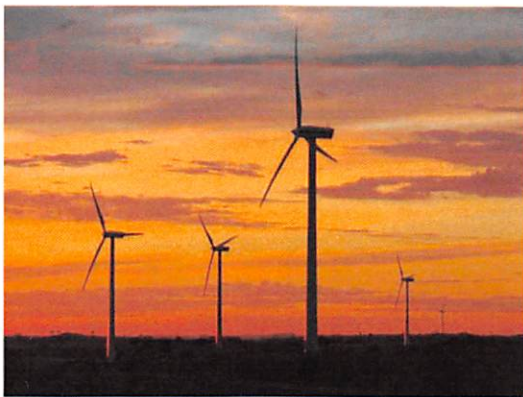




Wind Turbines



Wind turbines along Buffalo Ridge.

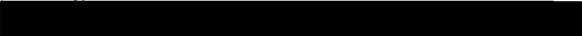
Why build wind farms here?

This area of Minnesota, called Buffalo Ridge or Coteau de Prairie, is a glacier-deposited ridge that runs diagonally across the state. Because of its higher elevation of 1950 feet, the area experiences continual wind speeds of 18 mph. This and the plentiful open farm and pasture land make it an ideal place for wind turbines.

In May of 2007, Governor Tim Pawlenty signed into law a renewable energy requirement for 25% of the electricity produced by state utilities to come from renewable resources by the year 2025. (Read more at <http://www.governor.state.mn.us/mediacenter/pressreleases/PROD008146.html>)

How big are the turbines?

To the hub, the turbines are 229 ft tall with 136 foot blades, meaning the height from the base to the tip of the blade is 365 feet. The bases of the turbines are 11 – 16 feet in diameter and the foundations, which run 30 feet into the ground, are 15.6 feet across. Each wind turbine weighs roughly 1450 tons.



How do they work?

Wind turbines operate on a simple principle. The energy in the wind turns two or three propeller-like blades around a rotor. The rotor is connected to the main shaft, which spins a generator to create electricity.

How fast do the blades turn?

At the optimum wind speed of 25 – 35 mph, the blades will rotate at 14 rpm. That gives them a speed of 105 mph at the tip.

How much electricity do they produce?

Each turbine produces about 2,000,000 kilowatt hours (kwh) per year, enough energy to power as many as 500 typical homes at 12,000 kwh per year.

How strong do the winds have to blow for the blades to rotate?

Wind turbines start operating at wind speeds of around 8 mph and reach a maximum power output at around 33 mph. When there is not enough wind to turn the blades, or when there is too much wind (i.e. gale force winds at 50+ mph) the turbines shut down.

How much do the wind turbines cost?

It costs over \$2.5 million to set up a 1650 KW turbine.

How many turbines are there in Minnesota?

There are somewhere between 1000 and 1200 wind turbines in Minnesota, with over 200 in Pipestone County alone.

Who owns the land the turbines are on?

Much of the land is leased from local farmers. Each unit takes up roughly 1/3 of an acre for the equipment and access road. The farmer receives a percentage of the revenue from the sale of electricity from each turbine.

For more information, visit:

American Wind Energy Association
<http://www.awea.org/>

Minnesota Renewable Energy
<http://search.state.mn.us/renewable/index.html>