their customers. Not coincidentally, those same resources, along with technical assistance on maintenance and development projects, helped

earn Western the Special Friends award.

A little appreciation goes a long way to encourage people to keep doing their best, especially in a long-term partnership built on shared goals of service. So when Western and NMPP took the opportunity to recognize each other's achievements in energy services, everyone realized that customers were the real winners. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2004/june/jun049.htm

Internet resources help evaluate rebate savings program

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.

Question:

Our utility is analyzing several residential rebate programs that we have already paid out in an effort to assign an energy value to those rebates. The equipment covered included:

- central air conditioner
- room air conditioning
- refrigerator
- washing machine
- whole house fan—new installations only (versus no fan)
- low-e windows and low-e window film treatments

We would like to determine an average on savings.

Answer:

Assigning precise energy values to your now-completed residential rebate program was difficult to do without having more specifics. You'll want to keep that in mind when designing future rebate programs. However, our library was able to come up with some information that should be useful.

Since refrigerators are the most energy-intensive home appliances, there is quite a bit of information available about potential energy savings.

An article in the January/February 1995 issue of the online Home Energy magazine, "If a Spare Refrigerator is Running Edison Wants to Catch it," has more on refrigerator energy use.

According to the article, Southern California Edison estimated energy savings for its refrigerator recycling program with existing data instead of randomly metering incoming refrigerators. Test data came from similar utility programs around the country, metering studies done by ARCA, and "book standards and values" for different vintages available from the Association of Home Appliance Manufacturer.

Edison program statistics estimated that as of August 1994, 24,000 refrigerators and freezers had been picked up, saving customers the cost of 30 million kWh of energy (an average of 1,250 kWh per unit), with a demand reduction on the Edison system of 4,500 kW.

For more info on refrigeration savings, see the complete article online. ⚡

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2004/june/jun0411.htm

What's This? A Supply Side UPS?

by Johnny Douglass

Editor's Note: This month, the Energy Services Bulletin introduces a new column featuring innovative equipment, systems and applications utilities around the nation are using to save energy and improve service.

Most of us are familiar with battery-powered uninterruptible power supply systems electric customers use to keep up critical loads. Customers commonly use them to keep their computers and critical processes running until power is either restored or on-site generation can be started. Golden Valley Electric Association of Fairbanks, Alaska, has taken this to another level—to the utility supply system.

Fairbanks can be fiercely cold in winter, so critical loads are not just computers and sensitive industrial processes, but building heating systems. With typical nighttime lows of around -19°F in January and record lows of below -50°F, electric power is a matter of life safety.

GVEA has local backup generation to provide power when there are problems with the transmission and distribution system that normally brings power in from Anchorage; however, that backup generation takes up to 15 min-

utes to start. This led the GVEA to implement a monster battery-powered UPS system that seamlessly fills the time gap.

The Battery Energy Storage System is currently the world's largest. It was a joint endeavor for the utility, with Saft Batteries supplying and maintaining the nickel cadmium batteries, and the ABB Group supplying the primary design and controls. BESS consists of 13,760 liquid-filled Ni-Cad cells, and has a total weight of 1,500 tons. Maximum output capacity is 46 MVA, and the system is currently capable of sustaining 27 MW for 15 minutes. It can be expanded to sustain 40 MW for 15 minutes.

From November 2003, when it began service, through February 2004, BESS sustained power through 10 outages totaling an hour and 40 minutes. In the three years between 1994 and 1997, GVEA suffered 111 outages. Of those, 73 were within the current 27-MW capability of BESS, and 10 more were within the ultimate 40-MW capability. For this Fairbanks utility, the UPS system has become an important supply-side tool.

(Note: Douglass is a registered professional energy with the Energy Services Clearinghouse.)

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/2004/june/jun04coe.htm>

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2004/june/jun04spot.htm