



Akron-Westfield School District Akron, IA



Technical Specifications

600 kW Vestas V44
164 ft. tubular tower

Project Cost: \$677,500

AERLP: \$250,000

Loan Term: 9.75 yrs.

Lender: First National Bank,
Akron, IA

Lender Share: \$427,500

O & M Cost: \$15,675

Est. Payback: 12.81 yrs.

Installation Date: February 1999

Since February 1999, the Akron-Westfield School District has powered their K-12 school building with wind energy. Their 600 kW Vestas turbine more than offset the district's energy use in each of its first eight years, while consistently surpassing energy production estimates.

Project History

The district cited a broad range of reasons for installing the turbine. These included eliminating their monthly electricity bill, providing a "problem-based learning experience" to students, and acting as a catalyst for community pride and economic development.

During the feasibility phase, Ron Wilmot, then special projects coordinator for the district, organized 20 students to collect, analyze, and present a year's worth of anemometer data gathered on neighboring property atop a ridge above the Big Sioux River valley. The students worked with energy consultants and Vestas staff, and Wilmot says twelve of the students stuck with the entire construction process and learned many valuable lessons and skills.

The district signed a thirty-year easement with two neighboring property owners for \$3000 in October 1998 to pave the way for the project.

System Performance

Wilmot says the turbine has generated at a rate "way above what was projected by everybody except the students." At first the turbine's stellar performance translated into financial success as well.

The district's monthly net-billing arrangement with Akron Municipal Utility initially gave them full credit for all electricity generated up to the amount they used, saving them about \$0.0633 per kWh. They also earned \$0.02 per kWh for all production in excess of their use

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Project Performance

Year	Production (kWh)	School Use (kWh)	Production/Use (%)	Production Value (\$)	Lawsuit Value ¹ (\$)	REPI ² (\$)	Total Value (\$)
1999	1,335,820	1,076,906	124.0	68,201	(54,551)	14,921	28,571
2000	1,253,981	1,082,612	115.8	46,634	(27,276)	22,320	41,678
2001	1,337,648	1,112,705	120.2	26,753		20,878	47,631
2002	1,361,516	1,115,380	122.1	27,231		26,509	53,740
2003	1,303,867	1,082,970	120.4	32,136		16,494	48,630
2004	1,270,240	1,108,300	114.6	39,507		20,866	60,373
2005	1,354,400	1,241,190	109.1	42,125		10,453	52,578
2006	1,283,040	1,258,910	101.9	41,402			41,402
totals	10,500,512	9,078,973		\$323,989	(\$81,827)	\$132,441	\$374,603
avg.	1,312,564	1,134,872	116%	\$40,499		\$18,920	\$46,825

Note: estimated annual production = 1,230,145 kWh.

¹ Lawsuit settled with City of Akron regarding first 18 months of production.

² REPI not fully funded FY 03-05; FY 06 REPI payments not available at this time; see www.eere.energy.gov/wip/repi.html.

and additional credits of greater than \$0.015 per kWh through the Department of Energy's Renewable Energy Production Incentive (REPI).

Had the net-metering agreement held, the district would have grossed more than \$94,000 annually in production value from 1999-2006 – \$10,000 more each year than they originally expected – even with REPI paying less than expected after 2002. But 18 months into the project, Akron's new mayor alleged that the agreement had not been ratified by any governing body and was therefore illegal.

A district court agreed, and the city eventually accepted an out-of-court settlement for half the \$163,653 they said the district owed for unpaid 1999-2000 electricity use. During the lengthy suit, the city paid the school district just \$0.02 per kWh produced by their turbine while charging them retail rates for consumption. In September 2003, after the settlement, Heartland Consumers Power began purchasing the district's power directly for \$0.032 per kWh, raising the rate to \$0.0351 in January 2007.

Operation and Maintenance

The district has been very pleased with the service provided by Vestas from a nearby office in Tyler, Minn. During the project's first five years the district paid \$3000 annually for regular maintenance, increasing to \$8000 per year in 2004. They paid Vestas an additional \$10,800 annually during the first five years for full warranty coverage, which covered the cost of a new transmission in 2000.

The only ongoing operational challenge cited by the district has been occasional outages due to blade icing.

System sensors shut down the turbine when they detect ice, but Wilmot notes that the turbine restarts automatically and says that even during major ice storms in 2007 "it was not a huge issue."

Overall Satisfaction

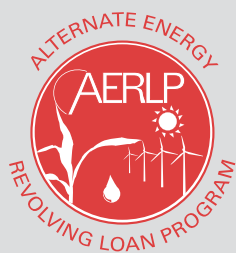
Wilmot, current district superintendent Ron Flynn, and district business manager Jodi Thompson all agree that the turbine's strong performance is bittersweet. They remain disheartened by the failed net-metering agreement, and they say that the community as a whole has mixed feelings regarding the turbine in wake of the lawsuit.

"It started out as a wonderful cooperative effort," says Thompson. "Some people may look at it now and say it was a wonderful thing, others may say it was a big mistake."

Wilmot notes that the suit arose after an audit of Akron utility billing records by the city's electricity provider, Heartland Consumers Power. Heartland alleged that the city could not legally purchase power from the school or any other source, according to Wilmot.

"The lesson I learned is you'd better deal with the people you're buying electricity from first," he says.

The district financed the project with a \$250,000 no-interest loan from the Iowa Energy Center's Alternate Energy Revolving Loan Program, along with a local bank loan negotiated at 4.85 percent through the Iowa Department of Natural Resources' Energy Bank program. Thompson says that once the district pays off the ten-year loans "we will not be paying as much for electricity, so that's a positive."



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.

