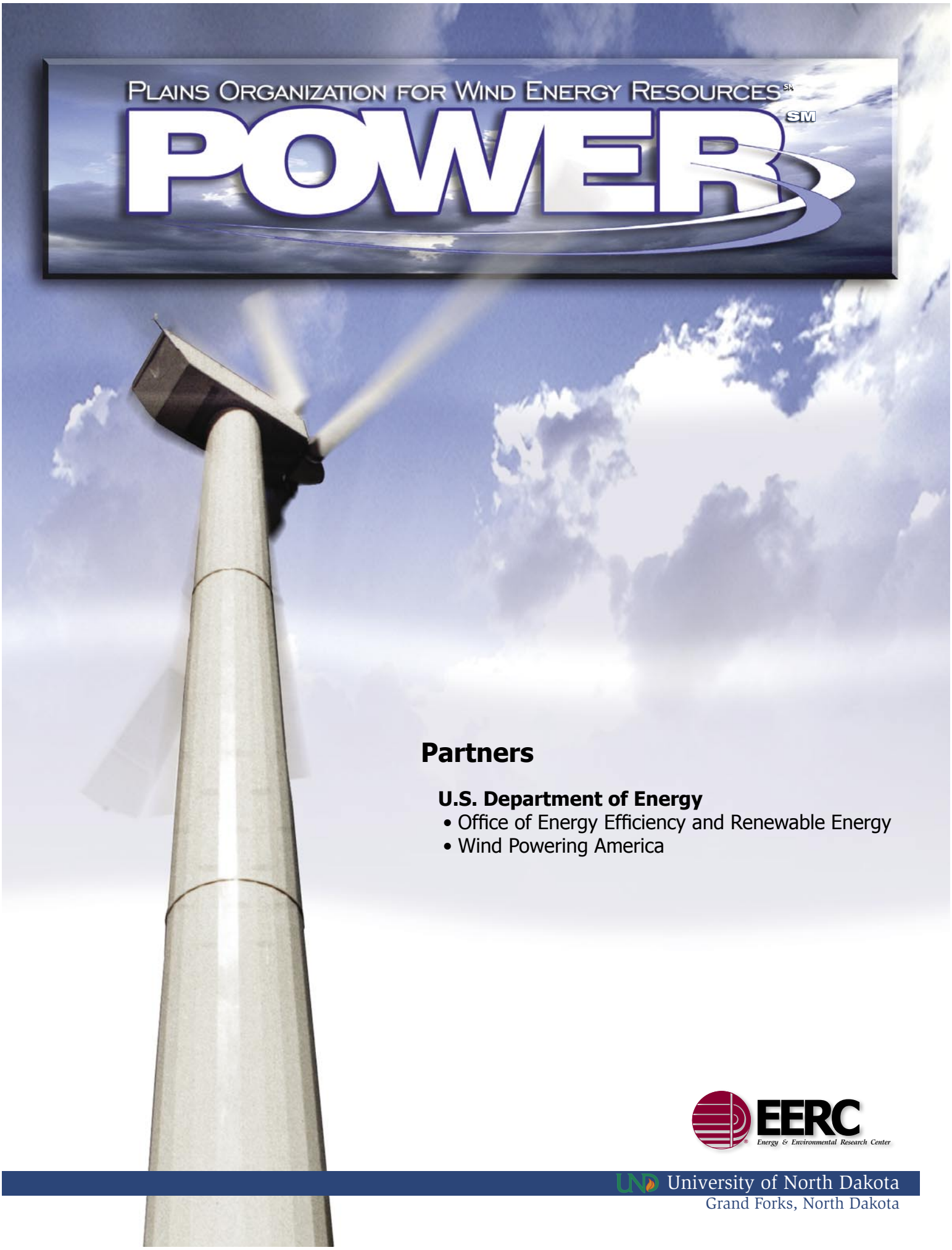
PLAINS ORGANIZATION FOR WIND ENERGY RESOURCES℠

POWER℠



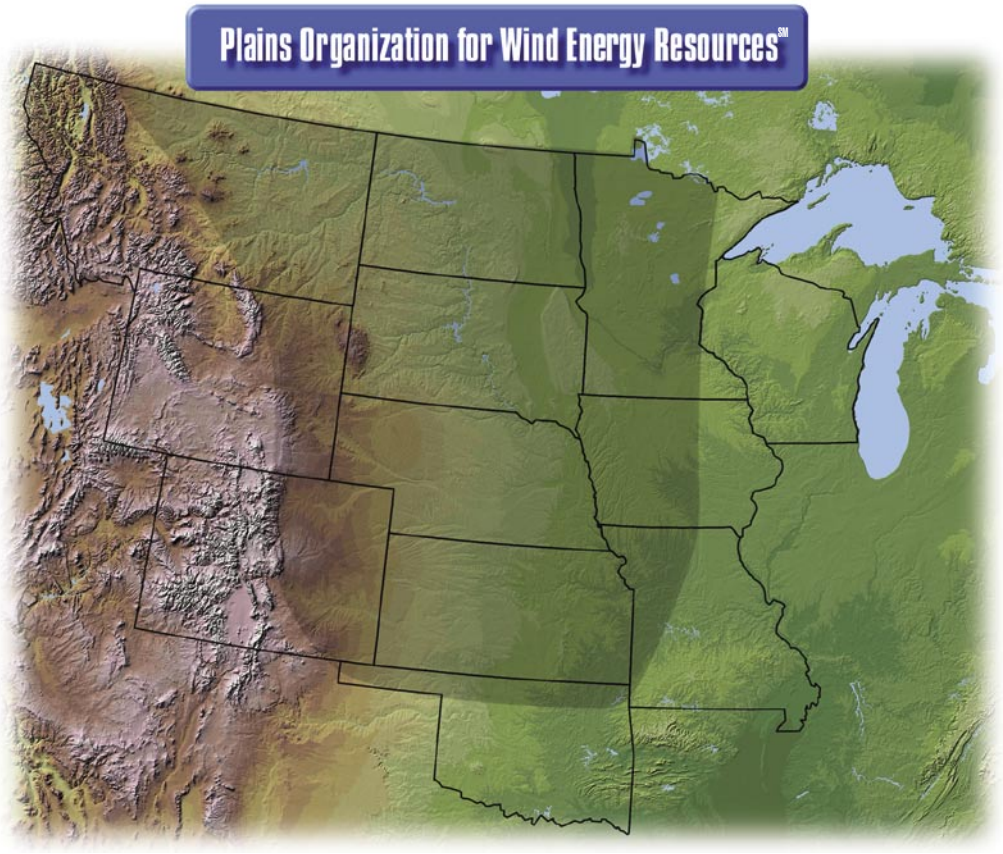
Partners

U.S. Department of Energy
- Office of Energy Efficiency and Renewable Energy
- Wind Powering America

EERC Energy & Environmental Research Center

University of North Dakota
Grand Forks, North Dakota

Overview



Producing power from the wind has long been a part of rural life. Although the technology of extracting power from the wind has changed, the underlying principles have not. Wind is a clean, readily available and renewable source of power. Within the United States, wind energy experts consider the central and upper Great Plains as having the greatest available wind energy resource, yet this resource has remained largely undeveloped. The development of "new" wind energy can help a struggling agricultural industry by bolstering rural economies and aiding in agricultural diversification.

The Energy & Environmental Research Center (EERC), with support from the U.S. Department of Energy (DOE) and the North Dakota Division of Community Services (DCS), developed the Plains Organization for Wind Energy Resources℠ (POWER℠) to serve as a regional center of excellence for wind energy. Through POWER℠, the EERC provides the educational, technical, and partnership-building resources necessary for harnessing and developing the vast wind resources of the central and upper Great Plains. The benefits of harnessing the wind resources in the region lie not only in the fact that wind energy is a clean, renewable, and abundant energy source, but also in the potential economic benefits to agriculture, rural businesses, and landowners.

Goals

The overall goals of POWER℠ are to:

- **Provide education and training regarding all facets of wind energy from general information to detailed windsmith training.**
- **Provide a platform for information dissemination, data transfer, and relationship building to foster and promote wind energy development in the region.**
- **Work with other regional wind energy interests to provide solutions to the barriers to wind energy development in the region.**
- **Provide an opportunity for significant economic benefit to farmers, Native Americans, and rural communities.**
- **Strengthen the agricultural economy of the region with an additional and complementary revenue source.**
- **Develop regional strategies to help meet the future energy requirements of the United States.**

Activities

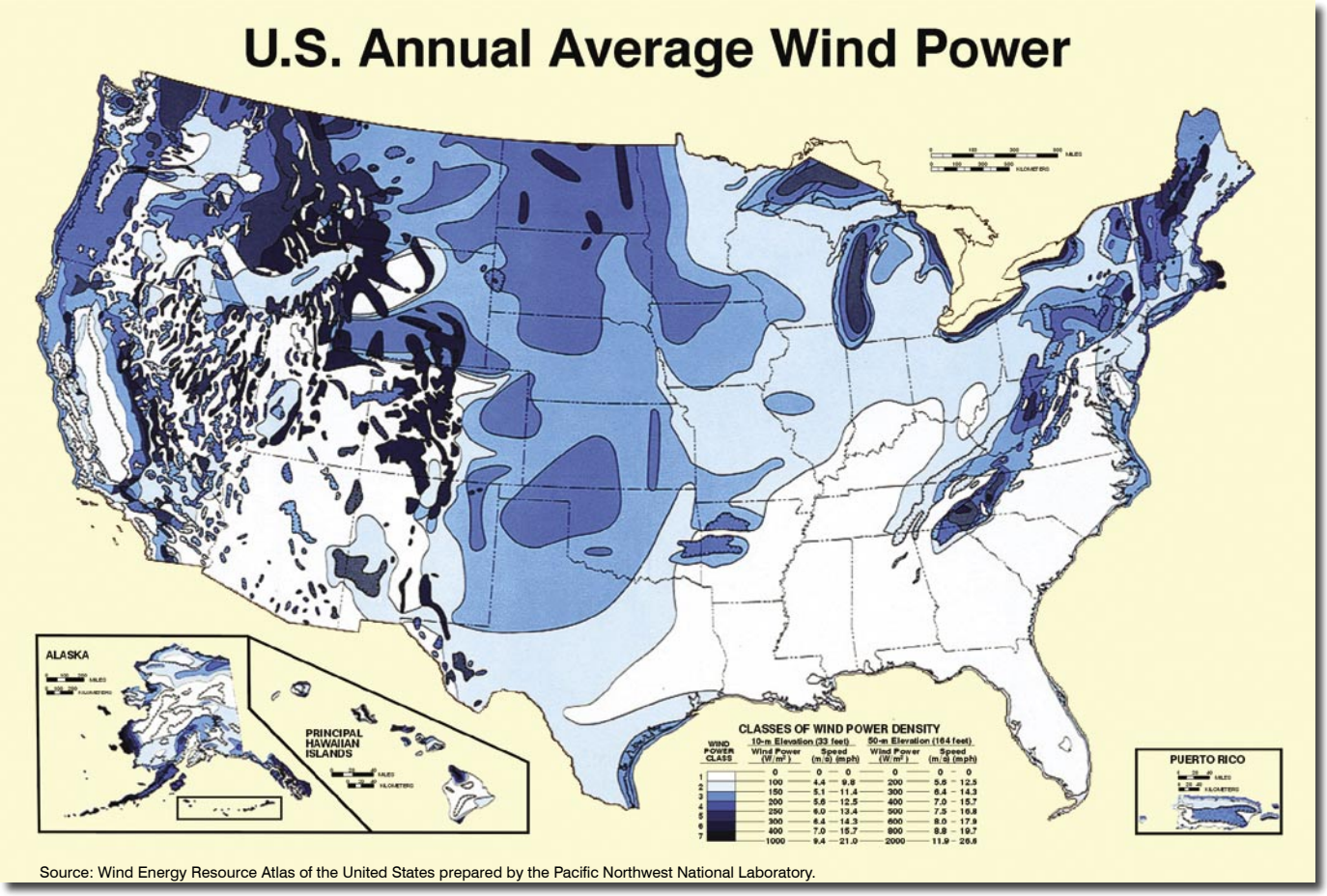
Internet Web Site/Database Development. One goal of POWER[SM] is to facilitate regional development of wind energy in the central and upper Great Plains through the development of a wind energy Web site/database.

Resource Assessment. POWER[SM] will continue to conduct wind resource assessments at strategic locations throughout the central and upper Great Plains region.

Education and Workshops. POWER[SM] is working to develop outreach activities, such as conferences, educational workshops, and a newsletter that support the development of wind energy in the region.

Development and Demonstration of Wind Technologies. Successful wind energy development in this region requires demonstrated, commercially viable technologies. Through POWER[SM], the EERC will continue to work in conjunction with farmers, landowners, Native Americans, rural businesses, and utilities to facilitate the development and demonstration of wind technologies.

Training. An important goal of POWER[SM] is the facilitation of windsmith training programs to provide skilled technicians for a growing wind energy market.



Source: Wind Energy Resource Atlas of the United States prepared by the Pacific Northwest National Laboratory.

Wind Energy Potential

THE TOP TWENTY STATES for wind energy potential, as measured by annual energy potential in the billions of kilowatt hours (kWh), factoring in environmental and land use exclusions for wind class sites of 3 and higher.

1.	North Dakota	1210
2.	Texas	1190
3.	Kansas	1070
4.	South Dakota	1030
5.	Montana	1020
6.	Nebraska	868
7.	Wyoming	747
8.	Oklahoma	725
9.	Minnesota	657
10.	Iowa	551
11.	Colorado	481
12.	New Mexico	435
13.	Idaho	73
14.	Michigan	65
15.	New York	62
16.	Illinois	61
17.	California	59
18.	Wisconsin	58
19.	Maine	56
20.	Missouri	52

Many states have greater wind potential than California.

To date, the vast majority of wind development has been in California.

Source: *An Assessment of the Available Windy, Land Area and Wind Energy Potential in the Contiguous United States,* Pacific Northwest Laboratory, 1991.

Facts of Interest

- Wind energy is the fastest growing energy technology in the world.
- Nine of the states in the POWER℠ region rank within the top 11 states in terms of wind energy potential.
- A single utility-scale wind turbine can prevent the emission of 1500 tons of carbon dioxide (CO_2) into the atmosphere a year. That is the equivalent amount of CO_2 that is absorbed by 500 acres of forest.
- An increase in average wind speed from 4 to 5 m/s will nearly double the energy output of a wind turbine.
- Improvements in wind turbine design and manufacturing over the last 30 years have resulted in a decrease in the cost of wind power from 40 cents/kWh to approximately 3 cents/kWh.
- The noise generated by an average wind turbine 300 meters away is equivalent to the ambient noise level in a library.

POWER℠ supports the 1999 Wind Powering America (WPA) Initiative, a program designed to help harness and utilize wind energy resources across the country. The goals of this initiative are to quadruple U.S. wind capacity by 2010, thereby generating enough energy to supply 3 million households annually. Under the WPA Program, by 2020, 5% of the nation's electricity needs will be supplied by wind energy. This would displace 35 million metric tons of carbon a year.

For More Information, Contact

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