

Since earliest recorded history, wind power has been used to move ships, grind grain, and pump water. Today, wind power is also being used to provide electricity to homes, schools, businesses, and entire communities. Wind power has been the fastest growing source of electricity generation in the world in the 1990s. More than half the United States has wind resources that could support the development of utility-scale wind power plants.

Minnesota winds currently produce more than 800,000 megawatt-hours (MWh) of electricity annually; that is enough to power more than 101,000 average residential households for a year (based on a statewide annual average consumption of 7900 kWh per household). More than 90% of the power is produced by utility-scale power plants that use 750-kW turbines. The remaining wind-generated electricity is produced by smaller, independently owned turbines.

Green Power

"Green power" is power produced by renewable or environmentally friendly energy sources, as distinct from power produced by fossil fuel, nuclear, and other types of generators. Customers can arrange to purchase a certain amount of "green power" (actual energy in kilowatt-hours) per month, for which they commonly pay a small premium to completely or partly offset any higher cost of renewable power sources. The policy of transferring these costs to green power customers is called "green pricing."

Two Minnesota utilities offer green power programs: Great River Energy and Moorhead Public Service. Great River Energy and its electric cooperative utility members established a 2-MW-capacity wind farm in Chandler Hills. The project, financed through customer subscriptions and state incentive payments, began operation in 1999. The wind-generated electricity is sold in blocks of 100 kWh for an additional \$2.00 per block per month. Great River's green power program currently has 1500 subscribers and a waiting list, which



it hopes will increase to the point that the program can expand.

Moorhead Public Service utility's Capture the Wind program is also based on subscriber support. Less than three weeks after the utility offered the program, more than 400 customers had signed up, enough to support the installation of a 750-kW wind turbine. Customers can choose to pay a premium rate for all of their electricity or purchase it in 1000-kWh blocks for about \$5.00 more per month. Commercial customers can pay the premium for all of their electricity or purchase it in 1500-kWh blocks.

State Financial Incentives

Minnesota offers incentive payments of 1.5 cents per kilowatt-hour for any power sold to utilities by qualifying facilities producing less than 2 MW. The system must be owned and operated by the landowner where the system is sited, or by a small business, a nonprofit organization, or a tribal council, if the system is located on a reservation. Facilities owned and operated by state entities, municipal utilities, or nonprofit electric cooperatives may qualify for a Renewable Energy Production Incentive

What is the installed wind energy capacity in the United States?

By January 2000, the total U.S. installed wind energy capacity was 2500 MW. (See <http://www.awea.org/faq/instcap.html>) That's enough electricity to meet the needs of 600,000 to 800,000 typical U.S. homes.



Minnesota

Additional Resources

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

U.S. Department of Energy
Chicago Regional Office
One South Wacker Drive
Suite 2380
Chicago, Illinois 60606-4616
(312) 353-6749
<http://www.eren.doe.gov/cro/staff.html>

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

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



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containing at least 50% wastepaper, including
20% postconsumer waste

(REPI) of 1.5 cents per kilowatt-hour for
electricity sold to another entity.

Minnesota also offers a variety of tax
exemptions for wind power generator
owners and operators. For more infor-
mation on tax exemptions contact the
Minnesota Department of Commerce.

Net Metering

The concept of net metering programs is
to allow the electric meters of customers
with generating facilities to turn back-
wards when their generators are produc-
ing more energy than the customers'
demand. Net metering allows customers
to use their generation to offset their
consumption over the entire billing
period, not just instantaneously. This
offset would enable customers with gen-
erating facilities to receive retail prices
for more of the electricity they generate.

Minnesota's net metering program allows
home and building owners to install wind
systems that generate less than 40 kW
and connect to the utility grid. Net
excess generation during the normal
billing cycle is purchased by utilities at
the average retail utility energy rate,
which is defined in Minnesota Rules
7835.0100, subp. 2a.

State Summary

Total—272.41 megawatts (MW)

Planned—30 MW

In-State Wind Energy Potential:
294,700 MW after land use and
environmental exclusions
490 billion kilowatt-hours (kWh)
per year electric energy

Installed Projects

Buffalo Ridge—25 MW installed capac-
ity, 49.7 million kWh annual energy out-
put (1998), power purchased by Northern
States Power, Kenetech turbines.

Chandler—1.98 MW installed capacity,
power purchased by Great River Energy,
Vestas turbines.

Lake Benton—107.25 MW installed
capacity, power purchased by Northern
States Power, Zond turbines.

Marshall—0.6 MW installed capacity,
290,220 kWh annual energy output
(1998), power purchased by Marshall
Municipal Utilities, WindWorld turbines.

Woodstock—10.2 MW installed capacity,
power purchased by Northern States
Power, Vestas turbines.

Moorhead—0.75 MW installed capacity,
power purchased by Moorhead Public
Service, NEG Micon turbines

Hendricks (Lakota Ridge)—11.25 MW
installed capacity, power purchased
by Northern States Power and Northern
Alternative Energy, NEG Micon turbines.

Pipestone County—103.5 MW installed
capacity, power purchased by Northern
States Power, Zond turbines.

Hendricks (Shaokatan Hills)—11.88 MW
installed capacity, power purchased by
Northern States Power, Vestas turbines.

Key Contacts

Minnesota Department of Commerce
Energy Information Center
Suite 200
121 7th Place East
St. Paul, Minnesota 55101-2145
1-800-657-3710
<http://www.commerce.state.mn.us>

Minnesotans for an Energy-Efficient
Economy
Minnesota Building, Suite 600
46 E. 4th Street
St. Paul, Minnesota 55101
(651) 225-0878
<http://www.me3.org>

Windustry
2105 First Avenue South
Minneapolis, Minnesota 55405
(612) 377-2407
<http://www.windustry.org>