

Looking back—and ahead—at utility wind projects

The Energy Services Bulletin has followed our customers' efforts to add wind to public power portfolios. Revisiting some of these projects shows how both the technology and the industry have matured.

Lamar, Colo., Light and Power and Lenox, Iowa, Municipal Utilities are still rookies with about a year of operation. The municipalities launched development on a modest scale – four turbines in Lamar and a single 750-kW unit in Lenox.

NMPP Energy's Kimball wind project has two years' experience with seven turbines.

Wind power veterans Platte River Power Authority in Ft. Collins, Colo., and Moorhead, Minn., Public Service have been generating clean

energy since 1998 and 1999 respectively. Platte River's Medicine Bow wind project boasts 10 turbines supplying four municipal utilities in Colorado. Moorhead's "Capture The Wind" program markets electricity from two turbines to town residents.

A variable resource

Each developer reported that initial generation estimates seldom matched the actual output. Once they adjusted to the resource's variability, the utilities were generally pleased with their units' performance.

Lamar Electricity Superintendent Rick Rigel noted a slight difference between the 35.65 percent capacity factor the feasibility study projected, vs. the turbines' 32.48 percent performance. "One of our units has a more than 95 percent availability rate, and the other two do better than 90 percent," he said.

Kimball experienced a similar shortfall of about three percent. "Our availability has been steadily increasing," said NMPP Energy Communications Manager Bob Selzer. "We anticipate next year with normal winds and normal availability to be close to initial projections."

Moorhead Energy Services Coordinator Kevin Bengtson recalled that the utility's estimates were between 1.4 million and 2.2 million



Platte River Power Authority's Medicine Bow wind project supplies energy to four municipalities. (Photo courtesy of Platte River Power Authority)

kWh per year. The actual output averaged 1.5 million kWh annually from each turbine.

Engineers predicted the Lenox turbine would generate about 10 percent of the town's native load. "It actually produced up to 12 percent in the winter," said General Manager Dave Ferris. "The summer months were shy of the 10 percent figure, though."

Like Lenox, Medicine Bow generates most of its electricity in the winter. "That's about 70 percent of its production," said Platte River Customer Services Engineer Paul Warila.

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Looking back

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The net bottom line on Medicine Bow's average production is only one percent off from study estimates.

Marketing options

Forecasting generation may be a complicated business, but the marketing options are simple: sell the electricity directly to the customer or sell the attributes in the renewable energy marketplace.

Lenox, Moorhead, Kimball and Medicine Bow take the direct sales route. According to the National Renewable Energy Laboratory's 2003 green pricing program rating, Lenox had the highest customer participation in the nation; Moorhead was third highest.

NMPP members prefer to take credit for Kimball's output, rather than market the attributes, and Platte River had to expand Medicine Bow to meet customer demand. "If we sold green tags, then the cities couldn't count their

power as green. That would be double counting," he pointed out.

Lamar Light and Power takes a mixed approach, adding some wind energy to the city's power mix and selling some green tags.

The municipality is working with its power supplier Arkansas River Power Authority and a Boulder, Colo., consultant to explore further green power marketing opportunities.

Expansion plans

Looking to the future, Platte River and Moorhead Public Services express the confidence that comes with experience.

Moorhead has room on its present wind site for another turbine, and is working with interested customers to develop an additional wind turbine. However, the expiration of state and Federal REPI incentives make it difficult to justify the additional cost of the wind turbines. "Renewable energy already makes up more than half of our generation," said Bengston.

He added that Missouri River Energy Services, the utility's power wholesaler, uses the town's wind generation to meet state standards.

A new turbine will be added at Medicine Bow early this year, a 2.5-MW unit designed by Clipper Wind Power. "It has four generators on board, variable speed and rotors 93 meters long," Warila said.

Platte River signed an agreement to purchase all the power from the C93 commercial prototype for the city of Ft. Collins, Colo.

Lamar and Kimball have no current plans for expansion. "We don't

have the load to support additional wind generation right now," said Rigel.

Transmission limitations and uncertain ancillary service rates are keeping MEAN's ambitions in check. "Project expansion represents an unacceptable cost risk at this point," said Selzer.

Success is a powerful incentive to do more. Encouraged by NREL's recognition, Lenox is eyeing other potential wind sites. The city owns 10 acres with good wind resources that could support another turbine. "There's talk in the boardroom about opening up the area," said Ferris, "but so far, it's just talk."

There is also talk of a group of Iowa towns with wind turbines marketing green tags, he added. "We're working with Wall Lake, Waverly and Algona, and possibly Stewart."

Such collaborations point to more development and to a growing pool of experience for the industry to draw on. Energy Services Bulletin looks forward to looking back on that progress. ⚡

Energy Services Bulletin

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Gasification turns biomass into mini-powerplant fuel

A demonstration project conducted by the Energy and Environmental Research Center at the University of North Dakota may turn diesel engines and woody waste into renewable energy solutions.

The EERC is operating a gas production unit and firing a diesel engine generator from forest residues, wood chips, sawdust and agricultural by-products. Biomass gasification technology was used to extract the fuel, similar to natural gas, from wood waste.

Research Manager Darren Schmidt said, "We believe that the project has good economic potential."

Disposing of waste

The concept is based on the National Renewable Energy Laboratory's Small Modular Biomass Initiative. The program's goal is to develop biomass-powered generators of 5 kW to 5 MW that are flexible, efficient and simple to install and operate. The systems can serve a dual purpose for industries that produce biomass waste and consume large quantities of electric power.

SMB initiative partners include the U.S. Department of Energy; the California Energy Commission; FlexEnergy; the North Dakota Department of Commerce Division of Community Services; Primeboard, Inc.; the Primeboard, Inc.; and the Massachusetts Technology Collaborative.

EERC became involved in the demonstration when FlexEnergy contracted with the research center

to provide a biomass gasification system to fuel its Capstone Flex-Microturbine. "They wanted to test it on gasifier-produced fuel," explained Schmidt, "and EERC has a lot of experience with that technology."

Modifying system for U.S.

EERC modified the gasifier to run on wood pellets instead of wood chunks, and automated the system so it did not require a large staff to operate it. "It was semi-automated, but it needed some upgrades to make it cost-effective for American industry," Schmidt noted.

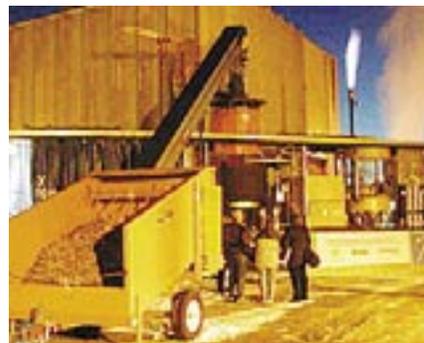
Integrating the gasifier onto a 45-foot trailer for portability was a critical modification, Schmidt added. "Since the ultimate goal is commercialization, we set it up for both mobile and stationary applications," he said.

In addition to processing fuel for the diesel engine at the research center, the portable gasifier will take field trips to a log home manufacturer and a wheat straw particle-board plant. The type of fuel had no significant affect on the gas quality.

Partners needed

Following those promising demonstrations, the EERC is looking for partners to prove the commercial viability of gasification-fueled generation. Schmidt receives a few calls a week, he said, "Either from engineering firms trying to solve clients' problems, or directly from forestry product companies."

The Healthy Forests Initiative could create an important market for



A wood chipper feeds woody residue into EERC's portable gasifier. (Photo by UND Energy and Environmental Research Center)

portable powerplants, too.

"The government is spending a lot of money to clear undergrowth, and producing tons of residues," said Schmidt. "The energy market can handle a much greater volume of material than industries that process waste into products."

Using waste residue as renewable fuel not only saves landfill space and costs, but reduces emissions from decay and displaces emissions from fossil fuel generation. The biomass gas-burning diesel engine emitted far less sulfur than fossil fuels, less NOx and slightly more CO. "A catalytic muffler might take care of that," Schmidt suggested.

On the road of commercialization, such issues are only potholes. At the end of the line is a new option in self-generation that disposes of waste products, decreases emissions and enhances energy security. ⚡

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Visit www.wapa.gov/es/pubs/esb/2005/feb/feb052.htm

Geexchange industry helps Colo. draft construction standards

Industry usually greets regulation with very little enthusiasm so it is refreshing to hear Ed Thomas talk about the Colorado Division of Water Resources' revised geothermal rules.

Thomas, a manager of the Western slope geexchange company Intermountain Energy, applauded CDWR's Rules and Regulations for Permitting the Development and Appropriation of Geothermal Resources Through the Use of Wells. "It brings another level of professionalism and validation to geexchange technology," he insisted.

Standards welcomed

Thomas' company, a wholly-owned subsidiary of Delta-Montrose Electric Association, has installed 300 systems in six years, so he knows about professionalism. "We've heard horror stories about do-it-yourselfers who don't install the units properly and then complain that the technology doesn't work," he explained.

The rules state that only individuals certified by the state engineer can install loop fields. To become certified, contractors must apply to CDWR and successfully pass a free examination.

Thomas was the seventh person in the state to pass the certification test since the rules went into effect Sep. 30, 2004. "Intermountain plans to put all its key employees through certification," Thomas said.

Once certified, contractors must obtain a "Permit to Construct Geexchange System Loop Fields" from CDWR. All work performed under the permit must be done or supervised by the certified contractor specified on the permit. Since Intermountain Energy installed over 75 geexchange

systems last year alone, it's good business for the company to make sure that all its key staff are certified.

Industry expertise

Intermountain and DMEA were part of the government-industry partnership that hammered out the regulations. "Joe Lambert in the state Governor's Office of Energy Management & Conservation pulled us into the process in the beginning," recalled Thomas. "We had a chance to review drafts in advance. It was very inclusive."

"We felt that the technology should be regulated in a way that encouraged its use," said Lambert, an OEMC program manager. "The CDWR deserves kudos for listening to input from other government agencies and the industry."

Input from energy experts and geexchange professionals helped to clarify some questions and issues surrounding the technology. Initially, for example, the state wanted to certify backhoe operators, but Thomas and other consultants pushed for contractor certification. "Contractors are the ones designing and building the system," he said.

Closed loop systems were treated the same as open loop systems under the past regulations. Since closed loops don't appropriate groundwater, Lambert pointed out, the permitting process worsened the economics of installation.

Mainstream acceptance

Ultimately, the geothermal rules should help promote the energy-efficient heating systems by simplifying and standardizing construction



Geexchange contractors supported the Colorado Division of Water Resources' construction permits for horizontal loops like this one. (Photo by Delta-Montrose Electric Association)

procedures and permitting. Contractors must submit a construction report and as-built drawings for each project. That information will be kept in the permit file at CDWR.

Such records add a layer of protection for geexchange system owners, Thomas noted. Intermountain has received calls from people who punctured loops putting in fences.

Records, permits and certification are all tools to advance the broad acceptance of geexchange technology, in Thomas' view, so he welcomes Colorado's revised geothermal rules. "The state recognizes that geexchange is a mainstream heating and cooling option," he said.

To apply for geothermal certification and take the exam, contact CDWR. Telephone numbers are: Denver: 303-866-3581; Greeley: 970-352-8712; Pueblo: 719-542-3368; Alamosa: 719-589-6683; Montrose: 970-249-6622; Glenwood Springs: 970-945-5665; Steamboat Springs: 970-879-0272; Durango: 970-247-1845. Permit applications should be submitted to the CDWR Denver office to the attention of John Gabert or John Bilisoly for processing. ⚡

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Anaheim Public Utilities customers support sun power for schools

Adding more renewable energy to a utility's portfolio can be a marketing challenge, one that Anaheim Public Utilities has tackled by giving customers a choice of green products.

In the more conventional "Green Power for the Grid" program, residents of California's tenth largest city pay a small monthly premium for a 100-kWh block of renewable generation. Those who like to see what they are buying can support "Sun Power for the Schools."

"We wanted customers to have an option that gave them tangible results," said Sun Power Program Manager Deana Presidik, "and engaged them in renewable energy production."

Anaheim Public Utilities launched Sun Power for the Schools simultaneously with Green Power for the Grid in 2002. Subscribers' voluntary monthly contributions help to pay for installing and maintaining photovoltaic systems at Anaheim schools.

Participating schools are selected on a first-come, first-served basis and contribute 20 percent of the solar system cost. Anaheim Public Utilities funds 20 percent of the project cost, and customer contributions raise the remaining 60 percent. Each school is responsible for the design, purchase and installation of its solar system.

Projects meet needs

The program recently completed construction of solar lunch shelters at two elementary schools. The PV arrays at Clara Barton Elementary School and Melbourne Gauer El-

ementary School generate more than 8 kW and provide students with a comfortable gathering space. "The projects have to make sense on more than one level," noted Presidik.

The shelters also add a renewable energy component to science education. "We offer an education program to help teachers bring solar energy into the classroom," Presidik said.

The education aspect of Sun Power for Schools took a front seat when Esperanza High School installed a tiny 1.125-kW solar system. The communication conduit from the inverter was hooked directly to the school's engineering lab, allowing students to study the equipment and collect data.

Building support

Promotion for both green power offerings is relatively low-key, relying on bill stuffers, newsletters, public service announcements and Web site information. The utility is launching a solar newsletter this year to tell green power subscribers about the projects their contributions are funding.

Word of mouth plays an important part in taking the mystery out of solar energy, added Presidik. "Any time there is a public event, our staff will be there talking about our programs, signing up customers and passing out incentives," she said.

Anaheim Public Utilities presents workshops to residential customers interested in home installations and to business accounts on rebates for renewable energy and efficiency. "And I'm promoting and present-



Anaheim School District Board President Dr. Don Garcia (left) and District Superintendent Sandra Barry accept a \$300,000 check from Mayor Curt Pringle and Utilities Interim General Manager Ken Noller (far right). (Photo by Anaheim Public Utilities.)

ing educators' workshops to schools whenever I can," Presidik said.

Renewable energy marketing efforts have brought in 717 green power subscribers. The majority, 702, are residential, with 43 percent contributing to the grid program, 20 percent to the school program and 34 percent supporting both.

Subscribers are a way of increasing the use of renewable energy, and Anaheim Public Utilities is proud of its progress toward that goal. "The city has installed or funded 322 kW of solar power," said Presidik

Those solar arrays generate a marketing message: that lower emissions and a secure energy supply are available to all Anaheim Public Utilities customers, now in two convenient packages. ⚡

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Partnership turns Nevada sunshine into RPS credits

In the competitive industry of power marketing, renewable energy stands out for the way two apparent competitors – say, water and solar – can team up to help a potential customer like Nevada Power Company meet the state’s renewable portfolio standard.

Solar advocate

In this collaboration, water is playing the role of host instead of power source. The Las Vegas Valley Water District has partnered with the southern Nevada utility and Power-Light Corporation to develop a series of photovoltaic stations. The \$22.6 million contract is part of Nevada Power’s plan to meet the 2005 RPS target of seven percent renewable energy, with five percent coming from solar.

The distributed solar array projects will provide electricity for four LVVWD reservoirs. Nevada Power will buy the renewable credits from the 3.1-MW development, and put any surplus generation on the grid. The solar credits, combined with geothermal purchases by the utility’s parent company, Sierra Pacific Resources, will bring Nevada Power’s mix to 7.5 percent renewable energy by the end of 2005.

“This agreement is a great example of parties working together to develop cleaner energy for Nevadans,” said Roberto Denis, vice president of energy supply for Sierra Pacific Resources.

“We’re hoping that this project will really jumpstart the other renewable projects that are underway in Ne-

vada,” said LVVWD Spokesperson Bronson Mack.

Historic landmark

For the first installation, LVVWD selected The Las Vegas Springs Preserve, the 180-acre site of artesian springs that contributed to the city’s development. “We chose the preserve because its mission is to promote sustainable life in the Mojave Desert through demonstration, public outreach and research,” said Mack.

The water district acquired the land in 1978, and in 1997, the LVVWD board authorized development of an education center on the historical site. The Springs Preserve will open in 2006.

In keeping with the goals of sustainability and appropriate use, the .5-MW solar array will serve as covered parking for visitors.

The Springs Preserve is the only facility that is likely to use all the electricity the PV system generates, Mack noted. “The other sites will just be basic reservoir operations,” he explained. “So there will be more potential for surplus generation.”

Funding projects

Ambitious renewable resource development requires significant investment, Mack admitted. LVVWD issued bonds to finance the DSA project. Additional funding is coming from the hook-up fees developers must pay to get on to the distribution system.



This rendering shows the PV system Las Vegas Valley Water District plans to build at the Las Vegas Springs Preserve. The system will produce approx. 835,000 kWh per year. (Artwork provided by Las Vegas Valley Water District.)

Nevada Power put new incentives put in place in August 2004 that have sparked solar projects, too. Business and residential customers are eligible for a \$5-per-watt rebate to offset the cost of installing a system.

Improvements in solar technology are also helping to bring down the cost of development, Mack pointed out. The important thing, he added, is that, “LVVWD does not expect to or plan to raise water rates to pay for the project.”

LVVWD customers will continue to enjoy stable rates, and Nevada Power Company will achieve its RPS goals. Las Vegas Valley Water District will promote sustainability and cut operation costs with self generation, while Nevada’s renewable energy industry gets a big boost. The gaming capital of the world has discovered a game where everyone really can win. ⚡

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OPPD program finances consumers' efficiency upgrades

Most commercial and industrial customers would love to cut their operating costs with more efficient equipment if only they had the money to pay for the improvements. Omaha Public Power District energy services contracting is an innovative program that allows a business to upgrade energy-related systems without any up-front investment.

"The improvements literally pay for themselves with guaranteed savings," said OPPD Account Executive Jim Krist. "OPPD carries the debt through construction and may sell the debt to a third party financier once the project is completed. The energy savings are the customer's collateral."

Energy services contracting benefits the customer by reducing costs, improving energy efficiency and reducing or eliminating maintenance and repair expenses. There are plenty of benefits for the public utility, too. "More energy-efficient customers in our ever-growing customer base reduce our risk of having to buy more expensive supplemental power from other utilities," he observed. "The program has helped to delay construction of new generation, and it's a great relationship builder."

Federal efficiency mandate

OPPD launched the program in 1998 to help its Federal customers comply with Executive Order 13123. The order directed Federal agencies to reduce their energy use 35 percent by 2010. "Bases and agencies in California and a few other areas of the country were having a lot of success with performance-based financing programs, and the idea grabbed our attention," said Krist.

Federal customers were the first participants, but OPPD soon realized

those weren't the only key accounts interested in big energy savings. "We featured this program at an annual customer meeting and that sparked a lot of interest among OPPD's commercial and industrial customers," Krist said.

Today, OPPD has energy services contracts with about a dozen of its 200 large C&I customers. Federal and local government facilities, schools, hotels and an insurance company have signed on to upgrade aging, inefficient systems and equipment.

Technical expertise

To offer its key accounts this opportunity, OPPD enlisted Chevron Energy Solutions as its technical support partner. Finding a knowledgeable and experienced partner is critical to the success of performance-based energy services contracting, advised Krist. "The firm brings a level of trust and service to the table that makes the program work," he declared.

The energy engineering firm conducts feasibility energy analyses for interested customers to determine where improvements are needed.

"It starts with the walk-through," Krist explained. "Together, we look at utility bills, and talk to owners and employees to prioritize their needs."

At Offutt Air Force Base in Bellevue, Neb., the account representative recalled, water conservation was a big concern. "Obviously, it wasn't an electrical issue, but it was a conservation issue that we were asked to assist the customer with."

The recommended measures have to produce enough guaranteed savings to pay for upgrades within 10 years. "That's the most important deter-

miner," Krist insisted. "If we can roll a bundle of upgrades into one package and get the 10-year payback, then OPPD will arrange the financing."

When the project is completed, ChevronES monitors the customer's energy savings to ensure that the guarantee is being met. "If they don't get the guaranteed savings, we pay the customer the difference," said Krist.

Federal customer upgrades

With an annual combined utility bill of more than \$7 million, Offutt Air Force Base was a prime candidate for an efficiency makeover. Energy services contracting helped the 10-million-square-foot facility cut its operating costs, and the base became the poster customer for OPPD's program.

Several measures implemented across multiple buildings have reduced the base's annual electrical costs by more than \$1.8 million per year. Equipment upgrades included installing direct-digital controls and variable-speed drivers on electric motors and automated systems.

Geothermal heat pumps, more efficient boilers and chillers and state-of-the-art CO₂ ventilation control improved HVAC performance. Increased insulation, efficient lighting and new well-based irrigation systems and water-circulation pumps added to savings.

Offutt is just one success story for a program that has provided Omaha Public Power District with a powerful tool to manage resources and strengthen customer service. "The choice is between paying for new equipment and paying for electricity flowing out of inefficient equipment," said Krist. ⚡

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Market research offers benefits to utilities

Public opinion polling has a lot to offer the power industry, especially when it comes to getting consumers to accept new products and services.

Two recent seminars used nationally conducted studies to make the case for market research to utilities and energy services providers. Primen, EPRI Solutions' market research division, presented the result of its 2004 Customer Insights Market Survey in October at the Electric Power Research Institute in Palo Alto, Calif.

On the first Monday in December, the *Guidebook to Expanding the Role of Renewables in a Power Supply Portfolio* webcast series focused on using public participation to build consumer support for renewables. Senior Policy Analyst Barbara Farhar of the National Renewable Energy Laboratory discussed research on public preferences on energy alternatives done between 1977 and 2002.

The Primen seminar included a section on green power marketing that echoed NREL's broader work. Both events offered direction for building customer support for renewable energy.

Data aids communication

Why should utilities care about customer participation? All homes and businesses need power, and the public is not knowledgeable enough about energy to make expert decisions.

However, Farhar pointed out, utility actions directly affect the community. Public opinion determines

the success of a product or program. Knowing what consumers value can help a utility communicate the product's or program's value.

According to NREL's findings, consumers consistently prefer renewable energy and energy efficiency to other energy alternatives. Over 19 years, NREL researchers analyzed data collected by national poll organizations and from consumer- and investor-owned utilities. The extensiveness and duration of the study produced a comprehensive description of public opinion on renewable energy and attitudes toward utility use of renewable energy.

NREL found that most respondents wanted their utilities to use more green electricity. About 75 percent of respondents indicated they were willing to pay at least \$5 a month more for electricity from renewable sources such as solar and wind.

Basic electric vs. renewables

Those findings appear to contradict the Primen annual survey. Most residential customers felt they were paying too much for gas and electric service. Not so says EPRI Solutions Vice President Brad Davids. "No one ever says they are paying too little for a basic commodity. That's how people perceive electricity," he observed. "They see green power as a different product. The decision to buy it appeals to a different part of the brain."

Yet low initial customer participation rates in voluntary green power programs—from one to two percent

for start-up programs—seem to indicate that people aren't willing to pay more. "There is always a gap between what people say they would do and what they actually do when they have the chance," Davids said.

Utilities should be aware of that gap when basing decisions on market research. Primen developed adjustment factors to bring projections into line. "Marketing needs to be approached as a science," he advised.

One factor affecting green power programs is customer awareness, he added. "Utilities have to better promote their programs."

Right kind of marketing

NREL's research bears out Davids' statement. Green power subscription rates showed an increase when utilities stepped up their efforts to involve consumers in key decisions about new generating resources.

"We found a lot of utilities marketed programs without looking at what works," said Davids.

To find out what did work, Primen collected collateral material from green power programs with two to five percent penetration—double the industry average. A panel of experts analyzed the campaigns.

According to the panel, subscribers identified most strongly with the concept of helping their children, grandchildren and future generations. Other compelling reasons for participation included local economic development, energy independence and patriotism.

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Renewables industry cheers production tax credit extensions

The passage of two long-awaited bills in fall 2004 sent a charge of optimism through the renewable energy industry.

H.R. 4520 hit most of the renewable technologies, said Karl Gawell, executive director of the Geothermal Energy Association. "All the major groups feel that the No. 1 thing Congress could do for renewable energy was to expand the production tax credit," he noted.

The other bill was a \$140 billion corporate tax bill eliminating the 12 percent tariffs on U.S. goods exported to Europe. Tax breaks in the bill ranged from extending the wind and renewable energy production tax credit to a break for utilities forming transmission companies.

Record year for wind

In its quarterly U.S. market report, the American Wind Energy Association predicted that wind energy PTC extension would make 2005 a banner year for new wind power installations.

Installations are expected to exceed 2,500 MW in the next year as developers move forward with projects that stalled after the PTC expired one year ago. The previous record for new capacity installations in one year was 1,696 MW in 2001.

"We will see what the U.S. industry can do at full-speed for the next 14 months," AWEA Executive Director Randall Swisher stated.

The continued volatility of natural gas prices makes wind power increasingly attractive to utilities. The combined generation of wind farms already in place and those installed to

earn the PTC will save more than 0.5 billion cubic feet of natural gas per day in 2006.

Geothermal rebounds

The expansion of Section 45 of H.R. 4520 to include the first five years of a new geothermal facility's operation is expected to similarly boost that industry. "The PTC will be an incentive to new investors," Gawell declared. "It shows that the Federal government has renewed its support for geothermal power."

Investors already appear to be responding to the PTC of 1.8¢/kWh (1.5¢/kWh adjusted for inflation). "Between the need for new power in the West and state renewable portfolio standards, the market is there," he said. "This is the right time to get the industry back on track."

Geothermal development languished in the 90s, but the industry has recently showed signs of bouncing back. Observers agree the new tax credit should help restore domestic markets. "You need funding to stay ahead in research and development," explained Gawell.

Biodiesel provisions

The bill also contains a new tax credit for biodiesel and provisions for the ethanol industry.

Biodiesel made from virgin oils is eligible for a \$1-per-gallon incentive. Fuel from agricultural products and animal fats get a \$.50-per-gallon credit. The biodiesel tax credit will be paid out of the General Fund rather than the Highway Trust Fund.

The Volumetric Ethanol Excise Tax

Credit extends the ethanol tax incentive to 2010 and eliminates the ethanol program impact on the HTF.

Modifications to the Small Ethanol Producer Tax Credit give agricultural cooperatives greater control over the management of its program.

More incentives sought

The production tax credit offers a variety of incentives for private industry to invest in renewable energy. The renewable energy production incentive targets tax-exempt entities like municipal utilities and electric cooperatives.

For FY 2005, Congress appropriated \$5 million for REPI in the Energy and Water Development Appropriations bill. The \$1 million increase over the DOE's request was a positive development given the huge budgetary restraints on discretionary spending in FY 2005.

Still, REPI funding is far below the PTC, something that the American Public Power Association would like to see change. "Private investors have a lot of funding options, but REPI is the only program for publicly owned utilities," said APPA Senior Policy Advisor Rebecca Blood.

She added that the 25 percent increase over the administration's request shows that Congress recognizes the need to stimulate renewable development in the public sector. The association will also continue to advocate for REPI's reauthorization and reform, either as a stand-alone bill or as part of a new energy bill.



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Firm power contract a stepping stone in Hopi development plan

Western officials accepted an invitation to see how new customer, the Hopi Tribe, was using its allocation, and to learn about the tribe's vision for energy and economic development.

"Meeting with Western was a great opportunity to learn about technologies that can help the tribe reach its goals," said Hopi Tribal Chairman Wayne Taylor, Jr. "The Hopi tribe is trying to build a sustainable economy, and having our own energy source is part of that."

Western Administrator Michael Hacsckaylo and representatives from the CRSP Management Center and Desert Southwest regional office met with tribal officials on the reservation Nov. 17. Chairman Taylor briefed the Western team on Hopi history, current issues and the tribe's future goals.

Improving electrical service

Hopi tribal lands are completely surrounded by the Navajo Nation, so the tribe's 2-MW allocation will be delivered through an agreement with the Navajo Tribal Utility Authority. Western's policy now allows Native American tribes without utilities to receive allocations.

Developing its own tribal utility is a top priority for the Hopi, however. Taking control of its power delivery is one way the tribe seeks to improve the poor electrical service. Infrastructure improvements and tying the current radial system to neighboring parts of the grid are other solutions the tribe is pursuing.

Western's relationship with the Hopi could help to move such projects forward. "There is no reason why we shouldn't work together to make this possible," said Hacsckaylo at the meeting.

Different challenges

Taylor took the Western team on a tour of the First Mesa Villages and the proposed site of the Tawaovi planned community. The First Mesa Villages include the Polacca, Sicho-movi, Tewa and Walpi communities. "The villages show the varying strata of Hopi life," Taylor noted.

Walpi, the oldest First Mesa Village, underwent recent restoration. In keeping with the traditional lifestyle practiced there, the village is not electrified.

"Some people don't want power because of cultural reasons," said Public Relations Officer Vanessa Charles. "Others do, but can't be connected because of their location. How do you lay underground wire to a village on solid rock? The tour helped to illustrate the kind of infrastructure challenges the Hopi face."

Currently in the planning stage, the Tawaovi development will be the tribal government center, and include an industrial park and homes. Because it is encased by privately owned land, the reservation has a housing shortage, explained Charles.

Job opportunities

The tribal economic development council is evaluating renewable resources for Tawaovi, both as a power



Hopi Tribe Chairman Wayne Taylor, left, presents Administrator Mike Hacsckaylo with a plaque thanking Western for giving the Hopi Tribe a Federal power allocation. (Photo by Lyle Johnson)

source and as an industry. "Getting into energy is a big opportunity for the tribe," Taylor said. "But instead of leasing the land, we want to own the business."

With an unemployment rate of 49 percent, the Hopi see job creation as a critical issue. The Hopi-Western partnership could bring public utility and engineering jobs to the area. During the meeting, the group discussed setting up training programs for interested individuals with local colleges.

Taylor said, "A tribal utility and renewable energy development will create jobs here, and assistance programs will train employees to fill them."

Tribe members and especially students will have the chance to learn more about energy options at the Hopi Energy Fair planned for the spring.

Western plans to be among the exhibitors at the energy fair, and looks forward to working with the Hopi in the years ahead. It is always exciting to watch our customers put plans into action, and it is even better to be included in the excitement. ⚡

Want to know more?
Visit www.wapa.gov/es/pubs/esb/2005/feb/feb059.htm

IRPs help customers achieve big energy savings in 2004

As new calendars go up on office walls, it is time to reflect on what went well during the last 12 months and what needs to be done in the year to come. Integrated resource planning gives Western customers a yardstick to measure past successes and plan for future energy needs.

Reporting options

Under the Department of Energy's Energy Planning and Management program, Western customers must submit an annual progress report and a new IRP every five years.

A total of 299 customers submitted new energy plans in 2004. Western received 111 reports from individual customers and 34 plans from cooperatives. Customers in member-based associations may submit IRPs and annual progress reports either individually or cooperatively.

Customers selling or using less than 25 GWh annually submitted 83 small customer plans, and 71 customers submitted minimum investment reports. MIRs are an option for customers required by state, tribal or Federal regulation to have demand-side management, renewable energy or energy efficiency programs.

Industry trends

The 2004 progress reports showed Western's 715 customers aiming for and reaching new heights. The total kilowatts saved by demand side management strategies was 895,650—almost double the savings of the previous year. Customers achieved this while actually spending less on DSM programs in 2004.

Westernwide, DSM strategies included lighting technologies, HVAC systems with emphasis on cooling and ventilation, energy audits across all market segments and load management. DSM champion customers in the Upper Great Plains region used load management, lighting programs, weatherization, new construction and motor and pump replacement to save 504,500 kW.

Customers reported increased support for energy efficiency measures of all kinds. In addition to practicing demand side management, consumers requested more education on energy-efficient technologies. Agricultural customers looked for ways to manage and conserve water resources and improve pump efficiency.

Renewables gain influence

Growing interest in renewable energy technology was another trend that continued in 2004. Utilities' spent \$57 million on renewables, an increase of more than \$1 million over 2003. The most popular renewable activities were large and small hydropower, wind generation and photovoltaic technology. Geothermal and biomass generation rounded out the 2004 list.

While cost and reliability are still customers' highest priorities, many are assigning greater importance to renewable energy technologies. Concerns about foreign energy dependence, the environment and security also play a role in utility planning.

Making sound decisions means keeping an eye on the big picture, and integrated resource planning provides it by tracking efficiency and renewable energy programs—and their results—over the long term. When it comes time for Western and our customers to take stock and make resolutions, we know where we have been and where we want to go, thanks to IRPs. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2005/feb/feb0510.htm

Research

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“The point is that purchasing green power is an emotional decision, and marketing has to connect with that,” Davids said “Traditional utility advertising won't work.”

Making that connection with the customer is what marketing research is all about. It may be extensive studies that identify trends over time, or it may be an annual survey that reveals an emerging need. Either type of research can provide utilities with the tools to build better customer service. ⚡

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/2005/feb/feb05coe.htm>

Technology Spotlight: Assessing energy savings of new products

This column features helpful information, innovative equipment, systems and applications to save energy and improve service.

by **Rob Penney, P.E.**

Utilities and energy program planners across the country invest millions of dollars in energy efficiency and market transformation programs based on products and technologies they believe will offer long-term energy savings. One challenge in developing these programs is a lack of reliable, comprehensive information about new products and technologies. This creates a risk for unwise investment and could tarnish the reputation of conservation programs.

Due to increasing product complexity, the task of evaluating energy efficiency claims is becoming more challenging. There is a growing need for regional or national services through which utilities learn can about promising new products to consider for their incentive programs.

One step Western customers can take is to call the Power Line at 800-769-3756. The Power Line has professional engineers and research librarians to review documented product test results and assess vendor claims.

There are other steps utilities can take to assess new product savings claims. The amount of time and effort spent assessing the claims should be proportional to

the products cost, potential savings and potential risk. Costly equipment and products with considerable application potential are generally worth more research time.

Trust your instincts—if it sounds too good to be true, it often is. Having a co-worker look over the facts can help you avoid being influenced by salesmanship and high-pressure tactics. Here are some good questions to ask when assessing product claims:

Are claims valid?

- Are independent testing results available? If so, what assumptions were made in the savings calculations?
- Are credible case studies available that show significant savings? Are the applications similar to yours? Is there someone local who you could visit or call?
- Is there any guarantee of energy savings? Are guarantee terms reasonable? Be leery of a “guarantee” whose remedy is to take the equipment out.
- How well will the product maintain its energy-efficient performance over time?
- Look carefully at the language of vendor claims and explanations. If they suggest that their device is too advanced for typical engineers to understand, be very skeptical and seek professional advice.

Is it a wise investment?

- Has the technology been tried before? If so, why was it not adopted more widely?
- What do the company’s competitors have to say about the product?
- Will the product require special staff training for operation and maintenance?
- How available are customer service and replacement parts?
- What are the non-energy benefits and liabilities (e.g., health/safety, productivity, inventory, power quality)?
- Are there local manufacturer’s representatives to repair or replace failed products?
- Is the device going to save enough energy to make it worth evaluating and implementing it?

A utility wishing to offer incentives for a new product or technology may want to consider starting with a pilot project. That way, performance can be assessed with a limited number of customers, and in applications where risk is minimal. ⚡

Want to know more?

Visit www.wapa.gov/es/pubs/esb/2005/feb/feb05spot.htm