

Wind Energy in North Dakota
Final Report

15 April 1999

Prepared for

Division of Community Services

State of North Dakota

Prepared by

PanAero Corporation

12345 West Alameda Parkway
Suite 113
Lakewood, Colorado
USA

ERRATA:

A paragraph titled “Property Tax Exemption” (page 14) in the “Wind Energy in North Dakota” final report (published by PanAero Corporation and dated April 15, 1999) may be in error.

In a memo from Assistant Attorney General Edward E. Erickson, he agrees with a Tax Department position that the property tax exemptions do not apply to public utilities, which are defined separately under law.

Anyone interested in either this exemption or the separate income tax credit outlined on page 13 should receive independent advice as to the applicability of these benefits.



EDWARD T. SCHAFER
GOVERNOR

STATE OF NORTH DAKOTA

OFFICE OF THE GOVERNOR

600 E. Boulevard Avenue

BISMARCK, NORTH DAKOTA 58505-0001

(701) 328-2200

FAX (701) 328-2205 TDD (701) 328-2887

E-MAIL: governor@pioneer.state.nd.us

January 27, 1999

Dear Prospective Wind Energy Developer:

On behalf of our state's citizens, I welcome your consideration of North Dakota as the site for future wind energy development. I am pleased to provide you with this document which provides important information and outlines the advantages our state has to offer to companies looking to further develop this exciting new technology.

Our state has a long history of working closely with companies to cultivate our abundant energy resources. We view the development of wind energy as complementing these efforts while advancing our objective of embracing industries of the future. I encourage you to work closely with our state Economic Development and Finance office as you proceed with your plans.

If there is anything we can do to assist you, please feel free to contact our state energy office, the Office of Intergovernmental Assistance, at (701) 328-2094, or my office at (701) 328-2200. Thank you and best wishes!

Sincerely,

A handwritten signature in cursive script that reads "Edward T. Schafer".

Edward T. Schafer
Governor

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Wind Energy in North Dakota

15 April 1999

Executive Summary

North Dakota is motivated to become a leading state in non-polluting wind generated electricity. North Dakota's goals include the following: general economic development, new wind project investments and construction, new landowner income, and new long-term jobs from broad professional services (such as wind project design, wind resource monitoring, legal and accounting services), from commercial project Operations & Maintenance, and from the manufacturing of wind turbine components.

North Dakota has an outstanding wind resource - - providing more available wind for development than any other state. According to the U.S. Department of Energy (DOE) studies, North Dakota alone has enough energy from good wind areas, those of wind power Class 4 and higher, to supply 36% of the 1990 electricity consumption of the entire lower 48 states.

The Renewable Energy Policy Project (REPP) organization recently concluded that North Dakota was the first among 12 states in wind energy potential. Using conservative assumptions, REPP reported that North Dakota has a wind potential of 138,400 megawatts (MW), and has available wind land of 100,700 square kilometers.

Several important wind resource maps and summary measurement results are provided below. Additional wind data may be available by contacting regional utilities. See "Useful Addresses" for utility contact information.

One near-term opportunity for new wind projects will be the Northern States Power Company (NSP) 160 megawatt wind energy Request for Proposals (RFP) which is expected during 1999. In early 1999 NSP was also required to proceed with an additional 400 megawatts of wind energy projects. North Dakota is well positioned to provide wind electricity to in-State NSP loads, which total about 400 MW at peak-load periods. These NSP loads are geographically close to major wind resource areas in North Dakota. Maps and added details are provided below.

In addition, North Dakota exports substantial amounts of electricity to neighboring states. Transmission lines link North Dakota to Minnesota, Montana, South Dakota, and Canada.

Wind Resources

The most important feature of the wind resource is its ability to support electricity generation. A typical 750 kW wind turbine could produce over 2,700 megawatt-hours (MWh) annually at the better wind sites in North Dakota (gross energy before normal losses).

Wind Turbine Energy Yield

Two of the major wind resource areas of North Dakota are the Pembina Escarpment and the Missouri Escarpment. The city of Finley is within the Pembina Escarpment and the city of Minot is near the northern portion of the Missouri Escarpment. Wind speeds for Finley and Minot correspond to very favorable wind turbine energy yields (see **Table One** below).

The annual average wind speeds at about 45 meters above ground level (AGL) are 9.1 meters per second at Finley and 8.4 meters per second at Minot. A height of 45 meters AGL is a typical hub-height of a modern commercial wind turbine in the 600 kW to 750 kW size range.

At a hub-height annual wind speed of 9.0 meters per second, a modern large wind turbine can achieve a gross capacity factor of about 41 to 46 percent, and for a hub-height wind speed of 8.5 meters per second the gross capacity factor is about 37 to 43 percent.

These estimated gross capacity factors are before corrections for North Dakota air density and before general energy losses that typically would occur in any multi-turbine wind facility. The turbine manufacturers would normally be able to adjust their machines to compensate for the North Dakota air density.

Calculations of wind turbine energy yield often correct for the local air density at the wind project site. The local air density is compared to a reference air density at sea level and standard air temperature. The mean annual air density in North Dakota should be nearly equal to the standard reference air density (1.225 kg/m³), based

upon climate data for monthly temperatures and typical elevations across North Dakota.

Table One: DOE Wind Speeds for Finley and Minot

This Table shows the results of two key wind measurements within North Dakota, at Minot Radar Station and Finley Air Force Station. These measurements were instrumental in upgrading the DOE estimates of potential wind resources in North Dakota (U.S. DOE 1987 Report).

Site	Levels AGL (meters)	Annual Average (mps)	Winter Season (mps)	Spring Season (mps)	Summer Season (mps)	Fall Season (mps)
Finley	45.7	9.1	8.7	9.9	8.9	9.2
	30.0	7.7	7.7	8.1	7.0	8.4
	9.1	6.1	6.0	6.8	5.6	6.2
Minot	45.7	8.4	8.3	8.9	7.5	9.0
	30.0	7.8	7.5	8.5	7.1	8.2
	9.1	6.5	6.1	7.2	6.3	6.5

Finley wind measurements during October 1980 to September 1982.

Minot wind measurements during September 1980 to December 1981.

Source: Wind Energy Resource Atlas of the United States, Report DOE/CH10094-4 (March 1987)

Typical elevations in North Dakota wind resource areas are about 200 to 500 meters above sea level (ASL). The mean monthly temperature near the center of North Dakota at Bismarck is about 5°C (40°F). Mean annual air density therefore will be approximately equal to sea level air density at standard temperature.

Geographic Characteristics

The terrain in North Dakota varies from flat, open farmland and grassland along the eastern boundary of the State (the boundary with Minnesota) to hilly plains and plateau areas in the far western and southwest portion of the State. The greatest geographic relief in the State occurs in the Badlands area along the Little Missouri River. Similar geographic relief occurs in an area defined as the Missouri plateau in western North Dakota. Pronounced physical features within the State include the Pembina Escarpment (which extends in a north-south line along the eastern side of the State), and the Missouri Escarpment (which extends from the northwest corner of the State through the south central portion of the State).

Federal Wind Studies and Resource Map

The U.S. Department of Energy (DOE) *Wind Energy Resource Atlas of the U.S.* assessment is the basis for the current North Dakota wind resource map. See the “Reference Documents and Maps” Section.

DOE’s analysis indicates that North Dakota is almost exclusively characterized by wind power Classes 4 and 5. This implies that annual average wind speeds within the State are in the range of 6.0 meters per second (13.4 mph) to 6.4 meters per second (14.3 mph) at 10 meters (33 feet) above ground level, and 7.5 meters per second (16.8 mph) to 8.0 meters per second (17.9 mph) at 50 meters (164 feet) above ground level. These estimates apply to areas and terrain features that are well exposed to the wind, such as open plains, ridgetops, and plateaus.

Additional Wind Resource Map

The Union of Concerned Scientists produced a wind resource map of North Dakota with resolution of one square kilometer. A copy of this map also is provided. See the “Reference Documents and Maps” Section.

Annual and Seasonal Wind Profiles

Based on some of the wind studies that were available, a composite summary of several wind sites across North Dakota and the neighboring region of the northwestern edge of Minnesota was developed in research done for North Dakota (“Wind Resource Assessment: Developing an In-State Capability for North Dakota” June 1994). Key conclusions include the following:

- The annual profile, as evidenced by the monthly wind speeds, appears to be very consistent for different sites and different years of data. The highest mean monthly wind speed typically occurs in May and the lowest in July. The highest mean monthly wind speeds occur in the time period of December through May.
- A definitive peak in hourly average wind speed occurs between 11:00 and 18:00 hours. This peak is most dramatic during the warmer months of March through October while becoming much less noticeable during November and February.
- The “power law coefficient” (used to model vertical increases in wind speeds above ground level) displays a diurnal variation with the most pronounced differences between daytime and nighttime values occurring during summer months. A site near the Grand Forks Air Force Base has displayed an average power law coefficient approaching 0.40 during night hours and 0.14 during mid-afternoon hours.
- Based on a comparison of Minot, Finley, and Grand Forks data, the range of the time-of-day variations in power law exponents (coefficients) may be site-dependent. However, the overall diurnal pattern shows up repeatedly.
- Winds in North Dakota are driven by meteorological high and low pressure areas passing over the state. Available data in North Dakota indicate an occurrence of multi-directional winds, with some dominance of winds from the west-northwest and, secondarily, from the south-southeast.

Wind Energy Resource Measurements

NSP participated in a three-year statewide wind resource assessment program (approximately 1995 to 1997). Eight sites around the state were monitored for wind speed and direction in a program assisted by the Electric Power Research Institute and the University of North Dakota. This program was sponsored by NSP and six other

generation and transmission utility companies. Participating utilities are the following (see the “Useful Addresses” Section for contact information):

Basin Electric Power Cooperative
Cooperative Power Association
Minnkota Power Cooperative, Inc.
Montana-Dakota Utilities Co.
Northern States Power Co.
Otter Tail Power Co.
United Power Association

These North Dakota wind sites were carefully chosen for their potential for large-scale wind energy development. NSP and other participating utilities have access to the detailed wind data from all eight sites. Available summary results for 10 meters above ground level (locations are only identified by County) are provided in the “Reference Documents and Maps” Section.

The North Dakota Division of Community Services (state energy office) may have additional information available on these wind resource assessment results. (See the “Useful Addresses” Section for contact information).

Additional North Dakota wind measurement programs are listed in the “Reference Documents and Maps” Section.

DOE Multi-Year Wind Data Summary

Additional wind data are available for nine North Dakota locations with latitude and longitude coordinates, as compiled by the U.S. DOE in 1981 using historical multi-year records. For some locations, the anemometer site was moved or changed in height above ground level during the period of wind measurements. These results provide wind data adjusted to both 10 meters and 50 meters above ground level. These data are summarized in **Table Two** below.

Table Two: Multi-Year Wind Speeds for North Dakota Stations (meters per second)

City	Station Name	Lat (° N)	Long (° W)	Elevation (meters)	Period (month/year)	Anem. Height (meters)	Annual Average Speed (m/s) At Height AGL (meters)		
							Anem.	At 10 m	At 50 m
Bismarck	Bismarck Airport	46.77	100.75	507	1/48-10/61	13.1	4.9	4.8	6.4
Bismarck	Bismarck Airport	46.77	100.75	507	10/61-12/78	6.1	4.4	4.7	5.9
Dickinson	Dickinson FAA	46.78	102.80	792	12/48-7/64	9.1	6.1	6.2	7.8
Fargo	Fargo, Hector Airport	46.90	96.80	278	11/53-6/61	26.2	6.7	5.9	7.4
Fargo	Fargo, Hector Airport	46.90	96.80	278	6/61-12/78	6.1	5.3	5.6	7.1
Gr. Forks	Grand Forks FAA	47.93	97.08	259	11/49-12/58	14.3	6.0	5.7	7.2
Gr. Forks	Grand Forks AFB	47.97	97.40	276	5/60-11/68	4.6	4.6	5.1	6.4
Jamestown	Jamestown FAA	46.92	98.68	456	12/48-12/54	8.8	5.4	5.5	6.9
Minot AFB	Minot AFB	48.42	101.33	504	5/60-2/65	5.5	4.6	5.0	6.3
Minot AFB	Minot AFB	48.42	101.35	497	4/65-11/68	5.2	4.6	5.1	6.4
Minot	Minot International Airport	48.27	101.28	526	12/48-9/58	6.4	5.5	5.8	7.4
Minot	Minot International Airport	48.27	101.28	526	6/62-12/78	6.1	5.6	6.0	7.5
Pembina	Pembina CAA	48.95	97.25	242	12/48-9/50	13.7	6.0	5.8	7.2
Williston	Williston W80	48.15	103.62	581	3/50-12/61	15.2	3.8	3.6	4.5
Williston	Sloulin International Airport	48.18	103.63	581	8/67-12/78	6.1	4.5	4.8	6.1

Source: PNL, Wind Energy Resource Atlas: Vol 2, The North Central Region, 1981

Electricity Sales to NSP

Sales to NSP Outside North Dakota

Substantial amounts of electricity can be transmitted from within North Dakota to buyers outside North Dakota. Transmission lines link North Dakota to Minnesota, Montana, South Dakota, and Canada. Regional transmission lines link these surrounding states to various NSP loads.

Sales to NSP Within North Dakota

Companies wanting to sell electricity to NSP should consider the delivery of electricity to several North Dakota cities now served by NSP. The Minnesota Public Utilities Commission has given NSP permission to build the final phases of NSP's required wind energy development outside the State of Minnesota, if NSP finds that doing so would be cost effective. As of April 1999 bills are pending before the Minnesota legislature that could limit NSP wind energy development to sites within the State of Minnesota. For additional information, see the "Reference Documents and Maps" Section.

NSP provides power to three cities in North Dakota: Minot, Grand Forks, and Fargo. These peak loads total nearly 400 megawatts. The peak loads in these cities are approximately as follows: (a) Minot 60 MW; (b) Grand Forks 120 MW; and (c) Fargo 210 MW.

Each of these cities is within approximately 50 miles or less of identified Class 5 wind resource areas. Because no NSP power lines go directly to these cities, wind electricity needs to be delivered through other utilities.

See the "Transmission and Utility Grid Interconnection" Section for additional information.

General Electricity Sales

Possible non-NSP electricity sales include North Dakota and/or Minnesota publicly owned utilities (see “Useful Addresses”) and also export of electricity to states surrounding North Dakota. Regional transmission maps are provided in the Section “Reference Documents and Maps.”

Publicly Owned Utilities

Cass County Electric Cooperative (CCEC) has its headquarters in Kindred, North Dakota, and its service centers in Fargo, Valley City, Lisbon and Arthur. CCEC has 3,594 miles of overhead power lines. Its wholesale power supply is from Minnkota Power Cooperative, Grand Forks, North Dakota. Over 522 million kWh were sold in 1997. CCEC provides service in Cass, Barnes, Traill, Richland, Ransom, Sargent, Dickey, Stutsman and LaMoure counties in North Dakota.

Nodak Electric Cooperative (NEC) has a proud record of 57 years of electrification. Nodak Rural Electric Cooperative became one of several cooperatives in North Dakota and Minnesota that would jointly own and purchase all power requirements from Minnkota Power Cooperative. Nodak’s service territory covers all or parts of Pembina, Walsh, Ramsey, Nelson, Steele, Grand Forks, and Traill counties in North Dakota.

United Power Association (UPA), now part of Great River Energy, is a generation and transmission cooperative based in Elk River, Minnesota. UPA is planning to offer a wind power product to its 12 member distribution cooperatives, which are located in Minnesota, for sale to their customers. The wind power would be sold in 100-kWh blocks in a 1-year test program. In late 1998, UPA was negotiating to buy the wind power from NSP.

Cooperative Power Association (CP), now part of Great River Energy, is a generating and transmission cooperative that provides electricity to 17 member distribution cooperatives in southern and western Minnesota. CP is one of 60 generation and transmission cooperatives in the United States. In the early 1970's, CP and United Power Association jointly developed and constructed a two-unit, 1,100-megawatt coal-fired power plant on a 3,370-acre site in central North Dakota. The plant is named Coal Creek Station and is located in Underwood, North Dakota. CP owns 56 percent of Coal Creek Station and operates the plant. CP is implementing a

program to procure wind energy for its distribution members for sale in green pricing programs. As of June 1998, 13 member co-ops were participating, with more than thirty-six hundred 100-kWh blocks subscribed. As a result, CP has contracted for nearly 2 MW (three 660-kW turbines) of new wind power. The project, as planned, will be located in southwestern Minnesota. The CP green power premium is expected to be about \$2 per block.

Dakota Electric Association is a publicly owned Minnesota utility. Dakota Electric covers 507 square miles and serves over 76,000 customers in a service area south of Minneapolis, Minnesota. Dakota Electric is the second-largest electric cooperative in Minnesota and is ranked among the top 20 electric distribution cooperatives nationally. Dakota Electric is a member-owned, nonprofit utility serving parts of Dakota, Goodhue, Scott, and Rice counties in Minnesota. The Minnesota PUC approved a tariff filing by Dakota Electric to offer its customers a wind energy purchase option. The power will be supplied by Cooperative Power Association, which is Dakota Electric's wholesale supplier. Under the program, customers can purchase 100-kWh blocks of wind-generated electricity at a proposed rate premium of \$2 per block. A 12-month subscription commitment is required (see also Cooperative Power Association summary).

Electricity Sales to Surrounding States

Concerning general sales into surrounding states, see the "Transmission and Utility Grid Interconnection" Section for additional information.

Transmission and Utility Grid Interconnection

Two general transmission conditions are of interest. The first is for electricity sales to NSP. The second is for electricity sales to other buyers. See “Useful Addresses” for utility contact information.

Transmission Constraints Within Minnesota

Concerning NSP, available information indicates that the substation and transmission capacity at the Buffalo Ridge wind resource area of Minnesota is fully utilized. This means that new wind projects selling to NSP likely will be located elsewhere within Minnesota, or outside of Minnesota.

Electricity Sales to NSP Within North Dakota

North Dakota is an excellent location for wind projects selling to NSP, in part because NSP serves three cities within North Dakota: Minot, Grand Forks, and Fargo. Electricity will need to pass through non-NSP utilities to reach these cities, generally as follows:

- to Minot primarily via Western Area Power Administration, Great River Energy, and Basin Electric Power Cooperative;

- to Grand Forks primarily via Western Area Power Administration, Minnkota Power Cooperative, and Manitoba (Canada); and

- to Fargo primarily via Western Area Power Administration, Minnkota Power Cooperative, and Otter Tail Power Company.

Great River Energy is the result of the recent merger of United Power Association and Cooperative Power Association. NSP has a “Network Services Agreement” with Great River Energy, which has transmission lines in North Dakota. Under the Network Services Agreement, NSP can declare long-term electricity purchases (such as wind electricity) to be a “system resource” or “Network Resource.” This allows NSP to simplify transmission arrangements and to charge a lower price for transmission services than would otherwise apply.

Mid-Continent Area Power Pool

North Dakota utilities participate in the Mid-continent Area Power Pool (MAPP). MAPP maintains extensive information about its participating utilities and the regional transmission system. This information includes data for export of power from North Dakota into Minnesota and South Dakota, and to other surrounding areas. See “Useful Addresses” for MAPP contact information.

Minnesota and South Dakota Transmission

Maximum transmission capacity from North Dakota into Minnesota and South Dakota (MSD) is about 1800 MW. During certain time periods, this export transmission capacity is fully utilized. However, historical MAPP records show that 160 MW of new wind generation could be exported into MSD approximately 95% of the time during the year. Smaller amounts of new wind generation could be exported into MSD for more than 95% of the time during the year.

Eastern Montana Transmission

Export of electricity from North Dakota into eastern Montana also is possible. Transmission to and from eastern Montana generally has not been constrained for MAPP. Therefore, data to quantify megawatts of transmission capacity are not readily available from MAPP. Interested parties should contact Montana-Dakota Utilities for more information.

Canadian Transmission

Export of electricity from North Dakota into Canada also occurs at certain times. The predominant flow of power is from Canada into North Dakota. Peak transmission from Canada exceeds 1900 MW. Transmission from North Dakota into Canada is limited to about 600 to 800 MW for technical reasons.

Policies and Incentives

To promote the development of renewable resources, the North Dakota legislature approved an income tax credit and property tax exemption for solar, wind, and geothermal energy devices. A summary of these incentives is given below.

Definitions

A “Solar or wind energy device” means a system or mechanism or series of mechanisms designed to provide heating or cooling or to produce electrical or mechanical power, or any combination of these, or to store any of these, by a method that converts the natural energy of the sun or wind.

Income Tax Credit

Any North Dakota taxpayer, whether an individual or a corporation, who installs a geothermal, solar or wind energy device, may claim an income tax credit of 5% per year for three years for the actual cost of acquisition and installation of such device. The three years in which the credit must be used are the year of installation and the two years immediately following installation.

Requirements

- The geothermal, solar or wind energy device must be installed in a building or on property owned by a taxpayer in North Dakota.
- If a geothermal, solar or wind energy device is part of a system that uses another means of energy, only that portion of the system directly attributable to the cost of the geothermal, solar or wind device may be used in determining the amount of tax credit.
- The cost of installation may not include costs of redesigning, remodeling or otherwise altering the structure of a building in which a geothermal, solar or wind energy device is installed.

How to Receive It

This is a direct credit against the North Dakota tax liability. A special line is provided on Form 37 (long form for individuals) for notation of this credit. This credit is not available on the Form 37-S (short form for individuals). This credit is also available on Schedule 2 of the fiduciary return and on the corporate returns.

Property Tax Exemption

Property owners may claim an exemption from property tax for a solar, wind or geothermal energy system. The exemption is valid for five years following the date on which the system is installed.

Requirements

- Property exempted includes installations, machinery, and equipment of systems in new or existing buildings or structures. It must be designed to provide heating or cooling or to produce electrical or mechanical power, or any combination of these, or to store any of these, by utilization of solar, wind or geothermal energy.
- If the solar, wind or geothermal energy device is part of a system that uses other means of energy, only that portion of the total system directly attributable to solar, wind or geothermal energy is exempt.

How to Receive It

Those who wish to apply for this exemption should contact their local assessor or their county director of tax equalization.

Corporate Taxes

North Dakota's income tax rates range from 3.0% to 10.5% depending upon the amount of taxable income. North Dakota is one of four states that allow a corporation to deduct the entire amount of federal income tax liability before calculating the state corporate tax. This lowers the effective North Dakota rates to 2.55% to 6.83%. A new project may qualify for an income tax exemption for up to five years. There are certain qualifications and limitations on this exemption. For more information,

contact the Office of the State Tax Commissioner. See “Useful Addresses” for contact information.

Real Property Tax

North Dakota does not tax personal property. Real property is taxed by the county. However, any new business may be granted an exemption for up to five years. There is a special five-year exemption for a wind energy system. Extensions of up to an additional five years are available for a project located on property leased for a governmental entity.

General Sales Tax

North Dakota's general sales tax rate is 5%. New businesses qualify for an exemption on machinery, building materials and equipment used for manufacturing, processing or recycling. Local subdivisions are also allowed to levy a sales tax. The current rate in all cities that currently levy this tax is 1%. This tax only applies to the first \$2,500 on any given purchase.

Training New Employees

A program is available that assists new or expanding businesses with training new employees. The cost of training under the program is paid for in whole or in part with the income tax withheld from the new employees. See “Useful Addresses” for contact information.

Unemployment Taxes

The rate for unemployment taxes is 2.2% on the first \$14,200 of wages per employee. This rate is used for the first one or two years. After that an experience rating system is used to calculate rates.

Workers Compensation

In North Dakota workers compensation premiums only apply to the first \$13,900 of wages per employee. These are among the lowest in the nation. Premiums are based on specific job classifications and accident experience over a number of years.

Permitting Wind Project Sites

Project siting and permitting jurisdiction depends upon the size of the project. Smaller energy projects less than 50 megawatts are governed only by local county and/or city requirements. This may make permitting easier.

The North Dakota Public Service Commission (PSC) has jurisdiction over large energy project siting under NDCC 49-22. This siting law applies to all “energy conversion facilities” that generate fifty thousand kilowatts or more of electricity (49-22-03.5a). A copy of this siting law can be obtained from the North Dakota PSC. See “Useful Addresses” for PSC contact information.

Use of State Land for Wind Energy

Concerning the possible use of State Land for wind projects, interested parties can contact the Director of Surface Management at the North Dakota State Land Department. Because no wind projects have yet been built, there apparently is no policy or known procedure, other than simply having interested parties contact the State Land Department.

The North Dakota State Constitution limits allowable State land leases to pasture and grazing, but pipelines and oil wells are allowed as easements. A legal opinion from the State Attorney General would be needed concerning wind energy easements as an allowable land use. A 1999 Memorandum from the North Dakota Assistant Attorney General concludes that “Wind generation easements would seem well within the land board’s past and current practice.” See the “Reference Documents and Maps” Section for a copy of this North Dakota Memorandum.

An initial review of land-use maps and wind resource maps shows that there are State Lands scattered throughout several of the large wind resource zones in North Dakota. Many State land parcels are about one square mile in area. One square mile of approximately flat land can support a significant number of large wind turbines. Thus, even 5 to 10 square miles at various locations that were acceptable for wind project use could be quite important for near-term North Dakota wind projects.

Reference Documents and Maps

Maps and Sources of Maps

U.S. DOE “Wind Energy Resource Atlas of the U.S.,” attached.

Union of Concerned Scientists “Wind Resources, State Assessment A-63,” attached.

Mid-Continent Area Power Pool “Principal Power Supply Facilities Existing and Proposed - 10 Year Map 1997-2006,” attached. To purchase MAPP maps, contact Mr. Charles Tyson, 1125 Energy Park Drive, St. Paul, MN 55108-5001, Tel: 651-632-8400, Fax: 651-632-8417.

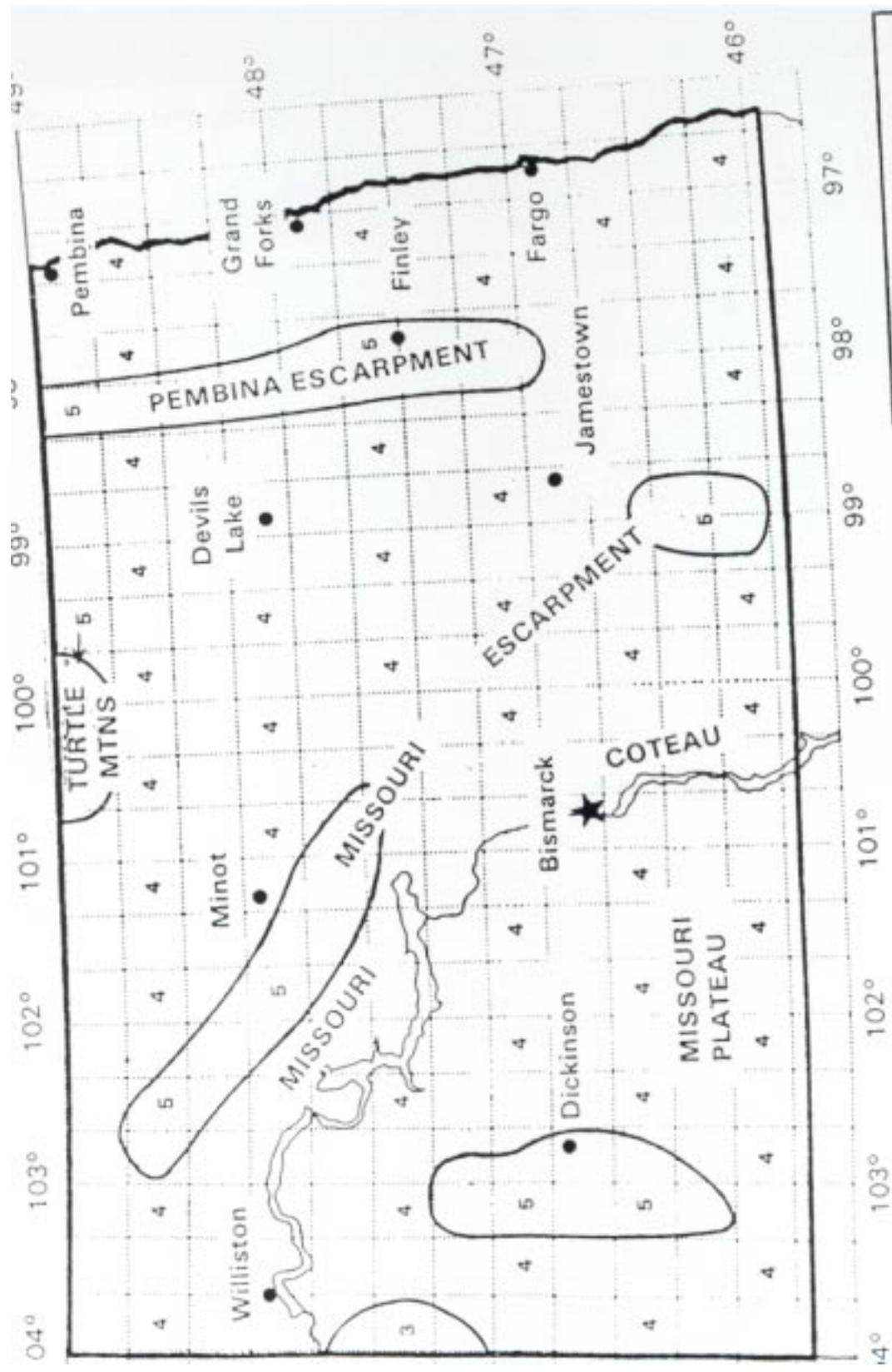
Western Area Power Administration, Map of North Dakota “Transmission Lines, Power Plants & Substations.” To purchase WAPA maps, contact Mr. Gail Ellison, WAPA - Montana, Tel: 406-247-7433, Fax: 406-247-7408.

The BLM map entitled “Land Status State of North Dakota” provides details of State, Federal, and private land ownership as well as topographic data at 200 foot contour intervals. This map may be ordered by calling the BLM office in Golden, CO at 303-239-3600 for cost and shipping arrangements. The cost is nominal.

For information regarding Otter Tail Power Company electrical transmission and power line maps, contact Mr. Gary Welharticky, 215 South Cascade Street, Fergus MN 56538-0496. Tel:218-739-8200, Fax:218-739-8218.

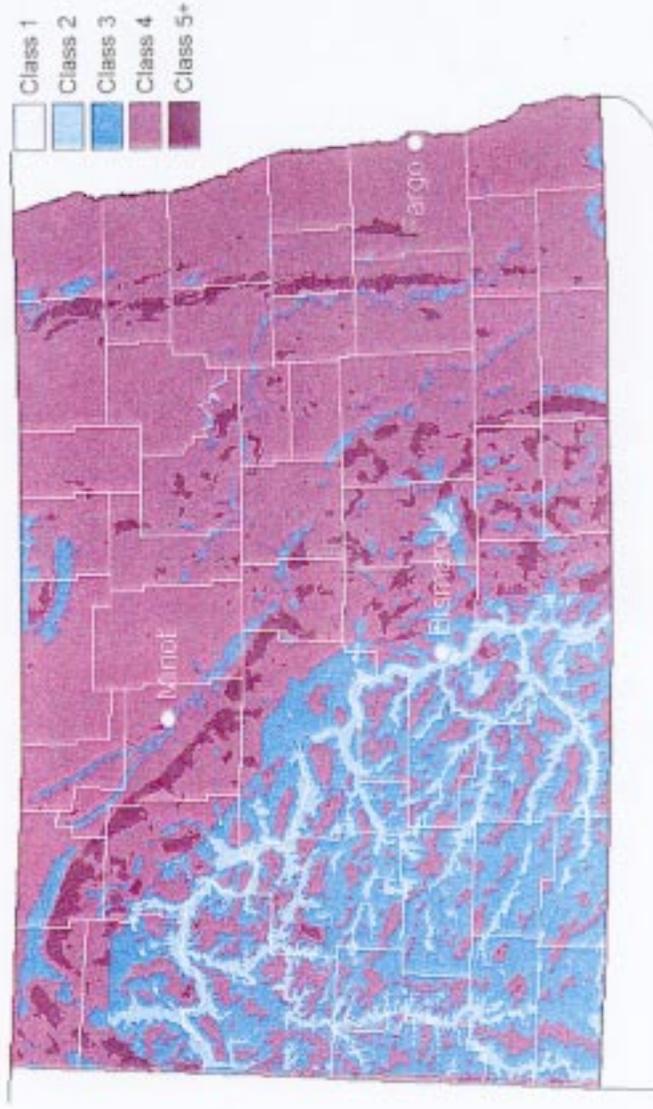
Wind Studies and Reports

1. North Dakota Wind Resource Assessment Program (see **Table Three:** NSP and North Dakota Utilities, Summary Wind Data below).
2. Montana-Dakota Utilities conducted a four-year study of the wind resource in North Dakota using data collected from a tower installed at Beulah. (See “Useful Addresses”)
3. Battelle Pacific Northwest Laboratory (PNL), Wind Energy Resource Atlas: Vol. 2, The North Central Region, 1981.



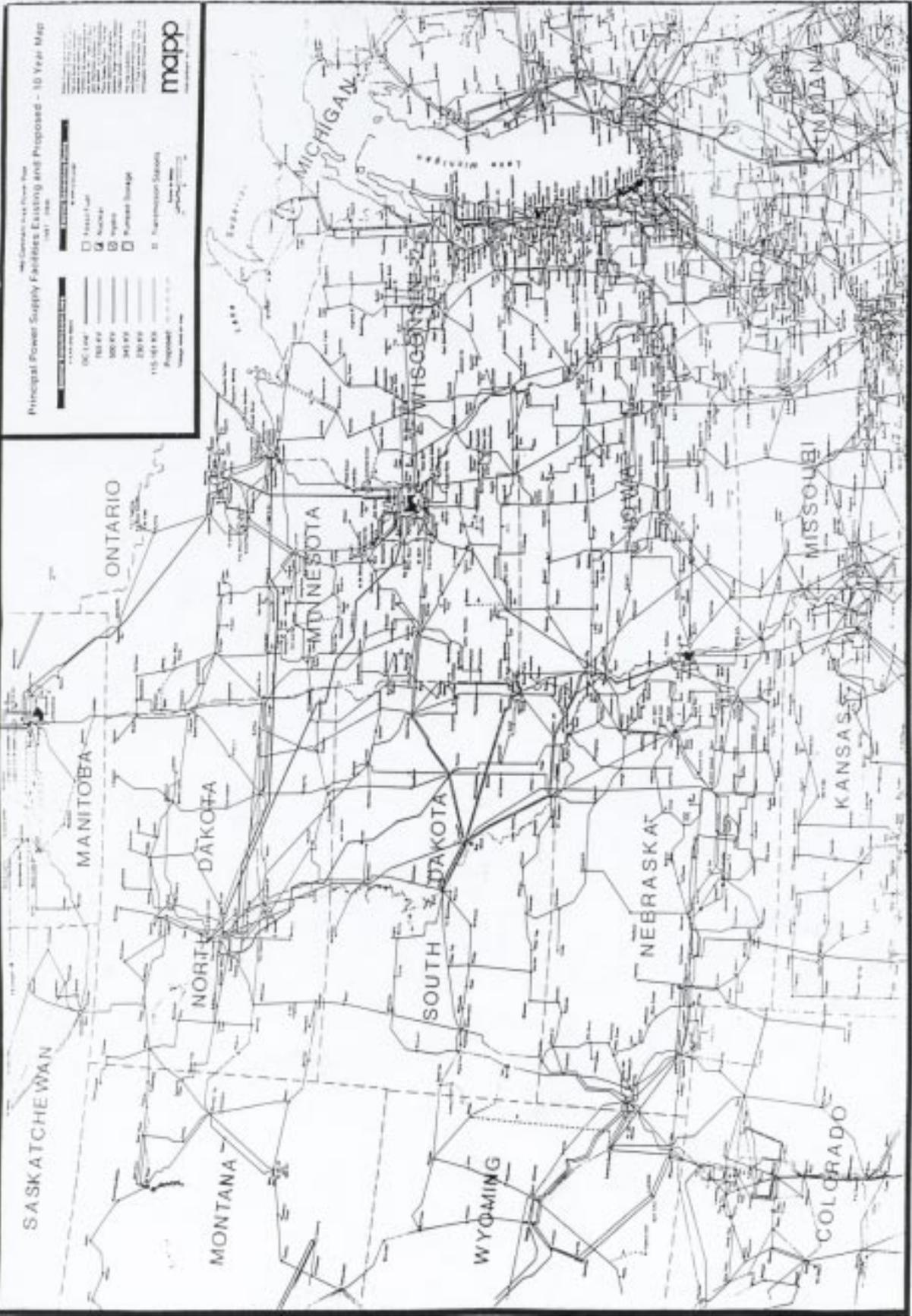
State Assessments A-63

Wind resources



Promising wind sites

SOURCE: Union of Concerned Scientists



Mid-Continent Area Power Pool
Principal Power Supply Facilities Existing and Proposed - 10 Year Map
1971 - 1980

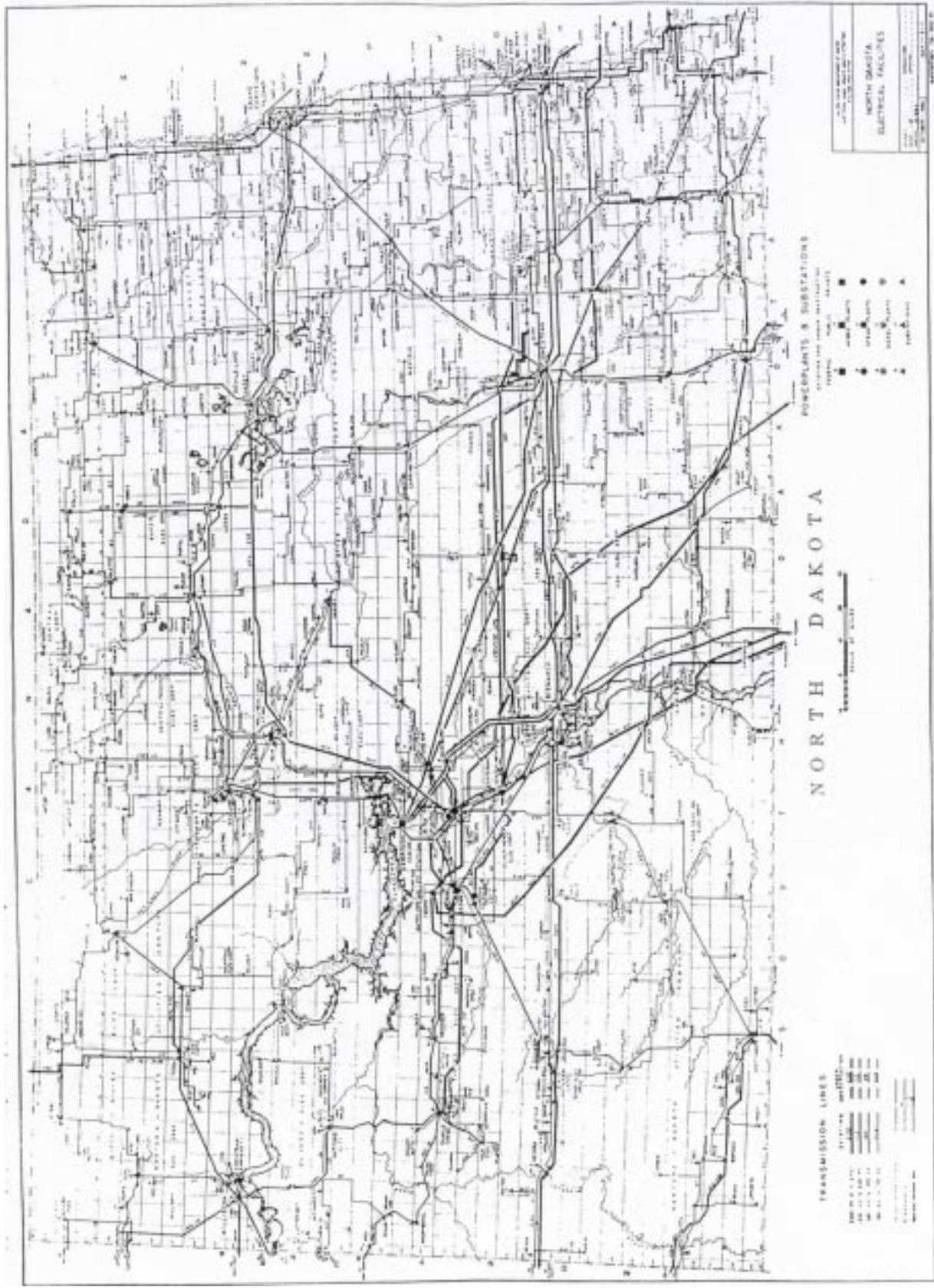
TRANSMISSION LINES	
138 KV	—————
115 KV	—————
76.5 KV	—————
50 KV	—————
34.5 KV	—————
23 KV	—————
115 KV AND ABOVE	—————
Proposed	—————

POWER SUPPLY FACILITIES	
Hydro-Electric	□
Nuclear	□
Thermal	□
Pumped Storage	□
Transmission Stations	□

Legend:
 ——— Existing
 - - - - - Proposed

mapp

SOURCE: Mid-Continent Area Power Pool



TRANSMISSION LINES

110 KV	SOLID LINE
138 KV	DASHED LINE
161 KV	DOTTED LINE
230 KV	THICK SOLID LINE
500 KV	THICK DASHED LINE

POWERPLANTS & SUBSTATIONS

HYDRO	(Symbol)
STEAM	(Symbol)
GEOTHERMAL	(Symbol)
WIND	(Symbol)
TRANSFORMER	(Symbol)
REACTOR	(Symbol)

NORTH DAKOTA

Scale: 1 inch = 100 miles

DATE: 11/15/77
 NORTH DAKOTA
 ELECTRICAL FACILITIES

SOURCE: Western Area Power Administration

4. U.S. DOE, "Wind Energy Resource Atlas of the United States," DOE/CH 10094-4, March 1987, report.
5. The Union of Concerned Scientists analysis of wind classes which provides a North Dakota map with a resolution of 1 km by 1 km, is included in the report "Powering the Midwest - Renewable Electricity for the Economy and the Environment" 1993 by Michael C. Brower, et al.
6. The University of North Dakota (UND) conducted an analysis for two utilities, and produced a wind assessment study for Eastern North Dakota, using data collected near Grand Forks AFB from 1984 through 1987. (See "Useful Addresses")
7. For additional information about wind studies, please contact

Ms. Dina Butcher, Director, or
Mr. Kim Christianson, Energy Program Manager
Division of Community Services
State Capitol - 14th Floor
600 E. Boulevard Avenue
Bismark, ND 58505-0170
Tel: 701-328-2094
Fax: 701-328-2308 Web site at: <http://www.state.nd.us>

Reference Documents

Permitting Requirements. The document "Energy Conversion and Transmission Facility Siting Act," reprinted February 1996, provides information about permitting requirements in North Dakota. This document can be obtained from: Office of the North Dakota Public Service Commission, State Capitol, Bismarck, North Dakota, Tel: 701-328-2400, Fax: 701-328-2410.

Research Report. The REPP Research Report No. 6, November 1998, entitled "A Few Dollars Per Family: The Cost of Large-Scale Wind Power Development" was published by the Renewable Energy Policy Project (REPP). REPP publications are available on the Internet at < <http://www.repp.org> >, or may be ordered by contacting REPP at 202-293-2833.

Minnesota 1997 PUC Order. The Minnesota Public Utilities Commission issued an Order dated 6 August 1997 concerning the completion of the final phases of Northern States Power's wind energy development. A copy of that PUC Order is provided below.

Minnesota 1999 PUC Order. The Minnesota Public Utilities Commission issued an order in early 1999, requiring Northern States Power to proceed with an additional 400 megawatts of wind energy projects. For additional information, contact the Minnesota Public Utilities Commission at Suite 350, 121 East Seventh Place, St. Paul, MN 55101, Tel: 612-297-4596.

Use of State Land for Wind Energy. The attached memorandum from Assistant Attorney General Charles M. Carvall, re: Wind generators on school trust land, dated 17 March 1999, comments on this matter.

**Table Three:
North Dakota Wind Resource Assessment Program
Summary Wind Data**

10 Meters AGL Wind Speed Summary (miles per hour)

September 1, 1994 - August 31, 1995

County	Fall	Winter	Spring	Summer	Annual
Cavalier	12.2	12.4	11.5	8.9	11.2
Nelson	13.0	12.7	12.7	10.7	12.2
Ward	15.2	14.1	13.3	12.8	13.7
Williams	13.4	12.1	12.3	11.8	12.4
Dunn	12.5	11.3	12.5	11.1	11.9
Burleigh	13.8	14.2	13.2	12.1	13.2
La Moure	14.2	15.1	13.3	11.8	13.5
Barnes	12.7	12.6	12.2	10.7	12.2
Average:	13.4	13.1	12.6	11.2	12.5

September 1, 1995 - August 31, 1996

Cavalier	10.6	13.2	11.4	8.3	10.8
Nelson	11.7	14.3	12.7	10.1	12.2
Ward	13.2	14.6	14.0	12.6	13.6
Williams	12.4	13.9	12.8	12.1	12.8
Dunn	12.2	12.2	12.2	11.4	12.0
Burleigh	12.7	14.2	13.1	11.5	12.9
LaMoure	12.9	16.1	13.9	12.1	13.7
Barnes	11.9	13.6	12.5	n/a	12.6
Average:	12.2	14.0	12.8	11.2	12.6

Useful Addresses

North Dakota Government Offices

Governor Edward T. Schafer has requested that Kevin Cramer, the Director of the Economic Development and Finance agency, provide whatever information and assistance your company might need as you consider the location of future wind energy developments.

You also may work with the North Dakota Public Service Commission (PSC) and the Division of Community Services (which includes the state energy office) as you proceed with your development plans.

Below is a list of the key North Dakota contacts and their addresses at each of the referenced agencies.

Mr. Kevin Cramer, Director
Economic Development & Finance
1833 E. Bismarck Expressway
Bismarck, ND 58505-0170
Tel: 701-328-5300
Fax: 701-328-5320

Mr. Leo Reinbold, President
Public Service Commission
State Capitol - 12th & 13th Floors
600 E. Boulevard Avenue
Bismarck, ND 58505
Tel: 701-328-2400
Fax: 701-328-2410

Ms. Dina Butcher, Director, or
Mr. Kim Christianson, Energy Program Manager
Division of Community Services
State Capitol - 14th Floor
600 E. Boulevard Avenue
Bismarck, ND 58505-0170
Tel: 701-328-2094
Fax: 701-328-2308, Web site at: <http://www.state.nd.us>

Mr. Mike Brand
Director of Surface Management
North Dakota State Land Department
P.O. Box 5523
Bismarck
North Dakota 58506-5523
Tel: 701-328-2800
Fax: 701-328-3650

Ms. Heidi Heitkamp
Office of Attorney General
600 East Boulevard Ave.
Dept 125
Bismarck
North Dakota 58505-0004
Tel: 701-328-2210
Fax: 701-328-3409

Mr. Rick Clayburgh
State Tax Commissioner
State Capitol
600 East Boulevard Ave.
Bismarck
North Dakota 58505-0004
Tel: 701-328-2770
Fax: 701-328-3700

Training New Employees

For more information about this program, contact:

Job Service North Dakota
P.O. Box 5507
Bismarck, ND 58506-5507
Tel: 701-328-2814

Cities in North Dakota

Mr. Bruce Furnes, Mayor

City of Fargo

200 Third Street North

Fargo, ND 58102

Tel: 701-241-1310

Ms. Pat Owens, Mayor

City of Grand Forks

255 Fourth Street North

Grand Forks, ND 58102

Tel: 701-746-2607

Mr. Carroll Erickson, Mayor

City of Minot

Mayor's Office

515 Second Avenue SW

Minot, ND 58701

Tel: 701-857-4750

North Dakota Utilities

Mr. Wayne Backman, Vice President

Power Marketing and Transmission

Basin Electric Power Cooperative

1717 East Interstate Avenue

Bismarck, ND 58501

Tel: 701-223-0441

Fax: 701-224-5336

Mr. Tom Thorson

Cass County Electric Cooperative

P.O. Box 8

Kindred, ND 58051

Tel: 701-277-4400

Fax: 702-277-4500

Mr. Phil Lavoie
Minnkota Power Cooperative, Inc.
1822 Mill Road
P.O. Box 13200
Grand Forks, ND 58208-3200
Tel: 701-795-4000
Fax: 701-795-4215

Mr. Gary Paulsen, P.E.
System Operations Manager
Montana-Dakota Utilities Co.
400 North 4th Street
Bismarck, ND 58501
Tel: 701-222-7900
Fax: 701-222-7606

Mr. Miles Jensen
Member Services Manager
Nodak Electric Cooperative, Inc.
4000 32nd Avenue South
P.O. Box 13000
Grand Forks, ND 58208-3000
Tel: 701-746-4461
800-732-4373
Fax: 701-746-6701

North Dakota Regional Council Directors

Region I

Mr. Paul Bauer
Tri-County Regional Development Council
20 East 2nd Street
PO Box 697
Williston, ND 58802-0697
Tel: 701-774-1358
Fax: 701-774-1363

Region II

Mr. Greg Hagen
Souris Basin Planning Council
4215 Burdick Expressway East
Minot, ND 58701
Tel: 701-852-4988
Fax: 701-838-8955

Region III

Mr. Rick Anderson
North Central Planning Council
Memorial Building
PO Box 651
Devils Lake, ND 58301
Tel: 701-662-8131
Fax: 701-662-8132

Region IV

Mr. Julius Wangler
Red River Regional Council
1004 Hill Avenue
Grafton, ND 58237
Tel: 701-352-3550
Fax: 701-352-3015

Region V

Mr. Irv Rustad
Lake Agassiz Regional Planning Council
417 Main Avenue
Fargo, ND 58103
Tel: 701-239-5373
Fax: 701-235-6706

Region VI

Mr. Eric Hoberg
South Central Dakota Regional Council
210 10th Street SE
PO Box 903
Jamestown, ND 58401
Tel: 701-252-8060
Fax: 701-252-4930

Region VII

Mr. Paul Rechlin
Lewis & Clark Regional Development Council
400 East Broadway, Suite 418
Bismarck, ND 58501
Tel: 701-255-4591
Fax: 701-255-7228

Region VIII

Mr. Rod Landblom
Roosevelt Custer Regional Council for Development
Pulver Hall
Dickinson, ND 58601
Tel: 701-227-1241
Fax: 701-227-1243

Regional and Additional Addresses

Mr. Mark P. McGree
Manager, Resource Planning & Bidding
Northern States Power Company
Power Marketing & Energy Planning
414 Nicollet Mall
Minneapolis, MN 55405
Tel: 612.330.5884
Fax: 612.337.2284
E-Mail: mcgm01@nspco.com

Mr. Richard M. Halet
Northern States Power Company
General Office - 8th Floor
414 Nicollet Mall
Minneapolis, MN 55401
Tel: 612.330.7780
Fax: 612.330.5913
Web: www.nspco.com

Mr. Charles A. Tyson
Senior Transmission Planning Engineer
Mid-Continent Area Power Pool (MAPP)
1111 Third Avenue South
Minneapolis, MN 55404-1008
Tel: 651-632-8400
Fax: 651-632-8417
E-mail: CA.Tyson@Mapp.Org

Mr. Gerald H. Groenewold, Director
Energy and Environmental Research Center
15 North 23rd Street
PO Box 9018
Grand Forks, ND 58202-9018
Web: <http://www.eerc.und.nodak.edu>

Mr. Gail Ellison
Western Area Power Administration
U.S. Department of Energy
2900 4th Avenue North
P.O. Box 35800
Billings, MT 59107-5800
Tel: 406-247-7405
Fax: 406-247-7408

Mr. Terry Grove
Great River Energy
(formerly United Power Association and Cooperative Power)
17845 East Highway 10
P.O. Box 800
Elk River, MN 55330-0800
Tel: 612-441-3121
Fax: 612-241-2366

United Power Association and Cooperative Power
See Great River Energy

Mr. Gary Welharticky
Supervisor, Transmission Lines
Otter Tail Power Company
215 South Cascade Street
Fergus MN 56538-0496
Tel: 218-739-8200
Fax: 218-739-8218

Ms. Karen Santori
Supervisor, Regulatory Information
Minnesota Department of Public Service
121 East Seventh Place
St. Paul, MN 55101
Tel: 651-296-0391
Fax: 651-297-1959

Donald M. Hardy, Ph.D.
President
PanAero Corporation
12345 West Alameda Parkway, Suite 113
Lakewood, CO 80228
Tel: 303-989-9060
Fax: 303-989-9066
E-mail: panaero@compuserve.com

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

Edward A. Garvey
Joel Jacobs
Marshall Johnson
Don Storm

Chair
Commissioner
Commissioner
Commissioner

In the Matter of Northern States Power
Company's Application for Resource Plan
Approval 1996-2010

ISSUE DATE: August 6, 1997

DOCKET NO. E-002/RP-95-589

ORDER APPROVING WIND
DEVELOPMENT SCHEDULE AND
CLARIFYING SITING REQUIREMENTS

PROCEDURAL HISTORY

On July 3, 1995 Northern States Power Company (NSP or the Company) filed its resource plan for 1996-2010 under Minn. Stat. § 216B.2422 and Minn. Rules Chapter 7843. On April 29, 1997 the Commission issued its ORDER APPROVING NSP's 1995 RESOURCE PLAN AS MODIFIED, REQUIRING CONSULTATION WITH INTERESTED PARTIES AND COMPLIANCE FILING, AND SETTING REQUIREMENTS FOR NEXT RESOURCE PLAN FILING.

Among other things, that Order deferred for further argument and later consideration two issues: (1) whether, to qualify for federal tax credits, NSP should be required to accelerate its schedule for acquiring statutorily-mandated wind-generated capacity; and (2) whether, under Minn. Stat. § 216B.2423, all the wind generation facilities at issue had to be located within the state of Minnesota.

Between April 30 and May 23, 1997 the following parties filed comments on these issues: NSP, the Minnesota Department of Public Service (the Department), the Izaak Walton League of America (the League), and the Sustainable Energy for Economic Development Project (SEED). All parties but SEED commented on the first issue, and all agreed that the Commission should not require NSP to accelerate its wind development schedule.

On the second issue, all parties but SEED interpreted the statute to permit siting outside the state of Minnesota. SEED viewed out-of-state siting as permissible, but only as a last resort. The organization argued that it was the intent of the Legislature for these facilities to be built in Minnesota and that they should not be built elsewhere without a clear showing that another location would have greater value to all Minnesotans.

The Commission also received letters from four legislators stating it was their understanding that the wind facilities would be built in Minnesota. Those legislators are Representative Ted Winter, Representative Richard Mulder, Senator Jim Vickerman, and Senator Arlene J. Lesewski.

The matter came before the Commission on June 26, 1997.

FINDINGS AND CONCLUSIONS

I. Factual Background

A. The Legislation

In 1994 the Minnesota Legislature passed legislation requiring any utility operating a nuclear power plant within the state to make significant investments in wind power over the next several years. The text of the statute reads as follows:

Subdivision 1. **Mandate.** A public utility, as defined in section 216B.02, subdivision 4, that operates a nuclear-powered electric generating plant within this state must construct and operate, purchase, or contract to construct and operate: (1) 225 megawatts of electric energy installed capacity generated by wind energy conversion systems within the state by December 31, 1998; and (2) an additional 200 megawatts of installed capacity so generated by December 31, 2002.

For the purpose of this section, "wind energy conversion system" has the meaning given it in section 216C.06, subdivision 12.

Subdivision 2. **Resource Planning Mandate.** The public utilities commission shall order a public utility subject to subdivision 1, to construct and operate, purchase, or contract to purchase an additional 400 megawatts of electric energy installed capacity generated by wind energy conversion systems by December 31, 2002, subject to resource planning and least cost planning requirements in section 216B.2422.

Minn. Stat. §216B.2423

The statute was part of a legislative package designed to encourage the development and use of renewable energy. While promoting renewable energy has long been public policy in Minnesota, its importance was highlighted during the 1994 legislative session by NSP's request for legislative authorization to build an above-ground nuclear waste storage facility at its Prairie Island nuclear plant.

The Legislature decided to permit the building of the storage facility, while trying to obviate the need for future facilities by hastening the development and deployment of renewable generation. The legislation therefore required NSP to acquire specific amounts of power from specific renewable resources (wind and biomass) within specific time frames. See Minn. Stat. § 216B.2424 for the biomass power mandate.

B. The Resource Plan

NSP's 1996-2010 resource plan explained its plans to implement the wind power mandate. The Company planned to use competitive bidding to acquire the power and to phase it in over the statutorily mandated period. The Company is on target to meet the December 31, 1998 deadline for the first 225 megawatts. It has 125 megawatts of in-state generation under contract and a short list of developers for the remaining 100 megawatts, also to be developed in-state.

The Company expects to develop the remaining 200 megawatts, subject to the December 31, 2002 deadline, in two phases. The amount of power in each phase will depend upon how many contracts the Company has executed with smaller providers. The Company anticipates the need for two major generating projects, however, and intends to site those projects in North and South Dakota, on cost grounds. The Company reports the Dakota sites offer richer wind resources and lower transmission costs than remaining Minnesota sites.

II. The Issues

The Company's wind deployment plans raise two issues: (1) Should the Company be required to accelerate its wind development schedule to capture the benefits of a federal tax credit for renewable facilities in operation by June 30, 1999? (2) Should the Company be required to site the second round of wind generation facilities within the State of Minnesota?

The parties are in agreement that the answer to the first question is no. On the second question, all parties but SEED say no. SEED argues that the facilities should be sited in Minnesota unless the Company can prove that an out-of-state site would be of greater value to all Minnesotans.

For the reasons set forth below, the Commission concludes the Company should not be required to accelerate its wind development schedule and should not be required to site the second round of wind generation facilities within the state.

III. Accelerating the Wind Development Schedule

The federal Energy Policy Act of 1992 provides production tax credits of 1.5 cents per kilowatt hour to renewable energy facilities meeting certain standards, including a requirement that they begin generating electricity by June 30, 1999. One of the issues raised in the

resource plan proceeding was whether NSP should be required to accelerate its wind development schedule to qualify for as many production tax credits as possible. After reviewing the facts presented by the Company and the parties' comments, the Commission agrees with the parties that it would not serve the public interest to do so.

Wind generation technologies are rapidly developing. Forcing the Company to make its entire wind investment now would leave it unable to use more efficient, less expensive technologies that might be available in the future. Since generation facilities are designed to last for decades, the long term cost of proceeding now could exceed the long term benefit of capturing the production tax credits.

Furthermore, it is entirely possible that meeting the June 30, 1999 deadline for the second 200 megawatts is simply not feasible at this point. Siting, permitting, competitive bidding, contract negotiations, financing negotiations, and actual construction typically take longer than the 30 months remaining here. Compressing the time frame would also increase the risk of mistakes and place the Company in a weak bargaining position when negotiating with property owners, manufacturers, developers, and financiers.

Finally, it is possible that the production tax credit will be extended. The American Wind Energy Association, of which NSP is a member, is working toward that end and reports significant Congressional support for a five-year extension.

For all these reasons, the Commission concurs with the parties that NSP should not be required to accelerate its wind development schedule.

IV. In-State Versus Out-of-State Siting

A. The Statutory Language

The language of the statutory wind mandate, set forth below, is ambiguous as to whether the second increment of wind capacity must be built within the state:

A public utility, as defined in section 216B.02, subdivision 4, that operates a nuclear-powered electric generating plant within this state must construct and operate, purchase, or contract to construct and operate: (1) 225 megawatts of electric energy installed capacity generated by wind-energy conversion systems within the state by December 31, 1998; and (2) an additional 200 megawatts of installed capacity *so generated* by December 31, 2002.

Minn. Stat. § 216B.2423, subd. , emphasis added

The words *so generated* could refer to energy "generated by wind energy conversion systems" or they could refer to energy "generated by wind energy conversion systems within the state." Since the language is ambiguous the Commission must look to statutory context and legislative history to determine its meaning.

Having examined the statutory context, the legislative history, and the public policies underlying the Public Utilities Act, the Commission concludes the statutory wind mandate does not require the second 200 megawatts of wind generation to be constructed within the state.

B. The Legislative History

The statute was enacted in its current form in 1994. It was part of a legislative package designed to avert the premature shutdown of NSP's Prairie Island nuclear power plant for lack of storage facilities for spent nuclear fuel. The Legislature decided both to resolve the immediate need for storage and to address the long term need for alternatives to nuclear energy by linking operation of the nuclear plant with significant investment in renewable energy facilities. The statute therefore both permitted the Company to build the storage facility and required it to secure at least 425 megawatts of wind capacity and 125 megawatts of biomass capacity by December 31, 2002 and December 31, 2001 respectively.

The legislation clearly required the first 225 megawatts of wind generation to be located within the state. It was unclear on any siting requirements for the second 200 megawatts. It did not require the biomass generation to be located within the state.

During the 1996 session the legislature passed legislation amending § 216B.2423 to require that the second 200 megawatts of wind capacity be located within the state. The legislation added the words *within the state* after the words *so generated* in the clause mandating the second 200 megawatts. The Governor vetoed the amendment, stating it was anticompetitive and would lead to higher costs for NSP and higher rates for its customers.

Legislative history can be invaluable in discerning legislative intent. In this case, however, that history can be read in as many ways as the language itself.

One of the authors of the 1996 amendment vetoed by the Governor, which would have inserted an in-state siting requirement for the second 200 megawatts of wind capacity, described the amendment as reaffirming the intent of the 1994 legislation. This is the strongest evidence for finding an in-state siting requirement. At the same time, however, the fact that an amendment was thought to be necessary and appropriate militates against finding that the original intent was clear. Had it been clear, amending the original legislation would have been superfluous.

Furthermore, the Governor's veto of the 1996 amendment, but not of the original legislation, tends to support this reading. The Governor opposed mandatory in-state siting as anti-competitive and tending to drive up costs and rates. He did not veto the original legislation, in all likelihood because he did not understand it to require in-state siting for the full 424 megawatts. He did veto the 1996 amendment, when legislative intent to require in-state siting was clear. The Governor's actions, then, suggest that any original intent to require in-state siting was not clear.

Since the legislative intent of the original provision is unclear, the Commission must consider the siting issue in the context of the Public Utilities Act and the public policies it embodies.

C. The Statutory Context

1. The Immediate Context

The wind generation mandate is one of at least four provisions of the Public Utilities Act designed to promote the use of renewable energy. The other three are as follows:

- (1) The resource planning statute, which gives the Commission authority over utilities' plans for investing in future generation, creates an explicit preference for renewable energy. Minn. Stat. § 216B.2422, subd. 4.
- (2) The certificate of need statute, which gives the Commission authority over utilities' plans to build specific new facilities, creates an explicit preference for renewable energy. Minn. Stat. § 216B.243, subd. 3a.
- (3) The biomass power mandate requires NSP, as a nuclear utility, to invest in 125 megawatts of capacity generated by farm-grown closed-loop biomass on or before December 31, 2002. Minn. Stat. § 216B.2424.

None of these provisions creates a preference for in-state, as opposed to out-of-state, generation. Instead, the resource planning and certificate of need statutes, at least, emphasize that cost -- in the most comprehensive and meaningful sense -- can be the determinative factor, not just for siting, but for whether renewable facilities win out over nonrenewables. The certificate of need statute prohibits the building of nonrenewable facilities unless the would-be builder "has demonstrated that the alternative selected is less expensive (including environmental costs) than power generated by a renewable energy source. . . ." The resource planning statute, in turn, incorporates that standard for acting on specific construction proposals. Minn. Stat. §§ 216B.242, subd. 3a; 216B.2422, subd. 6.

From looking at other statutory provisions promoting renewable energy, two things are clear. First, in-state siting requirements are the exception, not the rule. Second, as a general rule, cost considerations are critical to deciding not only *where* facilities are built, but *whether* they are built, even trumping the legislative preference for renewable energy. The immediate statutory context, then, does not support an in-state siting requirement, but a low-cost siting requirement.

2. The Larger Context

Neither does the Commission believe that the Public Utilities Act, read as a whole, supports interpreting the wind mandate of Minn. Stat. § 216B.2423, subd. 1 to require in-state siting of the second 200 megawatts.

First, the in-state siting requirement applicable to the first 225 megawatts of wind capacity is unique to this section of the Public Utilities Act. Nowhere else in the Act are utilities limited to Minnesota locations in siting generating facilities. Given the uniqueness of this requirement, and the clarity with which it is imposed on the first 225 megawatts of wind capacity, the Commission cannot lightly assume that it also applies to the second 200 megawatts.

Second, an in-state siting requirement would be inconsistent with the Public Utilities Act's general emphasis on maintaining the lowest rates consistent with fairness to utility investors. For example, two of the reasons the Legislature gave for regulating electric utilities in the first place were to ensure "reasonable rates" and to avoid unnecessary duplication of facilities "which increase the cost of service to the consumer . . ." Minn. Stat. § 216B.01. Similarly, the Act provides that any doubt as to reasonableness of rates shall be resolved in favor of the consumer. Minn. Stat. § 216B.03.

The Act assumes that low cost is essential to the material well being of Minnesota households and the economic health of its communities. Even when the Legislature has affirmed policy goals other than low rates, it has typically attempted to harmonize those goals with the overriding goals of keeping energy affordable for Minnesota homes, institutions, and businesses.

For example, as highly as the Legislature values conservation, the portion of the Act mandating conservation improvement investments by utilities limits those investments to those which will "result in cost-effective programs." Minn. Stat. § 216B.241, subd. 1a. (b) (1). Similarly, as discussed above, even the portions of the statute creating a public policy preference for renewable energy permit that preference to be defeated by cost considerations, as long as cost is fully and fairly determined.

The Commission concludes, from long experience with the Public Utilities Act, that assuming a binding preference for in-state siting without regard to cost would be contrary to the tenor, theme, and underlying policies of the Act.

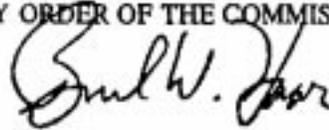
V. Conclusion

For the reasons set forth above, the Commission concludes it would be inadvisable to require NSP to accelerate its wind development schedule and that the second 200 megawatts of wind capacity required under Minn. Stat. § 216B.2423, subd. 1 need not be located within the state.

ORDER

1. The Commission will not require NSP to accelerate its wind development schedule
2. The Commission finds that Minn. Stat. § 216B.2423, subd. 1 does not require the second 200 megawatts of wind capacity to be located within the State of Minnesota
3. This Order shall become effective immediately.

BY ORDER OF THE COMMISSION



Burl W. Haar
Executive Secretary

(S E A L)

This document can be made available in alternative formats (i.e., large print or audio tape) by calling (612) 297-4596 (voice), (612) 297-1200 (TTY), or 1-800-627-3529 (TTY relay service).

M E M O R A N D U M

TO: Mike Brand, Land Department

FROM: Charles M Carvell, Assistant Attorney General 

DATE: March 7, 1999

RE: Wind generators on school trust land

I was asked to consider whether school trust land could be leased for wind generation. Wind generation contemplates the erection of wind generators on concrete platforms. The energy produced would be transferred off the land by underground power lines.

Our constitution contains a strict, clear limitation on the purposes for which school trust land may be leased. The constitution states that school lands "shall only be leased for pasturage and meadow purposes." N.D. Const. Art. IX, § 8. The restriction is repeated in statute. N.D.C.C. § 15-04-01. I don't see how wind generation could possibly be tucked into these bucolic purposes.

The Constitution, however, does give some small relief to this strict limitation. For trust lands under cultivation the land board may issue leases "for other than pasturage and meadow purposes." N.D. Const. Art. IX, § 8. The statutory version of this exception is more limited. It states that "[g]rant lands that have been placed under cultivation by a contract purchaser, in the event such contract is canceled, may be leased...[by the land board] for other than pasturage and meadow purposes." N.D.C.C. § 15-04-01. It isn't necessary to now reconcile the different treatment given this exception by the constitution and by statute. It is sufficient to conclude that the great majority of school land can only be leased for pasturage and meadow purposes and that only cultivated land might possibly be available to lease for wind generation.

I note that the board, for about whatever purpose it sees fit, may lease land that does not have the status of school trust land. N.D.C.C. § 15-07-20.

Even if there are strict limits on leasing school trust land, leasing is not the only method by which the land board can permit others to use school land. The board regularly issues easements for roads, telephone lines, all kinds of pipelines,

high voltage electric transmission lines, fiber optic cables, underground and aboveground electric distribution and transmission lines, etc. I understand it has also issued easements for telecommunication towers.

Wind generation towers are similar to telephone poles and transmission line towers now found on school trust land. The power lines that will convey energy produced by wind generators off the land are similar to telephone lines, high voltage lines, electric distribution lines, and fiber optic cables now found above and below trust land. Wind generation easements would seem well within the land board's past and current practice.

cc: Edward Erickson, Asst. A.G.
Kim Christianson, Office of Intergovt'l Assistance

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