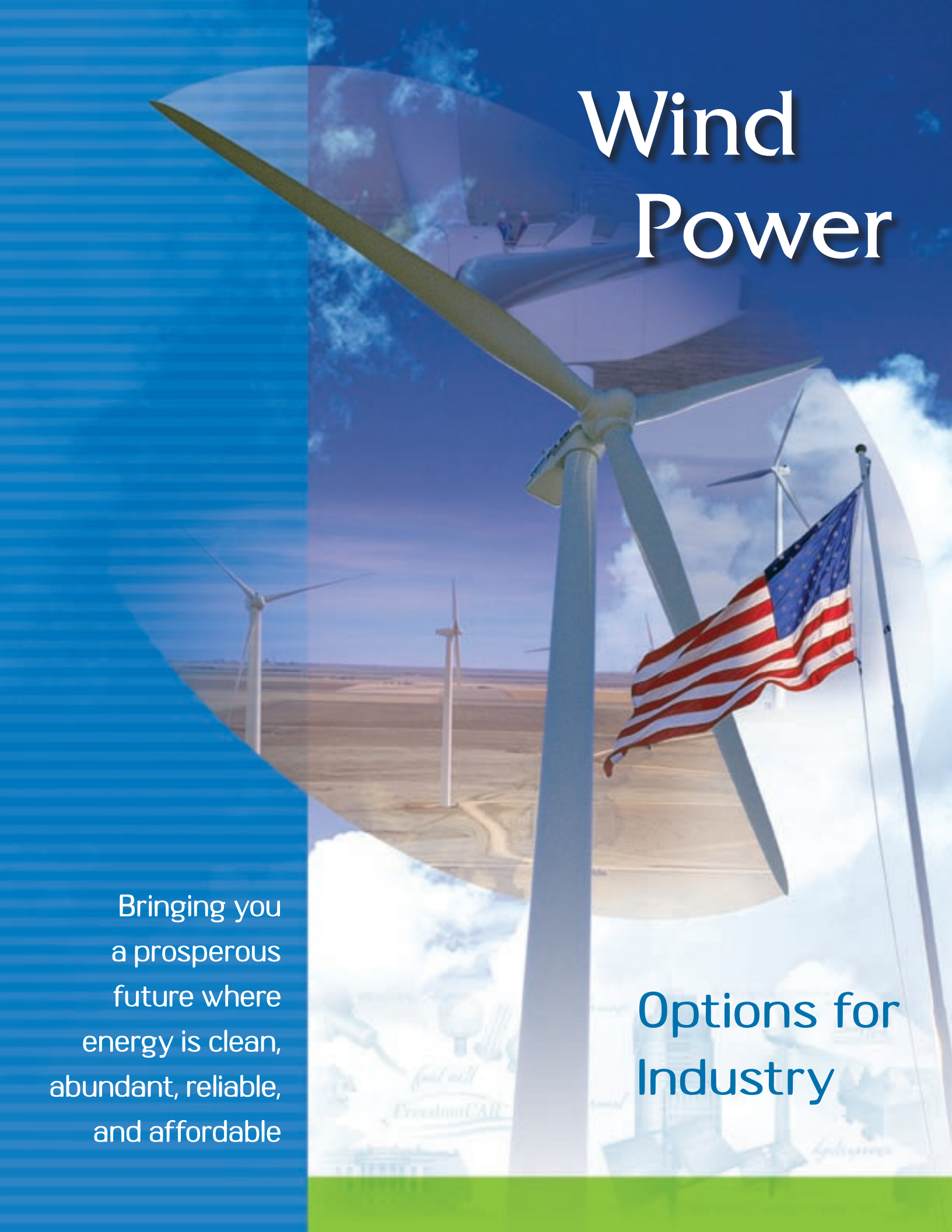
Wind Power



Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Options for Industry

Why Wind Power?

Wind power is the fastest-growing source of electricity worldwide. The American Wind Energy Association estimates that more than $40 billion will be spent worldwide over the next decade to build new wind installations. The opportunities for industries that build, buy, or invest in wind energy are tremendous.

Stabilize Energy Costs

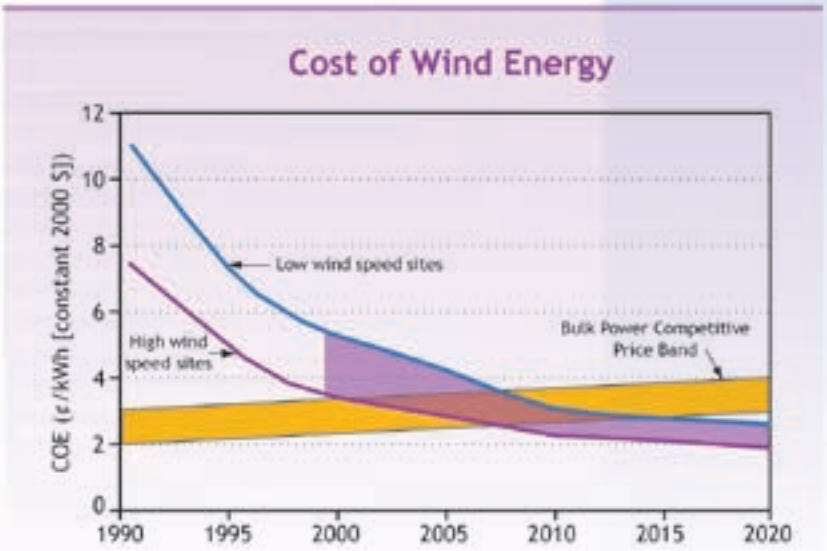
Fossil fuels are subject to price fluctuations and supply constraints. Wind energy is a vast renewable domestic energy source, and industries can take advantage of wind power to stabilize their energy costs and supplies.

Capitalize on Technology

With current U.S. Department of Energy R&D efforts to improve technology and take advantage of low wind speed resources, wind energy is poised to become one of the most competitive forms of energy generation in the nation. Reducing the cost of a wind turbine without sacrificing performance by developing superior low-cost materials for use in turbine components is vital to this effort, and an emerging market exists for industrial products and processes for the utility-scale and small wind industries.

Enhance Corporate Image

Wind energy does not emit pollutants, wastes, or greenhouse gases. In fact, a single 750-kW wind turbine prevents annual carbon dioxide emissions equal to the amount that could be absorbed by 500 acres of forest. An industry that harnesses energy from the wind not only helps the environment, it also enhances its corporate image. Corporations with a European presence will especially find that their use of wind energy can be a powerful marketing tool.



Enjoy Tax Incentives

A federal wind energy production tax credit (PTC) is available for industries engaging in the production of wind power. The PTC, which is adjusted for inflation, supports electricity generated from utility-scale wind turbines for the first ten years of their operation. The federal tax code also includes a five-year accelerated depreciated schedule for wind turbines. State incentives are also available for both utility-scale and small wind systems.

Building Wind Power

The explosive growth of the wind power industry offers an opportunity for industries to produce low-cost power for on-site use and to sell the surplus power to utilities or other customers. The siting, construction, and sale of electricity offers a lucrative business venture for U.S. industries.

Assess Your Resource

Wind projects begin with an assessment of the available wind resource in an area. The better the resource, the more economically feasible the project. To better understand your wind resources, please see the wind maps at www.eere.energy.gov/windpoweringamerica/wind_resources.html and www.windustry.org/basics/03-knowwind.htm.

Build Wind Farms

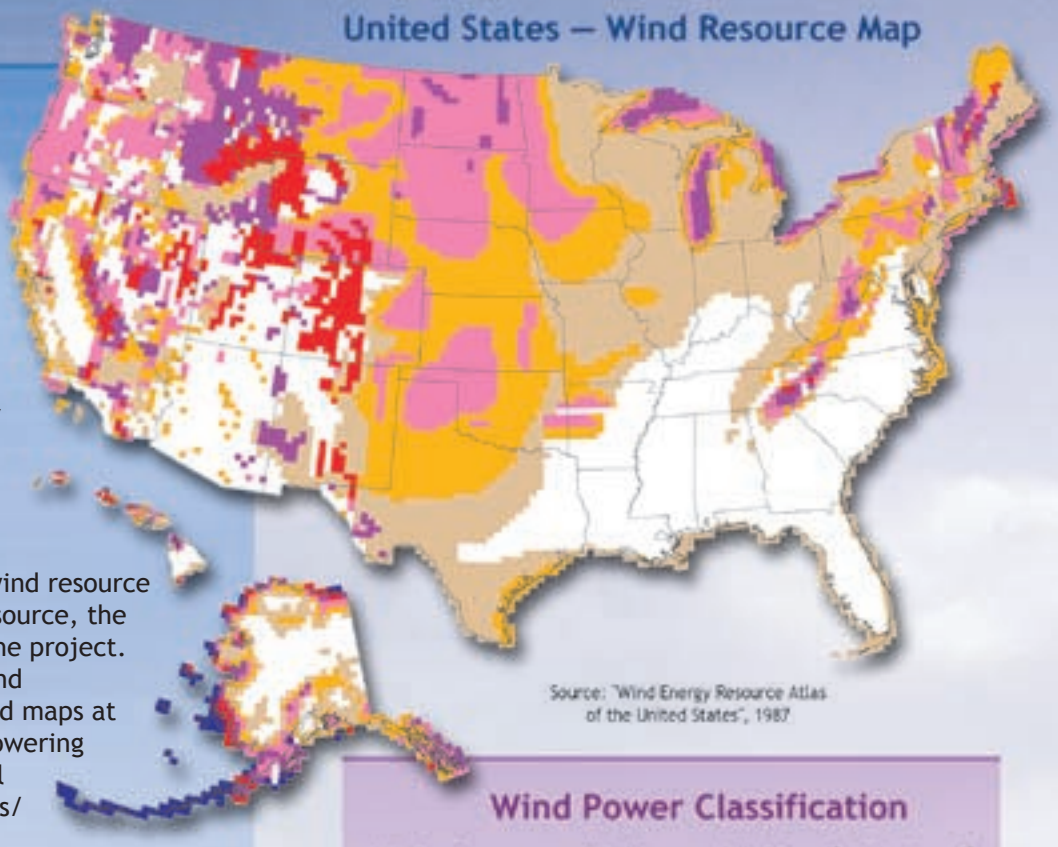
Companies planning to build wind farms may lease the land, procure an easement for land, or purchase the land outright. Companies are building wind farms in partnership with farmers, rural communities, Native American groups, and other organizations that own suitable land.

Use a Developer

A developer acts as a middleman between the company financing the wind farm and the turbine manufacturer. Developers provide freedom from actually building and operating the turbines.

A company may also choose to eliminate the middleman by contracting directly with the wind turbine manufacturers that offer a range of services.

For more information on wind project developers and existing projects across the country, please visit www.awea.org/utilityscale.html.



Wind Power Classification

Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m²	Wind Speed* at 50 m m/s	Wind Speed* at 50 m mph
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8

*Wind speeds are based on a Weibull k value of 2.0

NREL U.S. Department of Energy National Renewable Energy Laboratory 20-WAR 2000 1.1.5

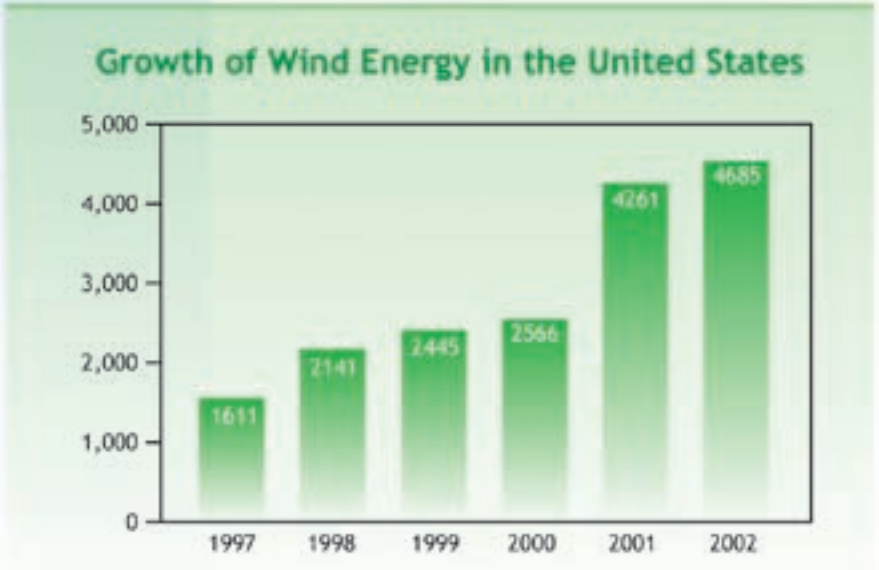
Buying Wind Power

Explore Your Options

1. Purchase wind-generated power. A company can choose to purchase wind power from a project developer or power supplier. Competitive green power offerings exist in nine states today, and the number continues to grow. Across the country, more than 300 utilities in 32 states currently offer green power products, including some that can be tailored to meet a customer's preference for a mix of renewable products.
2. Purchase "green tags," a type of green power product available to industrial customers. These low-cost commodities represent the environmental attributes of renewable-generated electricity. Green tags can be bought by energy consumers regardless of proximity to the power generation source. These products, complete with certification and tracking from the generation source to the consumer, are available from an increasing number of power marketers.
3. Issue a request for proposals (RFPs) for green power. An increasing number of companies are issuing RFPs for green power products to meet their power purchase needs. An effective RFP identifies the company's goals for investing in renewable power and specifies all relevant information on price and amount of power sought and where the power should physically be generated.

Supplemental Environmental Projects

Supplemental environmental projects (SEPs) are a policy vehicle designed by the U.S. Environmental Protection Agency (EPA) to give violators an alternative to standard fines for noncompliance. Instead of paying the full amount of its fines, the company can volunteer to fund environmentally friendly projects. Federal law permits all states to incorporate renewable energy into supplemental environmental projects, creating a positive outcome for both the company and the community. More information on SEPs is available at http://www.cdphe.state.co.us/ap/sep/SEPPolicy.pdf.



Industry–Wind Success Stories

Golden Northwest Aluminum

In 2000, skyrocketing electricity prices led to a halt in production for Golden Northwest Aluminum, the parent company of Oregon-based Northwest Aluminum Company and Washington-based Goldendale Aluminum Company. The company devised a plan to combine electricity supplied by the Oregon-based Bonneville Power Administration (BPA) with electricity supplied by other sources. These other sources include wind power developed in part by Golden Northwest. The 24-MW Klondike Wind Power Plant near Klondike, Oregon, came online in December 2001. Northwest hopes to eventually develop several other wind projects.

Advanced Micro Devices, Inc.

Advanced Micro Devices, Inc. (AMD), based in Sunnyvale, California, currently purchases more than 24 million kilowatt-hours of clean renewable energy each year, and 90% of it comes from a Texas wind farm.

Schafer Systems, Inc.

Schafer Systems, a plastics assembly plant in Adair, Iowa, has stayed ahead of the competition thanks to its use of a wind turbine. Schafer Systems installed a Vestas V27-225kW wind turbine, which supplies the plant with 65% of its annual electricity needs. The power is produced for 2 1/2 cents less per kilowatt than electricity from a utility company. The turbine has run virtually continuously since its installation in 1995. For more information, please visit www.state.ia.us/dnr/energy/pubs/renewable/rcase/rcase03.htm.

The San Clemente wind turbines were installed by the U.S. Navy to provide power for base operations, reduce high fuel and operating costs associated with its diesel generator systems, and improve air quality. Estimated annual fuel cost savings are more than $160,000.

Uinta Brewing Company

Uinta Brewing Company of Salt Lake City, Utah, is now 100% wind powered. Uinta purchases 100-kilowatt-hour blocks from Utah Power's Blue Sky green pricing program. The brewery estimates that its renewable energy purchase results in the prevention of 357,120 pounds of carbon dioxide per year — the equivalent of planting 71 acres of trees or not driving 348,400 miles per year. Uinta president and founder Will Hamill thinks that consumers are drawn to a product that is brewed by 100% wind power.

Public Service of Colorado's Ponnequin Wind Farm near the Wyoming border currently has 44 turbines that can generate up to 30 MW of electricity. This wind farm is a primary wind resource for the company's Colorado Windsource® program, the largest customer-driven wind energy program in the country.

Information Resources

Learn More

Learn more about wind energy at the following Web sites:

www.eren.doe.gov/wind
This site provides information about the U.S. Department of Energy's wind energy program.

www.oit.doe.gov
This site provides information on the DOE Office of Industrial Technologies and summaries of wind-related activities undertaken on behalf of the nation's largest industries. An overview can be found at www.oit.doe.gov/cfm/fullarticle.cfm/id=355 and a summary report at www.oit.doe.gov/pdfs/wind_power_1101.pdf.

www.nrel.gov/wind
The National Wind Technology Center is a world-class research facility managed by the National Renewable Energy Laboratory for the U.S. Department of Energy.

www.awea.org
The American Wind Energy Association advocates the development of wind energy as a reliable, environmentally superior energy alternative in the United States and around the world.

www.uwig.org
The Utility Wind Interest Group is a nonprofit corporation whose mission is to accelerate the appropriate integration of wind power for utility applications through the coordinated efforts and actions of its members, in collaboration with public and private sector stakeholders.

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This wind farm in southeastern Wyoming contains 69 600-kW wind turbines that provide green power for the customers of Eugene Water and Electric in Eugene,Oregon. Each turbine has a hub height of 130 feet, three 66-foot blades, and weighs approximately 30,000 pounds.

Industry and Green Power

www.thegreenpowergroup.org

The Green Power Market Development Group, a partnership of leading corporations and the World Resources Institute, seeks to create a corporate market for 1,000 megawatts of cost-competitive green energy capacity by 2010. The following corporations have joined the partnership:

- Alcoa Inc.
- Cargill Dow LLC
- Delphi Corp
- DuPont
- General Motors
- Kinko's
- IBM
- Interface

www.eren.doe.gov/greenpower/marketing.shtml

Here you will find information and news about green power marketers, customers, products, product certification, pilot programs, regulatory issues, and reactions from environmental and public interest groups on the evolution of the new green power markets.

www.epa.gov/greenpower

EPA's Green Power Partnership is a voluntary program designed to reduce the environmental impact of electricity generation by promoting renewable energy use. The partnership demonstrates the advantages of choosing renewable energy, provides objective and current information about the green power market, and reduces the transaction costs of acquiring green power. Commercial, nonprofit, and public organizations can become partners by committing to procure an amount of renewable energy that is proportional to their annual electricity use. In return, EPA will provide a network of providers and partners, technical information, and public recognition.

A Strong Energy Portfolio for a Strong America

Energy efficiency and clean, renewable energy will mean a stronger economy, a cleaner environment, and greater energy independence for America. Working with a wide array of state, community, industry, and university partners, the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy invests in a diverse portfolio of energy technologies.

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