

Energy EFFICIENCY

July 2004 Volume 8, Issue 3



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Calendar



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Solicitation for Non-Wires Demonstration Projects

BPA has issued a Request for Offers and Awards for services related to the development and implementation of Non-Wires Solutions demonstration pilot projects which can be replicated to meet the reliability needs of BPA's transmission customers and which are forecast to be regionally cost effective. These demand

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Lighting Project at Marvin Wood Products

On May 18, 2004, Marvin Wood Products a wood manufacturing plant in Baker City, Oregon, completed an extensive commercial lighting project under BPA's Expanded Standard Offer. The retrofit encompassed 197 250-watt metal halide, four 400-watt metal halide, and 24 T12 8-foot fluorescent lamps, which were all

[Click here for more . . .](#)

Livestock Enjoy Ice-Free Water

Oregon Trail Electric, Baker City, Oregon, has experienced success with their "Freeze-Resistant" Cattle Fountain Program. Steve Schauer, Member Services Manager, asked the Regional Technical Forum (RTF) to assess

BPA Continues Commitment to Conservation

Since the 1980 Pacific Northwest Electric Power Planning and Conservation Act gave BPA the mandate to acquire conservation, BPA programs have captured savings equal to a large nuclear plant. BPA's continued commitment to conservation is consistent with the Power Act mandate.

BPA is publishing a draft policy for the agency's post-2006 power supply role. Public comments will be accepted through September 22, 2004, and there will be a concurrent 30-day comment period.

Although BPA hasn't determined the structure of conservation development post-2006, it has

[Click here for more . . .](#)

BPA Symposium ENERGIZING THE NORTHWEST, TODAY AND TOMORROW



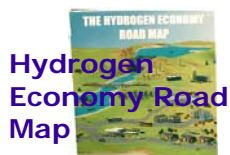
Utility executives, policy makers, environmentalists, implementers and experts from around the region and the nation will explore innovative ways energy efficiency and transmission adequacy can help maintain the reliability of the electric system and the quality of the environment at the September 28-29, 2004. symposium. "Eneraizing



Energy Hog [Read More Here](#)

Links

- ["Powerful Savings" Campaign](#)
- [Energy Efficiency: The Whole Picture](#)
- [Electricity Standards around the World](#)



Interested in hydrogen as a renewable energy resource? Get your own Hydrogen Economy "road map" by contacting Becky Clark at BPA (503) 230-3158, or rlclark@bpa.gov. Packed with information, the road map shows the infrastructure and technologies required to move towards a Hydrogen Economy and includes Internet links and a wide range of applications.

BPA supports the Power Quality Service Center, which is an alliance for power quality awareness. The Power Quality Service Center developed the Hydrogen Economy Road Map with help from BPA.

-- Mira Vowles
(503) 230-4796

the system for energy savings and qualification for the Conservation & Renewables Discount credit. With the data Steve provided, and additional research by Tom Eckman, the measure was approved by the RTF and BPA with a fixed credit under the Agriculture Sector.

[Click here for more . . .](#)

Test Uses Smart Home Technology for Electric Reliability

BPA and the City of Ashland have partnered to test a new system to reduce power use during peak times. With support from BPA, the City will install innovative demand-side management equipment in 100 homes and several businesses in the City's service territory. During the two-year test period, the City will use its existing fiber-optic broadband network to communicate with this equipment to monitor and, when appropriate, reduce electric demand of selected appliances within customer's homes.

[Click here for more . . .](#)

BacGen Project at Sunnyside Wastewater Treatment Facility

The Port of Sunnyside, Washington, wastewater treatment facility serves local industry, including a Dairygold cheese factory and fruit processing plants. The existing wastewater facility has four pond/lagoon systems. After treatment in a series of lagoons and prior to irrigating nearby agricultural fields during spring and summer, wastewater is stored at lagoon 4, a 40-acre pond, which is capable of holding 150 million gallons. The Port is served by [Renton RFA](#) Prosser

the Northwest, Today and Tomorrow" in Portland, Oregon.

[Click here for more . . .](#)

ASD Calculator Available

The Industrial Audit Guidebook and [ASD Calculator](#) are now available on the Energy Efficiency web site. The easy to use calculator can estimate energy savings for adjustable speed drive installations on fans and pumps.
-- Chris Milan (503) 230-3611

Kootenai Electric Hosts Residential Loan Program Vendor Meeting



Kootenai Electric hosted an informational meeting for local vendors interested in participating in the BPA/First Mutual Bank Energy Saver Loan Program. Pictured: Lisa Thompson, BPA Loan Program Manager and Peter Anderson, Energy Services Director, Kootenai Electric.

[Kootenai Electric Coop](#), Hayden, Idaho, hosted a meeting June 3, 2004, to provide information to local vendors about the BPA Energy Saver Residential Loan Program and how it can help grow their business.

Utilities participating in the program approve the vendors to work with their customers. These vendors must also be approved by First Mutual Bank to offer the unsecured loans to end-users for energy efficiency measures in their homes.

For more information on the loan

served by [Benton River, PUD](#), Washington.

[Click here for more . . .](#)

Rural Solar-electrification

[Ferry County PUD](#), Republic, Washington, was awarded \$888,408 in High Energy Cost Grant Funds, and is launching a program to serve remote areas of its sparsely populated service territory with distribution lines or solar electric installations.

Read the full [Con.Web Article](#): Washington Utility Offers Line Extensions or Solar Electricity for Off-Gridders.

Also, see how your utility can qualify for funds by reading the article at the end of this page about the [USDA grants](#).

Fuel Cell Poster Contest Winner



Ashley B., winner of the 2004 Save a Watt Fuel Cell Poster Contest autographs a composite poster displaying portions of several posters including hers.

The winner of the 2004 "Save A Watt" poster contest was Ashley B., a seventh grade student from the Battle Ground, Washington, School District. Sue Mauermann, Deputy Director of Washington State Department of Community, Trade and Economic Development (CTED) and Jeff James, Team Lead of State Partnership of DOE's

[Click here for more . . .](#)

Weatherization Helps Low-Income Families

Everyone complains about the high cost of energy, but energy bills can have a serious impact on low-income families. Low-income weatherization efforts help alleviate the tough choices families have to make when faced with high energy bills. Following weatherization, more income is available to families for other important uses such as paying rent or medical expenses. This is especially important in Idaho and Montana. Energy expenditures per household are higher in those cold climates, which also have higher percentages of families below the poverty level than other states in the region.

For more information on the loan program, how to participate, or to host a vendor meeting, contact Lisa Thompson at (503) 230-3059.

Information is also posted on the Energy Efficiency web site: [click here](#).

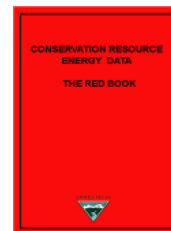
BPA Tests Demand Exchange

A utility, two paper companies, and the U.S Navy recently helped BPA test its ability to reduce congestion on transmission lines in Washington's Olympic Peninsula by voluntarily reducing transmission loads during times of critical peak demand as part of a pilot project.

[Click here for more . . .](#)

2004 RED Book Available

The 2004 Energy Efficiency Conservation Resource Energy Data Book ([RED Book](#)) is available on the EE web site.



[Click here for more . . .](#)

[Click here for the complete article . . .](#)

Hurry! USDA Offers \$22.8 million in Grants

The U.S. Department of Agriculture is offering \$22.8 million in grants to support energy efficiency improvements and renewable energy installations at farms, ranches, and rural small businesses that demonstrate financial need. The funds pay up to 25 percent of eligible project costs.

The Farm Security and Rural Investment Act of 2002 requires the Secretary of Agriculture to create a program to make direct loans, loan guarantees, and grants to agricultural producers and rural small businesses. Only the grant program will be issued for 2004.

The formal "Notice of Funds Availability" notice was issued May 5, 2004. ***The application period for this year's grants ends 75 days after that date, about July 18.*** For additional information, visit the Department of Agriculture's Rural and Community Development [web page](#).

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Editor: Jean Oates (503) 230-5861
Assistant Editor: Becky Clark (503) 230-3158

The BPA Energy Efficiency newsletter is published quarterly on the first day of the month in January, April, July, and October. Send contributions to the editor four weeks prior to publication: Jean Oates, PNG-1, Bonneville Power Administration, P.O. Box 3621, Portland, OR 97208, or e-mail your ideas/articles/photos to jaoates@bpa.gov.





News from Around the Region

BPA Continues Commitment to Conservation, continued from front page

identified five key principles to guide that development.

- BPA will use the Northwest Power and Conservation Council plan to identify the agency's share of cost-effective conservation.
- Most conservation will be pursued and achieved at the local level.
- BPA will seek to meet its conservation goals at the lowest possible cost and lowest possible rate impact.
- BPA will continue an appropriate level of funding for local administrative support to plan and implement conservation programs.
- Although they often don't yield measurable savings, successful initiatives such as education, outreach, and low-income weatherization are important pieces of the conservation portfolio and should continue to be funded.

BPA's Proposal: The most significant issues are:

- BPA Sales Limitation: The agency plans to make a long-term policy decision to limit its sales of power at

Lighting Project at Marvin Wood Products



Ray Avery, supervising electrician for Marvin Wood Products, and Shari Shermer, Oregon Trail Electric Cooperative, complete the final inspection of a new lighting system installed through BPA's ESO Program.

converted to T5 high output lamps. Marvin operates two 8-hour shifts five days a week, and will achieve annual savings of about 210,000 kilowatt-hours, with an overall wattage reduction of about 58 percent.

Ray Avery, supervising electrician for Marvin, measured the light levels before and after the project. He reported greatly improved lighting levels after completion.

embedded cost rates to the output of the existing system.

- Service to the DSIs: BPA plans to express continued interest in providing support to companies which have met their obligations under existing contracts, so long as such support sustains jobs, does not result in significant shifts of cost and risks, and is legally supportable.
- Public Power Contracts: BPA proposes to extend through 2011 a small number of contracts with public power customers whose contracts expire or have options to be exercised at the end of fiscal year 2006.
- Conservation & Renewable Resources: The agency plans to maintain its commitment to ensuring development of all cost-effective, least cost energy conservation in the loads it serves, although the methods to deliver that conservation may change. BPA will move away from direct acquisition of the output of renewable resources and move toward facility the development of those resources by others.

BPA plans to use a collaborative planning process to develop a conservation proposal that best serves the region. That process will probably begin sometime in early fall 2004.

BPA will also carefully consider demand-side management options to transmission construction.

Public meetings relating to the draft policy will be held in a number of locations throughout August and September 2004. The meeting schedule is listed below. Please check the [BPA web site](#) for the latest on the meetings and for additional information.

Public Meetings

1. August 17, 2004 6:00 p.m. – 8:00 p.m., **Seattle, WA** – Mountaineers HQ, Olympus Room, 300 Third Avenue West

2. August 19, 2004 6:30 p.m. – 8:30 p.m., **Eugene, OR** – Eugene Water & Electric Board, 500 East Fourth Avenue

3. August 24, 2004 6:00 p.m. – 8:00 p.m., **Spokane**

Some employees commented that it "took some getting used to" because the ceiling area is darker than it used to be, while the work area is brighter. Ray said, "We're realizing more benefits than we expected – better light, extra electrical circuits, improved power quality, and energy savings." With the old lighting system, 13 circuits were required to operate the existing light fixtures in one area of the plant. With the new T5 lamps, the entire building uses nine circuits.

Marvin Wood Products contracted with Energy Wise Design of Eugene, Oregon, to provide the lighting equipment. Before they made the decision to proceed, Marvin asked Energy Wise Design to install two fixtures at the manufacturing plant. The year-long test proved the lamps were durable, provided more light than the existing lamps, and that the clear acrylic dust covers were sufficient for manufacturing, which is necessary for the type of work done at the plant.

"We appreciate Oregon Trail Electric, in conjunction with BPA assisting us to be more energy efficient," Ray said. "It allows us to be more competitive in our market."

-- Shari Shermer, OTEC (541) 523-3616

Fuel Cell Poster Contest, continued from front page

Western Regional Office presented awards to Ashley and her teacher, Ron Wright, at an April 25 Earth Day ceremony in Olympia, Washington.

This year's poster contest focused on fuel cells and was funded by a U.S. Department of Energy grant. The contest was fun for students and demonstrated their understanding of and excitement about fuel cell technology. The posters were combined into a traveling fuel cell display.

The Fuel Cell Program was made possible through a \$100,000 State Energy Program (SEP) grant from the DOE Hydrogen, Fuel Cell and Infrastructure Program. The Washington State Department of

3. August 26, 2004 6:00 p.m. – 8:00 p.m., **Spokane, WA** – Ramada Inn Airport, 8909 Airport Road

4. August 31, 2004 6:00 p.m. – 8:00 p.m., **Boise, ID** – Boise Centre on the Grove, 850 W. Front Street

5. September 9, 2004 6:00 p.m. – 8:00 p.m., **Portland, OR** – East Portland Community Center, 740 SE 106th Avenue

6. September 15, 2004 5:00 p.m. – 7:00 p.m., **Kalispell, MT** – West Coast Kalispell Center Hotel, 20 North Main Street

-- Becky Clark (503) 230-3158

Non-Wires Solicitation, continued from front page

reduction projects will be implemented in 2005 and 2006.

The solicitation period opened June 11, 2004, and the deadline for proposal submission is August 19, 2004. For more information, or to be placed on an e-mail distribution list for periodic updates, please visit the following web site: [Non-Wires](#)

-- David Le (503) 230-5298

BPA Symposium, continued from front page

The symposium, hosted by the Bonneville Power Administration, will focus on system reliability and environmental stewardship through energy efficiency, two key values shared by many in the Northwest.

Transmission topics will include:

- System adequacy
- Progress in non-wires solutions planning and implementation
- Idea-sharing for regional collaboration
- Technology and innovation

Energy Efficiency topics will include:

- Current and future regional acquisition and infrastructure programs
- EneravWeb and GridWise™

Washington State Department of Community, Trade and Economic Development (CTED) received the DOE grant and contracted with BPA to administer it in support of the Northwest Energy Technology Collaborative.

The Fuel Cell Program included the development of an 8-day fuel cell car kit curriculum module, which was given to 200 teachers in exchange for their teaching the module to three classes each by September 30, 2004, with the intent to reach 18,000 students (at press time, the total was 7,000). In addition, a demonstration fuel cell was installed at Central Washington University as part of this grant.

One car kit was given to each teacher at hands-on teacher workshops. Chelan PUD, Clark County PUD and Snohomish County PUD hosted teacher workshops, helping make this program a success. These kits include a reversible fuel cell, model car, solar module, curriculum and a hydrogen resource book. Anyone can order a fuel cell car and curriculum kit directly through Sargent-Welch for \$234, including shipping. Ray Kufeldt is the contact and can be reached at (800) 727-4368, extension 510; fax (800) 727-4368; e-mail Ray_Kufeldt@vwr.com. The list price is \$260 plus shipping, so to get the lower price, you need to refer to the following: "Catalog No. WLZ2149M under Quote# VBQ-1368985".

Over \$125,000 of in-kind funding and support was received from the U.S. Army Engineer Research and Development Center Construction Engineering Research Laboratory (ERDC-CERL), the Washington State Office of Superintendent of Public Instruction (OSPI), Central Washington University, the Combined Heat and Power Consortium, Washington science teachers, Sargent-Welch, Heliocentris, ReliOn (formerly Avista Labs), and the Northwest Energy Technology Collaborative.

-- Mira Vowles (503) 230-4796

RED Book, continued from front page

The RED Book summarizes costs and

- Technologies
- Education
- Implementation
- Policies and more

Presentations will consist of special speakers, panels and concurrent sessions to engage regional stakeholders on these important issues. A tradeshow will showcase non-wires solutions, transmission and energy efficient technologies, products and service providers.

Registration fee for the symposium is \$125 before July 30, 2004 and \$150 after July 30, 2004.

The event will be held on the banks of the region's premier renewable resource, the Columbia River, at the DoubleTree Hotel, Jantzen Beach.

For more information, please contact Jennifer Eskil at (509) 527-6232, by e-mail at jleskil@bpa.gov, or click on this link to online information and registration: [Symposium web page](#)

THE RED BOOK COMMITMENT BOOKS ARE savings from BPA conservation programs over more than 20 years. These programs have saved approximately 804 average megawatts, after adjustments. Adjustments are necessary to account for various changes that occur to reflect program evaluation findings, the end of a measure life, or other circumstances. For the complete picture, check out the RED Book by clicking on the link above.

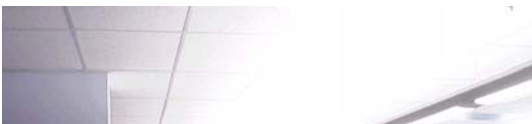
-- Roger Maddox (509) 358-7454

[The people behind the RED Book](#)

Second Largest Building in San Francisco Receives Lighting Retrofit



Before (above) and after (below) lighting retrofits in a portion of the second largest building in San Francisco, the Phillip Burton Federal Building at 450 Golden Gate Avenue. The 20-story, 1.45 million square foot building was constructed in 1962.





The Phillip Burton Federal Building at 450 Golden Gate Avenue. is the second largest building in San Francisco and the largest General Services Administration building west of the Mississippi. The 20-story, 1.45 million square foot building was constructed in 1962. BPA Energy Efficiency staff provided advice on the lighting portion of an extensive energy efficiency upgrade to the building.

The photos above were taken in an area of the building that received lighting retrofits as a lighting example for tenants to view. Before the retrofits, the building area had 3-lamp recessed fluorescent troffers; 93 watts/8'x8' spacing = 1.45 watts per square foot. After the retrofit, the lighting consisted of 1-lamp direct/indirect cable mounted continuous fluorescent fixtures; 55 watts/12'x8' spacing = 0.57 watts per square foot.

The new direct/indirect fixtures throw about 60 percent of the light at the ceiling and 40 percent downward. Since the fixtures are suspended from the T-bar ceiling by aircraft cable, they can easily be aligned over the centerline of cubicles. This makes for great quality and distribution of light. The existing lighting was focused downward with no indirect lighting.

The improvement over the existing system is amazing. Light level readings are approximately 30 foot-candles, a lumen per square foot "lighting density" measure. This level is similar to the pre-retrofit lighting and acceptable in an office environment. Also, there is less glare on computer screens because most of the light is indirect.

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For the complete story on the
450 Golden Gate building, [click here.](#)



-- Craig Ciranny (503) 230-5865

New Technology

Livestock, continued from front page

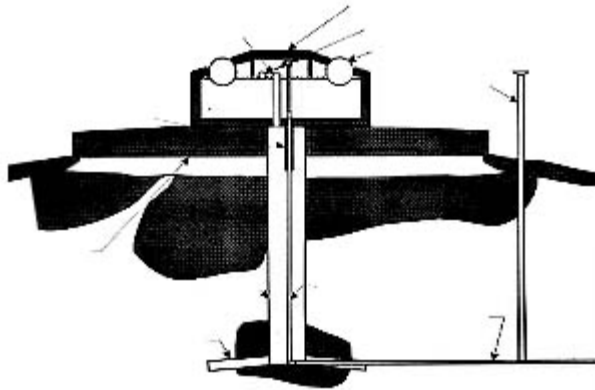


Member Services Representative Nancy Van Sickle of Oregon Trail Electric Cooperative inspects a new cattle fountain installation in LaGrande, Oregon.

The measure is basically a "super-insulated" container filled with water. As you can see in the photo above, the underground water supply comes into the unit, and a float controls the flow. The farm animals push the ball down to drink water. When the animal moves its nose, the ball reseals and insulates the hole. Naturally-warm groundwater enters the insulated tank. Last winter, at -16 degrees Fahrenheit, there were no freeze-ups.

Ranchers of all sizes are finding significant savings by ridding themselves of stock tank heaters and installing these freeze-resistant Cattle Fountains. Way to go, Oregon Trail Electric.

-- Chris Tash (509) 527-6217



Source: Regional Technical Forum

The PV Landscape

If photovoltaics were a primary energy source, would PV collectors cover every square inch of available land?

Contrary to popular opinion, a world relying on PV would offer a landscape almost indistinguishable from the landscape we know today.

Read the rest of this [article by the National Renewable Energy Laboratory](#)

BacGen Project at Sunnyside Wastewater Treatment Facility, continued from front page

The pilot project in Ashland is among the few pilot projects being tested in 2004 and is chartered by the Non-Wires Solutions initiative. In January of 2003, BPA formed a round table of Northwest leaders to work with the agency in investigating how to effectively integrate non-wires solutions into its transmission planning process to fix transmission bottlenecks.

BPA Tests Demand Exchange, continued from front page

Using an Internet-based trading platform, known as the Demand Exchange, BPA simulated severe weather event and asked pilot participants to reduce their need for transmission services. BPA posted an hourly price per megawatt, giving pilot participants the chance to accept, reject or counter the offer. Participants then bid to reduce their demand using backup generation or shifting load to other hours.

The tests occurred over four days in March. During the tests, BPA was able to purchase an average of 22 megawatts of peak demand reduction during each hour of a simulated event. This is about one year's load growth on the Peninsula. "We were hoping to achieve between 10 to 20 megawatts of deferred peak demand and potential generation, so this pilot gave us solid results" said Brad Miller, BPA Energy Efficiency project manager.

BPA developed the pilot to test the feasibility of contracting with large energy users to reduce their transmission use during critical periods, thus reducing the likelihood of voltage instability and ultimately a blackout.

Participants in the pilot included Nippon Paper Industries, Port Angeles; Port Townsend Paper Company, Port Townsend; Mason County PUD #3, Shelton; the Naval Shipyard at Bremerton, and the Navy's submarine base at Bangor.

For the complete story, as well as other Non-Wires Solutions information, [click here](#).

-- Written by Darby Collins (360) 418-8465

-- Project Manager: Brad Miller (503)

The idea of reducing energy use is not new to PBL's Energy Efficiency organization, however the idea you can use demand reduction and distributed generation to relieve transmission pressure is just beginning to gain widespread acceptance. "Once we have collected data from this pilot project we can make recommendations to utilities region wide for using this type of system to reduce costs and increase reliability," said Mike Weedall, BPA vice president for Energy Efficiency.

Working with homeowners, the City of Ashland will attach energy management equipment to selected customer's water heaters and air conditioning systems. During times of peak energy consumption the energy demand of these appliances will be reduced while minimally impacting customer comfort. The time of day when these energy management events will most likely occur is from 3:00 - 6:00 PM during the summer months. This is the time during the summer when electric use is at its highest.

"We are excited to work with BPA on this cutting edge technology. We hope to learn how effective this system is to keep Ashland's electric costs low while helping solve future Pacific Northwest transmission challenges. We will be checking installation costs, capacity savings and the level of customer acceptance closely, to evaluate a larger scale implementation," Dick Wanderscheid, manager City of Ashland Electric.

The customers who participate in this test will get an annual rebate from the City of Ashland. The City of Ashland has just begun to install the equipment into homes. The first homeowners to receive the equipment have been thrilled. They are excited to have the ability to check their thermostat, water heater and whole house meter via the Internet as well as create custom schedules that a regular programmable thermostat would never allow. In addition to giving them more control of their energy use, the homeowners are excited to participate in a program that helps their utility and community in the long run.

Sunnyside BacGen Project, continued from front page

The Port recently completed a BacGen project to save energy and to meet the needs of present users, as well as allowing for growth. BacGen Technologies helps cities (and other owners of wastewater treatment facilities) upgrade systems that may "consume 25 percent or more of an entire city's electrical power budget." The Port of Sunnyside project focused on optimizing sensors and controls throughout the facility, with electrical energy efficiency improvements directed at lagoon 4, for estimated annual energy savings of 1,521,829 kWh/yr. The project has been installed and in operation at the Port since late December 2003.

Equipment change-outs at lagoon 4 consisted of:

- Replacing five 20-horsepower aspirators with eight very low energy (VLE) aeration and mixing systems.
- New low maintenance, self-cleaning dissolved oxygen (DO) sensors capable of sending information via a radio signal provide operators with the ability to monitor DO levels at key locations within the lagoon from a computer inside the Port's office building.

VLEs (commercial name *Pond Doctor*) rely on solar power for mixing and electrical power input for aerating the wastewater. A small horsepower blower located on the VLE unit provides aeration, approximately one-tenth the electrical power input of the existing aspirators. Older aspirator units provide mixing in a turbulent manner mainly on the water surface, but the VLE units enhance mixing and overall wastewater treatment by providing a bottom to top circulation within the lagoon

Measurement and Verification of Project kWh/yr Savings

The measurement and verification (M&V) plan consisted of measuring affected equipment pre- and post-project kWh energy usage for a period of time adequate to represent the operational characteristics of the equipment and system for a typical one-year period.

Verifying the projects kWh/yr savings proved a challenge due to the stretch of exceptionally cold weather that the northwest experienced in January 2004. Sub-zero weather in the Sunnyside area lasted several weeks and major portions of two lagoons were frozen, which affected the short-term operation of the facilities wastewater treatment and required that all aeration equipment remain on up to the present. Due to that severe weather, the post-project M&V period has been delayed. The

LED Holiday Lights in July

Many customer utilities wanted LED holiday lights last year, but were stymied by the search and limited supply. With months until the 2004 holiday season, and with advance notice regarding the contact person and web site, people who are interested in buying these durable, non-fading, outdoor-indoor, energy efficient lights are in luck.

Consumers discovered last year that retail stores hesitated to stock a variety of choices in the LED holiday lights. Stores risk not selling them due to the slightly higher purchase price than traditional incandescent bulbs; however, the savvy consumer prefers the much lower operating cost over the years. Anticipating the desire for retail purchase requests, Holiday Lights of Central Oregon will soon have color pictures and a price sheet on their web site at <http://www.holiday-lights.net>.

For bulk buys -- one case has 12 strands - call Dennis Harvey at (541)388-4532 or e-mail him at Dennis@Holiday-Lights.net

Visit the Western Area Power Administration web site for their description, evaluation and support of the technology: [click here](#).

-- Rebecca Clark (503) 230-3158

facility should reach the intended post-project operation this summer. Even without the final M&V numbers, the facility is experiencing energy savings between one-third to one-half of the project's estimated energy savings.

Port operators also like the added capability of monitoring the facilities wastewater characteristics and equipment operations from their computer through the BacGen installed hardware and software, as well as the customer service that BacGen has provided throughout the project.

-- Todd Amundson (503) 230-5491

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