

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

Voluntary net-metering encourages St. George customers to go solar

Just because Utah's net-metering rule excludes municipal utilities, that didn't let St. George Energy Services off the hook—not with its customers, anyway. “Customers knew that investor-owned utilities in the area offered net-metering, and we kept getting calls asking if we had a similar program,” said Rene Fleming, conservation coordinator for St. George Energy Services. “We want to stay competitive with other local utilities and provide programs that our customers want.”

Vision also played a part in the municipal utility's voluntary decision to offer net-metering for solar and wind installations. “The director and staff understand how important renewable energy is going to be in meeting future demand,” Fleming stated. “After all, St. George is in the Sun Belt. We should be taking advantage of local resources.”

Pro-solar policy

Since the city adopted its net-metering policy in 2005, 10 customers



(Left to right) City of St. George employees Gerald Whipple and Orrin Farnsworth join installers Jeff Pomeroy, Sara Baldwin and Brian Smith to celebrate the completion of the 5-kW solar array the city installed on its Water and Energy Administration building. (Photo by Ken Gardner)

have done just that, installing a total of 33 kW. The conservation coordinator admits to being pleasantly surprised at the response. “My goal was 10 installs in the first year, but I figured we'd be doing well if we received five requests,” recalled Fleming.

Also surprising was the size of the systems customers were installing. The largest residential system is 4.8 kW. The smallest, she added, is a 0.5-kW array—too small to be eligible for the city rebate that accompanies the net-metering program. “The customer was very committed to going solar, and he has plans to expand his system later,” observed Fleming.

The city pays \$2,000 per installed kW with a limit of 3 kW for residential systems and 10 kW for commercial customers. Employ/Ease, a local staffing agency, recently completed installing St. George's first commercial system, a 5-kW array. Customers must be net-metered to receive the rebate, which also applies to wind energy systems, though none have been installed so far. “We don't recommend wind,” admitted Fleming. “The resources here in the southwestern tip of Utah just don't justify the investment.”

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St. George program

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Benefits—present, future

Under St. George's net-metering policy, renewable energy credits from the systems belong to the city. For now, Energy Services has no plans for the green tags, but Fleming has an eye on the future. "A renewable portfolio standard is inevitable, whether it is state- or Federally-mandated," she said. "When the day comes, the green tags will help us comply."

To reap the more immediate benefits of solar power, the city installed its own system on the Water and Energy Administration building in April. The 5-kW array is designed for future expansion up to a total of 10 kW and is equipped with Fat Spaniel software to track energy generation and avoided emissions. A kiosk in the building's lobby will display the information and educate visitors about solar power. The data

will eventually be available on the city's Web site as well. "I've been very pleased with the system's performance so far," Fleming said.

Facing challenges

St. George's solar mini-boom has encountered some challenges, and one is shared by the entire state. "Utah has a very limited contractor pool," Fleming acknowledged. "There are two contractors in St. George and one each in Hurricane, Cedar City and Ogden."

She said she still provides interested customers with the short list and advises them to get more than one quote before installing a solar system. The state is considering some sort of certification for solar installers. Such a program could expand the pool of qualified contractors and foster a better understanding of interconnection issues.

Another issue is that the contractors are electricians or engineers, rather than solar technicians, she noted. "We've had to educate both the contractors and the customers about our installation policy."

Specifically, St. George requires manual, lockable disconnect units to be installed at the meter in case the inverter fails. From the contractor's point of view, an inverter failure is very unlikely, and customers may see the control as an added expense. "For us, it's a safety issue," said Fleming. "Our linemen will be working around the system, and they need to be sure it is shut off."

Other incentives

St. George residents who are concerned about energy and the

environment don't have to generate their own electricity. They can buy 100-kWh blocks of power from wind and low-impact hydro facilities through the utility's Clean Green Power program.

Customers who prefer saving to spending can find information about saving energy on the city Web site, along with monthly conservation tips. The city also offers rebates on ultra-low-flow toilets that have been through Maximum Performance testing. The models must use less water and clear the bowl on the first flush, and they have to continue to perform if the flapper is replaced.

Even though it separated its electricity and water utilities in 2002, St. George recognizes that saving water is closely tied to saving energy. The city recently got a grant to provide incentives for dishwashers and clothes washers, including coin-op units for laundromats and apartment buildings with common laundry facilities. Also, the water department offers free lawn water audits performed by college interns. "They check the soil type, design an irrigation schedule and recommend repairs and adjustments to sprinkler systems," Fleming explained. "Landscaping has to get more efficient." ⚡

Energy Services Bulletin

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Western strengthens ties with tribes to develop renewables

As ongoing drought and growing demand take their toll on the West's water resources for energy production, Western is seeking ways to unlock the region's vast renewable energy resources—and may find the key in partnerships with its Native American tribal customers.

At a MidWest Electric Consumers Association meeting, Western Administrator Tim Meeks announced that Western will focus on three key issues: transmission expansion, wind integration and tribal partnerships. Intertribal Council on Utility Policy, a non-profit group of Great Plains tribes that deals with energy issues, greeted this list with enthusiasm. "We were very pleased to hear the announcement because these issues are very high priority for Northern Plains tribes," said ICOUN Secretary Robert Gough.

Partnering

Western counts 90 tribes as customers, and our transmission lines cross 900 miles of reservations and tribal lands—lands rich in renewable energy resources. Gough sees Federal/tribal partnerships as an excellent way for tribes to contribute to the greening of the nation's power supply while developing their own economy. "ICOUN has done a lot of assessment of wind resources along Western's grid, and we are very excited that Western is recognizing the opportunity, too," he said. "Western is in a position to become the tribes' biggest Federal partner in developing renewable energy."

The tribes face many challenges in harnessing those resources, acknowledged Gough, some typical to renewable energy development and some unique. "Reservations have a lot

of resources but not a lot of load," he observed. "That is why transmission expansion is important—transmission is the 'farm-to-market' highway for renewable energy."

Like community-based projects, tribes are restricted to working with whatever resources are available on their own lands. "If developers are looking at a site that is not ideal, they can go somewhere else," he pointed out.

Community projects, however, are often their own customers, he added, "Whereas tribes don't usually control their own meters. They can't tax their membership to secure a loan. Project funding has to be set up differently."

Also, tribes are not taxable entities, so they can't take advantage of production tax credits, a situation that could be changed by legislation recently introduced by Rep. Raúl M. Grijalva of Arizona. The bill would allow tribes to transfer their share of the production tax credit to private entities providing financing for joint-venture renewable energy projects on tribal lands. Gough sees that provision as critical to improving the economics of tribal renewable energy projects.

Success sets example

Still, such challenges haven't stopped Western's tribal customers from developing successful projects. The Rosebud Sioux Tribe, an ICOUN founding member, launched the first Native-owned and -operated wind turbine in 2003. ICOUN plans to use that experience to develop an 80-MW intertribal wind farm spread across several sites along Western's transmission system.

Tribal interest in renewable energy development has increased over the last several years, noted Lizana Pierce, project manager for DOE's Tribal



Upper Great Plains Energy Services Representative Greg Vaselaar (right) discusses power operations with a LaCreek Electric Cooperative member at the co-op's annual meeting.

Energy Program. "The program has funded 76 projects since 2002 at \$12.4 million with \$3.3 million in matching funds from tribes. That's a major indication of their commitment to development."

Another Federal partner

The DOE Tribal Energy Program promotes tribal energy sufficiency, economic development and employment on tribal lands through the use of renewable energy and energy efficiency technologies. Pierce proudly notes that about 90 percent of the program's funding goes directly to the tribes to support tribal projects. "We have a very low overhead," she said.

Tribes can also get help leveraging other Federal funding sources and learn more about the development process. The program offers training covering everything from renewable energy basics to planning for development. Presentations from workshops are available on the program's recently redesigned Web site along with the Guide to Tribal Energy Development. "Tribal leaders told us they needed a clearinghouse of information, and the guide is our attempt to provide that," said Pierce. "The website is also a

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New guidebook helps utilities address public concerns

Energy prices are rising, concerns about our environment are growing and energy resources are increasingly tied to national security. Suddenly, everybody wants to weigh in with their two-cents-worth on utility policies and decisions, and utilities are learning that failing to involve the public in decision-making can wind up costing a lot more than two cents.

“Call it a demographic and political convergence,” said Guy Nelson of the Utility Energy Forum. “Consumers are better educated, there are more media outlets to cover energy and environmental issues, baby boomers are retiring earlier and getting more involved in their communities. It all adds up to people becoming more outspoken about utility resource decisions.”

The Utility Energy Forum was one of the many partners that helped to create *Public Participation for Community-owned Utilities: An Implementation Guidebook*, a new publication from American Public Power Association’s Demonstration of Energy-Efficient Developments Program. Other partners in the project are Western, the International Association for Public Participation, Longmont Electric Department, City of Palo Alto Utilities, Platte River Power Authority and Redding Electric Utilities. U.S. DOE’s GeoPowering the West and Wind Powering America programs provided additional support.

Many opportunities

The guidebook is written for utility managers to get them comfortable with the public participation process. “Utilities today face a lot

of complicated issues,” said DEED Program Manager Michele Suddleson. “Developing policies and taking action to address issues is easier when the community understands and supports the utility’s decision. Any tool that helps our members work more effectively with their communities will be a valuable product, especially for smaller utilities, which often don’t have expertise in public participation.”

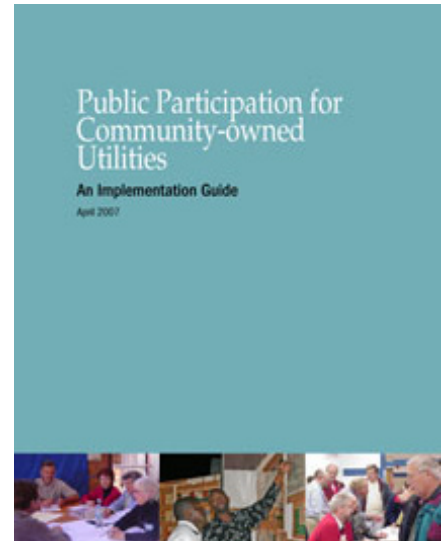
A critical point the guidebook makes is that even small utilities should not be put off by the expense that the public process entails. “In the long run, the cost of not involving the public in key decisions is likely to be much higher,” said Nelson.

The list of decisions the guidebook identifies as worthy of public participation will strike a chord with public power providers. Many utilities will recall their own experiences and welcome practical guidance for getting customer input on projects like siting a powerplant or restructuring rates. Public participation is also an effective aide in designing successful green power, green pricing or energy efficiency programs.

“Western customers will find the guidebook useful in the process of developing and implementing their required integrated resource plans, said LaVerne Kyriss, strategic initiatives officer for Western. “One of the necessary elements of a successful IRP is public participation.”

Utility experiences

Western’s Renewable Energy Program Manager Randy Manion and Nelson got the idea for the guidebook from several stories that appeared in APPA’s Public Power newsletters. “They were excellent descriptions of



Public Participation for Community-owned Utilities: An Implementation Guidebook is written to help utility managers become more comfortable with the public participation process.

utilities reaching out to customers,” Nelson recalled. “Many of the utilities in those stories ended up conducting case studies for the guidebook.”

One of those utilities, REU, agreed to submit a grant Kyriss wrote to the DEED program. The northern California municipal utility has sought public involvement in the past for critical decisions. However, there is always room for improvement in the process, said Key Account Manager Paul Ahern. For its case study, REU sent customers a survey Nelson designed. “We wanted feedback on our customer service and reliability,” Nelson said.

The survey method, said the key account manager, casts a wider net than simply inviting customers to a public meeting. “Only the people who are interested in that particular issue are likely to show up,” he said, adding

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that REU would definitely consider using strategies from the guidebook in future decision-making processes.

New outreach strategies

The City of Palo Alto Utilities used guidebook strategies to involve the community in the Mayor's Green Ribbon Task Force on Climate Protection.

In her 2006 State of the City address, Mayor Judy Kleinberg proposed forming a task force to recommend a set of policies and actions to meet or beat Governor Schwarzenegger's greenhouse gas emission-cutting goals.

When Nelson approached CPAU to participate in the guidebook project, the task force presented a good opportunity to test drive the strategies. "It was a different style of outreach than we were using," said Senior Resource Planner Karl Knapp, who worked extensively on the project.

Knapp observed that while public comment meetings are useful, they

uncover concerns after the decision has been made. "Public participation brings out those issues early in the process when all the options are still under consideration," he explained.

Community speaks out

The Green Ribbon Task Force is a good example of giving customers a voice in policy-making. Originally, participation was "by invitation only," but it was opened up for the case study. "We invited the whole community—both Palo Alto and Stanford—and asked citizens to join committees," said Knapp.

The task force produced a report for the city council that came from the community instead of city staff. That buy-in provides critical motivation for the city to move forward on a formal climate protection policy. "The city council has already voted to increase the city's energy-efficiency budget," Knapp pointed out. More important perhaps is that everybody involved came away with a better understanding of the factors that contribute to climate change, Knapp

said. "The council and the community understand that the utility can lead by example, but everyone has to get involved in the solution."

Guidebook premier

Utilities that want to build that kind of consensus and acceptance for key decisions should attend the Public Participation workshop at the APPA annual conference in San Antonio, Texas.

The workshop will introduce the guidebook and highlight key findings. Discussions will cover reasons for involving the public in decision making, the utility's role in public participation, methods to encourage participation and more. Attendees are encouraged to bring ideas and plans for public participation to be used in audience participation exercises. Representatives from the partnering utilities will share their experiences from the case studies. ⚡

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Technology Spotlight:

Solar thermal energy an option in large facilities

This column features helpful information, innovative equipment, systems and applications utilities around the nation can use to save energy and improve service.

Solar thermal energy may be used to provide energy for a variety of uses including building space heating, refrigeration and air conditioning, domestic hot water, hot water and steam for industrial processes, drying and electric power generation.

The technology

In a typical solar thermal system, water or other heat-transfer fluid is heated by solar collectors and then circulated through equipment where the energy is used. Solar collector types include flat-plate collectors, evacuated-tube collectors and concentrating collectors such as parabolic troughs. The Canadian Renewable Energy Network describes the technologies.

Solar collectors can attain high temperatures—more than 500° F in commercially-available parabolic solar troughs and more than 300° F in evacuated-tube collectors. However, systems are generally not designed to deliver such high temperatures. Most systems using evacuated-tube or parabolic-trough collectors will deliver hot water at 195° F or less. For power generation or some industrial process heating, the system may be designed to achieve higher temperatures.

Cost-effectiveness

Because of economies of scale,

solar thermal systems can be cost-effective for commercial, industrial and institutional facilities that require large volumes of mid- to high-temperature hot water, even if conventional fuel costs are relatively low. Solar thermal energy is most cost-effective in facilities that have a relatively constant energy requirement over the course of the day, week and year, or that have higher needs during the summer and during the day. Hotels, laundries, kitchens, prisons and military bases, for example, have relatively constant water heating needs.

Facilities with large, relatively constant cooling requirements that may be met by solar absorption cooling include computer data centers and cold storage facilities. CanREN provides background on solar cooling.

Generally, the bigger the project, the more cost effective it is. If the system is large enough, parabolic-trough collectors can be much less expensive than flat-plate collectors or evacuated-tube collectors. Parabolic troughs may be appropriate for projects with hot water requirements greater than about 10,000 gallons per day or with peak energy requirements for heating or cooling of at least 2 million Btu/h.

While economies of scale can bring costs down, often cost-effectiveness depends on Federal, state and utility incentives. Incentives are becoming more available, and the Database of State Incentives for Renewables and Efficiency contains

a comprehensive listing of incentives available throughout the United States. The Solar Energy Industries Association also has a guide to Federal tax incentives.

Other considerations

- Energy can be stored for use at night and during brief cloudy periods.
- Systems generally require a large area for the collector field. A parabolic-trough project sized for a heating load of 3,000,000 Btu/h will require approximately 20,000 square feet of collectors.
- Parabolic troughs require direct sunlight and so require a tracking system. This means the solar resource must be better than for flat plate collectors or evacuated tube collectors, which make better use of indirect light.
- Parabolic troughs are typically ground-mounted because of the large areas that are usually required to meet heating requirements.
- Sizing affects cost-effectiveness. Often the most cost-effective system will be sized to just meet the full summer demand and 50 percent to 80 percent of the annual demand.
- Solar thermal energy is not restricted to southern latitudes. The number of clear, sunny days each year is more important than latitude. Eastern Oregon and Eastern Washington, for example, have good solar resources. ⚡

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Energy Shorts

New RPS & transmission laws in New Mexico

New Mexico recently passed two bills, one to increase its renewable portfolio standard and a second establishing a statewide renewable-energy transmission authority.

Some of the functions the New Mexico Renewable Energy Transmission Authority may perform include:

- Identifying and establishing corridors for electricity transmission within the state
- Participating in appropriate regional transmission forums to coordinate, investigate, plan, prioritize and negotiate with entities within and outside the state to establish interstate transmission corridors
- Financing or planning, acquiring, maintaining and operating eligible facilities necessary or useful to accomplishing the purposes of the new law
- Exercising the power of eminent domain to acquire property or rights of way for public use if needed for projects
- Issuing and selling revenue bonds, known as “renewable-energy transmission bonds,” to enter into a project when the authority determines that the project is needed
- Entering into contracts to lease and operate eligible facilities owned by a public utility or other private person
- Entering into contracts to lease eligible facilities owned by the

authority, with revenue derived from the lease to be deposited in the renewable energy transmission bonding fund

Both new laws were enacted in March 2007 and take effect July 1, 2007.

Fixing California’s solar program flaw

Meeting with business executives, the California Public Utilities Commission and legislative leaders, Gov. Arnold Schwarzenegger has worked out a compromise to fix what was described as an “unintended glitch” in the Million Solar Roofs campaign.

The flaw, a requirement that solar users switch to higher “time-of-use” rates for their supplemental electricity, makes the installations potentially uneconomical. The Los Angeles Times quoted industry sources as saying that the higher rates made solar installations much less cost effective, even with a rebate and Federal tax credit. Worse yet, some experts predicted that homeowners in the Inland Empire and the desert might see higher electric bills after installing solar systems.

The result of the glitch has been a 78-percent decline in rebate requests in the first three months of 2007, compared to 2006. California solar equipment installers have complained that business is tanking.

If passed by the legislature, the governor’s bill will allow the PUC to temporarily change the rate structure for PV systems installed since January 2007. The plan would be in force for

two years. In the meantime, new rates would be developed as part of the PUC’s next general ratemaking cases for Edison, Pacific Gas & Electric Co. and San Diego Gas & Electric Co., beginning in 2009.

One lawmaker who worked on the compromise, Sen. Jim Battin (R-La Quinta), said he was hopeful that the new rates “will make it financially feasible for desert homeowners to use the program.”

CEC Booklet for home buyers, sellers

A new publication from the California Energy Commission aims to help home buyers and sellers use energy efficiency to make their new and existing homes more attractive in a tight real estate market. Raise Your Energy Efficiency IQ uncovers the facts about a home’s energy efficiency and recommends the best way to improve it.

Real estate agents will find tips to explain the value and benefits of energy efficiency. Because homes built before 1982 — before the advent of California’s Title 24 standards — are apt to need efficiency improvements, it also suggests simple efficiency upgrades.

Buyers will find a handy checklist of questions to ask sellers about a home’s energy costs and learn about home energy rating services and the benefits of having a home energy inspection. A home’s energy efficiency characteristics may be material facts that should be disclosed prior to a sale.

The 16-page booklet provides information on rebates and tax credits and options for financing efficiency improvements. A section on solar energy lists the advantages

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of installing a residential PV system and directs homeowners to Go Solar California to learn more.

Backyard wind turbine

Many homes in the Metro Denver area generate some of their own electricity with renewable energy systems, but only Chuck Courtad does it with wind.

The Golden resident is the first in Colorado to get a SkyStream turbine, a compact, user-friendly, all-inclusive wind generator designed to power utility-connected homes and businesses. Southwest Wind Power

and DOE's Wind Energy Program jointly developed the SkyStream for residential applications.

The Wind Energy Program's 2006 Peer Review Report called the unit well thought-out, well designed and remarkably low-cost. If the small turbine operates as designed and testing proves its operation, the report said, it has the potential to be a major factor in residential application and could become as widespread on American farms as the old windmill water pumps.

The SkyStream features 12-foot-long curved blades that hit maximum output (1.7 kilowatts, or 30 to 90 percent of most homes' needs) at 20 mph and produce about

as much noise as an air conditioner. With all electrical parts contained in the turbine body, installation is easy and costs around \$10,000, according to manufacturer representative Josh Levinson. Courtad, an Xcel customer, is hoping for a 20 to 50-percent reduction in his electricity consumption. Comparing the number of kilowatt-hours for February 2007 with February 2006, the family used 255 kWh this year versus 448 kWh the previous year. The average reduction, Courtad said, will probably be one third to one fourth. He is planning a Web site where other homeowners can watch and learn about wind power in a residential setting. ⚡

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Strengthens ties

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means of sharing the tribe's successes and lessons learned."

Pierce added that she anticipates more discussions between the Tribal Energy Program and Western on how to help tribal energy projects move forward.

Wind needed

Of the many good reasons for encouraging renewable energy development on tribal lands, the Section 2606 feasibility study looms large for Western. Sec. 2606 charges Western with determining the feasibility of a demonstration project that would blend of tribal-generated wind power with hydropower from the Missouri River to supply firming

power to Federal agencies.

Energy Services Representative Mike Radecki, project manager for the Sec. 2606 study, noted that there is already some blending from smaller projects like the Rosebud turbine. "But the effects on the transmission system are dispersed because of the size and distance between generating facilities," he said. "We're still not sure how large amounts of wind will impact the system, physically, operationally or economically."

Tribes in Western's Upper Great Plains Region are in the position to help the utility answer some of those questions. The Blackfoot Nation, Ft. Peck tribes and ICoup have all nominated wind projects to participate in the demonstration, although most of the facilities have yet to be built.

ICoup's plan to build a wind farm in 10- to 20-MW modules across five states would be a good fit with the demonstration's goals, said Gough. "A large-scale, distributed system would provide good information on integrating into the grid in a number of places," he noted. "The sites could also take advantage of weather fronts as they move across the plains."

Whatever the outcome of the Sec. 2606 feasibility study, Western will make sure its tribal customers are partners in finding solutions to the region's and the nation's energy challenges. In Gough's view, the partnerships will benefit everyone. "It will mean local, sustainable development for tribes and clean, safe energy for America. I don't see a downside." ⚡

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Visit www.wapa.gov/es/pubs/esb/2007/jun/jun072.htm