

AN OFF-THE-GRID, SMALL-SCALE WIND POWER SYSTEM TO SUPPLEMENT OUR FARM'S
ELECTRICITY SUPPLY

Ken Smith, Merck Farm and Forest Center, Rupert

Ken Smith at the Merck Farm and Forest Center in Rupert represents a different wind energy model than Jack Lazor, at Butterworks Farm. Some aspects of his farm make wind less attractive. For example, he does not have a grid connection, which limits his ability to match electricity available from wind to the timing of his energy demands. On the other hand, there is a strong educational component to the Merck Farm's activities, a mission that a wind project supports, in keeping with their other renewable energy sources, including wood and solar.

Ken began by working with NRG Systems to determine his wind potential. He discovered that his farm isn't as windy as it feels – the wind blows only in the late fall, winter, and early spring. But, the wind is sufficient to make generating electricity possible. Ken next purchased a Bergey wind system with a 7.5 kW generator and tail fin for shifting towards the wind. This system was different from Jack Lazor's (see earlier report) – it is a new system, with a smaller generator, controlled mechanically by a tail fin instead of by computerized parts. Working with NRG and Bergey to install a tower went smoothly. Ken has observed, however, that small-scale renewable energy operators lack a well-established servicing industry. The engineer who installed his system moved to California soon afterwards and Ken worries about how to get prompt advice on equipment concerns. Fortunately, no real problems have developed yet.

Ken did not expect to make a monetary return on his wind investment. Because his farm does not have a grid connection, he does not have the net metering option. He does have a battery bank, but the batteries can fill up long before the wind dies down and won't sustain him through long calm spells. Ken also only has wind from two directions, limiting the energy potential. Ultimately, he wanted the wind tower as a lifestyle decision and an educational piece as well as an electricity source. The total package (including generator and battery bank) reached \$60,000. The tower itself cost approximately \$10,000.

Ken sees several ways to improve the economics of wind power. If farmers could invest in towers with longer blades, they would produce much more electricity. Farmers in upstate New York farmers can get paid about \$3,000 each year for large wind turbines to provide towns with power. But Vermont is much less friendly towards large wind turbines. On a smaller scale, Ken improved the economic balance on his own farm by supplementing some of his wind with solar power. This pairing works especially well since often peak solar collecting days are the opposite of top wind days.

For more information on Merck Farm and Forest Center go to: <http://www.merckforest.com>