Backyard powerhouses

"Green Tags" spur development of renewable power co-ops in Northwest

By Stephen Thompson
Assistant Editor

Renewable power is the basis for a new kind of co-op developing in the Pacific Northwest. In Montana and Washington, farmers in Our Wind Cooperative are producing power from relatively small, "backyard-style" wind turbines. In Oregon and Washington, owners of small, home-size photovoltaic arrays — or solar-electric panels — have banded together in the Northwest Solar Co-op. Both co-ops are using a new concept to encourage the use of renewable energy, while putting dollars in their members' pockets at the same time.

The concept is simple: sell the environmental benefits of renewable energy to customers who want to help reduce the consumption of conventionally produced power.

Doug Boleyn, a solar power consultant in Gladstone, Ore., wanted to find a new way to help clients recover some of the costs of a home solar-power installation. He found the answer in a new project by the Bonneville Environmental Foundation, a non-profit organization based in nearby Portland that seeks to promote the use of renewable energy sources.

Perfect match

The foundation had developed a new way to sell environmental benefits, through certificates called "Green Tags" (see sidebar), and was looking to expand into small solar systems. It was a perfect match.

Photovoltaic systems provide environmentally clean power, but their output is intermittent: when the sun goes down, so does the power. Overcast days reduce output considerably. For this reason, home solar-power systems are almost always hooked up to the local power grid. (For an example of stand-alone solar systems, see "Isolated Navajos tap solar power," *Rural Cooperatives*, March/April 2002, page 6; current and back issues are accessible on-line at www.rurdev.usda.gov/rbs/pub/openmag.htm.)

A wind turbine is erected in Liberty County, Montana. Local supporters hope it is the first of many such installations. Photo courtesy NW Seed. (Above, right) The Gray family of Medford, Ore., with their photovoltaic array. Photo courtesy Doug Boleyn. Both sell the environmental benefits of their green power through a new kind of co-op.

An electronic inverter converts the direct-current power from the solar panel to usable house current. When the sun is out, the system routes any solar power not being used to the power grid; when the solar system isn't making power, electricity from the power utility is used. A meter measures current both ways, and the utility pays the user a rebate for the excess power.

Members of the co-op are required to have their solar systems hooked up to the local power utility to ensure that all the power they produce is used, either by the owner or by the utility's other customers. The amount of solar power output is measured, and at the end of each year each member sends his or her meter reading to the co-op. The total of all members' solar production is added up by the co-op and sent in to the Bonneville Environmental Foundation, which pays for the Green Tags and distributes them to customers. The co-op then sends the members the checks for their Green Tags production.

Utility gets the energy; co-op sells Green Tags

Each member is required to sign an "attestation" form every year, confirming the amount of green power produced and that it meets all criteria for being renewable and non-polluting. The Green Tags are certified as valid by an independent third-party entity, the Green-e Renewable Electricity Certification Program.

A typical home solar-power system puts out a maximum of about 1 kilowatt, and costs about $13,000 to $20,000, according to Boleyn. The amount of money each co-op member receives is comparatively small —

about $200 to $250 per year. But, he says, the added funds help in making a solar installation cost effective, and selling the tags gives others who don't have access to a green power source a chance to participate in the production and use of renewable energy.

"While $250 isn't that much," he says, "sometimes it seems to make the difference when people are considering purchasing a solar-power unit. Salesmen for photovoltaic systems are now using Green Tags as a 'sweetener' for potential customers."

Making money from the wind

Like the Northwest Solar Co-op, Our Wind Cooperative promotes grassroots production of green power. Our Wind members run small, 10-kilowatt wind turbine generators — producing more power than Northwest Solar's solar panels, but a far cry from the enormous turbines erected by utilities, the largest of which can produce as much as 4,200 kilowatts (see "Catch the wind," *Rural Cooperatives*, March/April 2002, page 4).

The co-op was launched by Seattle-based Northwest Sustainable Energy for Economic Development (NW SEED), Last Mile Electric Cooperative, Northwest Cooperative Development Center and other non-profit organizations seeking to promote customer-owned wind power among farmers and rural landowners in the Pacific Northwest.

NW SEED used a number of federal grants and loans to do the groundwork for the co-op. A contract award of $300,000 from the Department of Energy's National Renewable Energy Systems Laboratory helped get the effort off the ground by financing a survey of wind characteristics in the target area. A Value-Added Producer Grant (VAPG) of $50,000 from USDA Rural Development was used to conduct a feasibility study and to plan studies of various possible turbine sites.

The Bonneville Foundation helped by making upfront payments for projected Green Tags production, and also made available a low-interest loan.

The initiative had no problem finding potential participants: it received over 300 applications. Each was screened according to criteria, including availability of financing, local wind characteristics and access to power transmission facilities. Ten sites were chosen for the initial installations.

Five turbines installed

The cooperative was incorporated in November 2003. So far, five turbines have been installed, and one is under construction.

"Each site is different," says NW Seed project manager Jennifer Grove. Not only do geographic characteristics differ, but so do local regulations and permit requirements.

In addition, incentives for installing wind generators are different in each state as well. In Montana for example, the co-op took advantage of funding from state renewable energy incentive programs and a streamlined permitting process.

The co-op found a different kind of success in Washington. Financial support from Seattle City Light and Klickitat Public Utility District com-

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How Green Tags work

Green Tags are certificates of environmental benefit that can be sold and traded. In effect, they allow a person or entity to support a renewable energy source, without regard to where both the producer and the purchaser are located. Green Tags provide additional income to owners of renewable-energy generators, apart from that derived from the sale of the actual power or the savings derived by consuming home-made power.

Green Tags function on the principle that electrical power is fungible — that is, one unit of it is identical in use to another, regardless of its source.

They work like this:

- A producer of "green" electricity — from a wind turbine, solar array, or other renewable source — records the amount of power produced by the green source. Through a cooperative or other entity, the producer sells certificates for that amount of energy — Green Tags.
- The actual power that is produced by the green source is consumed at the site or sold to the local utility. The sale of Green Tags is thus separate from the sale and use of the power produced by the green source — in this case, solar arrays and wind turbines.
- Customers who want to use green power buy the certificates. The actual physical power that the customer consumes is not produced by the green source. But by buying Green Tags, the customer takes ownership of the "green" characteristics of the green producer's power. Doing so offsets the environmental damage done by the production of the conventional power the customer uses — that is, the customer's consumption of power does not add overall to the pollution being produced to generate power. Conversely, having sold the Green Tags, the owner of the green power source can't claim to be using green power. ■

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pensated for lengthier and more complicated permitting. All of these factors, including differences in overall yearly energy production, mean that costs and payback periods are different for each installation.

Co-op members own their turbines and are responsible for financing them. However, according to Grove, Our Wind was able to find a number of sources to help share the capital cost of the turbines. Assistance included grants by utilities, rebates by Bergey Windpower, the manufacturer of the turbines, and state, local and federal government programs.

USDA Rural Development awarded the co-op a Renewable Energy Systems Grant of $77,749 to help offset capital costs for each of nine turbines.

"We were able to reduce installation costs to the members by about 80 percent for the first five turbines, from an average of $41,000 to about $8,000," Grove says. "That reduces the time it takes for each turbine to pay for itself from about 50 years to only seven."

Turbine ownership & motivation vary

Four of the five existing turbines are on land owned by private citizens or farmers. One was built by a county government.

Co-op members have different reasons for participating. Doug Nelson, who owns an 800-acre ranch in Montana, says that, while he was interested in turbine technology, the main reason he wanted a turbine was to reduce his power costs.

Ed Kennell, on the other hand, a retired plumber in rural Washington, pursued renewable energy systems as a hobby for 30 years. "I was into clean energy when nobody even knew what the term meant," he says.

Don Marble, a Liberty County, Mont., commissioner, says, "We have three things out here: wheat, wind and cows." In an area currently in economic doldrums, he and other members of his community were interested in wind power as a potential source of economic development. After seeing a presentation about wind power projects in South Dakota, Marble got serious and started an initiative to install an Our Wind generator, which supplies power for county facilities.

For Marble and his community, the new turbine may be only the beginning. The county is currently conducting a survey to determine suitability for larger, utility-style wind generators. Marble says there have already been expressions of interest from a utility company.

Though the total amount of power produced by both co-ops is small, such efforts may point the way for many more grassroots, green power projects. Much will depend on startup costs, which may improve in the future with better technology and more sources of financial assistance.

Meanwhile, co-op members have the satisfaction of knowing that they are doing their part to reduce greenhouse gas emissions. And for them, that's enough. ■