Wind Powering America

Clean Energy for the 21st Century

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. In Texas, more than 80,000 windmills are still in use today.

Wind power was the fastest growing source of electricity generation in the world in the 1990s. More than half the United States have wind resources that could support the development of utility-scale wind power plants. West Texas A & M University's Alternative Energy Institute (AEI) in Canyon, Texas, installed solar and wind monitoring stations at 17 sites in Texas. From data collected, AEI has estimated the capturable wind energy potential at 130,000 MW on accessible lands for wind classes three and above (14 mph and above). The data provides critical information for utilities and developers considering wind projects in Texas.

The Texas State Energy Conservation Office's Renewable Energy Demonstration Program has funded several wind demonstration projects over the past seven years. The projects range in size and complexity from wind powered pumps which use a high-speed wind turbine for pumping water from a gas well to turbines that pump water for crop irrigation to generating electricity on a college campus or residence in rural areas.

These projects have demonstrated the feasibility and economic viability of using small wind turbines to replace the use of conventional energy sources. The turbines, in most cases, were interconnected with the local rural electric cooperative through a net-billing meter and equipped with instrumentation to collect data on the wind resource and the unit's production of electricity. These demonstration projects have served as an educational tool for both the utility and residential sectors.

Green Power

"Green Power" is power produced by renewable ("green") 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" (actually 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." Three utilities offering green pricing programs in Texas are Austin Energy, TXU Electric, and TX-NM Power Company.

Austin Energy's GreenChoice Program will supply its customers with 40 MW from new renewable resources, which is enough power to serve 20,000 homes. Under the GreenChoice program, residential and business customers will pay a premium of 0.4¢/kWh to receive 100% renewable energy, which is among the smallest green pricing premiums charged by utilities. In addition, Austin Energy will match participants' subscriptions dollar-for-dollar. The utility commitment will result in the construction of 12 large wind turbines and six landfill gas projects. The city also plans to add to its current stock of 27 solar installations.

TU Electric's "TU Renew" program will come from four new, 1.65-MW Vestas wind turbines that will be added to an existing wind power project at Big Spring, Texas. The four wind turbines will be the largest ever installed in the U.S. for commercial production and, collectively, will produce enough power for the annual needs of

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.

SECO
STATE ENERGY CONSERVATION OFFICE

WIND POWERING AMERICA

Texas

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
Denver Regional Support Offices
1617 Cole Boulevard
Golden, Colorado 80401
(303) 275-4826
http://www.eren.doe.gov/dro/

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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1300 Waco homes. The wind power is being offered to customers at a premium of 4.0¢/kWh and can be purchased in 100-kWh blocks or as a percentage of monthly electricity use.

Texas-New Mexico Power Company (TNMP), an electric utility serving about 225,000 customers in Texas and New Mexico, will purchase about 2 MW of wind power from a project to be developed near Fort Stockton, Texas. The company will offer a wind power option to its customers pending rate approval from the Texas Public Utility Commission, which in 1998 established formal governing of the development of green pricing programs by the state's utilities. TNMP agreed to develop a green pricing tariff in its "transition-to-competition" plan that was approved by the PUC in July 1998.

Net Metering

The concept of net metering programs is to allow the electric meters of customers with generating facilities to turn backwards when their generators are producing 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 generating facilities to receive retail prices for more of the electricity they generate.

Public Utility Commission Rule @23.66(f)(4) net metering ruling was made by the Public Utility Commission of Texas in 1986 in an effort to promote small wind power and photovoltaic generation in the state. The order requires utilities to offer a net metering option to qualified facilities of 50 kW or less that use renewable resources. The utility must install a single meter that can read electric flow in both directions. At the end of each billing cycle customers are paid the utility's avoided cost for any net excess generation. To date, roughly 25 wind facilities have signed up for the program. All customer classes are eligible for the program.

Installed Projects

Culberson County — Since 1995, the mountains north of Van Horn in Culberson County have been dotted with 112 turbines that provide electricity to the Lower Colorado River Authority. This wind farm, the state's largest, with a total capacity of 35 MW, produces enough electricity to power up to 10,000 homes. The power is purchased by Lower Colorado River Authority and Reliant Energy HL&P/LCRA and is produced by Kenetech and Zond turbines.

Dallas, Ft. Worth — 0.9 MW installed capacity, 0.8 million kWh annual energy output, power purchased by TU Electric, Carter turbines.

Fort Davis — 6.0 MW installed capacity, 8.7 million kWh annual energy output, power purchased by Central and SW Services, Zond turbines.

Big Spring I, Howard County — 34.32 MW installed capacity, 117 million kWh annual energy output, power purchased by TU Electric, Vestas turbines.

Big Spring II, Howard County — 6.6 MW installed capacity, power purchased by TU Electric, Vestas turbines.

SW Mesa McCamey — 74.9 MW installed capacity, power purchased by Central and SW Services, Zond turbines.

Planned Projects

Wind developments in small community-based clusters are becoming common in northern Europe. A big advantage for small wind power projects is that since they serve local electric needs, they do not require large transmission lines. This style of development is being brought to North Texas by the Texas Wind Power Company, which will install 2.5 MW near Lubbock during 2000.

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