

Pike County Wind Power

Converting wind to electric power



Illinois Rural Electric Cooperative

Your Touchstone Energy® Partner 

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At a time when fuel prices continue to skyrocket and oil reserves are being tapped, Illinois Rural Electric Cooperative in Winchester, Illinois, has found a way to supplement power it receives from its power supplier by harnessing something that is new to harvest in its service area — its own renewable resource — wind. Towering 365 feet at its highest point above hills and prairies is Illinois Rural Electric Cooperative's first wind turbine, completed in May 2005.

Generating 1.65 megawatts of power, or enough electricity to power 500 homes, the turbine was erected 35 miles east of the Mississippi River. According to Federal Department of Energy's Renewable Energy Laboratory maps, upwind from the river makes Illinois Rural Electric's service area one of the best in the state for wind energy development.

The operation of wind turbines is much like a reverse fan. Instead of using electricity to make wind, wind turbines use wind to create electricity. The wind turns the blades, which spin a shaft, which connects to a generator that creates electricity. Because wind doesn't blow constantly, most utility-scale wind turbines produce power at full capacity approximately 30 percent of the time. Depending on wind speed, turbine blades can turn as much as 80





percent of the time.

Illinois Rural Electric's wind turbine was manufactured by NEG Micon, which was recently bought by Danish-based Vestas, a world leader in wind technology. Vestas places high importance on safety. Both electronic and mechanical safeguards prevent the turbine blades from spinning too fast. At very high wind speeds, the blades automatically turn sideways to decrease the momentum, but continue to generate electricity. And cement footings that hold the turbine in place are sunk 32 feet into the ground.

With a price tag of \$1.89 million, this project would've proved too costly for Illinois Rural Electric Cooperative to consider, but grants and other funding from a number of state and federal sources made costs manageable. The first grant Illinois Rural Electric received was from the Illinois Department of Agriculture in the amount of \$438,000. A \$175,000 green tag purchase came from the IL Clean Energy Community Foundation, and the final grant for \$250,000 came from the State of Illinois. The remaining cost of the project is being financed with a low-interest loan from the U.S. Department of Agriculture Rural Utilities Service.

Current wind levels in Pike County could support as many as 100 turbines, which could add as much as \$5-7 million to the local tax base. The lifespan of each turbine is approximately 20 years.



Wind turbine frequently asked questions:

Why do this project in the first place?

Illinois Rural Electric Cooperative believes that using renewable energy sources is the right thing to do, and if you can do it at the right price, everyone wins. Remember that every kilowatt-hour (kwh) of electricity produced using wind is one less kwh produced using fossil fuels.

Where does the electricity generated by the turbine go?

While most turbines tap into transmission lines and feed into what's known as the nation's power grid, electricity generated by Illinois Rural Electric's turbine is being transmitted over the co-op's distribution lines and used by its local members. Power generated by the turbine offsets wholesale power purchased from Soyland Power Cooperative and is used like power generated anywhere else.

How fast does the wind have to be for the turbine to make electricity?

The wind turbine's rotor begins spinning at about 5-6 miles per hour and shuts down at about 55 miles per hour.

Who watches over the wind turbine?

The Vestas 24-hour dispatch center consistently monitors the turbine to ensure it's operating properly. Co-op personnel can also check it anytime they want.

How tall is the turbine?

The hub of the wind turbine is 235 feet tall, and when the blades point straight up, it is 365 feet tall.

Are turbines loud?

Turbines today produce a little less sound than an average house. You can carry on a conversation at a normal voice at the base of the turbine.

Do turbines pose a threat to birds?

While turbines of the past were built on open latticework structures where birds often perched and could fly into moving blades, today's turbines are designed to be more "bird friendly." They feature a rotor that is a lot bigger and turns much slower than turbines of the past. Birds can easily see and avoid the turbines.



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