

# Chapter News

## EPSEA

The El Paso Solar Energy Association's solar still project, via a grant from the EPA, has some fresh plans this spring as solar water distillers are being ordered and are to be installed by the end of June. Two of the three stills received from Solaqua have already been installed: one large still at the North American Independent Indigenous Community and another small still for a couple in Sunland Park, NM. Many more still applications have been received. The last of the public meetings are planned in Columbus and Anthony, NM, and San Elizario, TX. Applications were also available to those who live in Deming, NM and surrounding areas at Earth Day. For more information contact Sharon Eby-Martin, EPSEA Project Manager at 915-772-7657.

Other EPSEA activities include a straw bale workshop co-sponsored with Tierra Madre, another non-profit organization. EPSEA members also enjoyed the opening of a new PV array, provided with the help of El Paso Electric, at the El Paso Planetarium. It will provide enough power for the entire building during the daylight hours. The birth of two very large twins was also celebrated, with the opening ceremonies of two 660 kW wind generators at the new Hueco Mountain Wind Farm. These will provide enough energy for approximately 500 homes in El Paso.

[www.epsea.org](http://www.epsea.org)

## SSA

Things are looking bright in San Antonio especially for the future endeavors of Solar San Antonio, Inc. The Economic Development Administration has asked Solar SA to formally submit a \$256,000 grant request. The grant is for an economic feasibility study covering all

of South Texas. With the grant, Solar SA will team with the Center for Economic Development at the University of Texas at San Antonio (UTSA), Southwest Texas University and the Energy and Sustainability Laboratory at Brooks Air Force Base to take an in-depth look at the impact renewable and sustainable industry would have in the 47 counties of South Texas. Solar SA will also be working with the regional Councils of Governments to make sure a close, individual scrutiny is given to each area in the region. The 18-month study will include focus groups, a public demonstration of renewable energy and a symposium to bring together all of the areas of interest and produce the final study document for public review.

Other Solar SA projects include a half-day seminar planned in coordination with the Northside Independent School District and the San Antonio Independent School District for mid-May to discuss energy efficient school building techniques. Joining with the Department of Energy's Rebuild America program and the Energy Smart Schools program, Solar SA hopes to encourage the ISDs to change their building practices and become energy smart. Following the good examples set by the McKinney ISD and the J. J. Pickle facility in the Austin ISD, Solar SA will impress upon the local San Antonio school officials the positive impact of daylighting and energy efficiency.

[www.solarsanantonio.org](http://www.solarsanantonio.org)

## HREG

The Houston Renewable Energy Group meets the last Sunday of the odd-numbered months from 2-4pm at TSU School of Technology, Room 225. Call 281-335-1155 for presentation topics.

[www.txses.org/hreg](http://www.txses.org/hreg)



## 6 kW goes up on Wild Basin's roof

According to Project Manager, Leslie Libby of Austin Energy's Renewable Energy Division, this photo shows one of two 3 kW solar arrays now mounted on the rooftop of the Wild Basin Wilderness Preserve's education building. Also shown here are inverters (light gray boxes), meters (circular objects), switches (dark gray boxes under meters), and a data acquisition system (white box to left of window).

The Texas Solar Energy Society (TXSES) was founded in 1976 and is a non-profit educational organization formed to increase the awareness of the potential of solar and other renewable energy applications and to promote the wise use of these sustainable and non-polluting resources.

Texas Solar Energy Society  
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Visit our web site at:  
[www.txses.org](http://www.txses.org)

# Membership Form

Name: \_\_\_\_\_

Affiliation: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Home phone: \_\_\_\_\_ Work phone: \_\_\_\_\_

Fax: \_\_\_\_\_ E-mail address: \_\_\_\_\_

Other organizations to which you belong (check or write-in all that apply)

ASES  TREIA  TXSEIA  AWEA  SEED  Sierra Club

How can you help promote clean energy? (check or write-in all that apply)

Attend informal discussions  Staff educational booth  
 Help w/ solar car races  Write articles  Make presentations  
 Conference volunteer  Contact your utility/legislators

## Annual Dues

Individual Membership:

\$15 (student or EPSEA member)  
 \$25 (minimum regular member)  
 \$50  \$100\*  \$200\*  
 \$300 Patron\*  
\*recognized in quarterly newsletter

Business Membership:

\$100  \$250  \$500\*\*

\*\*includes ad in quarterly newsletter

ASES Membership:

\$55 discounted American Solar Energy Society membership for current TXSES members

School Fund:

\$25 Check here to contribute an additional \$25 to the TXSES school fund.  
*This money is dedicated to support renewable energy projects in Texas classrooms.*

Total due: \$ \_\_\_\_\_ Make check payable to: TXSES  
PO Box 1447  
Austin, TX 78767-1447

*Texas Solar Energy Society wishes to thank the following members who have supported us with \$100, \$200 and \$300 level memberships:*

Col. John Lee Carson, Jonathan Clemens, Dominick Dina, Robert Foster, Margie Haley, Terese Hershey, John Hoffner, Michael Landrus, Andrew McCalla, Chuck Wright

## Mark Your Calendar!

### Utility Independent Home

Austin Sierra Club  
Tuesday, July 3<sup>rd</sup>  
7 pm at the LCRA Board Room

TXSES member, Paul Breaux, will be giving a presentation on his off-grid home, Chez Soleil. Paul's owner-built home includes PV power and rainwater collection, along with appropriate passive solar design. You are sure to be inspired and gain lots of good ideas.

**Contact:**  
Paul Breaux at 512-249-1976

### Winston Solar Challenge

The only US high school solar powered vehicle road race!

Scrutineering and press conference  
Monday, July 16<sup>th</sup> at Dell in Round Rock

Send off for Race Day One  
Tuesday, July 17<sup>th</sup> at Dell in Round Rock

**Contact:**  
Kathryn Houser at 512-326-3391  
[www.winstonsolar.org](http://www.winstonsolar.org)

SOLAR REFLECTOR



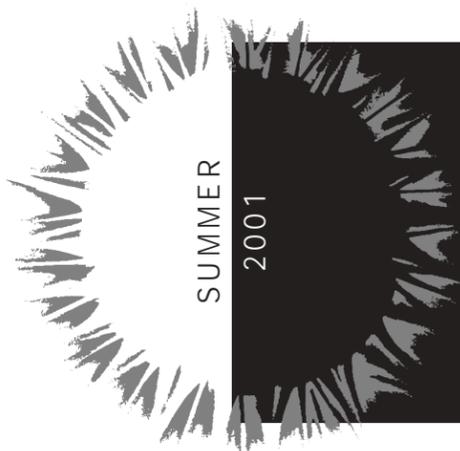
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# REFLECTOR

promoting the wise use of sustainable and non-polluting resources

# THE SOLAR

## What Can YOU Do To Contribute to the Paradigm Shift?

Environmentally conscious people and renewable energy enthusiasts are often faced with the dilemma of what to do on a tight home budget in order to transition to renewable and sustainable energy generation. How do you contribute to this important paradigm shift? The place to start is by being energy efficient users!

First, we need to become aware of the way we are using energy and how much of it we are using. In the typical Texas home the energy usage distribution is as follows:

Heating and cooling	= 45%
Water heating	= 24%
Refrigerating food	= 10%
Cooking	= 5%
Laundry	= 5%
Lighting and other electrical appliances	= 11%

Therefore, heating and cooling is the biggest consumer of energy for the typical Texas home, as is true for the rest of the country. The following tips can help you can use less energy for this task and still live comfortably year round:

- Install a programmable thermostat. You can save as much as 10% per year by turning your thermostat to a 10% to 15% higher temperature for 8 hours during the hot season. This 8- hour period generally occurs when everyone is out of the house. A programmable thermostat can help you set the temperature for each time period, automatically turning on the AC unit in time to cool down the house before the family returns but never forgetting to raise the temperature when everyone typically leaves.

- Install an efficient central A/C unit with a minimum efficiency level of 12 SEER (the higher the better). If you use room A/C units, then look for the EnergyGuide label and purchase the highest EER (Energy Efficiency Ratio) your budget allows. Remember, the money you put into efficient equipment is quickly recouped in lowered utility bills that annually continue to save you money, as will all electric appliances. Begin to think in terms of lifecycle costs, which includes operation, and not just up front costs.

- Implement the insulation and weatherization guidelines in the Energy Savers booklet published by the Department of Energy (DOE) at: [www.eren.doe.gov](http://www.eren.doe.gov). If you live in a house constructed before 1980, there is an 80% chance that it is not well insulated; the investment in additional insulation could be recouped with the following year's savings in energy cost. Caulk is one of the cheapest and most effective materials for saving energy and should be applied around every window and door frame. Whether the season is winter or summer, air leaks waste energy and can account for nearly half of all heating or cooling costs.

- Select high performance windows that have an Energy Star label; consider replacing single-pane windows with double pane glass. Approximately 40% of the unwanted heat that enters your home comes in through your windows. Solar screens on existing windows that absorb a significant amount of solar heat gain can block up to 80% of that heat.

- Allow for attic ventilation. Efficient attic ventilation diminishes the load on the air conditioner.

- Install compact fluorescent lighting around the house to diminish the heat load and electricity consumption. Normal incandescent light bulbs add to the electricity they consume in the form of heat to the surrounding environment, heat that then needs to be absorbed by the A/C system during the hot Texas season.

- Check the Energy Star web site ([www.energystar.gov](http://www.energystar.gov)) to determine the energy performance level of your home in comparison to similar homes in your area (same zip code). You can also read other energy saving tips at this site.

- To calculate the volume of greenhouse gases that you as an individual, or family, put into the environment, you can access the Texas Infinite Power web site at [www.infinitepower.org/calc\\_carbon.htm](http://www.infinitepower.org/calc_carbon.htm). There, with simple information about your energy consumption, you can calculate how your energy usage is adding to air pollution.

- Any conscious effort to become more efficient energy users will diminish the amount of greenhouse gases generated directly and indirectly, it will generate savings in your utility costs (savings that you could invest in renewable energy generation devices), and you will be contributing to the paradigm shift toward a sustainable energy generation economy.

*Feliciano Olivero, Secretary of the TXSES Board of Directors, is a Quality and Sourcing Specialist and a sustainable energy generation contributor.*

### Newsletter Staff

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 Jane Pulaski  
 Marge Wood

Visit our website for a calendar of events:  
[www.txses.org](http://www.txses.org)

## AEP Donates Watts On Wheels Trailer To TXSES



**New TXSES asset** Executive Director, Kathryn Houser, takes possession of the keys to the trailer from Rick Walker, who delivered it to Austin.

Thanks to the generosity of American Electric Power (formerly Central & Southwest Services), the Texas Solar Energy Society is now the proud owner of an exceptional educational asset. "Watts on Wheels" is a 30-foot trailer designed to engage and inform youngsters (and their parents!) about energy production and consumption. The Disneyland-like interior has been

fit with many small electrical appliances, which children can operate from the power generated by the solar panels and the small wind generator attached to the trailer. A plaque accompanies each appliance that identifies how many watts of power it is consuming. TXSES has plans to enhance the exhibit by adding information on Energy Star and other energy-efficient appliances and by increasing the available information on renewable energy production. We will be seeking funding for these enhancements and for staffing the trailer in order to drive it around the state to visit as many schools as possible. Funding for insurance, maintenance and a vehicle to haul the gooseneck trailer will also be necessary. Austin Energy is currently contributing by storing the trailer for TXSES.



**Checking it out** TXSES Board members Andrew McCalla and Chuck Wright wait for Kathryn to unlock the door to get their hands on the equipment inside the trailer



**Watts on Wheels** Many energy consuming appliances that can be run off solar power line the walls inside the new TXSES educational trailer, which made its debut at the Austin Earth day.

# Chairman's Corner

with Chuck Wright



## CONSERVATIVE?

I often imagine myself to be conservative, but find myself amazed and distressed by the energy and environmental outlook of our current "conservative" administration. What am I missing?

The dictionary gives two different meanings for the word. On the one hand, it means "tending or disposed to maintain existing views, conditions, or institutions". On the other hand, it means "cautious." One can easily see how they could come from the same root, also related to "conserve," of course. Typically the cautious path was to resist change. But think about the two definitions in relation to our treatment of the Earth, and you may see a conflict.

Humans have always pushed nature to the limit of their technology and modern Western civilization has taken this to new extremes. We basically draw from the

Earth to the extent of our abilities, assuming that the Earth is infinite, and throw out the waste for Earth to absorb. This is what we have done for a long time, so the conservative view is that this is what we should continue doing.

It is interesting to hear political conservatives talk about energy supply. Here is a typical sample, from the American Petroleum Institute's (API) web page: "the operation of the marketplace and the incentives it creates will without any intrusion from government ensure that replacement fuels will be developed long before any physical exhaustion occurs." I have seen an amazingly similar quote coming from a Nobel Laureate economist. In other words, don't worry, be happy, trust your big energy companies.

Now consider "conservative" as meaning simply "cautious," which I prefer. I have not sampled the opinions of political conservatives, but I suspect that most would consider themselves to belong to this second category. But think of the difference! To be this sort of conservative, one should put aside blind faith and instead rely on cold, hard facts and risk assessment and make contingency plans.

Miracles and assumptions have no place here.

Science provides tools for the cautious. Political conservatives who are quick to praise and pick the fruits of science (technological advance) are often equally quick to dismiss its results when they don't fit their agenda (claims that climate change research is "bad science" for instance). But it is intellectually dishonest to pick the fruits yet dismiss the method that delivered them. Imperfect as can be in practice, scientific methodology is the only process we have that is at its heart based on hard facts and their objective evaluation.

The tools of scientific investigation are what help us to understand what humans could never before realize. For example, that human activity, largely our use of fossil fuel, is affecting the Earth's climate; that worldwide, most indicators of environmental health are declining at an alarming rate; that extraction of any non-renewable natural resource rises, peaks, and falls; and that substitutes are not

guaranteed. These tools also allow us to analyze and understand the behavior of dynamic systems: for example, that the API's assertion is amazingly naive. Existence of market forces to find replacement fuel sources in no way assures that the replacements can be developed in time or in adequate quantity. An incompetent engineer basing a design on such poor analysis would quickly be fired, yet many uncritically accept the equivalent because Nobel Laureate economists deliver it. Analysis of dynamic systems also tells us that complex, highly nonlinear feedback systems with long delays can react strongly and unpredictably to perturbations. The Earth's climate is one such system. In ignoring our influence on it, we are like young children playing with loaded guns.

Let's put caution into political conservatism, basing it on facts, evidence and objective analysis, instead of wishful thinking and blind faith. Let's take control of our future and responsibility for our actions. This means acknowledging that the Earth is finite, having limited ability to absorb our waste, and a limited supply of the stored solar energy (fossil fuel) that runs our society. It is time to turn away from the past. There is a better path.

*Chuck Wright is a consultant in microchip design and in renewable energy.*

## Velomobiles: Reducing Transportation Fuel Costs

Would you like to escape soaring gasoline prices? If you are a bit creative, mechanically handy and daring, you certainly can. In a word, velomobiles: a new trend that could help you save money and get healthier in the process.

It all harkens back to the invention by Charles Mochet in the 1930s of a bicycle he called the Velocar. This was a new type of bicycle in which the rider almost lays down on his back, with pedals out in front, but sits up enough to steer and see where he is going. The improved aerodynamics and increased speeds of this type of bicycle caused a stir in racing circles, after which the new bike was banned from racing. After a 40-year period of neglect, the Human Powered Vehicle Association resurrected the idea in the 70s. Following years of experimentation, racing, development of new materials, and road testing, a new breed of vehicle, the velomobile, emerged.

The velomobile is a practical transportation vehicle that can substitute for a car on many trips, especially around town.

A velomobile goes far beyond the capabilities of the standard bicycle. It has a body that gives it good aerodynamics, so it can go fast under pedal power.

The body also provides weather protection, makes it look more like a small car or motorcycle, largely eliminates worries about dogs, provides protection in the case of a fall, allows the rider to carry normal shopping loads, and discourages theft. It has a built-in lighting system, windshield wipers, an electrical system, and other conveniences. Beyond that, it sails in crosswinds. This type of vehicle is much less slowed by winds from any direction than a standard bike. It looks unusual, so attracts attention, making it more visible and contributing to safety in traffic.

Velomobiles for racing have reached very high speeds. For example, the top speed over

a 200 m. distance under only human power is now 72.47 mph. Another velomobile has been pedaled at 50.42 mph for one hour, and over 36mph for six hours.



**David Eggleston tries out a commercial model** *The Danish Leitra trike with its fairing raised, an elegant pedal vehicle many use as a car substitute.*

Practical transportation velomobiles can go as fast as 30 mph under human power, but still have many capabilities of an automobile. I built one in May, 1998, and have been using it as a car substitute ever since. I have put on about 1500 miles per year the last three years just running around town. I only put gas in my car every month or two. My velomobile does fine on any sort of errand around town that doesn't require carrying very large objects or more than 55 lbs. of payload. For more than three years and 5000 miles, using a commercial sealant called "slime" in the tubes, I have not yet had a flat tire on the road that I had to fix before riding home.

The simple fairing I made is constructed from Coroplast, a corrugated plastic usually used for making signs. It can be easily cut, can be shaped with application of heat, and is very light and strong. A video is available

from People Movers recumbent bike shop in Anaheim, CA, for making a fairing of this type. The materials cost about \$100. I must admit that one must have a certain mechanical ability to build a velomobile body. Also, one must ride a recumbent bike for perhaps 6 months to acquire the skill level appropriate for riding a velomobile. There are many brands of recumbent bikes available. The least expensive now run about \$550, but they may be available used at a reduced price. A good number of people are making their own recumbents as do-it-yourself projects.

Many people disdain bicycling because they perceive it as too dangerous. Bicycling safely does require a high level of alertness and some skill. The necessary techniques are the subject matter of the League of American Bicyclists Cycling Education Program. You may learn much more by consulting [www.bikeleague.org](http://www.bikeleague.org). I will also be leading a workshop on this subject during the Roundup in Fredericksburg, Sept. 28-30, 2001.

One of the nicest things about velomobiles is the fun of going places under your own power. You use up calories and achieve a high level of cardiovascular fitness that



**The Aeolus faired** *The rear part of the faired entry.*

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air pollution from the generation of electricity could be doing the same thing to your lungs. that's why we harness the power of the wind to supply reliable electricity that's **100% pollution-free.**



### OPERATIONAL

#### Project

Texas Wind Power Project  
Fort Davis  
Big Spring I

#### County

Culberson County  
Jeff Davis County  
Howard County

#### Size

35.00 MW  
6.60 MW  
34.32 MW

#### Power

LCR  
CSW  
TXU

Big Spring II  
Southwest Mesa

Howard County  
Upton/Crockett  
Culberson County

6.60 MW  
74.90 MW  
30.00 MW

TXU  
AEP  
Relia

**Delaware Mountain**

**TOTAL**

187.42 MW

### ANNOUNCED

#### Project

Woodward Mountain Wind Ranch  
Indian Mesa  
Indian Mesa I  
King Mountain Wind Ranch (1)  
King Mountain Wind Ranch (2)  
King Mountain Wind Ranch (3)  
Trent Mesa  
Clear Sky Wind Park (Indian Mesa II)  
Hueco Mt. Wind Ranch at El Paso  
Llano Estacado Wind Ranch at White Deer

#### County

Pecos County  
Pecos County  
Pecos County  
Upton County  
Upton County  
Upton County  
Taylor County  
Pecos County  
Hudspeth County  
Carson County

#### Size

159.70 MW  
82.50 MW  
25.50 MW  
76.70 MW  
2.60 MW  
200.00 MW  
130.00 MW  
135.00 MW  
1.32 MW  
80.00 MW

TXU  
TXU  
CPS  
Aust  
TNM  
Relia  
TXU  
Enr  
El P  
SPS

**TOTAL**

893.32 MW

**OVERALL TOTAL**

1,080.74 MW

Source: The Texas Renewable Energy Industries Association



## 2ND ANNUAL 3-DAY FAIR SEPT. 28-30, 2001 FREDERICKSBURG, TEXAS

- Exhibits
- Demonstrations
- Workshops
- Tours
- Family Activities



Enjoy the unique town of Fredericksburg and the beautiful Texas Hill Country, close to Austin and San Antonio.

Lots of shops, museums, restaurants, quaint inns, wineries, breweries, music, Texas German culture, Enchanted Rock and the LBJ Ranch and National Park.



photos by judy pearson

AND THE **Texas Solar Energy Society**

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recumbent bicycle  
airing slides open for

For further information, see "Two Years Riding a Fully-Faired Vision R-40 Practical Vehicle," Recumbent Cyclist News, No. 63, June, 2001, p. 24, by the author.

David Eggleston, Treasurer of TXSES, is a mechanical engineer who owns DME Engineering-- a consulting firm working almost exclusively in wind energy-- and an avid bicyclist.

### Volunteer at the Fair!

Contact Leslie Libby 512-322-5746 or Leslie.Libby@austinenergy.com. Workshops and speakers are being scheduled; contact Chuck Wright if you would like to speak 512-255-4067 or chuckwright@ieee.org. Check for updates as they occur at the web site: [www.RenewableEnergyRoundup.com](http://www.RenewableEnergyRoundup.com)



**Watts on Wheels** The new educational trailer at Earth Day in Austin, where it made the perfect backdrop for our TXSES exhibit. The new Fact Sheets for the Infinite Power of Texas campaign made their debut.

# Renewable Chatter

with *The Solar Guy*

Dear Solar Guy,

I was wondering if you might be able to answer a question for me about calculating the amount of wattage supplied by a solar panel.

At the green-builder.com site it says 5.1 is the viable operating hours per day. Is this simply the hours of sunlight/day averaged over a year? Does it matter where I live?

Ina T. Dark

Dear Ina,

PV panels are typically rated at a reference solar energy input of 1000 W/m<sup>2</sup>. The "5.1" number referred to in the example (sometimes called the number of hours of sunshine) is FOR AUSTIN and represents the average number of hours per day in our location that the sun would effectively give 1000 W/m<sup>2</sup> on a south-facing surface tilted at our latitude (30 degrees) plus about 10-15 degrees. In reality this may be 5.1 hours at 1000 W/m<sup>2</sup> or 10.2 hours at 500 W/m<sup>2</sup>, but in either case this amounts to 5100 Whr/day (5.1 kWhr/day) of input. This represents the average daily solar input to a collector tilted at the local latitude plus 10-15 degrees, which for Austin is 40-45 degrees. So for a 48 Watt rated panel in Austin and tilted properly, the average daily output would be 48 Watts x 5.1hrs/day = 245 Whr/day.



To determine the number of hours of sunshine in other parts of the state, you should refer to an insolation map such as the one found in our Fact Sheet, *Estimating PV Size and Cost* (see [www.InfinitePower.org](http://www.InfinitePower.org)).

P.S. here is a copy of the guideline from Green Builders:

If a panel is rated at 48 watts, multiply that figure by 5.1 to get 245 watt-hours per day. Use that figure divided into the "Daily Energy Use" that was calculated above and the resulting number will be the number of panels of that particular size you will need.

If the "Daily Energy Use" figure above was 2,000 watts per day, 2,000 divided by 245 gives us 8.16, rounded up to 9 panels. (Note that there are tracking systems that will increase the effective hours of sunlight striking a PV panel beyond 5.1.)

The Solar Guy

*The Solar Guy is really Dr. Gary Vliet, Professor of Mechanical Engineering at UT-Austin.*



**Houston, we have renewables** HREG members Mike Ewart and Oral LaFleur show Houston residents just what renewable energy is all about at their Earth Day celebration. Mike is standing by the latest version of the solar go-cart.

### Learn More about Renewable Energy

The Texas Solar Energy Society, in conjunction with CSG Services and the State Energy Conservation Office (SECO), is very pleased to announce the completion of 25 revised and new renewable energy Fact Sheets. TXSES members updated existing Fact Sheets and wrote four new ones for the Infinite Power of Texas educational campaign. All are available on the web at [www.InfinitePower.org](http://www.InfinitePower.org)

In addition, TXSES created Lesson Plans to accompany each Fact Sheet. Our new Lesson Plans make it easy for children of all ages to learn about renewable energy and how it can impact their lives. Lesson Plans come bundled with Fact Sheets and a video in "Teacher Packs" designed for different grade levels and are integrated with TEKS standards. The Lesson Plans are also downloadable from [www.InfinitePower.org](http://www.InfinitePower.org) or you can receive the Fact Sheets and Lesson Plans FREE by calling Pam Groce, SECO Renewable Energy Program Manager, at 512-463-1889

### Earth Share of Texas

represents the Texas Solar Energy Society in payroll deduction plans for charitable giving.

For information, call 1-800-GREENTX or email [estx@earthshare-texas.org](mailto:estx@earthshare-texas.org)



### TEXAS WIND PLANTS

Owner/Purch.	Developer	Number/Nameplate/Manufacturer-Machines	Projected Completion
EA/Austin Energy	Kenetech	112 .350 MW Kenetech	
	CSW	12 .550 MW Zond	
	York Dev.	42 .660 MW Vestas	
		& 4 1.650 MW Vestas	
	York	4 1.650 MW Vestas	
	FPL/Cielo	107 .700 MW NEG Micon	
	NWP/Orion	40 .750 MW Zond	
		321	
Owner/Purch.	Developer	Number/Nameplate/Manufacturer-Machines	Projected Completion
	FPL/Cielo/RES	242 .660 MW Vestas	July 2001
	NWP/Orion	125 .660 MW Vestas	July 2001
	Enron Wind	17 1.500 MW Enron	2001
	FPL/RES/Cielo	59 1.300 MW Bonus	2001
	FPL/RES/Cielo	2 1.300 MW Bonus	2001
	RES/Cielo	153 1.300 MW Bonus	Oct. 2001
	AEP	87 1.500 MW Enron	Aug. 2001
	Enron Wind Corp.	90 1.500 MW Enron	2001
	El Paso Elec./Cielo	2 .660 MW Vestas	2001
	Cielo	80 1.000 MW Mitsubishi	2001
		857	
		1,178	