

SCIENTECH ISSUE ALERT

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Green Energy: Planting the Seeds for Growth

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[News item from The Renewable Northwest Project] The amount of green power purchased by retail customers in the Northwest more than tripled since last year. A new report titled "Powerful Choices" says that customers in the Northwest purchased the equivalent of the annual output from 94 wind turbines. Analysis: With alarm bells sounding over global warming and acid rain, groups are beating the drums for renewable energy. And consumers, regulators and utilities are beginning to listen. Alternative-energy forms are expected to gain market share, although significant hurdles stand in the way.

Renewable-energy markets are young with a fixed number of companies developing the resources in North America. As a result, the technologies that would facilitate its growth and enable it to become a prevalent fuel source used by utilities are still in their infancy. Some utilities offer green energy. But if such options are to become the norm, consumers must be made aware of their alternatives and new government incentives are necessary to make development financially feasible.

"Until it garners larger markets, renewable energy will continue to be more expensive than it needs to be," says Rafael Friedman, an energy analyst with Pacific Gas & Electric in San Francisco. "It also does not have 100 years of development subsidies behind it. And, renewables operate in immature markets that have few players, few local implementers and few people who can repair facilities. Therefore, it is no surprise that there is little compelling evidence for large-scale development of renewables."

In the case of the Northwest, efforts to go green have been pushed along by interest groups that have worked to ensure that Pacific Power and Portland General Electric offer geothermal and wind energy as part of their overall portfolio. Consumers can purchase green power at about 1 cent a kilowatt hour more than conventional sources, or \$7 to \$8 extra a month. The utilities are required by the state public service commission to invest those dollars into buying more renewable energy, which comes mostly from the Bonneville Power Administration (BPA).

The Potential

Just what's the potential of alternative-energy forms? Green energy from non-hydro renewable-energy sources supplies about 2 percent of the roughly 770,000 megawatts of power in the United States, says the U.S. Energy Information Administration. A study by Platts Research and Consulting's E Source Green Energy Service estimates that the total U.S. demand for green energy-that is not being met-is now about 6 percent of all U.S. residences, or 21,000 megawatts.

To ease development and to increase the use of renewables, the U.S. Senate's version of the energy bill now pending would require utilities to generate at least 10 percent of their power by 2020 from renewable sources. But while there are no such mandates on the books, the U.S. government does grant a tax credit of 1.5 cents a kilowatt hour for electricity generated during the first 10 years of operation of a wind plant, which in the aggregate produced 4.5 million kilowatt hours in 1999-the largest non-hydro renewable source. It also funds the National Renewable Energy Laboratory that develops renewable energy and the technologies that affect it, although its budget has recently been cut.

Currently, 14 states have laws on the books that oblige power companies to develop renewable-energy portfolios. Arizona, for instance, has future renewable-energy production requirements of about 1 percent

while Maine mandates 30 percent. Texas has perhaps the most notable program, which with ample wind resources has seen a large number of projects come to fruition.

"Most of the growth in renewables is serving state regulations, not customer demand," says Barry Friedman, senior research associates for Boulder, Colo.-based Platts E Source. "Most utilities that are providing green power are selling at a premium-to less than 1 percent of their customers. That's because they have not invested as much as they need to in marketing." Platts' data indicate that between two-thirds and three-quarters of those households that are eligible to buy renewable power are unaware that they can.

Peninsula Light Co., an electric cooperative serving about 26,000 consumers in Gig Harbor, Wash., is offering a new program that allows customers to purchase green power in 100-kilowatt monthly blocks for an additional \$2.80, or 2.8 cents a kilowatt hour. To supply the so-called Green Choice program, the cooperative has committed to buy an average of 10 megawatts annually for five years of wind and hydropower from BPA. Both the cooperative and BPA will allocate a portion of their revenues to the development of renewable energy. All Washington utilities serving more than 25,000 meters are required by state law to offer green power options to their customers.

New York State may have the right formula. The New York Public Service Commission approved an agreement last May to allow customers of Niagara Mohawk to buy renewable energy on behalf of their customers. It's all part of the initiative to get New Yorkers to go green, specifically one by Gov. George Pataki, which mandates by 2010 that all state agencies purchase 20 percent of their electricity from alternative sources.

Beginning this month, 2 million customers of Niagara Mohawk can enroll to buy wind, solar and biomass energy by filling out a form that has been enclosed with their September bills. To participate, customers choose a provider, which will notify the utility. Providers then send their power to the grid, where the utility buys and delivers it. For a residential customer using 500 kilowatts an hour a month, the added cost for cleaner energy would be about \$7.50 extra a month—a surcharge shown on the Niagara Mohawk bill.

"Customers can choose a new source of energy to meet their electric demand and at the same time stay with the reliability of Niagara Mohawk service," says Brent Alderfer, president of Community Energy. Along with Pennsylvania-based Community Energy, Austin-based Green Mountain Energy and Georgia-based Sterling Planet are serving as providers.

Reliability Issue

Despite the progress, a lot of utilities don't see investments in renewable energy forms as profitable. Not only are new technologies necessary to permit such energy to be sent over the wires but utilities are also concerned about reliability. Wind, for example, is unpredictable and difficult to schedule. Further, the lack of transmission capacity to bring the electricity generated from remote locations to residential sections is daunting.

In the Midwest, the wires are consumed by and equipped for carrying 56,000 megawatts fueled by natural gas, coal and nuclear plants. Wind-energy enthusiasts there are trying to get the Midwest Independent System Operator to upgrade those lines to accept 10,000 megawatts of wind development in the next five years.

Many utilities have expressed concerns about the uncontrollable and volatile nature of the wind resource and whether it can be physically linked with bulk-power systems. But because it is such a small part of the overall energy mix, Platts' Friedman says that it can be safely integrated into the pool of supplies without it interrupting the flow of power or causing the utility to depend upon expensive spot markets to supply their customers.

Renewable sources will assume more prominence but they will not likely garner more than a 10-percent market share before 2020. If such energy forms are to advance further, then power companies must realize a way to profit and consumers must see a benefit to buying such power. That probably takes some help from government either in the form of subsidies or renewable-portfolio requirements. As companies include

green options, it will not only be healthier for the environment but it will also encourage market participation. That, in turn, will foster new research and encourage development.

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