

# Renewable energy business seen heating up in Vermont

By MOLLY TUCKER

Vermont has its cloudy days, but the forecast is pretty sunny for businesses that install solar electric and hot water systems. Rising energy costs, as well as federal and state financial incentives, are spurring homeowners and businesses to purchase these systems.

Dave Palumbo, owner of Independent Power LLC in Hyde Park, says the solar industry is growing worldwide by 35 to 40 percent per year. His company has installed more than 300 off-the-grid and grid-tied solar systems since it was founded in 1988.

Palumbo says business is as good as it was in the late 1990s, when customers hired his company to install off-the-grid solar systems because of the Y2K scare. He currently has four employees and plans to hire more.

Building Energy of Williston, a newcomer on the renewable energy scene, is also getting a lot of calls. The company was started in September 2007 and provides a range of energy services including energy audits and installation of solar thermal, solar photovoltaic (PV) and wind turbine systems.

"We're really busy, said Building Energy's solar engineer, Nick Ponzio. "We're doing six site visits a week.

The increased interest in renewable energy systems is partly due to fears that electricity costs will continue to rise.

"It will vary depending on the utility," said Palumbo. "I've heard good things about Washington Electric Co-op. That utility thinks that it can keep prices stable and low. Other utilities, however, are buying power on the open market and they could easily see the price go up 50 percent by 2015. People in Vermont are paying 13 to 14 cents per kilowatt-hour now, but in Connecticut, it is already 25 cents per kilowatt-hour and in California some utilities are charging 40 cents during peak afternoon hours."



Building Energy of Williston installed this 5,000-watt solar array on the roof of Dr. Carol Gardner's Preventive Health Medicine office in Colchester.

## The green issue

Interest in renewable energy systems has also been sparked by global warming. Electricity produced by solar and wind systems helps reduce global warming because it does not emit carbon dioxide or other greenhouse gases and do not use fossil fuels to produce electricity. These systems also reduce consumption of utility generated electricity that is generated by fossil or nuclear fuel.

Solar thermal systems can produce hot water and provide space heating, as well as heat for swimming pools. These systems consist of one or more solar collectors, a storage tank, circulator pumps and controls.

Solar electric systems, also called photovoltaic or PV systems, produce electricity when sunlight interacts with semiconductor materials in the PV cells. These systems consist of an array of PV panels that convert solar energy to electricity and an inverter that converts DC power to AC so that the electricity can be used in standard electric appliances.

Vermont has a 'Good' rating for solar, even though it averages only four peak hours of sunlight per day. "Germany has an average of 3.1 to 3.2 peak hours of sunlight per day, and Germany is the leading nation on earth for solar," said Palumbo. Solar works for more businesses and homes than wind and hydro. It is a simple technology with no moving parts, and the systems last for over 50 years. As long as there is an opening to the south sky and an opening for the solar array to receive sunlight between 9 a.m. and 3 or 4 p.m., you've got a solar site."

Ponzio agrees. "It's much more common to have a good solar than a good wind site," he said.

Dollar for dollar, a wind turbine in a good location will produce more energy than a solar PV system. But, Ponzio said, "You need an average wind speed of

12 mph to justify installing a wind turbine. The wind speed is easily 12 mph on most Vermont ridges, but not in the valleys where most homes and businesses are located."

A restaurant in northern Vermont is interested in having Building Energy install a 100-kilowatt wind turbine. "We'll be measuring the wind at that site over the winter to see if it's sufficient," said Ponzio.

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***Dave Palumbo  
Independent Power***

## Selling it back

In most areas, customers can sell back any surplus electricity they produce to their utility through "net metering." The customer's electric meter spins backwards as the surplus electricity is fed into the utility's electric grid. "If the homeowner generates more than he needs, the electricity goes into the grid and keeps flowing to the next point of use, the homeowner's closest neighbors," said Palumbo. "The homeowner gets a one-to-one credit by the meter spinning backwards and can use the credits in the late fall or early winter when their solar systems are generating less electricity."

Palumbo says there is a movement to encourage customers to purchase larger solar systems so that they

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can produce surplus electricity. On July 1, 2008, Green Mountain Power announced its Solar GMP program, which will pay net-metered customers with solar installations a 6-cent premium for every kilowatt-hour of solar-generated electricity they produce. This is in addition to the 12.2 cents per kilowatt-hour the customer receive by generating solar electricity instead of purchasing it from the utility.

Green Mountain Power stated its reasons for paying more for solar. "Because the bulk of solar generation is during summer high peak periods, it helps 'shave' peak demand and it helps reduce the need for us to purchase expensive market power," the company said in a statement. "Secondly, it is our hope that this will encourage additional installations to increase the amount of renewable generation on Vermont's power grid.

Cost is a factor with solar systems. "We're getting a lot of calls, but one of the roadblocks is that these systems are prohibitively expensive for many folks," said Palumbo. "Young professionals in their late 20s and early 30s want to install the systems but can't afford to yet, so we're getting more customers who are professionals in their 40s."

The state, the federal government, banks and some Vermont utilities are helping to offset the costs of installing these systems by offering incentives, rebates and low-interest loans to homeowners and businesses. The DSIRE (Database of State Incentives for Renewables and Efficiency) Web site at [www.dsireusa.org](http://www.dsireusa.org) provides information on state, local, utility and federal incentives that promote renewable energy and energy efficiency.

### Vermont incentives

All renewable energy systems including solar water heat, solar thermal electric, photovoltaics and wind are exempt from Vermont's 6 percent sales tax, whether they're on-grid or off-grid systems. This year, the Legislature also passed a bill providing a 30 percent income tax credit for companies that install solar, geothermal, fuel cell and micro-turbine electricity systems in 2008. There is no comparable residential tax credit.

The Vermont Solar and Small Wind Incentive Program provides incentives for solar electric systems, solar hot water systems and small wind systems. It offers rebates of \$1.75 per watt capacity for individuals and businesses who install solar electricity systems, and \$3.50 per watt for multi-family, low income customers.

The program also provides rebates of \$1.75 per 100 BTU / days to individuals and businesses who use solar water heaters and \$3.50 per 100 BTU / days for multi-family, low-income customers. (A watt is equal to about 82 BTU / days.) The maximum rebate is \$8,750 per electric or hot water system or up to \$35,000 for low-income customers.

Wind systems for individuals and



**A Building Energy crew hoists a bundle of solar panels to the roof of Dr. Carol Gardner's Preventive Health Medicine practice in Colchester.**

businesses qualify for a rebate of \$2.50 per watt with a cap of \$12,500. Schools, farms and local or state governments qualify for \$4.50 per watt with a cap of \$20,000 or 50 percent of the total installed cost.

Building Energy is currently an approved dealer for three brands of wind turbines: Abundant Renewable Energy, Bergey Windpower and Proven Energy, all of which are manufactured outside Vermont. Ponzio says that Earth Turbines is expected to start selling a Vermont made wind turbine next summer.

"That will change the economics of wind power in Vermont," says Ponzio. "Customers who install a Vermont-made turbine will receive (a rebate of) \$4 per watt, compared to \$2.50 per watt for turbines manufactured outside of the state."

### Federal incentives

Residential solar hot water and solar electric PV systems qualify for a personal tax credit of 30 percent of the cost of the system after any state incentives, with a credit cap of \$2,000.

Customers may apply for incentives for more than one renewable system, whether installed at the same time or over multiple installations.

For example, someone can take both the 30 percent tax credit up to \$2,000 for a PV system and the 30 percent credit up to \$2,000 for a solar water heating system, resulting in a total tax credit of \$4,000.

A 2,000 watt residential solar PV system that initially costs \$20,000 would be eligible for \$3,500 in state incentives and \$2,000 in federal tax credits, saving the homeowner a total of \$5,500. Commercial solar hot water and solar electric PV systems qualify any state incentives. There is no cap on the solar tax credit for businesses.

The federal business energy tax credit for solar is set to revert from 30 percent to 10 percent on January 1, unless it is extended. If the federal credit is reduced to 10 percent, the state credit also will also be cut to 10 percent.

Since 2001, USDA Rural Development has also provided \$674 million in loans and

grants to farmers and rural small businesses for renewable energy and energy efficiency projects. The Renewable Energy Systems and Energy Efficiency Improvements Program offers loan guarantees for up to 50 percent of a project's cost, not to exceed \$10 million, and grants for up to 25 percent of a project's cost, not to exceed \$500,000 for renewable energy systems.

In July, Senator Bernard Sanders, I-VT, introduced legislation to provide rebates for the installation of solar photovoltaic systems on the roofs of 10 million single-family homes and businesses over a 100 year period. Under the 10 Million Solar Roofs Act of 2008, the rebates would cover about one-half of the cost of a \$20,000 solar PV system. Nonprofit organizations and state and local governments also would be eligible.

The legislation has received bipartisan support. Its co-sponsors include Senators John Kerry, D-MA; Ben Cardin, D-MD; Arlen Specter, R-PA; John Warner, R-VA; and Robert Menendez, D-NJ.

### Sharing the sun

Some customers aren't waiting for a payback on their solar PV systems. One of the smaller systems Independent Power installed in the Northeast Kingdom was for a woman in her 80s. "She had already transferred ownership of the home to her son, but she also wanted to pass along a PV system to him," said Palumbo. "She enjoyed the process of having the system installed. It has been over a year now and the system is working well."

Independent Power LLC is located at 462 Solar Way Drive in Hyde Park. The telephone number is 802.888.7194 and the fax number is 802.888.4230. The Web site is [www.independentpowerllc.com](http://www.independentpowerllc.com). Building Energy is located at 1570 South Brownell Road in Williston. The telephone number is 802.859.3384. the Web site is [www.BuildingEnergyVt.com](http://www.BuildingEnergyVt.com).