



At home in Pavilion, Steve Rigoni has transformed a windmill of his mind into energy-efficient reality with a 10-kilowatt wind power rig.

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FOCUS: HOME ENERGY

Wind turbines allow homeowners to cut costs

Low-tower technology is in homeowners' reach

By Fred O. Williams
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It's easy to spot Steve Rigoni's place in Pavilion — just look for the wind turbine spinning high above his house.

"I look at it as my midlife thing," Rigoni said. "Some people get a Corvette, or a new woman — I got a windmill."

His 10-kilowatt Bergey Windpower rig is hardly a wanton spree, however. While it cost him \$25,000, after state incentives, it has nearly wiped out electric bills that used to average \$120 to \$140 a month.

Wind power is nothing new in blustery Western New York, but Rigoni's system in

Genesee County is part of a new twist in the turbine world: Call it power — *wind* power — to the people.

"Small wind" technology has relatively low towers — and lower costs than utility-scale projects — that put it within reach for homeowners. It's on the rise across the country, lifted by government incentives, efficient new equipment and a growing desire to replace coal-and oil-fueled power.

"We benefit by not having to generate electricity through fossil fuels," said Sal Graven, spokesman for the New York State Energy Research and Development Authority, whose \$25,000 grant helped fund Rigoni's turbine.

Small wind systems are defined as having 100 kilowatts of capacity or less.

That's only 1/25th the output of the giant Liberty turbines at the Steelwinds site along Lake Erie. But small wind is within reach of more and more homeowners who are looking to cut their own electric bills, while reducing pollution and greenhouse gases.

Installation of small turbines on the regular power grid nearly tripled in 2007, to 1,292 units, according to the American Wind Energy Association. Thousands more were set up in areas that lack utility power.

For Rigoni, converting to wind power was as much a labor of love, he said, as it was about economics. A proponent of alternative energy, he also heats his home partly with wood, and burns switchgrass instead of propane to dry corn for his farming operation.

But the wind turbine pays its way. For the last two years, it has pumped out about 800 kilowatt-hours a month, powering Rigoni's washer, dryer, water heater, fridge and lights.

When the wind is blowing but the appliances aren't on, the turbine spins his electric meter backward, generating a small credit toward future energy use.

"We don't ever make much money on it," he said.

His location has one big advantage besides the wind, however. His nearest neighbor is a half-mile away.

"We're pretty far out in the open," Rigoni said. Even so, a special permit was

required for his 140-foot tower.

As the small wind movement spreads from its base in the countryside, more densely populated areas will have to grapple with the safety and aesthetics of tall steel towers — and Buffalo is in the path of the trend.

The Penn-Dixie fossil site in Hamburg has filed an application to erect a pair of wind towers on its site, about four miles from downtown Buffalo. The site would likely use towers 45 feet to 60 feet high, to provide energy for a planned visitors center, and to demonstrate the clean-energy technology.

"You're looking at the height of a tree," center director Jerold C. Bastedo said.

The application has prompted the town to start drafting new code provisions, a step toward small wind. "It's a new thing — this is baked-from-scratch legislation," said Kurt C. Allen, supervising code-enforcement officer.

Hamburg's code-review committee will have to look at how existing zoning regulations and building-height rules will apply to the towers, Allen said. Experts say that at least a half-acre lot is advisable, or less for property that's situated on a shoreline.

With wind towers, the taller the better. The gusts that bring lake-effect snow to Western New York blow harder above treetops and rooflines. But a tall tower is also more visible to neighbors, and it casts a longer shadow. Should it tip over, the "fall zone" of possible damage is wide.

Ernest Pritchard's company near Canandaigua has installed 24 wind turbines, including Rigoni's, in Western New York. Many towns limit structures to 30 or 40 feet — the length of the fire company's longest ladder — but waive the rule for unoccupied structures, he said.

"It's really all dependent on the town," Pritchard said. Frequently the tower height is limited to the distance to the property line, so that a falling tower won't threaten someone else's home or outbuildings.

The Great Lakes region is known as a prime wind-resource area, according to the American Wind Energy Association. Many Buffalo-area residents have felt the truth of that while being buffeted about on the Skyway, or watching a gale

shake the trees and set highway signs quivering.

Generally the wind blows harder in the cold months, which is a good fit for a region that has peak energy demand in the winter, when solar power is at its weakest. Still, any given spot needs an assessment to ensure that there's enough wind to make a tower worthwhile, Pritchard said.

Does small wind save money? The rule of thumb is that a well-located turbine with an average wind speed of 12 mph and with 10-kilowatt capacity can generate about 1,000 kilowatt-hours a month, or enough to power a typical home — not counting heating or air-conditioning. Whether that will break even over the 20-year life of a turbine depends on current and future electricity rates. Utility rates of 10 cents per kilowatt-hour begin to make the cost of wind attractive.

For years, most small wind was in "off-grid" applications, remote spots that couldn't get utility electricity. But the launch of the company's "Skystream" residential-sized system three years ago has caught hold, with sales up by 70 percent this year, Kruse said. That's the turbine that Penn-Dixie is considering, and most installations are going to sites that have access to utility power.

Wind power economics just got a push from Congress. The financial bailout package enacted in October included a tax credit of up to \$4,000 for small wind systems.

In New York, the federal credit comes on top of state incentives. In addition to outright grants from the Energy Research and Development Authority, the state's "net metering" rules give small turbines a credit for power they supply to the electric grid.

A state grant covered 40 percent of the \$70,000 cost for a windmill at Peter Wiemer's hilltop vacation place, Country Chalets in Ashville, Chautauqua County. Now that it's installed, the deflation of energy prices has Wiemer wondering if the economics of alternative energy still make sense.

"Back in the beginning of summer, when gas was \$4 a gallon, people said electricity was going up 15 percent," Wiemer said.

Now that the pressure seems to be off energy prices, the windmill can pay for itself, he thinks, by helping attract green business.

"Even if it doesn't make sense as far as a return on investment," he said, "it might make sense as far as booking the Country Chalets."

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