

MINNKOTA WIND ENERGY CENTERS

The Minnkota member cooperatives and Northern Municipal Power Agency (NMPA) participants are recognized as leaders in supporting the region's wind resource development. These associated systems built the first two commercial-scale, utility-owned wind turbines in North Dakota history in 2002. The success of those projects helped jump-start significant growth in the adoption of wind energy.

Presently, about 459 megawatts of nameplate wind generating capacity is available in the Minnkota/NMPA Joint System. Minnkota has purchase power agreements in place with affiliates of NextEra Energy Resources for energy produced at the Langdon Wind Energy Center, near Langdon, N.D.; Ashtabula Wind Energy Center, near Valley City, N.D.; and Oliver III Wind Energy Center, near Center, N.D. Minnkota owns the two Infinity wind turbines near the towns of Petersburg and Valley City, N.D.

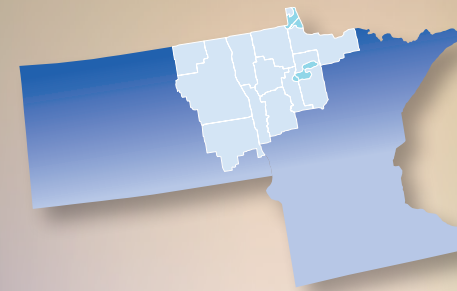
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701-795-4000

This Institution is an equal opportunity provider and employer.

INFINITY RENEWABLE ENERGY

The Infinity Renewable Energy Program allows member cooperative and municipal consumers to decide how much of the electricity they purchase is generated by renewable resources. While it is not possible to direct where electrons are specifically delivered on the electric grid, it is possible to ensure that the renewable energy purchased is from a resource connected to the Minnkota/NMPA transmission system. The record of that purchase and the proof that it was reserved for a specific consumer is done through a renewable energy credit (REC).

Participating consumers pay for the additional cost to purchase renewable energy and to specifically designate how this energy is credited and used. Contact your local Minnkota member cooperative or NMPA-associated municipal for more information.



Member-Owner Cooperatives

Beltrami Electric Cooperative
Cass County Electric Cooperative
Cavalier Rural Electric Cooperative
Clearwater-Polk Electric Cooperative
Nodak Electric Cooperative
North Star Electric Cooperative
PKM Electric Cooperative
Red Lake Electric Cooperative
Red River Valley Cooperative Power Association
Roseau Electric Cooperative
Wild Rice Electric Cooperative



Northern Municipal Power Agency

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Bagley Public Utilities
Baudette Municipal Utilities
Fosston Municipal Utilities
Grafton Municipal Utilities
Halstad Municipal Utilities
Hawley Public Utilities
Park River Municipal Utilities
Roseau Municipal Utilities
City of Stephen Utilities
Thief River Falls Municipal Utilities
City of Warren Water and Light
Warroad Municipal Utilities

WIND POWER



A Touchstone Energy® Cooperative



INFINITY Wind Turbines

Location	Valley City and Petersburg, N.D.
Size	Two 900-kW turbines
Estimated annual generation	2.8 million kWh per turbine
Capacity factor	36 percent
Tower height	230 feet
Total weight	130 tons
Tower weight	93 tons
Generator weight	25 tons
Blade weight	4 tons per blade
Blade length	85 feet
Wind speed	Cut-in: 8 mph Cut-out: 56 mph
Project cost	\$1 million per turbine
Start-up date	2002



LANGDON Wind Energy Center

Location	Nine miles south of Langdon, N.D.
Size	199.5 megawatts (MW) Minnkota portion: 139.5 MW Otter Tail portion: 60 MW
Turbines	133 turbines, 1.5 MW each, manufactured by General Electric
Towers	Approximately 250 feet to center of hub
Blades	Variable pitch – 120 feet long
Output	Cut-in wind speed: 8 mph Maximum output: 35-55 mph Cut-out wind speed: 56 mph
Delivery point	Langdon substation
Transmission	Langdon to Hensel 115-kilovolt (kV) line
Start-up date	December 2007



ASHTABULA Wind Energy Center

Location	15 miles northeast of Valley City, N.D.
Size	366 megawatts (MW) Minnkota portion: 217.5 MW Otter Tail portion: 97.5 MW Great River Energy portion: 51 MW
Turbines	244 turbines, 1.5 MW each, manufactured by General Electric
Towers	Approximately 250 feet to center of hub
Blades	Variable pitch – 120 feet long
Output	Cut-in wind speed: 8 mph Maximum output: 35-55 mph Cut-out wind speed: 56 mph
Delivery point	Pillsbury wind substation
Transmission	Pillsbury to Fargo 230-kilovolt (kV) line
Start-up date	2008/2009



OLIVER III Wind Energy Center

Location	42 miles northwest of Bismarck, N.D.
Size	100 megawatts (MW) Minnkota portion: 100 MW
Turbines	Approximately 48 turbines rated between 1.5 and 2.3 MW each
Towers	Approximately 262 feet to center of hub
Blades	Variable pitch – 186 feet long (average)
Delivery point	Roughrider substation
Transmission	Center to Mandan 230-kilovolt (kV) line
Start-up date	January 2017

