Update

## A monthly E-newsletter from Montana Green Power

The Montana Green Power E-newsletter is a monthly feature of the Montana Green Power website: www.montanagreenpower.com. Visit the website for details about all the stories below, plus lots of other green power news. The site is funded with Universal System Benefits charges paid by all NorthWestern Energy customers.

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## March 2009

"America has much to gain in terms of jobs and trade by meeting the growing world demand for advanced, environmentally sound technologies." — John McCain



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### NEWS & NOTES

**Missoula Forum Focuses on Importance of Energy Issues**
City Club Missoula recently held a forum focusing on energy issues in Montana. Among the speakers were NorthWestern Energy president Bob Rowe and state Public Service Commissioner Gail Gutsche, both of whom agreed that energy conservation and efficiency are becoming a higher priority in Montana and that increasing renewable energy sources such as solar and wind could prove an economic boon to the state.

According to Chuck Magraw of the Natural Resources Defense Council, Montanans can benefit by reducing greenhouse gas emissions. Failing to do so, he said, will hurt both the economy and environment.

NorthWestern Energy currently gets about 8 percent of its generation portfolio from renewables, up considerably in just a few short years. Rowe added that investors tend to still view wind and solar as

risky investments, adding to the challenges already facing renewables development.

The speakers agreed that Montana will likely face some tough energy choices in the future. The solution, they said, is to enact policy changes across all sectors that make renewables and efficiency business as usual. Read the full story in the *Missoulian* at www.missoulian.com/articles/2009/03/10/news/mtregional/news09.txt

**NorthWestern Energy Offers Free Course on Lighting and Controls**
NorthWestern Energy is offering a series of free courses around the state, developed for electricians, distributors, manufacturers, commercial lighting reps, and business customers. The Northwest is gearing up for a significant increase in the volume of energy-efficiency activities over the next few years. Utilities, energy-efficiency organizations and industry contractors and distributors are working together to dramatically increase the number of completed energy efficient lighting projects and save more energy.

In this workshop, you'll learn about: light sources, color rendition, design of energy-efficient applications; tips to conduct commercial lighting audits quickly and accurately; new and emerging commercial lighting technologies; incorporating efficiency training to real life applications; and techniques to market and sell commercial lighting projects. Montana Electrical License Continuing Education Unit (CEU) credits are available.

The normal $79 tuition cost for this course is being waived as part of NorthWestern Energy's E+ Commercial Lighting Rebate Program. For more information, email gwen.lusk@verizon.net or call 888-205-5756. Learn more at www.montanagreenpower.com/energy/docs/lighting&controls_workshop.pdf

**UM-Western Cafeteria Loses Trays to Save Energy**
The University of Montana-Western in Dillon is using less energy these days, since its cafeteria went tray-less. In addition to saving money by not having to buy new trays, the cafeteria also reduces energy use and costs by not having to wash the trays. And, as an added benefit, this scenario means less food waste, since students are more likely to eat the food on a plate, but not perhaps an entire tray. According to this report from *The Montana Standard*, the school saved about $2,600 last semester. Read the full story at www.mtstandard.com/articles/2009/03/05/area/hjjajgjejjiafb.txt.

**Butte Civic Center, Schools See the Light**
The Butte Civic Center recently completed work on a new lighting system that is both improving lighting quality in the building and saving money. The upgrade is expected to save some $111,000 in energy costs each year. NorthWestern Energy's Commercial Lighting Rebate Program provided $15,000 in incentives to the project. Read more at www.montanasnewsstation.com/global/story.asp?s=9906815.

The Butte School District also underwent a lighting upgrading, which is saving some 15 percent in electric costs. According to J.R. Richardson, district business manager, the project is expected to save about $103,000 each year, freeing up funds for other purposes. The project included installing new high-efficiency lights in classrooms, gyms and other rooms, along with occupancy sensors to turn lights off in areas that aren't being used. NorthWestern Energy's Commercial Lighting Rebate Program provided rebates of more than $180,000 to help pay for the project, bringing the payback period to less than four years. Read the full story in *The Montana Standard* at www.mtstandard.com/articles/2009/02/26/area/hjjajhhdjijhjh.txt.

**CEO Says NorthWestern Energy Supports Renewable Energy Development**
According to Bob Rowe, President and CEO of NorthWestern Energy, the utility strongly supports the development of renewable energy in Montana. And, he says, the company backs up that commitment with actions and results.

Says Rowe: "Over 8 percent of the electricity we deliver to our Montana customers comes from wind and other renewables. This is higher than any other regulated utility in the Pacific Northwest and we are on target to achieve at least 15% by 2015. We're also committing human resources to understanding how best to integrate wind (a highly variable resource) into our system, and to working with wind developers on cost-effective projects.

Recently, there has been some discussion in the media about NorthWestern Energy's view of small-scale renewable energy development, particularly in relation to HB 491, the 'QF bill.'

Our role concerning wind is twofold: We're a transmission provider that serves as the pathway between Montana generators and customers both in and out-of-state. We've recently added to the services we provide these “wind shippers” and we have enabled a number of them to interconnect to our transmission system. We're also the local utility providing energy to our customers at rates approved by the Public Service Commission.

It's the latter role that is now the main focus when discussing small-scale renewable energy production. However, there is confusion between the large amount of electricity generated in Montana on a peak hour basis (over 3,000 megawatts), the smaller amount consumed in Montana on that same peak hour of about 1800 MW, and the still-smaller amount provided by NorthWestern Energy to its mainly small- and medium-sized customers retail customers of about 1200 MW." Read the full news release at www.northwesternenergy.com/OurCompany/NewsCenter/displaynews.aspx?Article=6791&item=20.

**Montana Ambassadors Honor Champions of High Performance Buildings**
The state of Montana has embraced the green building movement, honoring champions who are leading the way by hosting the first ever Montana BetterBricks Awards. In a joint venture with NorthWestern Energy and the Montana Electric Cooperative Association (MECA), the event took place on February 26, 2009, in Helena, in conjunction with the Montana Ambassadors Annual Conference.

The BetterBricks Awards salute individuals pioneering high performance commercial buildings with an emphasis on energy efficiency in the Northwest. The first annual Montana BetterBricks Awards celebrated the people behind the best commercial projects in the state, such as architects, engineers, building owners and developers and other building professionals. The result: a greater number of buildings that offer improved energy efficiency, bottom line benefits and a reduced carbon footprint. Read the full press release at www.northwesternenergy.com/OurCompany/NewsCenter/displaynews.aspx?Article=6790&item=20.

**NorthWestern Energy to Help Track Renewable Energy Generation in Montana**
NorthWestern Energy is providing a new service to help eligible small renewable energy producers in Montana track renewable energy certificates as a Qualified Reporting Entity (QRE) with the Western Renewable Energy Generation Information System (WREGIS).

WREGIS is a voluntary, independent regional system that tracks renewable generation production to help ensure the credibility of the "green" value of renewable electricity. Using independent, verifiable, and reliable data, the QRE process will make it easier to implement renewable policies and achieve renewable energy goals. Data in WREGIS includes megawatt-hours produced, fuel source, facility location, and all state, provincial and voluntary renewable energy program qualifications. Each WREGIS certificate, bearing a unique serial number to prevent duplication, is issued for every megawatt-hour of renewable energy produced and deposited on the grid. Read the full press release at www.northwesternenergy.com/OurCompany/NewsCenter/displaynews.aspx?Page=NorthWestern_Energy_to_Help_Track_Renewable_Energy_Generation_in_Montana&article=6788&Item=20

## FUNDING OPPORTUNITIES

**Enhanced Geothermal Systems Component Research and Development/Analysis**

DOE is seeking advanced technology to address key aspects of engineered reservoir creation, management, and utilization identified in the GTP Multi-Year Research, Development, and Demonstration (MYRDD) plan. Projects are sought to develop innovative technology for cost-effective creation, management, and utilization of Enhanced Geothermal Systems (EGS) in reservoir environments.

Initial estimated total funding for this award is listed at $10,000,000 in FY2009; with additional anticipated funds of $25,000,000 in FY2010 and FY2011, subject to change and Congressional appropriations. Domestic applicants are eligible to apply including institutions of higher education, non-profit entities, for-profit private entities, State/Local Governments, and Indian tribes.
www07.grants.gov/search/search.do;jsessionid=RBtNJn2BpCDl5nfybs8ZkpynPlvnJLSBLj7tv2g9CJpgnHvRZ6nm!1440342003?oppId=45677&flag2006=false&mode=VIEW

## QUESTION OF THE WEEK

***Q*: How can I protect a solar water heater from freezing?**

A: Solar water heating systems, which use liquids as heat-transfer fluids, need protection from freezing in climates where temperatures fall below 42ºF (6ºC).

*Photo credit: NREL/PIX*

Don't rely on a collector's and the piping's (collector loop's) insulation to keep them from freezing. The main purpose of the insulation is to reduce heat loss and increase performance. For protecting the collector and piping from damage due to freezing temperatures, you basically have two options:

- Use an antifreeze solution as the heat-transfer fluid.
- Drain the collector(s) and piping (collector loop), either manually or automatically, when there's a chance the temperature might drop below the liquid's freezing point.

**Using an Antifreeze Solution**

Solar water heating systems that use an antifreeze solution (propylene glycol or ethylene glycol) as a heat-transfer fluid have effective freeze protection as long as the proper antifreeze concentration is maintained. Antifreeze fluids degrade over time and normally should be changed every 3-5 years. Since these systems are pressurized, it is not practical for the average homeowner to check the condition of the antifreeze solution. If you own this type of system, have a solar heating professional check it periodically.

**Draining the Collector and Piping**

Solar water-heating systems that use only water as a heat-transfer fluid are the most vulnerable to freeze damage. "Draindown" or "drainback" systems typically use a controller to drain the collector loop automatically. Sensors on the collector and storage tank tell the controller when to shut off the circulation pump, to drain the collector loop, and when to start the pump again.

Improper placement or the use of low-quality sensors can lead to their failure to detect freezing conditions. The controller may not drain the system, and expensive freeze damage may occur. Make sure that the sensor(s) have been installed according to the manufacturer's recommendations, and check the controller at least once a year to be sure that it is operating correctly.

To ensure that the collector loop drains completely, there should also be a means to prevent a vacuum from forming inside the collector loop as the liquid drains out. Usually an air vent is installed

at the highest point in the collector loop. It is a good practice to insulate air vents so that they do not freeze. Also make sure that nothing blocks the airflow into the system when the drain cycle is active.

Collectors and piping must slope properly to allow the water to drain completely. All collectors and piping should have a minimum slope of 0.25 inches per foot (2.1 centimeters per meter).

In integral collector storage or "batch" systems, the collector is also the storage tank. Placing large amounts of insulation around the unglazed parts of the collector and covering the glazing at night or on cloudy days will help to protect the collector from cold temperatures. However, water in the collector can freeze over extended periods of very cold weather. The collector supply and return pipes are also susceptible to freezing, especially if they run through an unheated space or outside. This can happen even when the pipes are well insulated. It is best to drain the entire system before freezing temperatures occur to avoid any possible freeze damage.

For more information, see Solar Water Heaters at http://apps1.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=12850.

## CASE STUDY OF THE MONTH

**Red Lodge Ales**

When Sam Hoffmann, owner of Red Lodge Ales, realized he needed to expand his operation, he began construction of a new, larger facility that would meet the needs of his growing businesses and allow for future expansion. He also incorporated plenty of green features.

*Photo credit: Red Lodge Ales*

For example, the building incorporates a natural cooling feature. A Freeaire refrigeration system takes advantage of cold outdoor air through a computer-controlled an air exchange system. When it's cold enough outside, a sensor will shut down the compressor, thereby reducing energy use. "They predict that 160 days of the year, we won't have to run any conventional refrigeration," Hoffman said.

The new brewery also will take advantage of the sun's energy with solar thermal array installed on the brewery's roof. The solar system will heat water, which can be used for several purposes, such as mashing grain in the brewing process and to heat the building. According to the company's website, the solar array will be largest such system in Montana.

Hoffman says the new brewery also has a room to make biodiesel. Hoffman dabbles in making biodiesel for delivery truck and his own 1981 Peugeot, using waste vegetable oil.

Read the full story in the Billings Gazette at http://billingsgazette.net/articles/2008/12/21/news/business/18-expanded.txt. See also the Red Lodge Ales website at www.redlodgeales.com/.