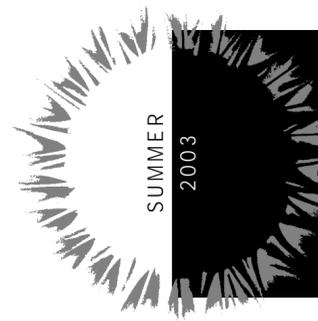


# REFLECTOR

promoting the wise use of sustainable and non-polluting resources



# The SOLAR

## Rainwater Collection Systems

Saturday, June 21, 1:30 p.m. – 5:30 p.m. (\$45)  
Participants: min 10/ max 56

*Guides: Charles Gibson, Owner, Rainman Waterworks  
Andrew McCalla, President, Meridian Energy Systems, Inc*

Many Central Texans are finding the solution to their concerns over clean, safe water in home rainwater collection. Following a morning workshop that details system components, design and installation issues, this afternoon tour will visit some of the examples highlighted in the class. Whether you take the workshop or not, join us for this guided tour that will visit installations of rainwater harvesting of varying sizes from 500 to 20,000 gallon systems. The sites feature collection systems used for irrigation purposes for gardens and landscapes and others as the sole source of household supply. Light commercial applications are also included. In addition, one stop uses PV power to deliver the collected water to its point of use, providing another key to total utility independence.

## SUNDAY MORNING TOUR

### Center for Maximum Potential Building Systems

Sunday, June 22, 9 a.m. – noon. (\$25)  
Participants: min 11/ max 56

*Guides: Pliny Fish and Gail Vittori, Co-Directors, CMPBS*

You've heard about for years; now come see for yourself! Created by the "Grandfather" of green building, CMPBS houses design and research offices designed as open building systems that include on-site grey water treatment and rainwater harvesting, PV, passive solar and multiple building materials. Spend two hours listening to Pliny explain it all! The UT-Austin Solar Decathlon model is also erected at the Center and will be open for viewing.

## SUNDAY AFTERNOON TOUR

### Green Built Homes II

Sunday, June 22, 1:30 p.m. – 5:30 p.m. (\$45)  
Participants: min 10/ max 56

*Guide: LaVerne Williams, AIA, Environment Associates*

Austin, Texas, is internationally known as a Mecca for green building. This guided bus tour will open doors into some of Austin's finest green built homes that demonstrate stellar passive solar design. A knowledgeable architect will provide a rolling lecture between stops and homeowners, architects and builders will contribute details at each site. The



photo courtesy of Living Architecture

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

delightful private residence of Peter Pfeiffer, Wednesday's plenary speaker, will be our first stop as we experience several "Green and Grand" homes. Peter will be on site to share the many lessons learned in designing and building this user-friendly family home that incorporates all the passive design and green materials for which the Barley & Pfeiffer firm are so well known. Another stop will highlight a "Smart Growth" infill project where four homes were built on 0.46 acres, each one utilizing superior design and material choices of maximum sustainability and energy efficiency. A 1,200 square foot straw bale home next perfectly showcases smaller spaces that feel larger with day lighting and passive design. This site also includes a 7,500 gallon rainwater collection system. Our final Green and Grand example is a large, yet very efficient, luxury home built of RASTRA, an alternative concrete block system made with recycled polystyrene that provides R-26 insulative value. The home is earth integrated with underground pre-cooling of air and large thermal massing inside.

NOTE: The stops on this afternoon tour are distinctly different from Tour #1.



photo by Judy Pearson

## SUNDAY ALL DAY TOUR

### Solar San Antonio

Sunday, June 22, 8:30 a.m. – 5:30 p.m. (\$60)  
lunch on your own at the Riverwalk  
Participants: min 16/ max 56

*Guide: Dominick Dina, Executive Director, Solar San Antonio, Inc.*

Enjoy a taste of Texas culture, history and sustainability on this full-day tour of beautiful San Antonio. Due in no small part to the influence of Solar San Antonio, many solar success stories have occurred in SA. Participants will visit a select few of these many projects, as well as tour the famous Alamo and have lunch on the magnificent Riverwalk. The tour will begin with a stop at the municipal City Public Service 75,000 square foot customer service center, a showcase of renewable energy technologies and energy-efficient design including solar electric, solar thermal, rainwater collection, earth-friendly building materials, and a high-efficient gas-fired absorption chilling system. As you drive towards downtown, you'll pass by a retail outfit solely dedicated to solar products.

To get the real flavor of San Antonio, two hours will be allotted for walking the world famous, picturesque Riverwalk and lunch at a riverside cafe followed by a tour of the famous Alamo. Next we'll drive through the Historic Gardens district, once a Brownfield area but now a revitalized community that includes solar water heating systems on many of its homes. We'll end the tour driving by a detention center with one of the largest solar water heating systems mounted on its roof. Your very comfortable charter bus includes on-board restrooms.

*Texas Solar Energy Society wishes to thank the following members who have supported us with \$100, \$200 and \$300 level memberships:*  
John Carson, Randy Combs, Gary Covington, Tom Fitzpatrick, Robert Foster, Terese Hershey, Mike Landrus, Scott Lenharth, Jane Pulaski, Lorin Vant-Hull, Paul Weatherall, Chuck Wright

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Solar San Antonio  
Dominick Dina, Executive Director  
210-354-0236  
www.solarsanantonio.org

Free Admission

**Solar San Antonio's Solar Fest**

Maverick Park  
Broadway and 10<sup>th</sup> Street  
San Antonio, Texas

MAY 17<sup>th</sup>, 2003 9 am – 4 pm

Learn about renewable energy and sustainable building

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The mission comes up every morning

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# SOLAR REFLECTOR

Register for tours and workshops online at [www.ASES.org](http://www.ASES.org) or on site with TXSES Saturday and Sunday June 21 & 22.

To become a member of TXSES go to [www.TXSES.org](http://www.TXSES.org)



America's Secure Energy

28th National Passive & 32nd Annual

# Solar Energy Conferences

June 21-26, 2003 • Austin Convention Center • Austin, Texas

SOLAR 2003's theme of AMERICA'S SECURE ENERGY focuses on the critical role renewable energy can play in our nation's security and environmental integrity, as well as our economic growth and energy reliability.

Don't miss our SOLAR 2003 Featured Speakers!

Program & On-line registration [www.ases.org](http://www.ases.org)

- Roger Duncan, Vice President, Austin Energy, Chair, SOLAR 2003
- Gilbert M. Grosser, Chairman, National Geographic Society's Board of Trustees
- David Garman, Assistant Secretary for Energy Efficiency & Renewable Energy, U.S. DOE
- John Magford, Group Vice President, Renewables and Alternatives, BP
- Alan Barnett, CEO, AutoPower
- Laura Doll, CEO, California Power Authority
- Pliny Fish, Co-Director, Center for Maximum Potential Building Systems
- Martin J. Hoffert, Professor of Physics, New York University
- Sandra Mender AIA, Vice President, HOK, San Francisco
- Bruce Starling, Author, Journalist, Contributing Editor, WRED Magazine
- Marjorie L. Tatom, Director, Energy and Transportation, Security Center, Sandia National Labs
- Pear Pfeiffer, Principal, Bailey + Pfeiffer, Architects
- And... Steve Gillet, University of Nevada, Reno; Richard Holper, Executive Director, American YouthWorks

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

## Join Us for the American Solar Energy Society Annual Conference

TXSES is hosting the annual national conference in Austin this year, June 21 – 26, at the Austin Convention Center. You can view our entire program and register online at [www.ASES.org/2003\\_conference/2003home.html](http://www.ASES.org/2003_conference/2003home.html)

You can also register for workshops and tours organized by TXSES on Saturday and Sunday, June 21 & 22. These are great learning opportunities presented by nationally recognized experts, right in our own backyard. You won't want to miss out! See pages 2-4 for listings.

# Chairman's Corner

with *Jaya Pichumani Jackson*



This issue highlights the annual American Solar Energy Society conference, "Solar 2003: America's Secure Energy," June 21 – 26, at the Austin Convention Center. We highly encourage you to attend and take advantage of the many workshops, tours, technical sessions and panel discussions that experts from around the country, as well as our many local ones, will present. Although the theme for the conference was determined almost 2 years ago, it is perhaps even more timely in light of recent world events. Unfortunately, in many arenas, energy security means

drilling for more oil. The message of the upcoming ASES/TXSES conference is to prove that we have better and sustainable options: efficiency, conservation, and our domestic and plentiful renewable energy resources. We hope to see you at the conference.

*Jaya Pichumani Jackson is the Engineering Manager in the Advanced Energy Division of CSG Services.*

## An Open Letter on Security from TXSES Member, Sam Reeves

My name is Sam Reeves, I am the inventor of the mechanical bull and, for the past 13 years, I have been in the oil and gas exploration business here in Texas. If everyone reading this information does not start a powerful movement for alternate energy, 9-11-01 is going to be a common occurrence. The things I am sharing with you in this writing are informative and sometimes frightening. You are not hearing this information from Fox, CNN, *The New York Times*, The Dixie Chicks, Ted Koppel or *The Wall Street Journal*. Why, I do not know, but here goes the story.

The price of oil is not controlled by Texas oilmen, or any independent oil company in the United States, or the federal government. The price of oil is controlled by OPEC, which is controlled by the Middle East, i.e. Iran, Iraq, Saudi Arabia, etc., and since 1998, Venezuela. All of these countries have openly stated their hatred of America. Our recent victory in Iraq is deepening that hatred in radical Muslim extremists who are willing to train their 9-year-old daughters as suicide bombers. Now get this: terrorist organizations have millions of dollars to reward and conduct these hideous terrorist attacks, which are almost impossible to stop.

Have you ever asked yourself where the terrorists get all the money to fund their activities? The answer to that is simple: oil. And who is the largest oil consumer in the world? We are! Yes, Americans, you and I fund the terrorists. Here is how: you and I spend 360 million dollars a day for foreign oil. Recently in the news from Iraq a

discovery was made of over 600 million American dollars. Think about it... that is only 2 days worth of what America spends on foreign oil purchases.

You might ask why we do not produce more here in the U.S. There again it is pretty simple. We have used so much of our domestic supply that it is getting harder to find replacement oil and gas reserves. Hitler did not lose World War II because he got out-gunned, out-manned or out-smarted; he lost the war because he ran out of oil.

At any given moment three countries in OPEC could own the U.S. in one day without firing a shot... all they have to do it stop the flow of oil.

You and I as independent doers and thinkers have to rise to this occasion and replace our foreign oil consumption with alternate energy sources today. Ladies and gentlemen, boys and girls, we have no choice but to solarize our homes and businesses. Everything we have or use must be energy efficient. If you experience resistance to the cost of alternate energy, share this... we do not have any cheap energy in the United States. The actual cost per barrel of foreign oil is over \$250 when you factor in the billions of dollars the U.S. has to spend on defense in the Middle East.

You and I are paying this high price with our tax money, and we don't even realize it. The U.S. literally subsidizes the terrorist's activities by buying their oil. To regain our independence you and I must use every alternate energy source available, now! Not tomorrow. Now!

If you are in the alternate energy business, I challenge you to make it your life's mission to get the word out, double and triple your sales... don't take no for an answer. Our future is depending on you.

*Sam can be reached via email at relucnet@relucnet.com*

## Solar 2003 Workshops

5-DAY WORKSHOP

### Women's Photovoltaic Design and Installation

Tuesday, June 17 – Saturday, June 21, 8:30 a.m. – 5:30 p.m. daily (\$275) includes daily lunch  
Participants: Min 8/ Max 30

*Marlene Brown, Sandia National Laboratory  
Debby Teva, Sandia National Laboratory  
Janet Hughes, Owner, Janet's Electric*

A solar electric workshop just for women. Topics include: basics of electricity; solar site analysis; PV system components; component specification; electrical wiring; safety procedures; tour of PV residences; 2-day actual installation of class-designed 2kW system at an area school campus. Materials included in registration fee: Sandia Lab's "Stand-Alone Systems" and "Operation and Maintenance" manuals plus a specifically designed class notebook. Registrants are invited to stay together at the Austin Youth Hostel, located in a lovely park setting on the river, where the class work will be held. Dormitory style lodging with kitchen privileges has been arranged for \$16.50 per person per night. Lunch is included in the registration fee, some of which will be prepared in solar ovens on site.

**Green by Design**  
Saturday, June 21, 1:30 pm – 5:30 pm (\$50)  
Participants: Min 10/Max 50

*Mary McLeod, Rich MacMath, Marc Richmond, Richard Morgan, Dick Peterson, Austin Energy Green Building Program*

This workshop will be presented by the staff of the internationally acclaimed Austin Energy Green Building Program. It will cover basic green building topics such as making new or existing homes more energy efficient; choosing durable, low maintenance materials; installing a water wise landscape; and choosing the right design for your lot. It will also cover how to make the indoor home environment healthier for occupants. This presentation has been designed for the public and for building professionals who are not familiar with green building concepts. Each participant will receive a copy of the Green by Design workbook and CD.

### Selling Distributed Generation

Saturday, June 21, 1:30 pm – 5:30 pm (\$55)  
Participants: Min 10 /Max 50

*Scott Sklar, President, The Stella Group, Ltd.*

SATURDAY WORKSHOPS

### A Sustainable Home Water Supply: Rainwater Harvesting

Saturday, June 21, 8:30 a.m. – 12:30 p.m. (\$45)  
Participants: Min 10/Max 50

*Charles Gibson, Owner, Rainman Water Works  
Andrew McCalla, President, Meridian Energy Systems, Inc.*

The increasingly critical concerns and issues surrounding the availability of clean, safe water for our homes have created a greater demand for intelligent, innovative solutions. Much of the situation can be solved one home at a time if we become more involved in fitting water into our plans for sustainable living and building. Rainwater collection systems are considered by those who own them to be the best solution for both their quality of life and the environment. This workshop will present sustainable water supply concepts and project parameters that can help guide us toward a better water future. Specific examples from the more than 100 residential rainwater systems installed by the presenter will be included. For remote applications or the ability to endure power outages, a solar electric system can provide the necessary power to utilize the water from a rainwater catchment system. The final hour of this workshop will provide an overview of independent power systems for the pressurization, filtration, and delivery of collected rainwater. A copy of the manual, *Texas Guide to Rainwater Harvesting*, is included.

NOTE: participants are encouraged to register for the afternoon Rainwater Harvesting Tour, where examples from this workshop will be demonstrated on site.

### Solar Domestic Hot Water

Saturday, June 21, 8:30 a.m. – 12:30 p.m. (\$45)  
Participants: Min 10/Max 50

*Dr. Gary Vliet, Professor Mechanical Engineering, UT-Austin  
Phil Fischer, Owner, Solar System Installations*

Combining 27 years of teaching solar energy at the University of Texas with 19 years of installation experience, the two instructors will cover all angles of solar water heating. This workshop will emphasize applications of home solar thermal that are often economically attractive: primarily solar water and pool heating. It will include descriptions of components and system designs, design guidelines and economics. Course hand outs will include the basics of solar radiation and solar thermal collection as well as descriptions of alternative systems and current literature on available systems.

### Green by Design

Saturday, June 21, 1:30 pm – 5:30 pm (\$50)  
Participants: Min 10/Max 50

*Mary McLeod, Rich MacMath, Marc Richmond, Richard Morgan, Dick Peterson, Austin Energy Green Building Program*

This workshop will be presented by the staff of the internationally acclaimed Austin Energy Green Building Program. It will cover basic green building topics such as making new or existing homes more energy efficient; choosing durable, low maintenance materials; installing a water wise landscape; and choosing the right design for your lot. It will also cover how to make the indoor home environment healthier for occupants. This presentation has been designed for the public and for building professionals who are not familiar with green building concepts. Each participant will receive a copy of the Green by Design workbook and CD.



student teams apply math, science, and creativity to construct model solar-powered cars and race them in interscholastic competitions hosted within their schools or within their states or regions. Each participant will receive the 25 Infinite Power Fact Sheets and accompanying Lesson Plans; the Knowledge is Power curriculum supplement; and JSS information packet. Continuing Education Credit certificate also provided.

SUNDAY WORKSHOPS

### Designing High Performance Sustainable Buildings

Sunday, June 22, 8:30 a.m. – 12:30 p.m. (\$60)  
Participants: Min 10/Max 50

*Murray Milne, University of California, Los Angeles  
Carlos Gomez, University of California, Los Angeles*

High performance sustainable buildings minimize their consumption of energy, their generation of greenhouse gasses, their contribution to air pollution, and their cost of operation. In this workshop you will learn how to "fine-tune" your building's design for optimal performance using the latest release of HEED (Home Energy Efficient Design), a user-friendly computer design tool useful for both residential and commercial buildings. HEED provides bar charts of your annual energy costs for heating, cooling, fans, lights and plug loads, and advanced design graphics show an hour-by-hour plot of energy consumed, indoor temperature, air changes, and costs. Three-dimensional bar charts show the differences between all schemes in pounds of air pollution, cubic feet of greenhouse gasses, and dollars of cost for gas and electricity and many other variables. In this hands-on workshop participants will work in teams to design a base case building using HEED and then strategize a series of design alternatives, comparing its performance using TMY2 climate data. Where possible, bring a PC or MAC laptop computer, and we will install the latest version of HEED for you. Free software download available for all.

### Daylighting and Passive Design for Heating AND Cooling Climates

Sunday, June 22, 8:30 a.m. – 12:30 p.m. (\$60)  
Participants: Min 15/Max 50

*L.M. "Mac" Holder, III, FAIA, L.M. Holder, III, Austin, Texas  
Greg Franta, AIA, ENSAR Group, Boulder, Colorado*

A primary objective of this workshop is to demonstrate how a structure and its components can work with the environment, regardless of the climate, to reduce the energy loads and maximize interior comfort without mechanical or lighting systems operation much of the year. Each of the presenters brings over 25 years' experience in passive design within their respective heating or cooling climates. The reduced loads achieved can be the basis for attainable off-grid living.

### Latin American Renewable Energy Development

Sunday, June 22, 8:30 a.m. to 12:30 p.m. (\$45)  
Participants: Min 10/Max 50

*Robert Foster, International Renewable Energy Development, New Mexico State University*

This workshop is designed to offer participants an overview on current renewable energy programs in Latin America, with an emphasis on innovative approaches and applications. Intended to be of interest to both the professional and layperson, the workshop will provide training on wind and solar energy technologies with a focus on remote applications. Such applications as facilities power, communications, refrigeration, water supply and purification will be discussed via diverse case studies from Latin America. Participants will learn about key Latin American activities and programs, cutting edge technology, as well as institutional and development issues facing renewable energy development in the region. The workshop will be conducted in English by renewable experts

working in Latin America; presenters are from both US and Latin American organizations. Includes Sandia National Laboratory/NMSU's Stand Alone Photovoltaic Systems: A Handbook of Recommended Design Practices as well as wind and solar industry literature and DOE/USAID renewable energy literature.

### Solar and Radiant Heating

Sunday, June 22, 8:30 a.m. – :30 p.m. (\$140) 1 hour lunch break on your own  
Participants: Min 10/Max 50

*Peter Biondo, Managing Director, USA Solar, and owner, Solaradiant Systems*

This workshop will explore solar technologies with modern hydronic heating components and controls for radiant floor heating, forced air and convective heating for residential and light commercial applications. Designs will include the latest in solar combination systems, solar heating fundamentals, radiant heating basics and analysis tools for collector sizing, determining solar costs and calculating payback. Product demonstrations will be a part of the learning experience, and a solar heating design guidebook is included.

### Tapping the Hybrid Potential: Wind for the Solar Installer

Sunday, June 22, 8:30 a.m. – 5:30 p.m. (\$150) includes outdoor box lunch  
Participants: Min 10/Max 25

*Ken Starcher, Alternative Energy Institute, West Texas A&M University*

Learn to configure and install commercial wind generator systems sized for the home. In this workshop, the different commercially available wind turbines and the advantages and disadvantages of each will be presented. Get hands-on wiring experience and simulated tilt up challenges working with actual home-size wind system components. Topics to be covered include safety considerations; aerodynamics; generators and alternators; site analysis and resource assessment; system sizing and hardware specification; energy storage; legal issues; solar hybrid and utility tied systems. Includes Wind Energy Basics: a Guide to Small and Micro Wind Systems by Paul Gipe and PowerPoint class presentation copies.

### Building Integrated PV

Sunday, June 22, 8:30 a.m. – 5:30 p.m. (\$160) includes lunch at Convention Center  
Participants: Min 20/Max 60

*Steven Strong, Solar Design Associates, Inc.  
Paul Maycock, PV Energy Systems, Inc.* This comprehensive course by two internationally known experts will provide historical perspective, present status and future forecasts for cell technology, performance and manufacturing costs, balance of systems performance and cost (batteries, charge controllers, inverters, safety and power quality), system design (stand alone to grid connected) with emphasis on the details of Building Integrated PV and ending with a detailed analysis of the present world markets forecasted to 2010. Each participant will receive Strong's book, *The Solar Electric House*, and copies of numerical charts.

The students at Maplewood Elementary School



photo courtesy of Jaya Jackson/CSG

## Solar 2003 Tours

Tours will depart from and return to the Austin Convention Center

SATURDAY MORNING TOURS

### Green Built Homes I

Saturday, June 21, 8:30 a.m. – 12:30 p.m. (\$45)  
Participants: min 10/ max 56

## Renewable Chatter

with *The Solar Guy*



Dear S.G.

I have a solar water heater and the pump keeps running at night, after the sun goes down. I've had the system for several years. It is a closed loop system with a drain-back tank, and there is a controller unit to actuate the pump. Why does the pump not operate properly ... the way it used to work ?

Yarg Teivl, Austin, TX

Dear Yarg,

The system you describe is a common one and is generally quite robust (reliable). The most likely problem is one or both of the temperature sensors. There are two temperature sensors (thermistors), one on the collector and one on the storage tank. The resistance of thermistors decreases with increased temperature, and the controller senses the difference in the resistances of the two sensors. When the controller senses the collector resistance to be lower than that of the tank by a specified amount (i.e. collector hotter than tank), it concludes that there is sufficient solar radiation and turns on the pump. There may be some cycling shortly after sunrise and near sunset, but for 8 or so hours of a clear day the pump should run continuously. When the pump is on and the solar radiation decreases to a low level, the temperature rise through

the collector is lower than the specified value and the pump is turned off. So the most likely problem is that either the two thermistors are old and their resistances have deteriorated or that the thermistor on the tank is "open-circuited," inferring to the controller that the tank is cold. This can be checked quite easily. In the evening turn the controller to the manual on setting so there is water circulation. Disconnect a lead from each thermistor and measure the resistance of each. They should be very nearly equal. If they are not or if one of them (the tank thermistor) is open circuited, then both sensors should be replaced with thermistors having resistance values consistent with what is specified for the controller.

If the thermistors appear to be satisfactory, then the problem may be with the controller itself, and you should call a solar service man.

Sincerely, The Solar Guy

*Guide Roy Holder, L. M. Holder, III, FAIA*

endangered species, and hundreds of native plants, animals and birds) to view their roof-mounted PV system.

SATURDAY AFTERNOON TOURS

### Green Built Commercial

Saturday, June 21, 1:30 p.m. – 5:30 p.m. (\$45)  
Participants: min 10/ max 56

*Guide: L.M. Holder, III, FAIA, Passive Review Committee Chair*

From the influences of the City of Austin's award winning Green Building Program, many examples of sustainable commercial architecture abound in Austin. Mac Holder, one of Austin's premier passive design architects, will provide a rolling lecture between stops and owners, architects and builders will contribute details at each site. You will have the chance to see some very unique designs, from a theater to a church to a mixed use office/classroom facility, all built with passive design and green materials. The



photo courtesy of Living Architecture

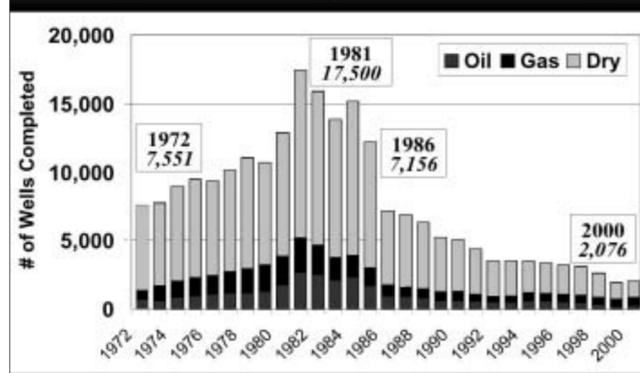
### Solar Installations

Saturday, June 21, 8:30 a.m. – 12:30 p.m. (\$45)  
Participants: min 10/ max 56  
*Guides: Leslie Libby, Photovoltaics, Austin Energy  
Jaya Jackson, Engineering Manager, CSG Services, Inc*

More than just a tour of solar panels, this tour will highlight some of the unique mounting techniques that have been employed in Austin to provide structure for the array as well as have an alternate function. You'll start right at the conference venue itself and see the building integrated photovoltaic system that was recently installed on the new section of the Austin Convention Center. Next stop will be the newly installed PV system that provides shade for the top level of a garage complex for a city performing arts center. We'll change gears by stopping by a residential site that has a roof-mounted PV system as well as a solar hot water system. The tour will end with a drive through Austin's scenic Hill Country to a 227-acre pristine wilderness preserve (home to threatened and

*continued on pg 4*

## History of U.S. Exploration Activity



The dramatically increased exploration of the 80s, in response to the oil embargo, was not very effective in increasing output, an indication of a mature exploration environment. We know how to find the remaining oil, but it is expensive to get, again reflecting the decline of the resource.