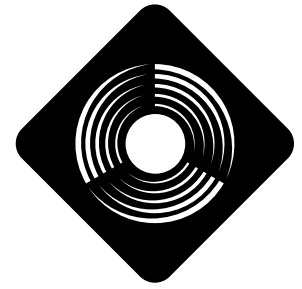


# Renewable Energy Resources for Texas



**RENEWABLE ENERGY**  
THE INFINITE POWER  
OF TEXAS

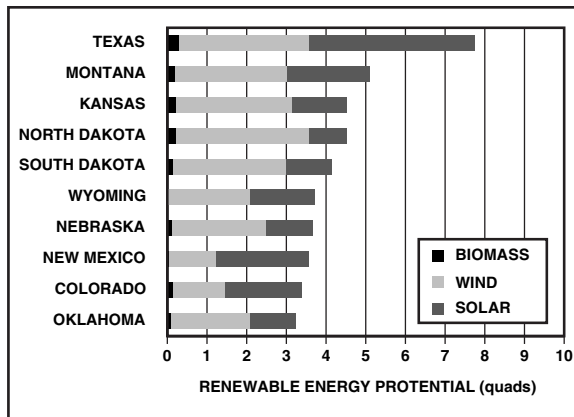
SECO FACT SHEET **NO. 8**

## HIGHLIGHTS

- ◆ **Texas has more renewable energy potential than any other state**
- ◆ **Proper technology and incentives will help renewable resources meet a growing portion of the state's energy needs**
- ◆ **Every Texas community has opportunities to use clean renewable energy affordably**
- ◆ **Developing Texas' renewable resources will help the state's economy**

## SUMMARY

Due to its size and diverse climate, Texas has tremendous potential to harness clean, renewable energy resources such as wind, solar and biomass. These resources are abundant, large enough in fact to meet all of the state's energy needs. The key lies in developing technologies that can tap this immense non-polluting resource affordably and reliably as well as setting up a regulatory and incentive structure that



**Texas is #1 in renewable potential** *This figure, based on data from a study conducted for the United Nations, indicates that Texas has more potential to develop clean renewable energy resources than any other State.*

makes such investments viable. Such technologies are now becoming commercially available, assisted by Texas' landmark legislation that includes a "Renewable Portfolio Standard" mandating 2,000 Megawatts of electricity generation from renewable resources by 2009. A move toward renewables would also spur the local economy, create jobs and increase the tax base. Doing so would benefit the wind and solar rich rural regions of west and south Texas, where jobs and economic development are most needed.

## RENEWABLES HAVE "TEXAS SIZE" POTENTIAL

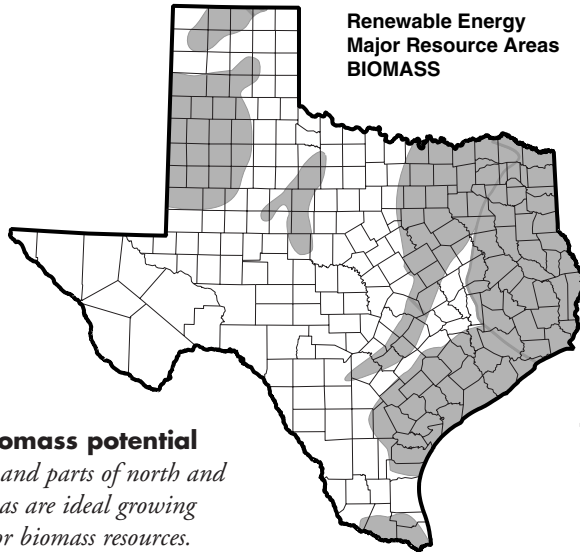
Texas has copious amounts of oil, gas, coal and uranium. But the state's renewable resources make those fossil fuel resources look small. The wind, solar and biomass potential in Texas

is equal to 4,330 quadrillion BTUs per year, or about 400 times the state's annual energy diet. While smaller than Texas solar potential, wind energy alone could provide eight times as much power as all of the state's electric generation plants combined. Clearly, we only need to tap into a small fraction of the enormous potential of renewables to meet our state's growing energy needs.

Texas' abundance of renewable resources is richest in wind, solar and biomass, which is useful energy derived from plants or animals. The potential of other renewable resources is more limited. For instance, most of the state's

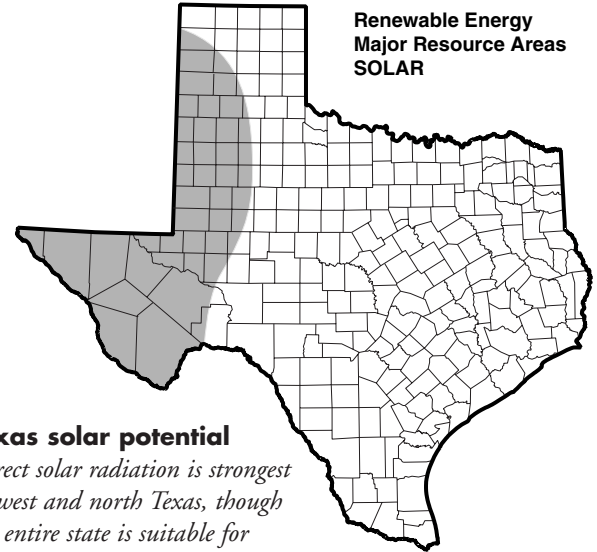


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**Texas biomass potential**

*East Texas and parts of north and central Texas are ideal growing locations for biomass resources.*



**Texas solar potential**

*Direct solar radiation is strongest in west and north Texas, though the entire state is suitable for small-scale solar installations.*

hydropower has already been developed. And Texas has scant potential in wave or tidal energy.

The real question for renewables is not whether there is enough resource, but rather when technologies will be available that allow this enormous potential to be used reliably and affordably. In some cases,

such as wind energy and landfill gas, the answer is now. Another renewable ready for use is Building Climatology, which refers to knowledge of the local climate used to design buildings that are comfortable but use little energy. This underutilized “resource” could save Texans billions of dollars in ongoing energy costs while improving the liv-

ability of structures.

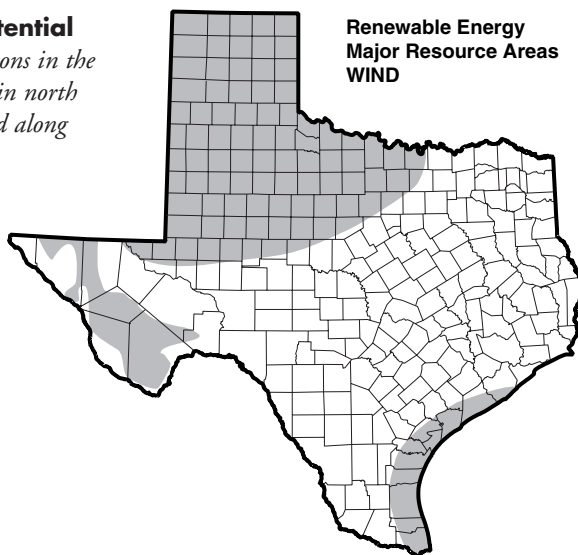
**WHERE ARE  
THE RESOURCES  
LOCATED?**

No matter where you are in Texas, renewable energy resources are, more than likely, all around you. Passive solar heating, photovoltaics, solar water heaters and ground coupled heat pumps (geothermal) are practical just about everywhere in Texas. Other small to medium scale technologies, such as landfill gas-to-energy projects and water pumping windmills, can be suitable in many communities across the state.

However, for large scale renewable power projects involving wind and solar power, commercial developers will seek out the best locations in the State. For wind and solar, the best potential areas are in south Texas, west Texas and the

**Texas wind potential**

*The windiest locations in the state can be found in north and west Texas, and along the gulf coast.*



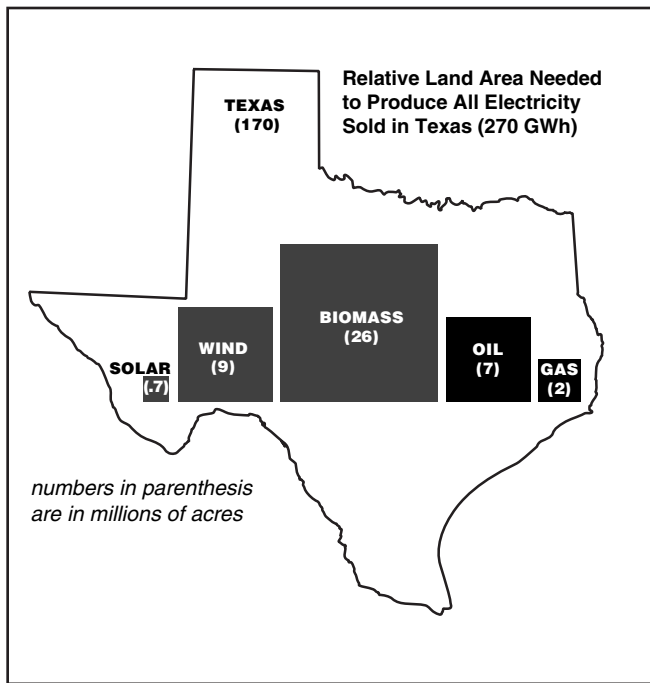
Panhandle. The best biomass resources are concentrated in east Texas and the Panhandle. When you add it all up, Texas has opportunities to benefit from clean, renewable energy sources in every community in the state.

## RENEWABLE ENERGY USES

Renewable energy resources provide the same energy services that we now get from fossil fuels including generating electricity, providing heat, driving mechanical equipment and powering vehicles. Renewable energy is manifest in nature in many forms, each of which is best suited for certain applications. Biomass, which is material derived from plants or animals and then used for energy, is particularly versatile. The solar energy stored in the chemical compounds of biomass can make liquid fuels (like ethanol) for cars, gaseous fuels (like methane) that can be burned in place of natural gas, or solid fuels like wood chips that can be burned like coal.

## LAND USE

A common misconception is that renewable energy use requires too much land to be practical. In reali-



**Land requirements of various Texas energy sources** Each square shows the relative land area needed by different energy resources to produce enough electricity for the entire State of Texas. Oil wells and wind turbines produce about the same amount of energy per unit of land area.

ty, renewable energy has similar land use requirements as the oil and gas on which Texans now rely. The similarities between oil pump jacks and wind turbines is particularly striking—one machine per 40 acres each producing the equivalent of about 9 barrels of oil a day. The only difference is that one pulls energy from the ground and the other pulls energy from the sky. Also renewable energy use can co-exist with other traditional land uses. For instance, cattle can graze around wind turbines, and solar equipment can be placed on the roofs of factories, shopping centers and individual houses, over parking lots and along roadways.

## DEFINITION

Renewable Energy refers to any energy resource that is naturally regenerated over a short time scale and derived directly from the sun (such as thermal, photochemical, and photoelectric), indirectly from the sun (such as wind, hydropower, and photosynthetic energy stored in biomass), or from other natural movements and mechanisms of the environment (such as geothermal and tidal energy). Renewable energy does not include energy resources derived from fossil fuels, waste products from fossil sources, or waste products from inorganic sources.

## ORGANIZATIONS

**American Wind Energy Association**  
122 C Street, NW, Suite 380  
Washington, DC 20001  
(202) 383-2500  
[www.awea.org](http://www.awea.org)

**American Biomass Association**  
314 Massachusetts Ave., N.E.,  
Suite 200  
Washington, D.C. 20002  
[www.biomass.org](http://www.biomass.org)

**Landfill Methane Outreach Program**  
501 3rd St., N.W.  
Washington, DC 20001  
(888) STAR-YES  
[www.epa.gov/lmop/](http://www.epa.gov/lmop/)

**International Ground Source Heat Pump Association**  
490 Cordell South  
Oklahoma State University  
Stillwater, OK 74078-8018  
(800) 626-4747  
[www.igshpa.okstate.edu/](http://www.igshpa.okstate.edu/)

**Texas Solar Energy Society**  
P. O. Box 1447  
Austin, TX 78767-1447  
(512) 326-3391  
e-mail: [info@txses.org](mailto:info@txses.org)  
[www.txses.org](http://www.txses.org)

**Texas Renewable Energy Industries Association**  
P. O. Box 16469  
Austin, TX 78761  
(512) 345-5446  
[www.treia.org](http://www.treia.org)

## RESOURCES

### FREE TEXAS RENEWABLE ENERGY INFORMATION

For more information on how you can put Texas' abundant renewable energy resources to use in your home or business, visit our website at [www.InfinitePower.org](http://www.InfinitePower.org) or call us at 1-800-531-5441 ext 31796. Ask about our free lesson plans and videos available to teachers and home schoolers.

### ON THE WORLD WIDE WEB:

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

**National Renewable Energy Laboratories.** Lots of good general information and a great source of renewable energy pictures and graphics.  
[www.nrel.gov](http://www.nrel.gov)

**Renewable Resource Data Center.** Provides information on several types of renewable energy resources in the United States, in the form of publications, data, and maps.  
[rredc.nrel.gov/](http://rredc.nrel.gov/)

**Alternative Energy Institute.** Good in-depth wind data and maps.  
[www.windenergy.org](http://www.windenergy.org)

**Texas Solar Radiation Database**  
[www.me.utexas.edu/~solarlab/tsrdb.html](http://www.me.utexas.edu/~solarlab/tsrdb.html)

**Renewable Energy Roundup and Sustainability Fair.** An annual event in Texas that provides renewable energy booths, seminars and workshops  
[www.RenewableEnergyRoundup.com](http://www.RenewableEnergyRoundup.com)

### PUBLICATIONS:

*Texas Renewable Energy Resource Assessment: Survey, Overviews, and Recommendations.* Virtus Energy Research Associates, 1995. Detailed summary of each renewable energy resource in Texas. (Available from State Energy Conservation Office at 800-531-5441 ext 31796)

*Texas Energy: Past, Present, Future.* Virtus Energy Research Associates, 1998. A state of the state of renewable resources in Texas.

### POSTER:

*Our Energy Sources Are Outstanding in the Field.* (Available from State Energy Conservation Office at 800-531-5441 ext 31796 or on the web at [www.infinitepower.org](http://www.infinitepower.org))



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