

TX-SES NEWS

A PUBLICATION OF THE TEXAS SOLAR ENERGY SOCIETY

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1007 SO. CONGRESS, SUITE 359 AUSTIN, TEXAS 78704



Photo by Meg Mooring

- * BOARD NOMINATIONS—ANNUAL MEETING
- * REALITIES CONFERENCE — PAPERS DEADLINE EXTENDED
- * BOOK: *Energy Strategies — Toward a Solar Future*

CATCHING THE WIND
Wind Energy Activities in
Texas Summarized in
Pages 12-13

Energy Strategies: Toward a Solar Future, by the Union of Concerned Scientists, edited by Henry W. Kendall and Steven J. Nadis, Ballinger Pub. Co.

Energy Strategies presents a familiar theme. The authors contend that most current "official" forecasts of future energy needs are greatly inflated, mainly because they are based on simple extrapolation of recent trends. Using the current distribution of end use of energy as a starting point, they argue that increasing the efficiency of energy use will allow per capita energy use and population to grow to high levels while total national primary energy consumption remains at about current levels. Supplying these energy needs from non-renewable sources-- coal, petroleum, nuclear-- is fraught with economic, environmental and social pitfalls as they see it. They argue that by using remaining supplies of oil and gas, together with a modest increase in coal production, as a "bridge", a completely solar-derived energy mix is possible by about 2050. They feel that this can be accomplished by judicious applications of a broad range of solar energy options which are or are soon expected to be economically viable and technically feasible. They advocate reorientation of government R&D spending and elimination of institutional barriers to solar and conservation.

This sounds very much like *Soft Energy Paths*. Indeed, it is strange that *Energy Strategies* does not mention this antecedent work. However, the tone of this book is very different from *Soft Energy Paths*. The authors are apparently hard-nosed products-- and exponents-- of American technocracy. While it appears that environmental and social aspects of energy development are seriously considered, clearly their "bottom line" for energy technologies of the future are economic viability and technological practicality. It is noteworthy that *Energy Strategies* touts a totally solar energy future even while the authors openly disparage the decentralist vision which is basic to many who espouse such a view. This makes the argument for solar appear that much stronger. Because of this, however, one can conclude that perhaps the greatest weakness of this book is philosophical. The authors advocate and expect the development and implementation of a "benign and sustainable energy future" by a society which is not benign and sustainable. They correctly point out the economic and social antagonism between continued development of non-renewables-- breeder reactors, coal gasification, etc.-- and the development and deployment of renewable energy sources. But they argue that long-term rationality for society as a whole,

overwhelmingly favoring solar in their view, can largely control the making of the myriad macroeconomic and microeconomic decisions which will shape our national energy future. Given the imperatives of modern industrial society where great concentrations of economic power have, or perceive that they have, vital economic interests in non-renewables, that is a dubious argument.

The book is written in a highly readable non-technical manner. Its chapter on renewable energy sources is an excellent basic discussion of the role, potential and limitations of the solar resource. It is a significant contribution to the "demystification" of solar energy to the general public. The text is also extensively referenced for those who wish to delve into the background material upon which the authors base their judgments. While both technical and philosophical aspects of this book are amenable to some improvement, *Energy Strategies* promises to be a much-quoted source in the coming debates upon our national energy future.

-David Venhuizen-

this issue:

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Cover Photo: Prototype wind unit being tested by Alternative Energy Institute. Horizontal axis downwind unit by Wind Engineering Corp., Lubbock. Rated 25 kw in 25 mph wind. Dacron covered blades, aluminum ribs. Located on a farm near Tulia.



Energy-sources Technology
Conference & Exhibition

Albert Thomas Convention Center
Houston, TX January 18-21, 1981

TX-SES Annual Meeting — Board Nominations

The 1980 TX-SES Annual Meeting will be held in Austin on Sunday, December 14th, at 1:30 p.m. The Board of Directors will formally accept nominations for six Board positions. Board members serve two year terms with a maximum of two consecutive terms permitted. Of the six individuals currently filling these positions, four are finishing their second terms and are thus ineligible for nomination. (Warren Cole, Anna Fay Friedlander, Al Hildebrandt, and Peter Jenkins); one is finishing a first term and is eligible (George Way), and one is the Board appointee serving out the final months of Ken Anderson's term and is also eligible for nomination (Judi Basehore). Board members continuing in their positions through 1981 are: Gary Ashford, Rick Brand, Bill Burgess, Ernst Kiesling, Dennece Knight, and Gary Vliet.

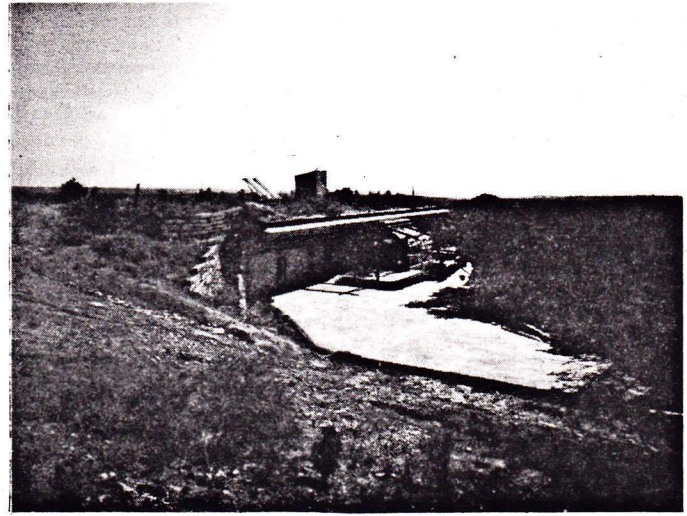
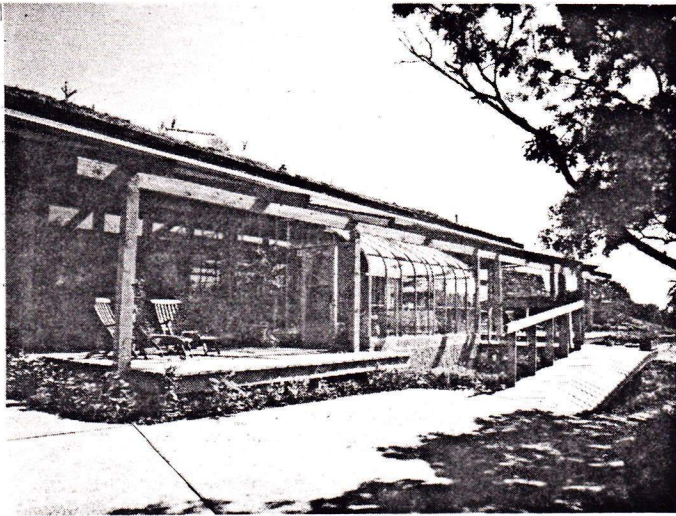
In accordance with the TX-SES by-laws, any current TX-SES member may place a name in nomination. This may be done at the meeting or by mail in advance. A minimum of six board members must hold active membership in the American Section of I.S.E.S. For this reason nominees should hold such a membership or express a willingness to become a member after election if necessary for Board compliance. Officers of the Board are elected by the Board to one year terms and are required to be AS of ISES members.

Ballots for the election will be mailed to the membership within two weeks of the Annual Meeting. Those elected will take office upon notification on or following January 1, 1981.

Solar Realities Conference Postponed Call for Presentations Extended

John Carlson at TENRAC has announced that the Solar Realities '80 Conference originally scheduled for December 11, 12, 13 in San Antonio has been postponed and will be rescheduled for late February or sometime in March. The new dates will be advertised as soon as they are known. Russel Smith, at the TX-SES office, indicates that the Call for Papers issued with a deadline of October 31 has been extended. Good presentations are still needed. An Extended Call for Presentations and Exhibits will be issued as soon as the new dates are set. In the meantime, "keep those summaries coming in" says Smith. "We plan to have an outstanding conference with lots of useful information based on your experiences."

TX-SES CASE STUDY NUMBER 9



EARTH SHELTERED HOME

Location: Parker County, Texas

Gross Area: 2457 sq. ft.

Living Area: 1782 sq. ft.

Completion: Spring 1980

Designed by: Boothe & Assoc. - Arch.
Ray W. Boothe, AIA
Joseph R. Halbach, Assoc.
William B. Walker, P.E.
James McClure, P.E.

Built by: Terra Systems
Guy P. Hall
Ray Boothe

Reasons for Building Earth Sheltered Homes: Energy conservation, security, ecological, low maintenance building form and site.

Special Features: Pre-stressed concrete roof system, dual return air systems, solar hot water system, passive solar heating system, wind tower, and solar greenhouse.

Earth Shelter: 100% East, North, West 0% South

Earth Cover: 2' 0"

Insulation: 4" polystyrene - roof
2" polystyrene - top 4' walls

Weatherproofing: Bentonite

Earth Contact Walls: Poured concrete

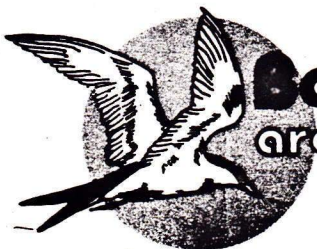
Roof System: Structural steel frame, precast, pre-stressed hollow core concrete planks.

This earth-sheltered home features a strong emphasis on relating to the site. All major areas open out onto the wooded valley and to the prevailing summer breezes. The decks serve to further integrate the interior and exterior spaces of this project. The preliminary designs of this home were entered in a Department of Energy Passive Residential Design Competition in late 1978. It received a design award in 1979 just prior to the start of construction.

Energy Systems

Heating: Passive solar
Fireplace
Electric furnace

Cooling: Wind Tower
Earth-effect return air
Central electric



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Solar Energy Grants Available Through Energy Conservation Bank

The Energy Security Act (S.932) created the Solar Energy and Energy Conservation Bank to "encourage energy conservation and the use of solar energy, and thereby reduce the Nation's dependence of foreign sources of energy supplies..."

The Bank is headed by a Board of Directors. Moon Landrieu, Secretary of Housing and Urban Development is the statutory Chairman of the Board. The Secretaries of Treasury, Energy, Commerce and Agriculture are the four other board members.

The Bank is authorized to provide financial to owners and tenants to purchase and install residential and commercial conservation improvements and solar energy systems for residential, multi-family residential, commercial and agricultural buildings. The Bank also has the authority to provide financial assistance to construct or rehabilitate buildings including solar energy systems.

The law sets various stipulations on the financial assistance and provides for both grants and loans. The grants, given to owners of existing residential buildings or to tenants of existing residential or multi-family residential buildings are limited depending on the income level of the individual. Details of the grant are not yet final; however, an individual earning less than 80% of his area's median income could receive a grant of \$1,250 on a \$25,000 energy conservation investment. A tenant in a multi-residence could receive \$400 on a \$2,000 investment.

Direct grants are not available for solar energy systems. Financial assistance for solar energy systems is a partial payment by the bank on a loan made through a financial institution. The payment is based on a sliding scale involving income and cost and could be as much as \$100,000 on an investment of \$250,000 for a solar energy system on an agricultural or commercial building. In the case of individuals, assistance is available up to \$5,000 on a loan of \$5,000. Financial assistance for energy conservation loans on agricultural or commercial buildings, or on loans made for residential buildings, could range up to \$5,000 per building.

Financial assistance is available only for the energy conservation or solar energy system part of a loan, and only to systems installed after June 19, 1980. Individuals may apply for grants for a limited time for energy conservation improvements made after January 1, 1980. For more details contact John Carlson, 475-5407

Texas Energy and Natural Resources Advisory Council's Technology Development coordinators will be putting together preliminary programs for research, development, and demonstration funding during the next few months. It is expected that the Texas Legislature will appropriate energy development funds in 1981, to be used starting September 1981. The funds can be used for developing energy technologies toward commercialization, but cannot be used in commercialization itself. Other restrictions limit the funds to projects performed in Texas, and non-redundant projects which have more significance to Texas than to the remainder of the United States. Informal preproposals and priority suggestions will be welcomed at TENRAC, 200 East 18th Street, Austin, TX 78701 by Bob Avant and by Charles Mauk for direct solar and energy conservation technology.

In the current funding cycle, TENRAC is soliciting proposals for feasibility studies for the application of solar energy to supply heat for industrial processes. This is SPI 80-S-9, and proposals are due at TENRAC on November 17, 1980. Copies of the solicitation can be obtained from Charles Mauk, 512/475-5588.

John Carlson, Coordinator for Solar and Commercial Programs in the Conservation Division of TENRAC, welcomes suggestions for public outreach and education programs to be executed during 1981.

SAC Recommendations Now Policy

GOOD NEWS FROM AUSTIN! The Texas Energy and Natural Resources Advisory Council, at its meeting on September 25, formally adopted the report of the Solar Advisory Committee. The S.A.C. recommendations included in the report will now be pursued as TENRAC policy. Those recommendations requiring legislative action have been forwarded to the Texas Legislative Council where specific legislation will be drafted and fiscal notes attached. The "conclusion" section of the report follows.

The Solar resources of this State are sufficient for any demands envisioned for them, and are great enough to provide a significant fraction, over 20 percent, of Texas' total energy needs by the year 2000. The technology to attain this goal is generally well-developed; however, further development is necessary for certain systems of interest to Texas. Specifically, cost effective residential/commercial cooling and dehumidification systems, agricultural scale wind machines, small scale heliostat systems and industrial process heat systems must be developed.

The State can take certain actions

to speed the implementation of these technologies. There is no doubt that the use of Solar technologies will be of immense benefit to Texas, and will provide a considerable part of the answer to the problem of our dependence on less secure and declining energy sources. The costs of the recommended actions are small in relation to the long-term benefits to Texas. The timing of these benefits depends to a great degree on the dedication of the State of Texas in providing all possible incentives and removing all possible barriers to the rapid widespread use of Solar energy.

Renewable Spirit — Taking Charge: Community Energy Strategies for the 80's

As a workshop leader in this October conference in Amherst, I came away with a renewed spirit for our future. The title of this meeting means more than what a casual observer might think. It was not just the strategies available for bringing energy to the community level. It also greatly exemplified the active role the citizens in their own cities and neighborhoods are taking to relieve their energy-based problems. "Community Energy", plain and simple.

The people who participated in this conference were from many cities and small rural towns across the nation. They were mayors, clergy, council people and citizens representing everything from small business concerns to urban neighborhood associations.

For this Texan it was a meat and potatoes conference with an abundance of substance. It was a working session where those who came to observe and learn became active and involved. There were workshops on such subjects as: Training for Energy Employment and led by representatives of the cities of Madison, WI, Memphis, TN and Santa Fe, NM; Community Level Energy Planning conducted by the Mayor of St. Paul, MN and many others directed at funding for conservation and solar, community action programs, and utility rate structures for new construction.

This was a heartening experience for one personally. Living in the wide open spaces of Texas it can become easy to think not much is going on in the rest of the nation. It could not be further from the truth. Individuals, neighborhoods and cities are coming together in a positive and conservative way. They are working collectively to find solutions that will not only alleviate many energy problems but will in addition give them a clean, comfortable and affordable future.

- Judi Basehore

DIRECTIONS

SUN / ANGLES

SUSTAINING MEMBERS

Over the years since 1976, the Texas Solar Energy Society has contributed a great deal toward public and institutional understanding and acceptance of renewable resource technologies as a vital part of our energy mix in Texas. In this time of perceived impending crisis in the "solar community" a positive focus is all the more critical if the renewables message is to transcend the barrage of charges and counter charges which looms ahead. The message is a winning one, but it must compete with an ever increasing mass of conflicting messages, and therefore requires vigilance as to quality, and an exponential increase in quantity. More than ever the media which delivers the message will be critical to its acceptance.

It is "get serious" time for the Society concerning information transfer. To current members and those who will soon join, this means renewed resolve; it means increased selfless effort; it means serious money; it means doing yourselves as you would have others do, then sharing what you've done; it means helping the one statewide organized effort on behalf of solar energy to build on the foundation of credibility it has established, to the benefit of us all. Are you serious?

RUSSEL E. SMITH

Richard Barrett, current President of the El Paso SEA announces their Board elections are to be held in December. Members have been working with their SGH '80 team to make the local workshop a success. The demo structure is attached to a City of El Paso rehab center... Gene Teske has passed the reins to Glenn Hill, new West Texas SES Pres., who is joined by Haywood Ramsey, VP. Solar Greenhouses are the current focus of much of the groups activities including the SGH '80 Workshop... the Houston SES reports a new set of officers: Rick Brand, Pres., Ken Hoffman, 1st VP, Barry Worthington, 2nd VP, and Kevin Conlin, Sec/Treas. With three solar greenhouses under their belts in the last four months, the Houston team is really stirring up interest. The Solar Index is now being broadcast on Channel 13 as a service of the Society, and January will see the printing of the first brochures in the SES contract with HL&P... D/FW SEA has seen its sundial telephone program bite the dust due to lack of the proper response sought by financial backers, other funding approaches are being explored to revive this valuable information link. The D/FW team is up to its ferns in the SGH '80 program and preparations for officer election in December.

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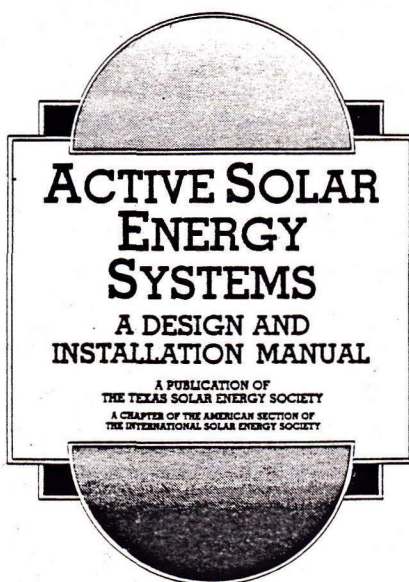
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RESOURCES

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AIA Energy Notebook
1735 New York Ave. NW
Washington, D.C. 20006

National Solar Energy Education Directory. A 200 page comprehensive directory lists 1760 solar-related courses and 240 programs and curricula offered at more than 750 post secondary educational institutions nationwide. The directory can be obtained from the Superintendent of Documents, U.S. Govt. Printing Office, Washington, D.C. 20402.

Protecting Solar Access for Residential Development: A Guidebook for Planning Officials. Developed by the American Planning Association under contract to HUD to provide practical, up-to-date information on means to ensure reasonable solar access in residential developments. Available from the Govt. Printing Office for \$4.75 (GPO stock no. 023-000-00523-9).

Site Planning for Solar Access: A Guidebook for Residential Developers and Site Planners. This book discusses elements of site planning and building design that are relevant for solar access protection for both active and passive solar energy systems. Illustrated with over one hundred drawings showing every facet of site planning for solar access. Five appendices provide info. on solar related terms and other more technical concerns. Available from the Government Printing Office for \$4.75.
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Energy & Power in Your Community, by Elizabeth Schaefer and Jim Benson. How to analyze where it comes from, how much it costs, and who controls it in a book specifically designed for community activist groups needing short, easy projects to produce dramatic findings about their community energy system. Available from the Institute for Ecological Policies, 9208 Christopher St., Fairfax, VA 22031 for \$6.00. Payment should accompany orders (postage and handling of \$1.50 will be added to purchase orders.)

Proceedings of the 5th National Passive Solar Conference, held in Amherst, MA, October 19-26, 1980. Edited by John Hayes and Rachael Snyder. To obtain a copy of the proceedings contact: AS/ISES, c/o RIAT, U.S. Highway 190 West, Killeen, TX 76541, 817/526-1300.

The Windcyclopedia. A complete, concise and up-to-date directory, enabling the expert as well as the layperson to quickly locate information on all aspects of Wind Energy. Compiled by the Power Company-Midwest Inc. Offers state by state listings of over 170 distributors, dealers, state and federal energy offices and information centers, organizations, site analysis services available, bibliography of over 500 books, reports, conference proceedings. \$7.95 (postage and handling included - bulk prices available upon request.) Make checks payable to The Power Company-Midwest Inc. Order: Windcyclopedia, The Power Company-Midwest Inc., Bruce Berg Equipment Bldg., P.O. Box #221, Genesee Depot, WI 53127.

A Siting Handbook for Small Wind Energy Conversion Systems provides easy to understand guidelines for choosing suitable locations for small wind turbines. Includes information on estimating the potential wind power at a given site. Available from NTIS, 5285 Port Royal Rd. Springfield, VA 22161. Order PNL-2521 Revision #1, \$8.

Crystal Productions of Aspen, CO. has available hands-on solar energy laboratory equipment for the high school and college instructor. The equipment includes: a Sun Site to determine the sun's position and analyzes site situations; Solar Test Boxes which test different glazing, collector plates and insulation for comparative study; and a 4-in-1 Solar Collector which interchanges the basic components of water and air collectors in either an active or passive mode.

To complement the solar lab equipment is a solar radiation meter, a student text and a laboratory manual.

For more information contact Crystal Productions, 107 Pacific Ave., Aspen, CO. 81611.

Proceedings: A Summary of the Second Annual National Citizens' Solar Energy Conference. The proceedings of this conference were published by the Center for Renewable Resources and contain summaries of over 20 speeches and 40 workshops. An appendix provides addresses for all speakers and workshop panelists. Available from: SUNDRIES, c/o Center for Renewable Resources, 1001 Connecticut Ave., N.W., 5th Floor, Washington, D.C. 20036, 202/466-6880. \$4.95 + 15% postage and handling, total prepaid.

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Consumer Information Catalog lists over 200 publications representing almost 30 agencies of the federal govt. Energy publications include those regarding utility bills, solar hot water, construction and maintenance of fireplaces and chimneys, oil fired furnaces. Publications on car care are also available. Write Consumer Information Center, Dept. Y Pueblo, CO 81009. FREE

Three schools in Texas have received grants for PREFACE projects (Pre-Freshman and Cooperative Education for Minorities and Women in Engineering) this year. The PREFACE program helps schools identify potential engineering students during their high school years and provide them with enrichment studies and freshman academic support. For general information about the program, contact Education Division, DOE Office of Consumer Affairs, Washington D.C. 20585. The schools selected are as follows:

University of Texas at Austin
Dr. J. Parker Lamb
Dept. of Mechanical Engineering
University of Texas
Austin, TX 78712

University of Texas at San Antonio
Dr. Manuel Berrizabal
Division of Mathematics
Computer Science & Systems Design
University of Texas
San Antonio, TX 78284

University of Texas at El Paso
Dr. Andrew Jones
Civil Engineering Dept.
University of Texas
El Paso, TX 79968

ATTENTION: SOLAR HOMEOWNERS

If you live in a solar home anywhere in the US, the Solar Energy Research Institute would like to hear from you. People using domestic hot water, passive, active, wind, or hybrid systems in houses, apartments or mobile homes are asked to write. SERI may contact you in the future in connection with its work in designing effective government policy concerning residential solar application, helping industry plan marketing strategies, and developing better information and communications programs. Names will not be used for business solicitations. Please send, name, address, and telephone number to Solar Users Information, SERI, 1617 Cole Blvd., Golden, CO 80401.

PASSIVE SOLAR ARCHITECTURE

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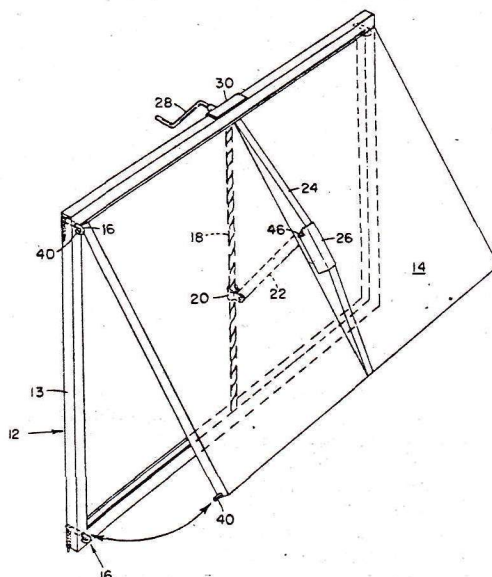
The following are two more articles in a continuing series which look at grant winning projects from the Appropriate Energy Technology/Small Grants program. We will be concentrating primarily on recipients in our own Texas sector in order to glean as many regional pointers as possible.

Flip Flop window cover

Recently I had the chance to see and hear about a product that shows real promise for the solar passive market. Moreover, it addresses some of the special problems we face with our variable Texas climate.

This product was first conceived as an accessory to a passive solar house design built in Kerrville, Texas. The house was built with minimal overhangs to capture the warmth of the low winter sun. Come summer, the friend turned foe (overheating). There was also the problem of winter nighttime heat losses to be considered. Existing products (moveable insulation, storm shutters, awnings, etc.) were examined for efficiency, economy and utility and were found wanting. When it came to providing shade, the interior approaches seemed particularly poor. It appeared that more than one product would be required and this would mean additional expense. It was at this point Dr. James Briggs began re-thinking the problem. Why not incorporate several of these features in a single product? Here was the start of the "adjustable combination shade awning, solar reflector, and thermal security shutter to be integrated within a window system".

Jim with his associate Ben Mizell secured an initial Cycle I grant covering conceptual phase funds and the process was begun. Several configurations were considered: some side-hinged, some multi-tiered, finally a solution was hammered out



incorporating all of the desired features in a commercially viable product. It's evident quite a bit of work was put into perfecting the mechanical operation of the experimental model.

The product consists of an exterior-mounted, insulated panel, hinged top and bottom. The hinged points may be engaged or released from inside allowing a hand operated (or motor driven) crank to activate a worm gear which in turn extends a lever arm that is connected to a dual pivot point on the shutter. The entire device is designed so that it may be attached to a manufacturer's window and placed in the wall. Adaptations for retrofits are being studied further. The single, multi-purpose panel is adjusted to three different positions to perform the following functions:

A. Provide an insulated storm shutter to fit snugly (weatherstripped) against the outside of a window frame. In addition to providing thermal insulation (from conduction) to the window wall, in this configuration the panel can serve as a storm (hurricane) shutter, and can also be latched as a security shutter. When mounted on north, east, or west windows, this configuration also prevents the low early morning and late afternoon solar heat rays from radiating through glazed windows.

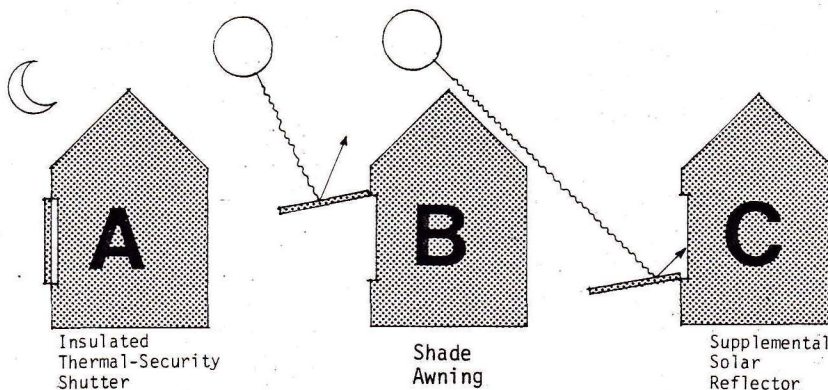
B. Provide an overhead awning to shade out unwanted solar radiation through south facing windows in the summertime.

C. Provide a flat solar reflector mounted just outside the sills of south facing windows, sloping slightly, to add supplementary solar heating in the wintertime.

Here are a few of the products benefits as seen by the inventor:

1. By increasing the portion of buildings heated by passive solar energy the consumption of fossil fuel energy will be proportionately reduced.
2. By adding a practicable solar reflector to south facing windows during the cold weather season, more solar energy will enter a building per square feet of window glazing, which is a poor insulator of heat conduction.
3. By removing completely the shading devices (fixed overhangs or awnings) over south facing windows during the cold weather season, all of the window area will be exposed for the admission of solar energy into the building.

Continued on p.10



Sunset solar greenhouse

This greenhouse was built onto the southern exposure of an existing one story tract style house (1125sq. ft.) The main structure had a couple of things going for it. First, the house was oriented with it's long dimension (45') running approximately east-west. Secondly, the south elevation, facing the rear yard, had a clear view of the sun as it made it's path from east to west in the southern sky. (The critical collection time is from 10AM to 3PM). There were two objectives apparent in the design process:

1) Winter operation - gain maximum sunlight for supplemental home heating and ample light for vegetable growth (45°F is a desirable minimum overnight low.)

2) Summer operation - reduce the amount of solar heat gain on the south elevation while retaining the prevailing southerly breezes. The design we wound up with included the following features:

1) The framework is primarily 4x4 and 2x4 rough cedar members with Cuprinol soakings for sections that sit-in or catch water (this covers a large portion of an open air greenhouse). Application of a semi-transparent stain would tie the raw wood into the existing color scheme and would help to unify the eventual weathering process.

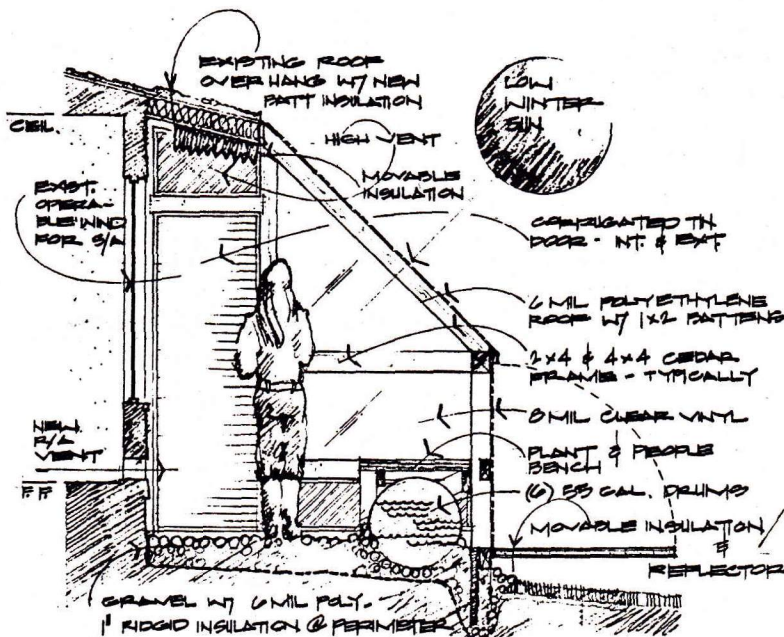
2) A 6' x 22' long 45° sloping roof covered with 6 mil clear polyethylene, secured with staples and topped with 1 x 2 wood battens. We use this covering through the winter season then replace it with a 6' x 22' section of split bamboo fencing. This can be supported with the wood batten strips running E-W or with lengths of galvanized wire drawn taut across the 2x4 cedar rafters.

3) The vertical wall areas are covered with 8 mil clear vinyl, attached similarly, and are removed at the beginning of spring, rolled up and stored until needed in the fall season. This 4' high "knee-wall" element offers ample head room at the perimeter and is left open for summer breezes.

4) A window seat of salvaged 2x8's was built along the outermost knee-wall to serve as a plant and people bench.

5) Below this are six 55 gal. steel drums painted with high temperature flat black and filled with water (add one gallon of cheap anti-freeze to each drum to inhibit rust).

6) The floor consists of 2 tons of Colorado pea gravel shoveled in atop some 6 mil polyethylene sheeting over the existing well sloped sod.



CROSS SECTION - looking east

7) 12" high galv. flashing material was tacked along the perimeter at grade to retain the gravel fill. Then 1" thick, rigid, closed cell insulating foam was installed, to 12" below grade, continuously along the perimeter greenhouse walls.

8) Vents were provided in both end walls below bench level (12 sq.ft. total) and above both doors (9 sq.ft. total) at either end.

9) The doors were "home-made" from 2x2 rippings with rigid foam infill and covered with corrugated tin on both sides. 1x2 cedar was used to trim the door edges.

10) The final element, moveable insulation, has yet to be installed. An insulated interior curtain will be used to prevent the heat gained during the day from passing through the single glazed roof of the structure. A panel of rigid foam insulation with reflective surfaces on either side will be installed along the base of the exterior "knee-wall". This will not only cut nighttime heat losses but will, also increase the amount solar exposure to the water storage by incorporating the reflective surfaces (see Section "A" for hinged panel operation). Material costs for the 150 sq.ft. space ran around \$5/sq.ft.

Our experience with the space to date indicates a couple of things:

1) Occasional mid-winter overheating, given our San Antonio climate, can be a problem (temperatures of 120°F inside with 70°F outside temp. have occurred if the vents are unattended). Some sort of automatic venting would be a good bet, as would a belvedere feature (a high exhaust port). Additional thermal mass (given effective placement and surface area)

combined with a remote storage system, assisted by an active system are some more expensive options to diligent manual operation.

2) A more involved, yet more flexible, solution might include interchangeable panels for roof and walls. One set of frames would be covered with Monsanto 602 film, the other set with plastic sun screen material. Be sure to stretch and tack the plastic on a warm day to prevent subsequent sagging and wind ripping. If insects are a bother this would offer protection from them as well as from the summertime sun. With either approach, remember passive heating relies on low infiltration rates - keep it tight!

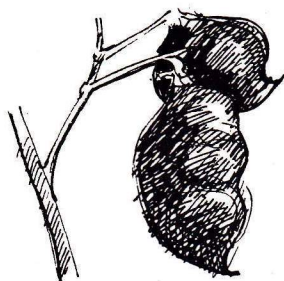
Finally, when planning your passive solar design keep in mind our Texas climate does not have the large day/night temperature swings that characterize the New Mexico, Arizona, Colorado areas. This means you should be cautious when using high thermal mass and provide adequate venting for occasional warm winter days. Moveable shading and insulating features can be useful during both winter and summer seasons. - Bob Bradley

For more information:
Bob Bradley
Maple Leaf & Co.
115 Wickes St.
San Antonio, Texas 78210
512/ 222 8881

TRACT

Morama propagation

Dr. Joseph Bousquet and the Center for the Study of Human Adaptation received one of the first round appropriate technology grants to coordinate efforts to grow a Kalahari Desert plant food in arid and semi-arid parts of Texas. The following interview by Steve Wilson took place in Dr. Bousquet's office at Southwest Texas State University where he teaches anthropology.



S. - Where did you first hear about the Morama bean?

Dr. B. - In my last year of graduate work at the University of Texas in 1977 I was working as assistant to an anthropologist, Megan Beasley, who had done her field work in Botswana. She lived in bushman camps and had been recording legends and myths about their gods. While she was living with them she was eating their food and moving from camp to camp when they moved. After she finished her doctorate she returned to Botswana to put in some time working for the government as a kind of repayment to the people for the help and hospitality she had received. She worked as a liaison officer between the bushmen and the government of Botswana. One of the projects that she foresaw at that time was to give the bushmen more economic power by commercializing the activities they were already engaged in. One of these was basket making and another was to grow as agricultural crops the foods that they gather in the wild. The major foods that can be done that way is the mongongo nut and the morama bean. Morama beans are a legume and they grow in a wide variety of environments around the Kalahari. They grow in places that are very dry and receive from 10" to 80" of rain per year. The way it survives in the years of light rainfall is that it has an underground tuber that stores moisture. The people eat both the beans that fall off and the tubers which are similar to sweetpotatoes.

S. - Is it a substantial portion of their diet?

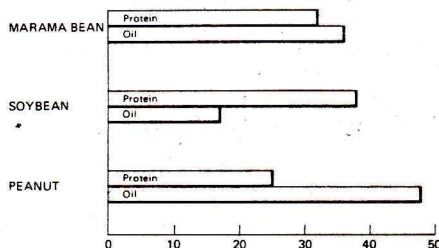
Dr. B. - It is a major item in their diet for several months and a minor part for the rest of the year.

S. - What about the health of the natives?

Dr. B. - Well, they are very healthy. Partly because they are living in the bush and they don't have the stresses of modern civilization, they don't get ulcers, heart attacks, diabetes, hypertension, T.B. or malnutrition. Their major health hazards are from thorns and scratches.

S. - What have you found out about the food value of the morama?

Dr. B. - The analysis of the nutrition content that we have done so far says that it's 30 to 40 percent protein. The soybean has more protein, but they are harder to cook and soybeans are not as high in oil. Morama oil is low in cholesterol. We are also doing studies with animals, feeding some small mammals and observing how they add body weight to see how much of the protein is being used.



S. - What is the Kalahari desert like?

Dr. B. - It's not like the Sahara, its got lots of green stuff.

S. - But drier than the Texas Hill Country.

Dr. B. - Yes-- even drier than West Texas-- it doesn't have any rivers or streams. During the rainy season there will be water, they call them pans- dry lakes, which later evaporate.

S. - What is the per acre yield?

Dr. B. - We don't know that. A single plant will send out vines radiating in a star pattern from the tuber and one plant may cover up to half an acre. The average length of the vines is 18 feet.

S. - How do you harvest them?

Dr. B. - They just fall off. I would like to see it growing on a trellis, in that case the beans would fall

off onto the clear ground underneath where they could be raked up.

S. - How long does it take them to produce beans?

Dr. B. - At least two years as far as we know.

S. - Will they be nitrogen fixing?

Dr. B. - We think so.

S. - Where are they being grown in Texas?



Dr. B. - In the Monahans Sands area of West Texas, the Chihuahuan Desert Research Institute, in Alpine in the prairie of the northern panhandle, the people at Texas Tech are experimenting with greenhouse propagation; and in Dallas, Geoffrey Stanford of the Greenhills Experiment Station will be growing them in that higher rainfall area. He has experimented with germinating them before. The first sample of beans that we had in this country was brought here in the late 1950's by Leona Marshall, she had a coffee can of them in her pantry for 17 years and when Megan got interested in experimenting with these, she turned them over to Geoffrey and he was able to germinate over 50% of them.

S. - What kind of market do you foresee?

Dr. B. - We are hoping to market them as a snack food as a healthy snack food.

Continued on p.10

A.T. Small Grants

The Appropriate Technology Small Grants Program, second cycle awards have been announced. Twenty were grants selected in cooperation with the Texas Energy and Natural Resources Advisory Council totaled \$330,559 with an average grant of \$16,528. There were 912 applicants for the 20 grants. Anyone wishing to be notified of the third round of proposal solicitations may write to Office of Program Operations/6CE, U.S. DOE, P.O. Box 35228, Dallas, TX 75235. Here is a list of the projects:

"Geothermal Energy for Space Heating" \$34,000 City of Hubbard (Local Government Agency); Hubbard, TX 76648

"Salt Gradient Solar Ponds- \$9,100 Ana-Lab Corp. (Small Business) 2600 Dudley Rd., Kilgore, TX 75662.

"Vehicular Tire Air Pressure Measuring System" - \$17,725, Mr. Jess B. Smith (Individual), 1153 Rock Creek Dr., Garland, TX 75040.

"Energy From the Waste of Secondary Wood Processors" - \$8,000, Mr. W. H. Richards (Individual), 106 Inwood, Silsbee, TX 77656.

"Low Cost Concentrating Collector" - \$5,500, Mr. Greg Ochs (Individual) 2611 Oakhaven Drive, Austin, TX 78704

"Improved Structural Systems for Earth Sheltered Housing" - \$10,000, Texas Tech Univ. (University), P.O. Box 4089, Lubbock, TX 79409.

"Passive Solar Adobe House for Low-Income Families" - \$24,000 Mr. Phillip M. Caldwell (Individual) 3019 East Yandell Blvd., El Paso, TX.

"Investigation of heat pump efficiencies in the Gulf Coast Region Using Groundwater Coils" - \$30,000 Lamar University (University), P.O. Box 10028, Beaumont, TX 77710.

"Self Energized Home Clusters" - \$18,000, Design Technology, Inc. (Non-Profit Organization) 604 Civil Courts Bldg., Houston, TX 77002

"Retrofitting Residential Air Conditioners" - \$6,200 Bernard B. Kinsey, Ph.D. (Small Business), 102 Skyline Drive, Austin, TX 78746

"A Model for Early Solar Energy Education" - \$2,335 Travis Elementary School (Local Government Agency) 1400 South Lee Street, Odessa, TX 79760.

"Solar Powered Wastewater Treatment Plant" - \$35,000, City of San Marcos (Local Government Agency), 501 South LBJ Drive, San Marcos, TX 73666.

"Solar Energy for Laundromate Washing and Drying" - \$30,000, University of Texas at El Paso (University), El Paso, TX 79968.

"High Efficiency Heat Pump Using Ground Heat Source" - \$4,612, Mr. C. Richard Reeves (Individual), 5604 Lakemoore Dr., Austin, TX 78731

"Wind Power for Municipal Water Pumping" - \$31,800, West Texas State Univ. (University), Box 248, WTSU, Canyon, TX 79016.

"Retrofit Hybrid Solar Collector System" - \$2,987, Dr. C.E. Teske (Individual), Box 4360 Texas Tech Univ., Lubbock, TX 79409.

"Waste Oil Recycling Concept Development" - \$3,300, Community Development Corp. of Brownsville (Local Non-Profit Organization) 833 West Price Rd. Brownsville, TX 78520.

"Development of Wind-Powered Heat Pump" - \$19,000, San Jacinto College (College), 8060 Spencer Hwy., Pasadena, TX 77505.

"Manufacture of Caliche Blocks for On-site Building and Area Marketing" \$35,000 Hill Country Youth Ranch (Local Non-Profit Organization) P.O. Box 67, Ingram, TX 78025.

"Wind Driven Mechanical Refrigeration Unit" - \$4,000 Mr. James C. O'Hara (Individual) 240 Purl Place, Corpus Christi, TX 78412.



Eylasenu esculentum (Carr.) Schweiter

Continued from p.9

S. - Do you believe Texas is running out of water?

Dr. B. - Definitely - The Ogallala Aquifer is already reaching the end of its productivity. Certainly water resources are not infinitely expandable and agricultural desires are. So its got to reach a point where we don't have enough water anymore for what we would like to do.

S- What else is involved in your project?

Dr. B. - The other part of this project is to take this information back to the bushmen. After we have ripped off their intellectual resources and their knowledge about the plant we want to take our information back to them to help grow these things so that they can protect themselves from the encroachment of civilization. They will have a traditional plant that they love to eat that they could grow near their villages so they won't have to travel long distances to find the plants.

S. - Thank you Dr. Bousquet. We will certainly be interested in learning about your findings as your project progresses.

Continued from p.7

4. By having an adequately sized fixed awning over the south facing windows during the hot weather season, all of the glazing may be shaded from the sun's rays; thus, less heat will enter the building.

5. During the heating season, a well insulated shutter weather-stripped against the outside frame of a window would greatly reduce the loss of inside heat by conduction through the glazing at night and on cloudy days. In some "sunbelt" climates, the percent of possible sunshine during winter months is only approximately 50% such as San Antonio, TX which averages only 49% sunshine during the month of January. In those locations, installation of south facing windows for purposes of passive solar heating may not be practicable in the absence of some form of thermal shutter to reduce the loss of inside heat by conduction through the glazing at night and on cold, cloudy days.

Also by having one panel serve the role of three, building material is substantially reduced along with associated energy costs.

The product seems particularly well suited for regions which require shading for extended, as well as variable, periods during the year. While there are some added difficulties with an exterior mounted panel (operation, cleaning, weathering, and required clearances) the additional features of shading, reduced air infiltration, and protection from vandalism and/or storm appear to offset these handsomely.

Currently, Dr. Briggs is seeking additional funds to continue with design development and pursue manufacturing and marketing investigations. Interested parties should contact:

Dr. James Briggs
Tierra Linda Ranch
Star Route Box 574-637
Kerrville, TX 78028

SOURCES & RESOURCES

The Griffolyn Company, Division Reef Industries in Houston is producing nylon fiber reinforced, laminated plastic film materials. They make a 3-ply polyvinyl chloride with nylon cord translucent film that is fire retardant and very tough. They believe it has a 3 to 5 year life expectancy under continuous exposure. Cost: 25¢/sq.ft. They also make an ingenious double wedge type tie down device that is simple and works well. Griffolyn will send you a packet of samples, call collect 713/943-0070 and ask for Bruce Lowrie.

These products were originally developed for temporary construction shelter and protection for building materials. We have asked them to add solar transmission data to their technical information sheet and their lab is working on it.

SUNDIAL

FREDRICKSBURG, FARMERS AND SOLAR

Nov. 21-23

SAW ANTONIO, TX. Solar Greenhouse '80. Hosted by IDEA. Contact: William Perry, 512/622-3401.

Nov. 21-23

CORSICANA, TX. Solar Greenhouse '80 Workshop. Hosted by Navarro College. Contact: David Moorhead, 214/874-6501.

Nov. 25

AUSTIN, TX. Texas Solar Town Hall '80. Contact: TX-SES Office, 512/443-3221.

Nov. 30 - Dec. 5

PHOENIX, AZ. The 7th National Conference on Energy and the Environment, at the Hyatt Regency Hotel. Sponsored by the Environmental Protection Agency; Dept. of Energy. Contact: William N. McCarthy, Jr., 10813 Vista Rd., Columbia, MO 21044.

Nov. 30 - Dec. 3

PHOENIX, AZ. 7th National Conference on Energy and the Environment, at the Hyatt Regency Hotel. Sponsored by the Environmental Protection Agency; Dept. of Energy. Contact: William N. McCarthy, Jr., 10813 Vista Rd., Columbia, MD 21044.

Dec. 3-5

COLORADO SPRINGS, CO. 2nd Wind Energy Innovative Systems at the Broadmoor Hotel. Sponsored by SERI and Dept. of Energy. Contact: Kate Blattenbauer, SERI, Conferences Group, 1617 Cole Blvd., Golden, CO. 80401, 303/231-1864.

Dec. 8-11

HONOLULU, HI. National Conference on Renewable Energy Technologies, at the Sheraton-Waikiki Hotel. Sponsored by the DOE, Hawaii Natural Energy Inst., Univ. of Hawaii at Manoa. A forum for interchange of the latest info on the major DOE programs and projects in renewable energy technologies. Theme: Island energy self-sufficiency as a model for regional energy planning. Contact: Donni S. Hopkins, Conference Coordinator, Univ. of Hawaii at Manoa, Hawaii Natural Energy Inst. 2540 Dole St. Holmes Hall, 246, Honolulu, HI 96822, 808/948-6379.

Dec. 9-10

DALLAS, TX. Mother Earth News Seminars on Alcohol Fuel and Low Cost Solar Heating Systems at the Holiday Inn Central, 4070 No. Central Expwy. Dallas, TX 75204. The Alcohol seminar is on Tues., Solar on Wednesday. Registration takes place from 7:30 - 9 a.m. each seminar day and the fee is \$40 per person.

Dec. 11-13

AUSTIN, TX. Conference on Alternative State and Local Energy Policies (specific ways for state and local governments to support conservation and solar energy). Contact: Becky Glass, Energy Project, Conference on Alternative State and Local Policies, 2000 Florida Ave., N.W., Washington, D.C.

NEWS Cont'd from p.4.

BOARD SELECTS BASEHORE

At the TX-SES Board of Directors meeting, September 20 in Houston, Judi Basehore was selected to serve the remaining months of Ken Anderson's position on the board. An active proponent of solar energy and the other renewables, Judi is currently serving as President of the North East Texas Solar Energy Association, on the board of the Solar Lobby, and completing a degree in architecture.

As a Board of Directors nominee at the beginning of this year, Judi explained her interest in serving on the board as follows. "My work in the solar field is primarily concerned with the establishment of outreach and networking programs in East Texas. With such programs people in this area and across Texas will become aware of all forms of renewable energy and have a resource center to enable them to make solar a reality."

After serving the few months left in Ken Anderson's term, Judi will still be eligible for nomination to the board in the elections to be held in December.

At the request of Sharon McKenzie of the Fredricksburg Public Schools, and the Pioneer Library, TX-SES asked M. J. Osborne, a five year veteran of the solar wars, to go to the "Sunday House" town on September 28 and talk with 40 citizens in this amazingly well kept German community in the hill country.

After a 15 minute D.O.E. film featuring developments in the solar industry in agriculture, and another government film showing some of New Mexico's fine passive solar homes, Mr. Osborne shared some of his experiences in his passive solar home projects, active installations, wind projects in the Texas panhandle, and his biomass experiences in both combustion and ethanol production. He also showed slides of the many examples of solar technology at work in the Central Texas region, while at the same time, giving a basic overview of solar energy and how it can be collected and connected to support our energy needs.

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The Solar Federal Buildings Program

As reported in the last newsletter, eleven projects are planned for Texas under the Solar Federal Buildings Program. The chart below gives the specifics of the type and size of system planned for each location. These projects are currently open for bid. For additional information contact: The Solar Federal Buildings Program, NASA/MSFC FA 34, Huntsville, AL 35812.

City	Building	System	Collectors Sq. Ft.	Type	TK. Volume
Austin	Office	DHW	300	Liquid	540 gal.
Austin	Retail Store	Heat/Cool	987	Liquid	1776 gal.
Dallas	Office	DHW	2680	Liquid	2412 gal.
El Paso	Office	DHW	2544	Liquid	5000 gal.
Lubbock	Office	DHW	300	Liquid	540 gal.
San Antonio	Office	DHW	300	Liquid	540 gal.
San Antonio	Aircraft Hangar	Process Ht.	11936	Liquid	18000 gal.
San Marcos	School	DHW/Heat	6450	Liquid	9000 gal.
Texarkana	Waste Treatment	Heating	1300	Air	730 cuFt.
Texarkana	Industrial	Process Ht.	31500	Liquid	40000 gal.
Tyler	Courthouse	DHW	150	Liquid	300 gal.

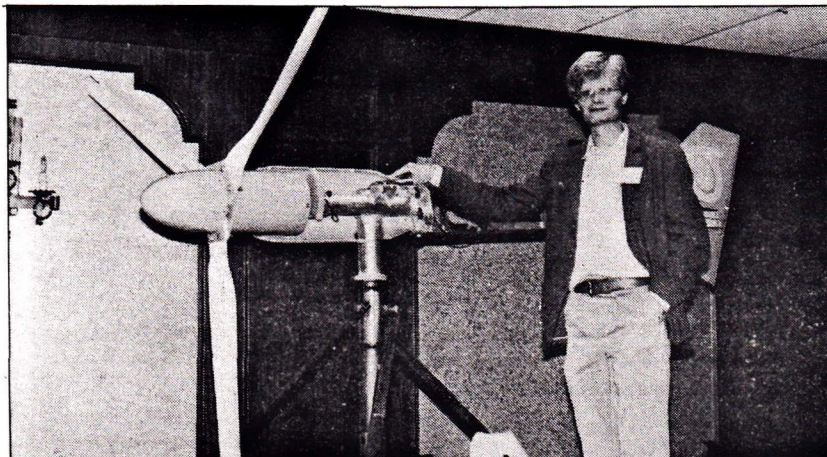
Wind Energy Forum

A Wind Energy Forum held April 2 in Amarillo brought together people who would be developing a wind market in Texas and Oklahoma. The purpose was to bring together manufacturers (both large and small machines), dealers, electric utility and cooperative representatives, and government officials to discuss problems and opportunities in commercialization of wind energy. Key issues were utility buy back rates, policies for setting rates, markets, and service of that market (sales, service, reliability and quality control). A panel of Texas and Oklahoma manufacturers discussed their problems.



Jay Carter, Jr. discussing his wind unit.

The field trip to Southwestern Great Plains Research Center on April 3 showed the operation of four units (Alcoa 17 m, DAF 40, DAF 4, Carter 25) being tested by US Dept. of Agriculture and Alternative Energy Institute. Winds of 40 to 60 mph provided ample demonstration of energy in the wind. The forum was sponsored by Southern Solar Energy Center, Alternative Energy Institute, Oklahoma Department of Energy, and Texas Energy and Natural Resources Advisory Council. A summary of speakers comments will be available from Steve Nelson, SSEI, 61 Perimeter Park, Atlanta, GA 30341.



Mike Bergey, Norman, OK, with Bergey 1000 display.

Hanshu Enters Wind Turbine Enterprise

Darrouzett, population just edging over the 400 mark, will soon be the area sales center for wind turbine electrical generators.

Clinton Hanshu, owner of Pro Ag Services in Darrouzett which handles the sales and service of irrigation equipment, has recently been appointed area district sales manager for Tumac Industries. Tumac manufactures wind turbines, an egg beater type machine that is capable of generating enough electricity from mother nature's wind to run irrigation equipment or an average household's electrical needs.

Tumac, one of the few manufacturers of the turbine systems, is headquartered in Colorado Springs. The Hanshus ordered one in early January to provide energy for their home located west of Darrouzett, and it will bear the distinction as the first privately owned turbine in the state of Texas.

"Our's is the first production model- and we have experienced several delays," stated Hanshu, "but we are expecting it to arrive in about ten days."

In preparation for this new business venture, Clinton attended an energy seminar in Amarillo recently, hosted by the Alternate Energy Institute of WTSU. Wind energy was the central topic of the seminar, and representatives were on hand from industry, governmental bodies, utility companies, to discuss alternate energy systems as pertaining to the production of electricity.

Hanshu received his college training in the field of agricultural engineering and hopes to include solar and wind energy consultation service, and equipment sales in the Pro-Ag services.

- Lipscomb Co. Limelight
Follett, TX

Canyon City Turbines

Two Carter 25's were installed at the City of Canyon well field in a joint project with AEI, funded by Appropriate Technology Grant. From March 8 to end of April, the two units have generated over 8,500 kwh.

The three MOD-2's, designed and built by Boeing, are installed and going through the shakedown phase. These units are 300 ft in diameter on a 200 ft tower, and reach their rated power of 2,500 kw at 28 mph. The wind turbines are connected to the grid of the Bonneville Power Administration.

Information

Additions to List of Texas Manufacturers and Dealers

WindTex, Inc., 200 Rupert St., Box 9380, Fort Worth, TX 76107 817 332-6352
Unit developed in Europe, 49 ft diameter, rated power 50 kw.

Tumac - Darrieus
Clint Hanshu, Box 314, Darrouzett, TX 79024

Other sources of information
List of Texas Manufacturers and Dealers
Alternative Energy Institute
P.O. Box 248, WTSU
Canyon, TX 79016

Wind Energy Equipment Manufacturers
SERI
1617 Cole Blvd.
Golden, CO 80401

Commercially Available Small Wind Systems and Equipment
Rocky Flats Wind Systems Program
Information Dissemination
P.O. Box 464
Golden, CO 80401



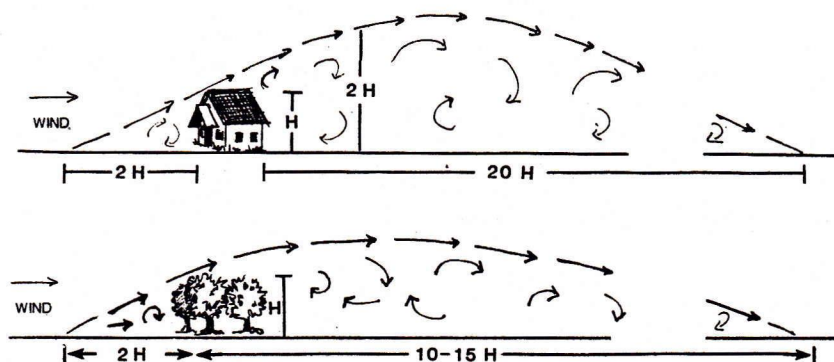
Big Cut

Federal wind energy program for 1982 is budgeted for \$20 million, a reduction from the \$80 million for 1981.



CATCHING THE WIND

by Vaughan Nelson



Zones of turbulence around windbreaks and buildings.

Siting of Wind Turbines

Small wind energy conversion systems are best located where the energy is to be used since the cost of transmission lines from a site further away will not be paid by the extra energy. Also, in many cases, land area is limited. Terrain and specific site conditions such as trees or buildings affect the wind. Surface friction reduces the wind speed near the ground and obstructions increase the turbulence. Reduced windspeed means less power and turbulence can affect the performance and life of the system. Generalized rules for siting have been developed from previous experience, models of airflow for different kinds of terrain and obstructions, and measurements of windspeed with height for different types of surfaces and atmospheric conditions.

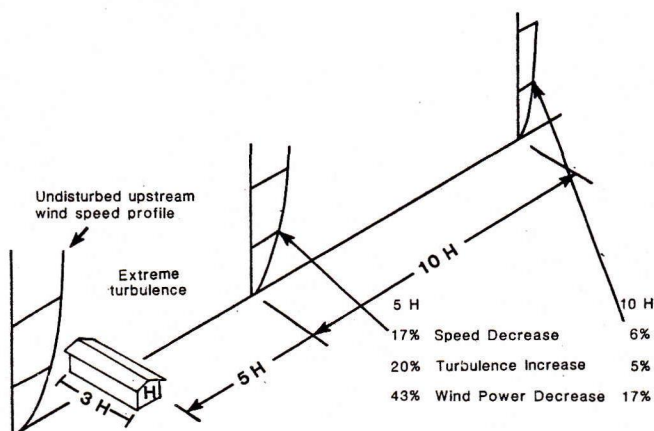
Finding a suitable location in

rough terrain, woods, or an urban area may be difficult. Many people overestimate how much wind energy is at their location. A good source of information on siting is Harry L. Wegley, et al., "A Siting Handbook for Small Wind Energy Conversion Systems," Battelle Pacific Northwest Laboratories, PNL-2522 Rev 1/UC-60, available from National Technical Information Service, \$8.00.

Since windspeed increases with height, hills or ridges can serve as natural towers and since winds seek the path of least resistance, gaps and gorges also tend to affect windspeed and direction. Sites in rough terrain present problems and bottom of ravines and canyons should be avoided. The main objective is to have the wind unit exposed to the prevailing wind and out of regions of turbulence. Natural obstructions such as trees and man-made obstruc-

tions will affect the winds (Figure 1). A site should be far enough away or on a high enough tower to avoid the disturbed wind flow.

Major benefits of a tall tower are increased energy and less turbulence. However, at some point the increasing cost of a taller tower offsets the additional energy from higher windspeeds. There are locations where a 40 ft tower might be acceptable, but a 60 to 80 ft tower is recommended as the increased height will pay for itself in increased energy output. The height of a tower should be 25 to 30 ft taller than the highest obstructions. Growth of trees and future building projects may affect future performance of wind turbines. The two main types of commercially available towers are free standing and guyed. Free standing towers have to be stronger, but they take up less land area.



Windbreaks reduce wind speeds even more than buildings.

FOR SALE

Five complete Revere Solar Hot Water Systems (one mounted on a trailer for demonstrations) to be sold due to changes on the part of the firm:

Odiorne Lighting & Appliance
712 Chestnut
Bastrop, TX 78602
512/321-2262

PASSIVE SOLAR ARCHITECTURE

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Architect of over 20 Texas solar buildings.
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Texas Solar Energy Society

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(512)345-8817

RAYS OF HOPE

A subscription to the Texas Press Association's clippings service has provided new insight into the impact solar and other renewables are making in both rural and urban communities. Articles are regularly appearing in papers across the state which detail the development of renewable energy sources and report specific projects underway or planned. A sampling of such articles is given below, each with the headline the story ran with and the press source.

Solar Heated Well Increases Efficiency

When Jim and Irma Pinkston bought the Triple Peak Ranch Estates subdivision at Canyon Lake in 1973 they soon discovered they had a problem. The subdivision was served by a water well and a 2,000 gallon storage tank that got too hot in the summer and froze in winter.

But Pinkston, a professional engineer who is in the manufacturing business in Houston, didn't let a little problem like that get him down. He put his professional know how to work and built a passive solar heated well house from aluminum, styrofoam and glass.

When put to the test last March with outside temperatures dipping below 20 degrees in the Canyon Lake area, his pump house was a nice, cozy 65 degrees inside, with no auxiliary heat.

"We couldn't have made it through this summer without it," he said. "With temperatures outdoors over 100 degrees, we kept it about 85 degrees in the pump house." In summers past, when the temperature rose, the controls got so hot the safety cut-off would engage, and someone would have to come reset it.

Another problem caused by the heat was the formation of coliform organisms in the air space in the top of the tank, which caused the state health department to declare the water unsafe to drink.

Pinkston designed the well house using wall panels which are made of two sheets of .32 sheet aluminum with three inches of styrofoam sandwiched between. A row of clear windows line the south side of the building. The overhang is calculated to shade the windows in the summer, and allow the sun's heat to enter the building in the winter.

The building had to be designed to get to the well if the pump had to be pulled for service. It was built with one roof panel, one and one half panels on the west side, and one panel on the north side being removable.

- New Braunfels Herald

Bay City Residents Invite Solar Energy Into Home

The Burnell residence located in the River Oaks Subdivision just outside of Bay City received coverage in the Bay City Tribune. The Burnell's designed their home as a passive solar collector, using large double glazed southern facing windows, 2x6 construction in exterior walls, and double conventional insulation. Six active solar collectors are used to meet hot water needs, and a forced air fireplace acts as a back-up heat source. The couple's winter electricity bill usually runs about \$35 a month, with their summer bills running about \$25.

Expert Likes 'Solid' Energy Idea

Acme Brick Co., North Texas State University and the City of Denton are working on an energy idea they think is solid as a brick.

The research partners hope to meet one half of the energy needs of Acme Brick's plant in Denton, using the city's annual production of 30,000 tons of solid waste.

"When fuels are eventually deregulated, you're going to be in a position where solid waste will increase in value," said Dr. Ken Daugherty, North Texas State professor of chemistry.

"What is looked on as a negative economic resource right now, a landfill site, I believe will be tomorrow's source of recoverable energy," Daugherty said.

Denton pays about \$4 a ton to dispose of its waste, Daugherty said, adding urban waste is 75 percent combustible.

Actual commercial production of brick using solid waste as a kiln fuel could begin by 1982. If the Denton project is successful, Dallas has several potential customers for its solid waste, because of the number of cement and lime plants in the area.

Brick, cement and lime plants are especially suited for the garbage-to-energy concept because the ash left after the trash has been burned can be used in masonry products, Daugherty said.

The project is receiving \$138,471 in funding: \$59,855 from the U.S. Energy Department; \$21,000 cash from the city of Denton and \$30,000 from Acme Brick. Materials and manpower worth \$23,116 will be provided by North Texas State, and another \$4,500 will come from the City of Denton.

-Dallas Morning News

Prairie View Engineers to Design Solar Heating Project for Waller

Waller County Commissioners Court has approved a solar heating project designed by engineers at Prairie View A&M University and will seek federal funds recently provided for such energy programs.

John R. Williams, head of the university's Center for Energy Affairs, said the system, to be used primarily to heat asphalt, will cost an estimated \$15,000 and should save the county 75 percent in heating costs.

"This project will give the citizens of Waller County a chance to see how solar energy is an alternative and the costs are not prohibitive," Williams said.

Jack Rafferty, county road commissioner lauded the project and efforts by Prairie View A&M. Rafferty explained, "We now heat by electricity and it costs about \$600 monthly to keep asphalt hot, and it must stay hot." The asphalt purchased in loads of 6,000 lbs. (the smallest available) is stored in a 10,000 gallon refurbished railroad tank car, and must be kept at between 165 to 170 degrees at all times.

- Houston Post

Future Subdivision Going Solar

A solar subdivision, Valley West, is underway in Temple and should be ready for occupancy around January or February. A project of David Langham, a Harker Heights homebuilder, the subdivision will be made up of 17 homes of approximately 1,800sq.ft. starting at \$100,000.

The homes are completely passive in design employing a wall of double glazed windows on the south, none on the east or west, and one small window on the north. Other design features are terazzo floors for heat storage, insulated slabs, attic fans, heat circulating fireplaces, and air-locked front and back entrances.

The subdivision is a "pencil-shaped" tract about 480 feet wide by about half a mile long. The land is located between Forrester Rd. and State Highway 93 in Taylors Valley. The land costs of the area were noted by Langham as a factor in the high price for the houses.

- The Daily Telegram
Temple, Texas



MAKING THE NEWS

Plant Gambling on Solar Cell Product

Owners of the Photon Power plant are betting \$18 million that their electricity producing coated glass cell will be a big seller in areas with little or no electrification.

The marketing director admits Photon's cadmium-sulfide photovoltaic cell won't make a hit in residential America, because it would take three of the modules, designed to sell at around \$300, to power one television set.

"It would take a hell of a big roof to hold enough of our units for a good residential application, said Marty Wenzler. "But you take a farmer in central Texas who needs some irrigation pumps running, and he can use the product."

Photon Power is a joint venture of the Libby-Owens Ford Glass Co. and Compagnie Francaise de Petroles, a French oil company. Wenzler, on loan to Photon from LOF said the 62,000 sq.ft. plant under construction at El Paso should be on line producing saleable products by March 1981.

The heart of Photon is a process in which a 2-foot square piece of glass is sprayed first with tin oxide, then cadmium sulfide, then sectioned by a laser and coated in a vacuum with copper, chromium and lead. It's boxed in wood, fitted with two electrical leads, and when exposed to sunlight produces 10-16 watts of direct current.

"The DOE believes that good photovoltaics only use silicone instead of cadmium sulfide," Wenzler said. "Ours takes four times the area as silicone to produce the same power, but we're a lot less expensive."

Although Photon believes its immediate market will be largely in Mexico, where 80,000 villages have no power generation whatsoever, he says there are also ready markets in the United States for the cell.

"On this side of the river, for example, there are a lot of cattle fences with energizers," Wenzler said. "They need something to charge the battery that sends out a pulse. There are a lot of electrified fences in the Southwest."

Daily Sentinel
Nacogdoches

Everman Corp. to Expand

Everman Corporation, manufacturer of precast concrete products has announced construction will begin immediately on a \$2 million plant expansion project in Everman.

The three buildings, to be completed within a year, will consolidate and modernize the existing concrete casting operation. The architect for the project is Kirk Voich.

Everman Corp. will install solar heat facilities for curing concrete building products, a system that will replace a steam heat curing process. "The new solar-powered hot water system will demonstrate that solar power has tangible uses right now, and is not merely an exotic fuel system of the future", Everman Corporation President Earle Haley said. The solar system is projected to cut curing costs by 60 percent.

-Everman Times

Federal Energy Regulatory Commission

The major agency responsible for regulation of natural gas and electric rates is the Federal Energy Regulatory Commission (FERC). Created in 1977, as an independent regulatory agency, the FERC inherited most of its duties from the Federal Power Commission. In addition, the Congress in 1978, expanded the FERC's responsibilities to other areas, including some aspects of retail natural gas and electric utility regulation. The FERC is charged with regulating industries involved in: natural gas production, natural gas pipelines, wholesale electric power, hydroelectric facilities, liquefied natural gas, and oil pipelines.

There are many issues that come before the Commission that may be of interest to you, such as: renewable energy resources, power pooling, licensing of hydroelectric projects, liquefied natural gas facilities, and fuel adjustment clauses.

The Commission is developing a consumer mailing list in order to hear your suggestions, comments and proposals concerning the issues that come before the FERC. This list will be used to alert you to hearings, proposed rulemakings, major rate cases and other pending business. If you are interested in being placed on the Federal Energy Regulatory Commission's consumer mailing list write to:

Charles B. Curtis, Chairman
Federal Energy Regulatory Commission
Washington, D.C. 20426

Wind Powered Electric Generators Arrive in Valley

In June, Walter Plitt erected what he says is the Valley's first modern, commercially produced wind powered electric generator next to his business at the Port of Brownsville.

The generator is an Enertech 1500 manufactured in Vermont. Sitting on a 60-foot metal pole at a height where winds here average 15 mph year-round, the windmill will average about 1,000 watts at that speed and a maximum of 2,100 watts when winds reach 28 mph.

Plitt, the owner of Plitt Crane and Brownsville Stevedoring, said he is the Valley's first and only dealer of Enertech generators. Fully installed the systems will cost from \$5,000 to \$7,000. The first \$4,000 goes towards the cost of the windmill generator and its accessories. The finished system costs depend on the type and height of tower used to mount the generator.

The system costs are decreased considerably by the federal and state tax breaks available. The entire cost and value of the system are exempt from all state sales and property taxes, as well as eligible for a 40% federal tax credit. There's the obvious benefit of the free electricity, too!

Brownsville Herald

DID YOU KNOW?

- | | | |
|----------------------------------|-------------------------------|----------------------------------------|
| 1. Southridge Phase II | 29. Sun Star Estates | 69. Blue Street Resident Homes |
| 2. Southridge Phase III | 30. Manor Estates | 70. Sun Center |
| 3. Mustang Creek II | 31. Loma Vista | 71. Phoenician |
| 4. Canyon Estates | 32. Sater Sunbeam Homes | 72. Discovery |
| 5. Coast Park | 33. Nacogdoches | 73. Sunridge |
| 6. Dunes Apartments | 34. Pointe Conception | 74. Vista Pacifica II |
| 7. Village Homes | 35. Solar One | 75. Aspen |
| 8. Dunes Manor | 36. Solar Two | 76. Economidia Blvd |
| 9. Marquette Plaza | 37. Alhambra Gardens | 77. Economidia Homes |
| 10. Marquette Oaks | 38. Ventura del Sol | 78. Alhambra Farms |
| 11. Marquette | 39. Bel-Air Park | 79. Maple Street |
| 12. Marquette Lakes | 40. Bel-Air | 80. Northridge |
| 13. Quail Run | 41. Turtle Rock Highlands | 81. Veterans Village |
| 14. Marquette Canyon Estates | 42. Woodbridge Circle | 82. Time for Living in Canyon Phase II |
| 15. Hazelnut Condominiums I & II | 43. Woodbridge Estates | 83. 3788 Glen Avenue |
| 16. Lyrain Gardens I | 44. Santa Monica Ocean Towers | 84. 3814 Glen Street |
| 17. Flax River Estates | 45. Sea Breeze Townhomes | 85. 4015 Texas Street |
| 18. Alhambra Hills | 46. The Trade Winds | 86. 4062 Georgia Street |
| 19. Jackson Square | 47. Corralito | 87. 4208 Walnut Street |
| 20. Homewood Creek | 48. Vista Pointe | 88. 4788 5th Street |
| 21. Jonon Place | 49. Greenfield | 89. 4789 Houston Way |
| 22. Burnington Manor | 50. Seahorse Homes | 90. 125 Astor Drive |
| 23. Van Dyck Estates #10 | 51. Sun Tree | 91. Antler Condominiums |
| 24. Van Dyck Estates #7 | 52. Pinyon Reposement Courts | 92. Casa Nuevo-Sonoma |
| 25. Van Dyck Estates #10 | 53. Van Dyck Park | 93. Patterson Estates |
| 26. Van Dyck Estates #11 | 54. Sunset Canyon | 94. Ponderosa Homes |
| 27. Chaparral Townhomes | 55. Seaside Townhomes | 95. Villa del Sol |
| 28. Chaparral Estates | 56. Vista del Mar | 96. Villa del Sol |
| | 57. Rio Vista Estates | 97. Kaneland |
| | 58. The Meadows | 98. Pines Manor |
| | 59. Lakewood Apartments | 99. Loma Vista Villas |
| | 60. Sycamore Hills | 100. Valley Center |
| | 61. Chateau Cove | 101. Oremco Village |
| | 62. El Rancho Verde Estates | 102. Harbor Park II |
| | 63. Sunset Valley II | 103. Woodridge |
| | 64. Sunset Valley I | 104. Essex Project |
| | 65. Solar Crest | 105. Baramore |
| | 66. Vintage Series I & II | 106. Winters |
| | 67. Canyon Court | 107. Mediterranean Sonoma |
| | 68. Sun City | 108. Mirador II |



January 1980



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All memberships extend for 1 year from month of joining.

TEXAS SOLAR ENERGY SOCIETY: AFFILIATE CHAPTERS

Dallas/Fort Worth Solar Energy Association
 12547 High Meadow Dr.
 Dallas, TX 75234
 Attn: John Reddick, Pres.
 214/358-4101

E1 Paso Solar Energy Association
 P.O. Box 26384
 El Paso, TX 79926
 Attn: Richard Barrett, Pres.
 915/779-6587

Houston Solar Energy Society
 P.O. Box 13629
 Houston, TX 77019
 Attn: George Way, Pres. or Rick Brand
 713/622-3130

North East Texas Solar Energy Association
 P.O. Box 6892
 Tyler, TX 75711
 Attn: Judi Basehore, Pres.
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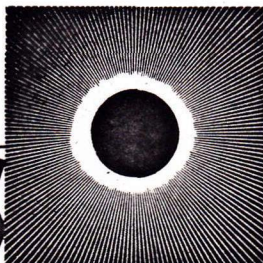
Coastal Bend Solar Energy Society
 P.O. Box 1716
 Corpus Christi, TX 78403
 Attn: Gary Weed
 512/887-2588

West Texas Solar Energy Society
 c/o Texas Tech University
 Dept. of Engineering Technology
 Box 4360
 Lubbock, TX 79409
 Attn: Dr. C. E. Teske, Pres.
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☐ Please send information on the American Section of the International Solar Energy Society. (TX-SES members may join AS-ISES at a \$5/yr. discount.)

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