



Roping the Texas Breezes

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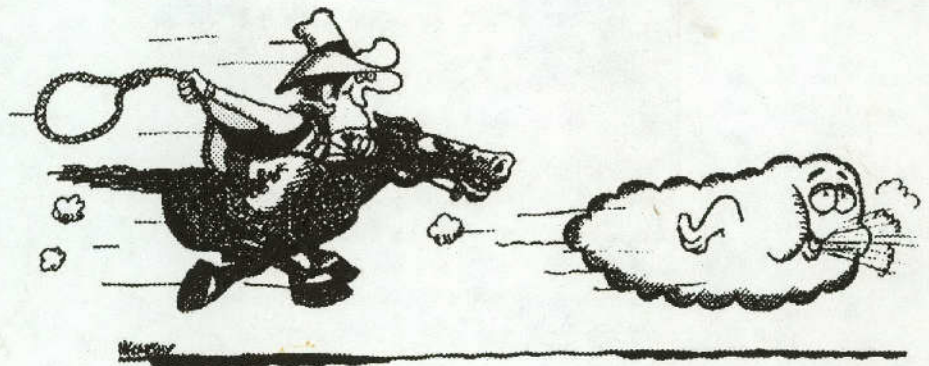
RENEWABLE ENERGY
THE INFINITE POWER
OF TEXAS

SECO FACT SHEET NO. 14

HIGHLIGHTS

- ◆ Wind power has been used in Texas for more than a century
- ◆ The state's wind reserves are vast and largely untapped
- ◆ Modern turbine technology provides clean, low-cost electricity
- ◆ Utilities are starting to harness this promising domestic resource

CAPTURE WIND POWER



Roping the wind *Capturing a small portion of available wind power will meet a significant fraction of Texas' future electricity needs.*

SUMMARY

More than 80,000 windmills are still in use in Texas. For decades, these simple machines have helped residents pump water, process grain and create electricity. Over the coming years, the use of wind power for electrical generation will become cheaper and more common. The newest class of wind turbines can generate electricity for as little as three and half cents per kilowatt hour. That's cheaper than electricity from new coal-fired power plants. And when costs like air pollution and greenhouse gases are factored in, wind

power may be the cheapest source of electrical power available today.

TEXAS-SIZE POTENTIAL

Windchargers were a common source of household electricity prior to the rural electrification programs of the 1930's. Today, a new generation of wind machine is beginning to crop up in the windiest parts of the state. Massive wind turbines mounted atop towers 50 meters tall that are capable of generating enough electricity to power hun-

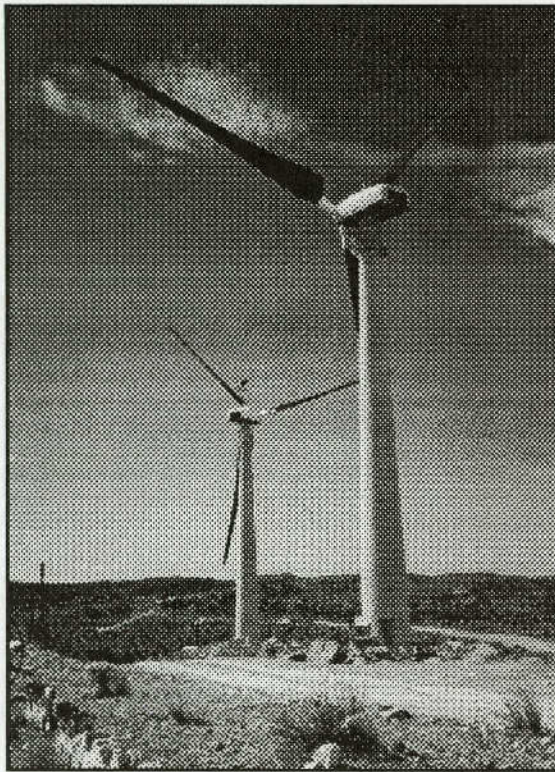
dreds of homes are cropping up across the state.

Texas has as much wind potential as any other state. Studies have shown that up to 525,000 MW of electricity — about eight times the state's current total generating capacity — are available in Texas if all the state's wind resources were captured. And several utilities have launched programs to lasso some of that enormous potential.

Utilities and wind farm developers



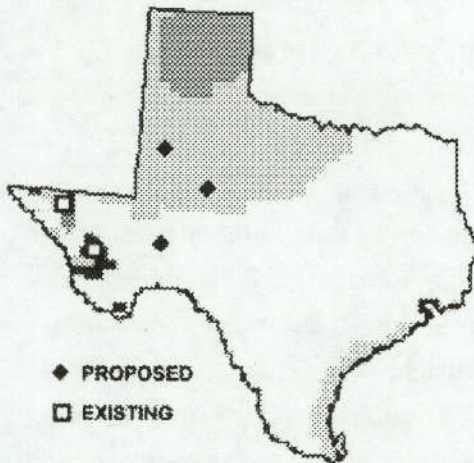
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SOURCE: LOWER COLORADO RIVER AUTHORITY

Large modern wind turbines Towering more than 200 feet above their perch in the Delaware Mountains, each 300 kW machine generates enough electricity for roughly 100 Texas homes.

are seeking out the windiest locations in Texas. The best locations—on top of mountains and mesas in West



Texas wind potential. Windy areas in Texas are indicated on the map as shaded areas (darker color represents stronger wind speeds). New wind projects may soon join the 45 MW of wind turbines already installed to tap into Texas' enormous potential of more than 500,000 MW.

Texas and along ridges in the Panhandle — will be developed first. Future generations of wind machines will make it economically feasible to utilize a far greater fraction of the Lone Star State's wind potential.

FARMING AND RANCHING WITH THE WIND

Although large utilities are getting the most attention for their move into wind power, Texas agricultural producers and rural residents continue to embrace wind power. While the Aeromotors of the 1930's continue pumping water for cattle and crops, rural Texans are also installing small-scale wind power systems. In

some rural areas these wind turbines offer a viable, lower cost alternative to electricity from the local utility.

WIND-DRIVEN MEGAWATTS

Since 1981, the total capacity of wind turbines installed in the U.S. has jumped from 10 MW to about 1,800 MW. Electric utilities are turning to wind power because of its attractive economics. Wind turbines have relatively low initial costs; and since they require no fuel and produce no emissions, they are cheap to operate. In fact, new wind power plants cost only half as much to operate as natural gas-fired power plants.

Much of the recent growth in the domestic wind power industry has occurred here in Texas.

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. Developed on land leased from the state's Permanent School Fund, the project pays

approximately \$100,000 per year in royalties to the fund, which helps educate the youth of Texas.

BIG SPRING

Texas Utilities Electric Company has contracted to purchase power from a 40 MW wind farm being built atop a mesa near Big Spring. This project is expected to be operational by the summer of 1999.

FORT DAVIS AND MCCAMEY

Central and South West Services Corp. is evaluating wind turbines at a six MW research site near Fort Davis. Armed with extensive knowledge gained from assessing the wind resources throughout its service territories in Texas, Oklahoma and Arkansas, CSW is embarking upon a commitment to add wind resources to its fuel mix. The company is

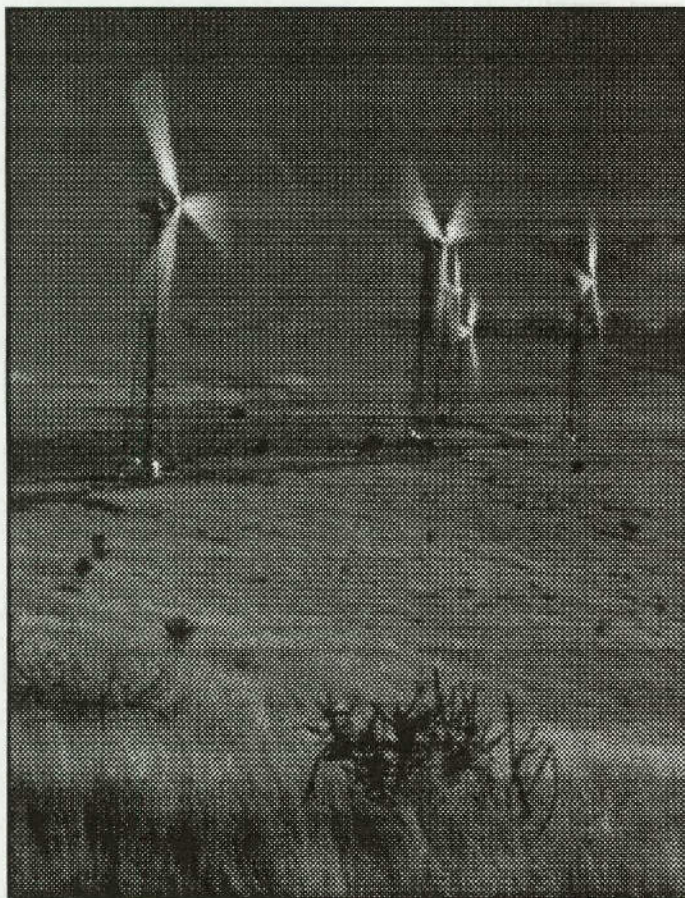
expected to announce an agreement during the spring of 1998 for a wind farm of at least 75 MW to be located on a mesa near McCamey.

BROWNFIELD AND LUBBOCK

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 Texas by the Texas Wind Power Company, which will install six 750 kW turbines near Brownfield and Lubbock during 1998. These turbines will provide enough energy to power 500 homes.

TEXAS HAS A WINDY FUTURE

Given the vast wind resources available here in Texas, increasing numbers of rural residents and large electric utilities alike are beginning to harness the power of the wind. Whether the task is pumping water for a few head of cattle or providing electricity to thousands of homes, wind power means business in Texas.



SOURCE: CENTRAL AND SOUTH WEST SERVICES

Clean energy from free fuel *As costs continue to drop, wind turbines like these near Ft. Davis will become an increasingly common source of low-cost, environment-friendly electricity.*

ORGANIZATIONS

American Solar Energy Society
2400 Central Ave., G-1
Boulder, CO 80301
303 / 443-3130

American Wind Energy Association
122 C Street, N.W.
Washington, D.C. 20001
(202) 383-2505
<http://www.econet.org/awea>

CADDET
Center for Renewable Energy
1617 Cole Blvd
Golden, CO 80401-3393
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<http://www.caddet.co.uk/>

National Renewable Energy Laboratory
1617 Cole Blvd.
Golden, CO 80401-3393
<http://www.nrel.gov>

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Texas Renewable Energy Industries Association
P. O. Box 16469
Austin, TX 78761
512 / 345-5446

RESOURCES

TEXAS RENEWABLE ENERGY EDUCATION CAMPAIGN

Texas is in the midst of a major campaign to develop thought-provoking educational materials on renewable energy. The campaign includes: (1) the first-class video, "The Infinite Power of Texas," (2) 20 fact sheets for students and adults, and (3) a powerful World Wide Web site on the Internet. Begin your search for Texas-specific information on renewable energy at:
<http://www.InfinitePower.com>

INTERNET SITES:

<http://www.InfinitePower.com/factsheets/fs14.html>

Center for Renewable Energy and Sustainable Technology (CREST)
A comprehensive educational resource for renewables. A good place to start your search.
<http://solstice.crest.org>

Department of Energy. Web pages run by the Department of Energy on everything from cooling your home naturally to selecting a new water heater.
www.eren.doe.gov/erec/factsheets/factsheets.html

Florida Solar Energy Center. Information on photovoltaics, batteries, alternative buildings systems, solar heaters. The center is developing a test house which relies exclusively on PV power. www.fsec.ucf.edu

El Paso Solar Energy Association. Lots of good information. www.epsea.org

BOOK:

Texas Renewable Energy Resource Assessment: Survey, Overviews, and Recommendations.
Virtus Energy Research Associates, 1995. ISBN 0-9645526-0-4. Detailed summary of each renewable energy resource in Texas. (source: SECO, 512-463-1889)

POSTER:

Our Energy Sources Are Outstanding in the Field. (source: SECO, 512-463-1889)
(web version: www.infinitepower.com/poster1.html)



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