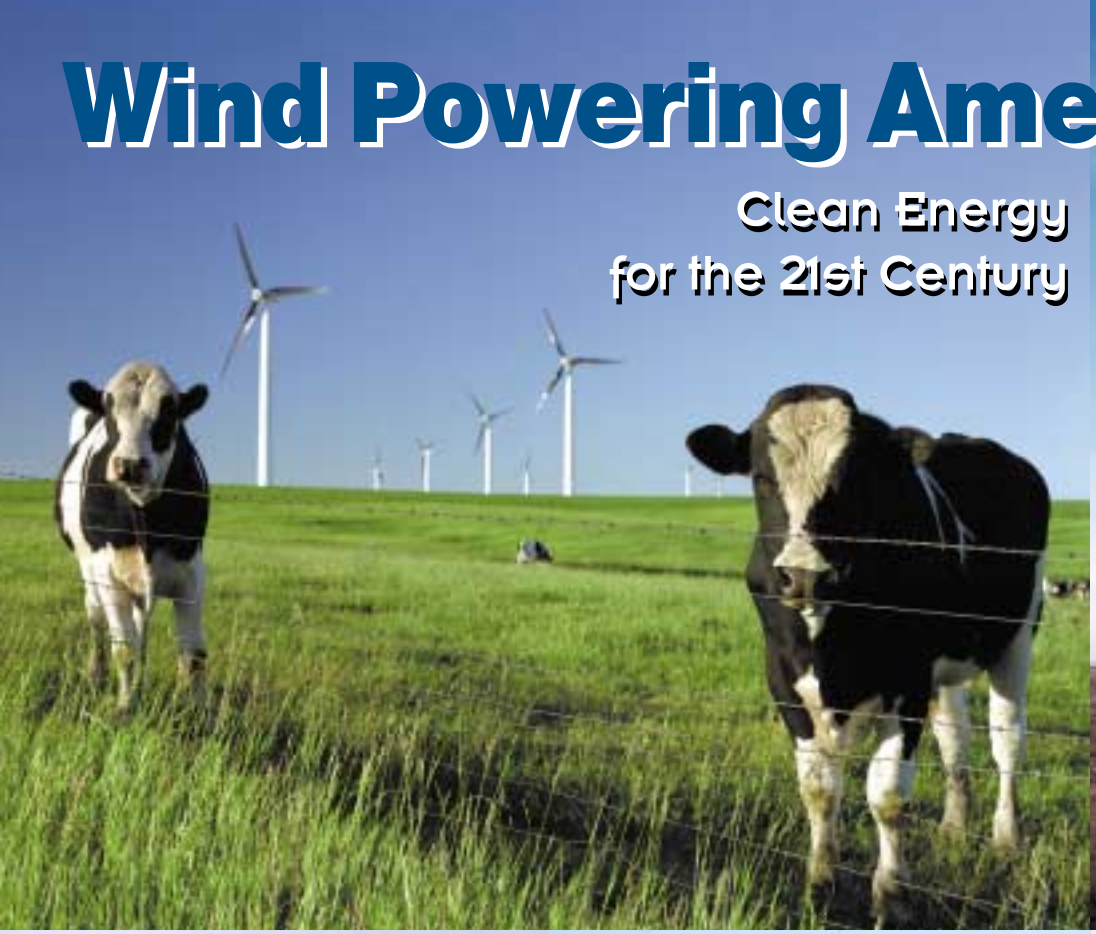
Wind Powering America

Clean Energy for the 21st Century



- What is wind energy?
- How much energy can wind supply?
- Can wind power my home?
- What are the environmental benefits?
- How do wind turbines work?
- Is there enough wind where I live to produce electricity?
- What does wind energy cost?

PIX07078

Wind energy has been the fastest growing source of energy in the world during the past decade and now represents a major economic opportunity for the United States. Wind Powering America will help us promote regional economic development, increase America's energy security, and protect our environment for generations to come.

Bill Richardson
Secretary of Energy

Wind Powering America

Wind Powering America is a commitment to dramatically increase the use of wind energy in the United States. This initiative will establish new sources of income for American farmers, Native Americans, and other rural landowners, and meet the growing demand for clean sources of electricity. The time has come for wind to take its place as one of the preferred electricity supply options.

Wind Powering America can help the United States achieve targeted regional economic development, protect the local environment, reduce air pollution, lessen the risks of global climate change, and increase energy security.

PIX02102

The goals of Wind Powering America are:

- Provide at least 5% of the nation's electricity with wind by 2020
- Install more than 5000 megawatts by 2005
- Have more than 10,000 megawatts on-line by 2010
- Double the number of states that have more than 20 megawatts of wind capacity to 16 by 2005, and triple the number to 24 by 2010
- Increase wind's contribution to federal electricity use to 5% by 2010.

The benefits of Wind Powering America are:

- Adding $60 billion in capital investment in rural America over 20 years
- Reaching $8 billion in annual investment by 2020
- Providing $1.2 billion in new income for American farmers, Native Americans, and rural landowners over 20 years
- Creating 80,000 permanent jobs by 2020
- Displacing 35 million tons of atmospheric carbon by 2020.

PIX09072

Wind is homegrown energy that we can harvest right along side our corn or soybeans or other crops. We can use the energy in our local communities or we can export it to other markets. We need to look carefully at wind energy as a source of economic growth for our region.

David Benson, Farmer & County Commissioner,
Nobles County Minnesota

PIX09056

Our company's consensus commitment to wind power has given employees and owners great pride in knowing that they all had an important part in making such a significant reduction to the impact we have on our environment. As the largest business in Colorado to use 100% wind power, we have the luxury of being a role model and encourage others to join in.

Jeff Lebesch and Kim Jordan, Owners
Ryan Trail, Design Engineer
New Belgium Brewing Company,
Fort Collins, Colorado

PIX09058

Diversification of generation resources has been important to electric utilities for many years. When you add in the environmental pressures being placed on traditional sources of generation and the high levels of customer support for renewable energy, it's only logical that more and more utilities will be considering adding renewables to their resource mix in the future.

Ward Marshall, CSW Renewable Energy,
Tulsa, Oklahoma

PIX09073

We started the wind turbine project (at the Sacred Heart Monastery) for two reasons: we had uncontrollable utility bills, and we wanted to help the environment. This year we saved $12,105 and prevented 113 tons of carbon dioxide (the main greenhouse gas) from going into the air (this is like planting 23 acres of trees).

Sister Paula Larson, Prioress,
Sacred Heart Monastery,
Richardton, North Dakota

PIX09082

I love wind energy. When I see wind turbines turning, I think no fuel, no pollution, no imported oil. It's energy we can use economically today and be proud of the future we leave for our kids.

Brent Alderfer, President, Community Energy,
Philadelphia, Pennsylvania

What is wind energy?

Wind is created by the unequal heating of the Earth's surface by the sun. Wind turbines convert the kinetic energy in the wind into mechanical power to grind grain, pump water, or run a generator to produce electricity to power homes, schools, businesses, and communities.

How much energy can wind supply?

According to the U.S. Department of Energy, the world's winds could supply more than 10 times the current total world energy demand. With today's wind turbine technology, wind power could supply 20% of this country's electricity.

PIX06330

What is green power?

"Green power" is simply power that is produced by renewable or environmentally friendly sources such as wind and solar. Customers can purchase green power (energy in kilowatt-hours) from their utilities by paying just a little more each month for a cleaner, healthier future.

What are the environmental benefits?

A single utility-scale wind turbine can prevent the emission of 5000 tons of carbon dioxide (CO_2) into the atmosphere each year. It would take 500 acres of forest to absorb that much CO_2. In California, wind plants effectively save the energy equivalent of 4.8 million barrels of oil per year.

What are the advantages of wind energy?

- Wind energy is a free, inexhaustible renewable resource.
- Wind energy is a source of clean, non-polluting, electricity.
- Wind energy displaces imported foreign oil and other fuels.
- Wind energy provides more jobs per dollar invested than any other energy technology.
- Wind plants increase property tax revenues for local communities.
- Wind power plants take less time to construct than most conventional energy plants, they are modular, and they can be added to our nation's energy mix in increments as needed.

How do wind turbines work?

The wind turns the turbine's blades, which spin a shaft, which connects to a generator, which produces electricity.

What does wind energy cost?

The larger the wind turbine, the lower the cost per kilowatt-hour. Costs range from three to ten cents per kilowatt-hour.

How much land is required?

To provide 20% of America's electricity, only 0.6% of the land of the lower 48 states would have to be developed with wind power plants. Most existing land use, such as farming and ranching, could remain as it is now.

Can wind power my home?

Yes. Either large or small wind systems can be used to provide power to homes or businesses already connected to a utility grid. A wind turbine rated in the range of 5 to 15 kilowatts could lower your utility bill by 50% to 90%.

What is a wind farm or wind power plant?

A "wind farm" or "wind power plant" is a collection of large (100 to 750 kilowatts) turbines used to produce electricity. A wind farm can contain half a dozen to hundreds of turbines. Most wind farms are owned and operated by businesses that sell electricity to electric utilities.

PIX01476

PIX09015

Plains tribes can play a critical role in developing the resources and infrastructure to help make the transition from fossil fuels to renewable energy such as wind.

Patrick Spears (right), President,
and Bob Gough (left), Secretary,
Intertribal Council on Utility Policy,
Environmental Network Conference,
Fall River Mills, California

PIX09055

From our winter pasture near the Wyoming border, we used to be able to see all the way to Denver. Now all we see is air pollution. We believe it's time to begin using pollution-free energy in the West. That's why our winter range now boasts a wind farm.

Keith and Myrna Roman
Landowners/Ranchers in Weld County, Colorado

PIX09050

We have a whole generation of students that have a built-in appreciation of wind energy because it's in the school's backyard. It's part of our culture. It's part of Spirit Lake. There's no pollution, no problems, and it saves the school district energy dollars so we can spend more on the students. (See cover photo: Spirit Lake Community School playground and turbine.)

Jan Bolluyt, Physics Teacher,
Spirit Lake Community School, Spirit Lake, Iowa

PIX09051

Regulators should work with the wind industry and legislators to remove barriers to deploying wind technology, both industrial-scale and distributed, to capture its diversity value and long-range price benefits.

Roger Hamilton, Commissioner,
Oregon Public Utility Commission

PIX09047

Wind generated electricity is clean, renewable, and ready for use today. I'm asking our politicians and utilities to make good decisions for wind energy today to help bring about a brighter future for our kids.

Lee Olson, Stay-At-Home-Mom,
St. Paul, Minnesota

Resources

U.S. Department of Energy
Wind Energy Program
Forrestal Building
1000 Independence Ave., S.W.
Washington, D.C. 20585
(202) 586-5348
www.eren.doe.gov/wind

National Renewable Energy Laboratory
National Wind Technology Center
1617 Cole Boulevard
Golden, Colorado 80401
(303) 384-6979
www.nrel.gov/wind

American Wind Energy Association
122 C Street, N.W., 4th Floor
Washington, D.C. 20001
phone (202) 383-2500
fax (202) 383-2505
www.awea.org

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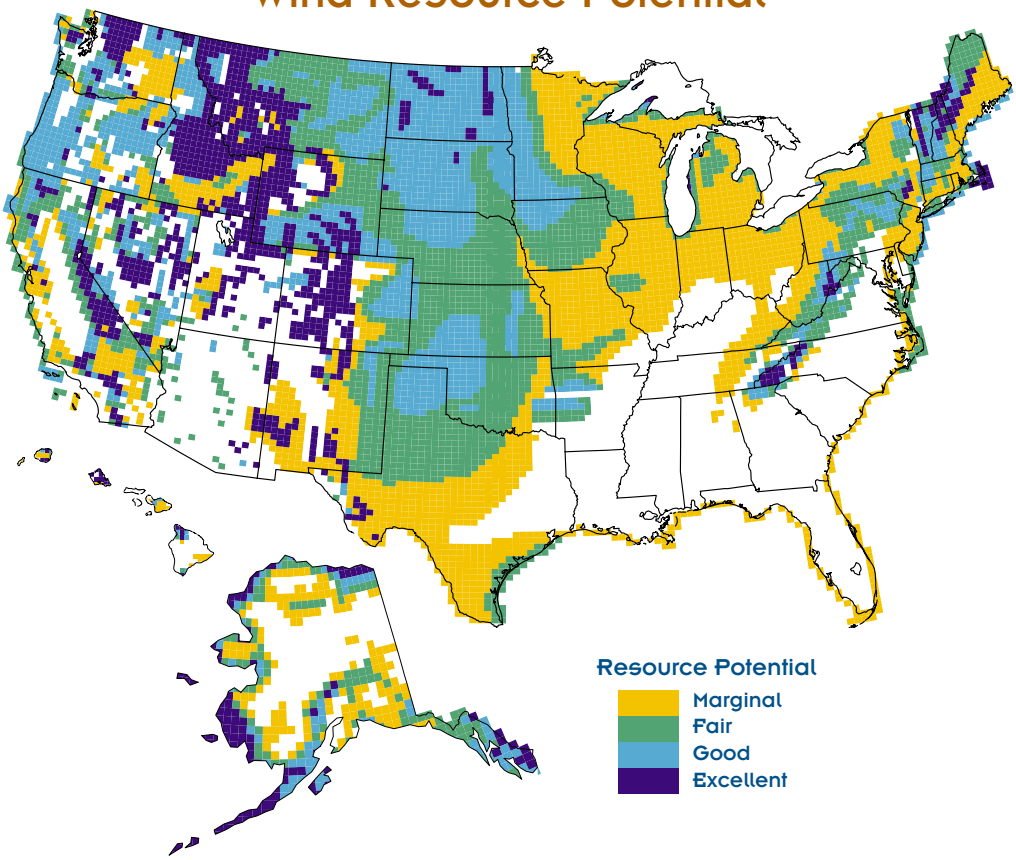
Wind Resource Potential



Is there enough wind where I live to produce electricity?

All 50 states have enough wind to power wind turbines. Thirty-seven states have wind resources that would support utility-scale wind power plants. To find out about the wind resources in your area, see the Wind Energy Resource Atlas of the United States at http://www.nrel.gov/wind/database.html or write to the American Wind Energy Association for a copy of the atlas.

The Department of Energy researches, develops, and deploys clean, efficient, and renewable energy technologies to help meet America's energy needs while protecting the environment and strengthening the economy. Energy technologies supported and promoted by the Department will play a key role in providing Clean Energy for the 21st Century.

Clean ENERGY for the 21st Century

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