



Montgomery Residence Bryant, IA



Technical Specifications

40 kW Enertech 44 Wind Turbine
80 ft. lattice tower

Project Cost: \$45,000

AERLP: \$22,500

Loan Term: 14 yrs.

Lender: Gateway State Bank,
Clinton, IA

Lender Share: \$22,500

Annual Avg. O & M Cost: \$650

Est. Payback: 6.27 yrs.

Installation Date: March 2002

In March 2002, Kevin Montgomery began producing electricity with a reconditioned 40kW Enertech E44 wind turbine mounted on a new 80 ft. lattice tower. The turbine had previously been used on a California wind farm, and Montgomery hoped it would decrease the electricity bill for his confinement hog operation and 750-acre farm near Bryant in far east-central Iowa.

Project History

Montgomery says he became interested in acquiring a wind turbine in about 2000 but found nothing available. He learned about the Enertech turbine through a newspaper ad placed by a turbine dealer located in Wisconsin.

To save on installation costs, Montgomery poured the concrete foundation and assembled the tower himself. He hired a local crane to lift the tower into place and relied on the dealer for the electrical work.

Though the installation itself went smoothly, Montgomery was frustrated with the length of time it took to reach a net metering agreement with Alliant Energy, as well as with installation delays caused by his dealer.

System Performance

Montgomery spent about \$1025 per month on electricity, on average, in the year prior to installing the turbine. In addition to moving about 3200 hogs through his farrow-to-finish operation each year, Montgomery also runs corn dryers and relies heavily on electricity for heat and appliances in his home.

Based on estimates provided by his dealer, Montgomery believed he might save an average of \$800 per month in electricity costs. Instead, his turbine produced an average value of \$211 per

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Project Performance

Date	Production (kWh)	Value (\$)
3/15/02 - 2/28/03	43,333	2,529
3/1/03 - 2/28/04	53,242	2,913
3/1/04 - 2/28/05	40,092	2,495
totals	136,667	\$7,937
avg.	45,556	\$2,646

Note: estimated annual production = 70,000 kWh;
turbine down during most of January and February 2005.

month in its first year despite minimal downtime. His dealer boosted performance by 15 percent the following year by adjusting the pitch of the blades, but the production value still fell far short of expectations, and Montgomery has found no further ways to significantly increase output.

Montgomery believes the underperformance has less to do with any mechanical problems than it does with a certain amount of overselling on the part of his dealer, as well as with the vintage of his turbine.

“I knew there was some risk going with used equipment when I went into this,” he says, noting that turbine technology has evolved since his machine was manufactured.

Operation and Maintenance

For the most part, the turbine has operated smoothly. The biggest mechanical problem has been premature brake wear: the dealer replaced worn brake pads in the first year for free, and Montgomery replaced brake shoes himself two years later at a cost of \$257.

Montgomery notes that his larger problem has been long downtimes while waiting for service. In both 2005 and 2007 the turbine was down for more than two months at a time. In the latter case, Montgomery attempted to fix a faulty tip brake himself and inadvertently knocked a screw loose which caused further downtime.

He says he wishes that he had been able to secure a firm commitment for service when he purchased the turbine. “I wouldn’t let anyone put one up unless they had a five-year maintenance agreement,” he says.

Overall Satisfaction

If he had it to do over again, Montgomery believes he might still invest in a turbine though with a newer system and a different dealer. He thinks the greatest opportunity now lies with much bigger turbines, especially for operations like his that have large energy expenses to offset and are not just hoping to make money by selling power at wholesale rates to utility companies. Though he doesn’t envision making an investment in a larger turbine himself, he’s pleased to see wind production blossoming in Iowa.

“A lot of people like me are guinea pigs, and we’re all learning,” he says. “But [turbines] are going to be everywhere, it’s only a matter of time.”

Montgomery says the shortfall in his production value has been offset to some degree by the beneficial financing he received through the Iowa Energy Center’s Alternate Energy Revolving Loan Program.

“It makes the whole project a little more attractive,” he says. “If some of these things don’t pan out the way we hope it helps smooth things out...it’s really a good deal.”



The Iowa Energy Center’s Alternate Energy Revolving Loan Program (AERLP) plays a supporting role in stimulating renewable energy development within the state. Since its inception in 1996, the AERLP has supported numerous wind, biomass, solar, hydro, and hybrid projects.

Successful applicants receive a low-interest loan from a combination of Energy Center and lender funds. The Energy Center provides loan funds equal to 50% of the projects financed cost (up to \$250,000) at 0% interest. Matching financing must be obtained from a lender of the applicant’s

choice. The maximum loan term for the Energy Center’s funds is 20 years.

The lending institutions are responsible for financially qualifying the borrower, while the energy center assists in technically qualifying the borrower. By partnering with expertise from lending institutions the Energy Center is able to cost-effectively process the loans in a timely manner and maximize the impact of the loan program.

Eligibility

The AERLP is open to all individuals and groups who want to build renewable energy production facilities in Iowa. Utilities that are not required to be rate-regulated are not eligible. AERLP loan funds may not be used to refinance an existing loan or be applied to existing alternate energy facilities.

Application Deadlines

January 31
April 30
July 31
October 31

For more information

Contact the Iowa Energy Center,
(515) 294-8819
www.energy.iastate.edu

The Iowa Energy Center is dedicated to improving Iowa’s energy efficiency and use of renewable energy through research, demonstration, and education.

