

Conservation and Renewable Resources

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consumers, point-of-purchase materials for retail outlets, retail merchandising support, training for retail salespeople, and some consumer advertising. After a year, sales of resource-efficient washers had grown to more than 12 percent of the market. Retailers indicated they believed they could sell the washers to a third of their customers. Consumers were pleased with the washers' performance and were better educated about how they worked. Most importantly, major manufacturers in the U.S. began to produce resource-efficient washers. Even after the consumer rebate was discontinued, sales continued at the same level.

The U.S. Department of Energy used results from the project when it determined energy efficiency standards for clothes washers. The first phase of these standards will produce washers that are more than 22 percent more efficient by 2004. By 2007, all clothes washers produced in the U.S. will be 35 percent more efficient than current models. Education transformed the market.

Learning from these successes, the Alliance and its partner utilities have redoubled their efforts to help consumers understand how they can save power over the long term. The region's

utilities have boosted funding and personnel for many different programs aiding homeowners, businesses, and industries. The Alliance will continue to push for market transformation in the future and will soon receive its funding from the newly established Oregon Energy Trust, rather than directly from the IOUs in the state.

The goal of organizations such as the Alliance is to make energy efficiency as easy for the public as recycling is now. It should not be something you do to go out of your way for the environment, but just another sound household or business decision—something that makes sense for both the environment and the pocketbook.

Just on the horizon are a number of exciting developments, such as light emitting diode (LED) technology for lighting and microscale heat exchangers that may improve the performance of heating and cooling systems by 30 to 40 percent.



Margie Gardner is the executive director of the Northwest Energy Efficiency Alliance, a non-profit group of electric utilities, state governments, public interest groups and efficiency industry representatives.

Refinements in solar technology allow windows and roofs to collect the sun's heat to generate power, and distributed generation systems allow buildings and homes to have their own power sources.

As efficient as these technologies are, however, none will save much energy if people don't use them. Right now, Oregonians are still lighting their homes and

businesses across the state with incandescent bulbs, when compact fluorescent bulbs produce the same light using 75 percent less energy. Over the next decade, Oregon could make dramatic reductions in its energy use by installing energy efficiency technology, especially given the unique opportunity provided by the Oregon Energy Trust.

Renewable Resources in the Northwest: An Awesome Opportunity

by J. Rachel Shimshak

We are lucky in Oregon. We have clean air, we can see the mountains, and our state has a history of supporting environmentally responsible policies and programs. The reason why we enjoy this high quality of life is that hydropower fuels over half of our economy. Hydro is a renewable resource, and harnessing falling water to make electricity does not pollute our air. *(Please see sidebar on Low Impact Hydro Institute which addresses the issue of hydro sustainability -ed.)* However, coal plants provide most of the remaining 40 percent of the electricity used by consumers. As we move into the next decade our need for more power could shift the balance between these fossil fuels and the relatively clean energy

of hydropower.

A report completed by the Northwest Power Planning Council in 2000 concluded that the region must acquire a minimum of 3,000 new megawatts (MW) of energy, about enough to serve four cities the size of Portland, to meet future demand. Utilities, owners of our transmission system, and generators of electric power will soon decide who will produce this power and how they will transmit it. The choices they make will impact the quality of our lives and the lives of the next generation of Northwesters. Certainly we need to build some new, efficient gas plants to meet our needs. However, if we are to proceed rationally, and in a way that protects our treasured quality of life, the Northwest needs to invest in

conservation and renewables.

Policymakers should make energy efficiency and conservation programs a permanent part of Oregon's energy strategy, as Margie Gardner convincingly argues in her article for this edition of *Oregon's Future*. The second element to the solution, and the focus of this article, is the need to add new renewable resources, such as wind power, to the electric power system.

Wind turbines, as well as geothermal and solar energy facilities, do not use fuel and builders can construct them quickly. The capital costs, though higher than a new gas turbine, are fixed and therefore stabilize rates for the long term. Local resources such as wind farms keep well-paying jobs in our region and don't send hard-earned dollars across the border to pay for fuel.

Wind Power Makes the News

The state of Montana alone has enough wind energy potential to serve 15 percent of our nation's electricity needs. In addition to the environmental benefits of such a new, renewable resource, wind farms provide economic benefits to rural areas. Owners of wind projects lease land from farmers and ranchers and pay them royalties. Royal Raymond, a farmer in Helix, Oregon, has ten turbines on his land. He claims that the extra income from the turbines acts as a "second crop" that helps him stay in the farming business. Because Mr. Raymond can farm right up to the base of each turbine, not much of his property is taken out of production. His only complaint is that there are not enough turbines spread around his land.

Engineers mount wind turbines on steel towers that stand

60 meters tall. The Stataline Wind Project, located in Umatilla County, Oregon, and Walla Walla County, Washington, will include about 400 towers. Turbine manufacturers are hiring the region's metal manufacturers to construct

the towers. One turbine manufacturer is even contemplating building a facility here in Oregon. The jobs created in the construction and operation of a wind project not only provide employment for rural areas of the state, but also contribute to local property taxes.

Important Regional Players for Renewables

Fortunately, Bonneville and major Oregon utilities (specifically PacifiCorp, Portland General Electric, and the Eugene Water and Electric Board) exercised

The Hydropower Dilemma: Certifying Low Impact Hydropower Dams

Hydropower presents a dilemma for Oregonians interested in environmentally sound, sustainable energy. Hydropower does not burn fossil fuels, but hydropower dams can block habitat access, impede natural river flows, and degrade water quality. The Low Impact Hydropower Institute (LIHI), based in Portland, can help consumers choose "green" hydropower. LIHI certifies as low impact those hydropower dams that meet criteria in eight key resource areas: river flows, water quality, fish passage, watershed, threat-

ened and endangered species, cultural resources, recreation use, and removal potential. The certification criteria are based on recommendations for environmental protection made by state, federal and tribal resource agencies, and the certification process is open to public comment and appeal. (Certification criteria, pending applications and a list of certification projects are all available at www.lowimpacthydro.org).

Lydia Grimm, Low Impact Hydro Institute

Green Power Trading

The environmental community has a love-hate relationship with using market-based mechanisms to improve environmental quality. From emissions trading to electricity deregulation, the market has been a double-edged sword. For example, electricity deregulation has opened markets to cleaner sources of generation, but it has, in some cases, resulted in lower wholesale prices, making renewable power less competitive.

One promising market mechanism is the trading of Renewable Energy Credits (RECs). Modeled after markets for tradable emissions credits, RECs represent the environmental benefits or "greenness" of power generated by renewable resources such as wind and solar. For each megawatt-hour (MWh) that a renewable power project produces, it is awarded a REC that can be sold separately from the underlying physical electricity generated by the plant. A wind project, for example, which needs \$42.00/MWh to break even, can sell its physical power to a utility

at the prevailing wholesale market price such as \$32.00/MWh and can sell a REC for \$10.00/MWh to a retail customer or green power marketer. The combined revenue of \$42.00 makes the generator whole. The REC purchase allows power suppliers to market their power as "green power" and it allows residential consumers to invest in renewable energy. Green power marketers typically bundle RECs with system energy and market it as "renewable energy."

To some, this approach is a marketing fiction, but REC sales directly support new renewable power projects and lead to improvements in air quality. Several agencies, including the Attorney General's office, closely monitor REC trading to prevent abuses and double-counting. Some players hope to eventually see a national market for Renewable Energy Credits, which could be an important step in growing the renewable power market.

Elliot Mainzer for Oregon's Future



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early leadership when they developed some small wind, solar, and geothermal projects. These projects, which include the Vansycle Wind Project near Pendleton, demonstrated that renewables can be integrated into our system, sited in our region, and counted on to produce clean energy.

Obligated to provide an additional 3,000 MW to meet the needs of its customer utilities, Bonneville recently requested proposals for 1,000 MW of wind power. The market responded with a vengeance! Bonneville received proposals for over 2,600 MW of wind power and has chosen to move forward with projects that will generate 830 MW of wind power to add to the 400 MW to be generated by projects already underway. The clout of Bonneville brought bid proposals from many new developers. The region's developing competitive market for wind power has reduced its cost by between 4 and 6 cents per kilowatt-hour (KWh). This range is nearly competitive with prices of energy produced from fossil fuels.

In an unexpectedly farsighted move, PacifiCorp Power Marketing (PPM)—a subsidiary of PacifiCorp an investor owned utility that serves customers in six Western states—shocked the

region by announcing last fall that it would buy the entire 261 MW output of the Stateline Wind Project (developed by FPL Energy, LLC, a subsidiary of FPL Group). PPM has since indicated its intention to purchase between 1,000-2,000 MW of wind over the next couple of years. PPM recognizes that wind power is cost-effective and that customers

want more renewables. Stateline, the anchor tenant for wind power in the region, will be the largest wind project in the West when builders complete it at the end of this year.

An even more diverse group of players is investing in the region's natural renewable power. An affiliate of Golden Northwest Aluminum, Inc., which owns two aluminum plants in the region, is building a wind plant to serve the company's needs. Another, the Blackfeet tribe in Montana, is working with wind developer SeaWest Wind Power, Inc. to develop the first wind project on tribal lands. Even Energy Northwest, the owner of the region's only operating nuclear plant, is developing a wind project for its customer utilities.

Green Power

Over 80 percent of the customers in Oregon can currently choose to purchase a renewable product, also known as "green power," from their local utility. Wind power and community solar projects support the retail green power programs being offered by 15 utilities throughout the region. A growing number of residential and commercial customers, including the Port of Portland, Columbia Steel, and the City of

Corvallis, are demonstrating that they care where their power comes from. North-westerners now purchase over 46 million kilowatt-hours (KWh) of renewable power—they are going green.

The Current Clean Energy Challenge

So if there's all this great renewable activity in the region, why should we worry? Power managers tend to resist the large, up-front costs of building generators fueled by renewable resources, even though the low cost of generation stabilizes prices over the long-term.

Altogether, there are about 1,600 MW of wind, solar, and geothermal projects proposed or underway. Compare that to the 16,000 MW of natural gas-powered projects proposed or underway. If developers bring all these gas projects online, their gas turbines will release 53 million tons of carbon dioxide into the atmosphere, the same amount of greenhouse gas released from the gasoline burned by 8 million new cars. To sequester that much carbon and remove the CO₂ from the atmosphere, foresters would have to plant 23 million acres of trees.

House Bill 3283 and Carbon Offsets

In July 1997, the Oregon Legislature passed [SMW1] an innovative measure to confront the problem of global climate change. House Bill 3283, the first of its kind in the United States, requires Oregon's new gas-fired energy facilities to meet a net emissions rate of 0.675 pounds of carbon dioxide per kilowatt-hour. This works out to 17 percent less carbon dioxide than any power plant currently operating in the United States. This is a tall order for power plants, so the law provides them with some flexibility. A plant developer can choose to fulfill Oregon's emissions requirements by providing funds to what the law calls a "qualified nonprofit." This nonprofit uses the funds to undertake projects that offset carbon dioxide emissions that the plant produces.

One such nonprofit is The Climate Trust, originally funded with money from Oregon electric utility operators. The Oregon Energy Facilities Siting Council and energy facilities appoint the Trust's board of directors, and the state audits its operations.

Last year, The Climate Trust funded a landfill gas generation project, a project to stimulate Oregon wind power, an Internet-based car- and vanpool matching project, and two permanent forest sequestration projects. This year, the Trust is working with the Bonneville Environmental Foundation on a project that will retire CO₂ offsets purchased as green tags. The environmental benefits, represented by green tags, will be held in trust and will not be resold to companies for use in meeting emission caps. The green tags are being purchased from the Bonneville Power Administration (BPA) to assist the development of the new wind project at Condon, Oregon, or another comparable Oregon wind power project. For more information see www.climatetrust.org or send email to info@climatetrust.org.

Kris Nelson for Oregon's Future

The barrier in the market is that the price of renewable resources does not reflect all the environmental and economic benefits they provide. These benefits are directly proportional to what economists call the “external costs” of burning fossil fuels. Air pollution, negative health impacts, and climate changes caused by fossil fuel combustion cost members of society a high price that is not reflected in either fuel prices or electric rates.

Follow-through Is Essential to a Clean Energy Future

Bonneville, PacifiCorp Power Marketing, and many other utilities in the Northwest have already played an important role in developing renewable resources. But it is not enough. In the early and mid 90s, when energy prices were low, Bonneville slashed funding for conservation by 70 percent. To make the Northwest the renewable capital of the country, the region’s utilities and marketers will have to remain steadfast in their resolve to follow

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through with a commitment to conservation and renewables, even if falling prices in the market tempt them to change course.

Policy Changes Are Needed

Natural wind cycles set the schedules of wind farms. Wind energy cannot be stored in a barrel and then “burned” when customers call for power. Plant managers of fossil fuel plants, however, can fire them up and

transmit power on a schedule that accommodates demand and the transmission system. Owners of the transmission system in the Northwest need to agree on a system of transmission service policies that works with the natural cycles of renewable energy plants.

Both state and federal policies should support the market activities of the region. Congress should extend the wind energy production tax credit and provide the credit to all renewable resources. It should also adopt the renewable portfolio standard sponsored by Sen. Jim Jeffords (I-VT). This standard would ensure that every purchase of energy in the United States contains a minimum amount of new renewable energy. Oregon’s electricity restructuring bill, passed by the 2001 Legislature, also provides necessary financial incentives for energy conservation and the development of renewables. Oregonians must support initiatives that help level the playing field and aid Green Power developers in overcoming market barriers.



J. Rachel Shimshak is the director of the Renewable Northwest Project, a regional advocacy organization promoting the implementation of solar, wind, and geothermal resources.

