



America's Secure Energy

National Solar Energy Conference

June 21 - 26, 2003 • Austin, Texas

Presented by the American Solar Energy Society
Preliminary Program

You'll want to attend!

If you are a sustainable energy advocate or professional

join your colleagues:

- policymakers • manufacturers • architects • engineers • educators
- installers • utility professionals • students • **anyone** interested in advancing clean energy technologies!

Featuring—

- 32nd ASES Annual Conference
- 28th National Passive Solar Conference
- SEIA Industry Updates
- AIA Committee on the Environment Symposium
- SBSE Annual Meeting
- IREC/DOE Million Solar Roofs Partnerships Annual Meeting
- SRCC Annual Meeting



Featured Speakers

Roger Duncan, Vice President of Austin Energy and Chair of the SOLAR 2003 conference, manages Governmental Relations, Energy and Environmental Policy for the municipally owned electric utility. He represents Austin Energy in local, state and national forums on policy and energy issues. He serves as Chairperson for the Urban Consortium Energy Task Force, and in this capacity he advises municipal staff of the 50 largest cities and counties on energy matters.



Mr. Duncan has been a leader in energy conservation and environmental policy for over 20 years. Since joining City of Austin Management staff in 1989, he has overseen the development, implementation and operation of water quality programs, air quality programs, environmental reviews, energy and water conservation programs, hazardous spill response and home chemical collection. Prior to his years in City Management, he served four years as a City Council Member. His record of legislation includes Lake Austin water quality ordinance, landscape ordinance, expansion of the environmental department and establishing energy conservation programs.

Gilbert M. Grosvenor is chairman of the National Geographic Society's Board of Trustees, its Education Foundation and its wholly owned subsidiary National Geographic Ventures. He retired June 1, 1996, as president of the Society, the fifth generation of his family to serve in that position. The Geographic greatly broadened its reach during Grosvenor's tenure as president.



Mr. Grosvenor is a director or trustee of numerous foundations and corporations, including the Conservation Fund; Chevy Chase Bank; Ethyl Corp.; The Jason Foundation; Marriott International Inc.; Dian Fossey Gorilla Fund International; Wildlife Conservation Society; National Wildflower Research Center, and Federal City Council (Washington). He also is a member of the Board of Visitors of Duke University's Nicholas School of the Environment; Chairman Emeritus of the Foundation Board of the Alexander Graham Bell Association for the Deaf; former Vice Chairman, President's Commission on Americans Outdoors; and former member of the President's Commission on Environmental Quality.



John Mogford is Group Vice President for Renewables and Alternatives at BP London. His previous role was Group Vice President for Health, Safety and Environment. Prior to this he served as Technology Vice President with specific responsibilities for drilling, production operations and HSE for BP's global E&P activities. He has worked in a variety of geographical regions including London, Alaska, the Gulf of Mexico, Egypt and the North Sea. Mogford graduated from Sheffield University as a mechanical engineer and joined BP in 1977.

David Garman is the Assistant Secretary for Energy Efficiency and Renewable Energy at the U.S. Department of Energy. Assistant Secretary Garman previously served in a variety of positions on the staff of two U.S. Senators and two Senate Committees during a career spanning nearly 21 years. Most recently, he served as Chief of Staff to Alaska Senator Frank H. Murkowski. Mr. Garman also served on the professional staff of the Senate Energy and Natural Resources Committee and the Senate Select Committee on Intelligence. Throughout his career, Mr. Garman's work has focused mainly on energy and the environment. For example, while serving on the Senate Select Committee on Intelligence, Mr. Garman worked in the newly emerging area of "environmental intelligence and security," working on issues such as global climate change, transboundary pollution and regional environmental threats from the former Soviet Union. While on the staff of the Energy and Natural Resources Committee, Mr. Garman's portfolio included energy research and development, science and technology and global climate change. He also served as a U.S. Senate observer at virtually all of the major negotiations under the United Nations Framework Convention on Climate Change from 1995-2000. Mr. Garman holds a Bachelor of Arts from Duke University and a Master of Science in Environmental Sciences from Johns Hopkins University.

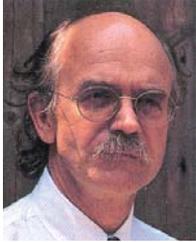


Dr. Allen M. Barnett is President and CEO of AstroPower, Inc. AstroPower is currently the largest independent manufacturer of solar electric power products and one of the fastest-growing solar electric power manufacturing companies. Barnett serves on the Solar Energy Industries Association (SEIA) Board of Directors. He also serves on the Advisory Board of the National Center for Photovoltaics (NCPV) of the U.S. Department of Energy. Barnett received The Karl W. Boer Solar Energy Medal of Merit in April 2001 for pioneering high-performance, thin-crystalline silicon solar cells, founding and leading a world-class enterprise for the commercialization of solar electric products, and outstanding continuing service to the solar electric power community. Barnett received his Ph.D. in Electrical Engineering from Carnegie Institute of Technology and his M.S. and B.S.E.E. from the University of Illinois.



Laura Doll currently serves as Chief Executive Officer of the California Power Authority, a state agency created in the fall of 2001 to ensure sufficient power reserves and reliability in California's electricity market. Doll has more than twenty years of management experience and knowledge of public power, resource planning, renewable energy and efficiency. During 15 years at Austin's municipally-owned electric utility, Austin Energy, Doll served as Chief Administrative Officer with responsibility for long-range resource planning (including renewable and alternative energy strategies), legislative affairs and policy planning. She designed Austin's first award winning 553 MW "conservation power plan" and oversaw a wide variety of utility resource projects (including renewables and conservation) that involved multi-million dollar public investments. She also has private sector experience in both the energy and telecommunications industries.

Featured Speakers



Pliny Fisk co-directs the Center for Maximum Potential Building Systems, a 27 year old sustainable design and planning office which is now the oldest firm of its kind in the country. In the last year Fisk has also held academic positions at three Universities including the Bruce Goff Chair for Creative Architecture at the University of Oklahoma, the Hearin Distinguished Fellow for Architecture and Planning at Mississippi State University, and Adjunct Professor at the University of Texas. Fisk has had contracts with the

U.S. Department of Energy, the U.S. Housing and Urban Development Administration, the U.S. Environmental Protection Agency, and other federal, state and local government agencies, private foundations, corporations and private clients. At this time he is directing the rebuilding of the University of Texas Solar Decathlon house that he helped create with students on the Center's land.

Dr. Steve Gillett, Department of Geological Services, University of Nevada, Reno

Richard Halpin, Executive Director, American YouthWorks

Martin I. Hoffert is Professor of Physics and former Chair of the Department of Applied Science at New York University. Hoffert has published broadly in fluid mechanics, plasma physics, atmospheric science, oceanography, planetary atmospheres, environmental science, solar and winds energy conversion and space solar power. His research in alternate energy conversion includes wind tunnel and full-scale experiments on innovative wind turbines, photovoltaic generation of hydrogen and wireless power transmission (WPT) applied to solar power satellites. His present efforts focus on energy technologies that could stabilize climate change from the fossil fuel greenhouse – including (but not limited to) space solar power.



Sandra Mendler AIA, is Vice President and Sustainable Design Principal with HOK in San Francisco. She has been integrally involved with the development and implementation HOK's sustainable design program since 1992, and continues to be actively engaged in the design of projects. Three of these have been recognized by AIA COTE as top ten green buildings of the year. Mendler received the IIDA and Collins & Aikman 2001 "Sustainable Design Leadership Award," and CSI's national "Environmental Sensitivity Award" in 1998. She is co-author of the HOK [Guidebook to Sustainable Design](#), and principal author of [The Greening Curve: Lessons Learned in the Design of the New EPA Campus](#).

Peter Pfeiffer is principal in the Austin based architectural firm of Barley + Pfeiffer Architects, specializing in "sustainable" (or "green") building practices. Founded in 1987, the firm is considered a national leader in the fields of energy and natural resource conserving design, low toxicity living & working environments, and environmentally compatible "green" construction technology. Pfeiffer has spent the better part of the past twenty years developing pragmatic methods to "main stream" green building. He holds a Masters in Architecture degree, with an emphasis in resource efficient design and energy studies, from the University of Texas; graduated with a BS degree in Building Sciences from Rensselaer Polytechnic Institute in 1977.



Bruce Sterling is an author and journalist from Austin. He is a contributing editor of WIRED magazine. His most recent book is [TOMORROW NOW: Envisioning the Next 50 Years](#).

Marjorie (Margie) L. Tatro, Director, Energy and Transportation Security Center Sandia National Labs, currently leads a group of approximately 180 people working to make the nation's energy and air transportation systems safer, more secure, and more reliable. She is responsible for a portfolio of programs that include a \$12M fossil energy program, a \$40M renewable and energy storage program, and \$5M of infrastructure programs (energy and transportation). Tatro holds BS and MS degrees in mechanical engineering and has been employed by Sandia National Labs since 1985. She has worked in renewable energy research, facilities design, software design, and energy reliability groups while at Sandia.



Schedule at a Glance

Shaded sessions are all-day events.

	Saturday, June 21	Sunday, June 22	Monday, June 23	Tuesday, June 24	Wednesday, June 25	Thursday, June 26
Morning	<p>Workshop Last day of Women's Photovoltaic Design & Installation (Tuesday 6/17–6/21)</p> <p>Special Event Sun Run</p> <p>Meeting IREC's Board of Directors Meeting (Directors Only)</p> <p>Workshops*</p> <ul style="list-style-type: none"> A Sustainable Home Water Supply –Rainwater Harvesting Solar Domestic Hot Water <p>Tours*</p> <ul style="list-style-type: none"> Green Built Homes I Solar Installations 	<p>Workshops*</p> <ul style="list-style-type: none"> Solar and Radiant Heating Tapping the Hybrid Potential—Wind for the Solar Installer Building-Integrated PV <p>Tour*</p> <ul style="list-style-type: none"> Solar San Antonio <p>Special Events* Joint Annual Meeting of IREC & DOE's Million Solar Roofs Partnerships</p> <p>Workshops*</p> <ul style="list-style-type: none"> Designing High-Performance Sustainable Buildings Daylighting and Passive Design for Heating AND Cooling Climates Latin American Renewable Energy Development <p>Tour*</p> <ul style="list-style-type: none"> Center for Maximum Potential Building Systems 	<p>Exhibit Open</p> <p>Passive Conference Opening Plenary <i>Vital Spaces—From Vision to Value</i></p> <p>Forums</p> <ul style="list-style-type: none"> Building on Faith—The Sustainable Energy Movement Started by the Interfaith Power and Lights Renewable Energy Case Studies—Redefining the Models, Refining the Messages, and Getting the Word Out Women in Solar Energy Industry Update—Export Financing and Opportunities <p>Technical Sessions</p> <ul style="list-style-type: none"> Daylighting Testing Teaching and Outreach Sustainable Community Issues 	<p>Exhibit Open</p> <p>Conference Opening Plenary</p> <p>Forums</p> <ul style="list-style-type: none"> Adaptive, Full-spectrum Solar Energy Systems Real Stories from Real Buildings (Part I) <p>Technical Sessions</p> <ul style="list-style-type: none"> BIPV Systems and Analysis Transportation Security Ventilation Reaching the Public 	<p>Exhibit Open</p> <p>Passive Conference Plenary <i>Sustainability—A Social Imperative</i></p> <p>Annual Conference Plenary <i>Future of Energy</i></p> <p>Forums</p> <ul style="list-style-type: none"> Sustainable, Secure Energy Certification & Accreditation Programs for Solar Electricity <p>Technical Sessions</p> <ul style="list-style-type: none"> PV Economics for Grid-Connected Applications Resource Assessment, Modeling and Applications Low Temperature Solar Thermal Applications Sustainable Design Process Daylighting Examples 	<p>Annual Conference Plenary <i>Renewable Energy—Our True Security</i></p> <p>Forums</p> <ul style="list-style-type: none"> Solar Means Safety Vote Renewables <p>Technical Sessions</p> <ul style="list-style-type: none"> State-based Programs Global Electrification PV System Implementation Solar Thermal Systems for Cooling and Generation
Lunch			<p>Special Events</p> <ul style="list-style-type: none"> Women in Solar Energy Luncheon* Student Poster Contest Judging 	<p>Special Events</p> <ul style="list-style-type: none"> Advocacy Training and Lunch* <i>Working Together for Change—Building an Alliance of Renewable Energy Organizations</i> Professional Poster Author Q&A 	<p>Special Event ASES Membership Meeting</p>	
Afternoon	<p>Workshops*</p> <ul style="list-style-type: none"> Green by Design Selling Distributed Generation Energy for Teachers <p>Tours*</p> <ul style="list-style-type: none"> Green Built Commercial Rainwater Collection Systems <p>Special Events/Meetings IREC'S Special Topic Forum <i>Understanding & Improving the PV Permitting Process</i></p> <p>Solar Rating and Certification Corporation Annual Board of Directors Meeting</p> <p>*ASES Chapters Caucus</p>	<p>Tour*</p> <ul style="list-style-type: none"> Green Built Homes II 	<p>Forums</p> <ul style="list-style-type: none"> Biofuels Panel A Primer on Solar-Based Architecture & Urbanism California RD&D Projects Building on America's Secure Energy Industry Update—New Opportunities in the Federal Market Spirit and Sustainability <p>Technical Sessions</p> <ul style="list-style-type: none"> Building Testing and Measurement Designing Schools <p>Business Meetings</p>	<p>Forums</p> <ul style="list-style-type: none"> Solar Schools—Learning Labs for the Community What Does Sustainability Mean? <p>Technical Sessions</p> <ul style="list-style-type: none"> Water Purification and Low-Temperature Applications Tools for Analysis, Design and Presentation Hydrogen and Fuel Cells Residential Buildings Passive Cooling <p>Special Forum</p> <ul style="list-style-type: none"> Emerging Transportation <p>Business Meetings</p>	<p>Forums</p> <ul style="list-style-type: none"> The Dawning of Solar Electric Architecture Sustainability Lessons Learned Industry Update—Policies and Trends for the Grid-Connected Market <p>Technical Sessions</p> <ul style="list-style-type: none"> PV System Analysis Materials in Solar Thermal Applications Regional Incentives and Development Activities Sustainability Lessons Learned Commercial Buildings <p>Passive Conference Closing Plenary</p> <p>Business Meetings</p>	<p>Forums</p> <ul style="list-style-type: none"> Real Stories from Real Buildings (Part II) Industry Update—Leveraging Local Media and Politics <p>Technical Sessions</p> <ul style="list-style-type: none"> Solar System Applications Concentrators for Mid- and High-Temperature Applications Utility-Based Programs <p>Annual Conference Closing Plenary</p>
Evening	<p>Special Events *ASES Chapters Caucus Dinner</p>	<p>Special Event Opening Night Reception</p> <p>Exhibit Open</p>	<p>Special Event General Reception</p> <p>Special Forum Emerging Architecture</p>	<p>Special Events Awards Banquet Reception</p> <p>Grand Awards Banquet</p>	<p>Special Event Texas Food & Follies</p>	

*Requires separate registration (Find complete times & descriptions of all events in Conference Program, pages 5-17)

This is a preliminary program. The final program is subject to change, and will be distributed at the conference.

Monday morning–afternoon, June 23

Conference Program

Monday, June 23, 2003

8:30 am

Passive Conference Opening Plenary

Vital Spaces—From Vision to Value

Break-Through Projects—The Marriage of Economics and Innovation
Sandra Mendler, Vice President, HOK, San Francisco, California

Life Cycle Space—The New Solar Constant

Pliny Fisk, Co-Director, Center for Maximum Potential Building Systems, Austin, Texas

10:30 am

Building on Faith—The Sustainable Energy Movement Started by the Interfaith Power and Lights

Moderator, Erika Morgan, Technical Advisor to Maine Interfaith Power and Light

Episcopal Power and Light started it all in 1994 under the leadership of the Reverend Sally Bingham, a San Francisco-based Episcopal priest with a mission and ministry on behalf of the planet. This forum will bring together representatives of at least three of the most established “ipls”, from California, Maine and Massachusetts, to discuss their approach, their lessons and successes.

Renewable Energy Case Studies—Redefining the Models, Refining the Messages, and Getting the Word Out

Moderator, David Hill, Vermont Energy Investment Corporation

Case studies are commonly used as a communications and marketing tool. This session will provide a sampler of innovative approaches on how the “case-study” is being re-defined, refined, and expanded to promote market development for solar and green building technologies. Speakers will describe how they are using the case study model to provide education, decision support, and lead generation in a number of markets.

Women in Solar Forum

This session explores the advances being made by women in the renewable energy field, as well as the challenges and rewards women encounter working in a non-traditional field. Panel members will describe their work in different aspects of solar energy.

Industry Update—Export Financing and Opportunities

Industry Updates at SOLAR 2003 will be organized by the Solar Energy Industries Association. They will focus on providing industry with up-to-the-minute knowledge of national markets and policies, along with the skills needed for success.

Export financing and opportunities will be a practical session with Export-Import Bank of U.S., the Commerce Department’s Trade Development Authority and others. Learn how the U.S. government can help you close foreign deals, provide low-cost and innovative finance, and even find dealers and markets—all for low or no cost. This session will include a hands-on opportunity to deal with the forms, procedures and people you will need to know to have the U.S. government help you make foreign deals a reality.

Daylighting Testing

A Simplified Method to Quantify Savings Due to Incorporation of Daylight into Architectural Design

K. Mansy, Oklahoma State University

Daylighting Simulation—Radiance vs. EnergyPlus

V. Ghatai, The Weidt Group

Sizing Skylights for Daylighting Mature Landscaping in an Atrium

J. Weiner, GreenWorks and M. Milne, University of California, Los Angeles

Designing and Optimizing a Polyvalent Glass for Energy and Daylight in an Office Building
A. Jain, Arizona State University

A Comparative Analysis of the Radiant Effect of External Sunshades on Glass Surface Temperatures

N. Kapur, Arizona State University

Teaching and Outreach

Solar Decathlon 2002—Review of the Event

C. Warner, National Renewable Energy Lab and R. King, U.S. Department of Energy

The University of Texas at Austin Solar Decathlon House

M. Garrison, University of Texas at Austin

Sun Tracking and Sound Tracing—A Pedagogy for Integrating Solar Design Principles in Beginning Architectural Studios

I. Elzeyadi, University of Oregon

The Agents of Change Project—Changing Perceptions of Building Performance

A. Kwok, University of Oregon and W. Grondzik, Florida A&M University

Sustainable Environmental Design Education (SEDE)—A Curriculum Model for Architects and Landscape Architects

M. McDonald, P. Cooper, C. Corlett and K. Haggard, Cal Poly, San Luis Obispo

Sustainable Community Issues

Legal Considerations for Energy-Planned Developments

O. Stitt, Stitt Energy Systems, Inc.

Power From the Sun for Mother Earth

M. Brown, Sandia National Labs

Two Mile Ranch—A Net-Energy Homestead

L. Yarmuth and G. Franta, ENSAR Group, Inc.

The Critical Role of NGOs in the Advancement of Renewable Energy

K. Casper, K. Davies and J. Ross, Greenpeace

Resource Balanced Land Use Planning

P. Fisk, Center for Maximum Potential Building Systems

2:00 pm

Biofuels Panel

Biodiesel has become the fastest growing alternative fuel in the U.S., with estimated use doubling between 2001 and 2002. Since it works with existing diesel engines and diesel technology, fleets can become cleaner burning literally overnight. More than 250 major fleets currently use biodiesel and significant growth is anticipated in 2003. This presentation will give an overview of the state of the industry, including why it has become so popular. Various performance and environmental/health aspects of biodiesel will be discussed, along with the experience of those who use biodiesel and the potential markets for the fuel.

A Primer on Solar-Based Architecture and Urbanism

The last few years have set the stage for the development of sustainable principles and the forum presenters have been at the forefront of green and sustainable design practice. This session will cover the beginning of the movement, important solar-based principles and present case studies for the professional architect, planner, public official and concerned citizen.

Speakers will include:

Daniel Williams, FAIA, Principal at DWA Architects and Planners, Seattle, Washington and Chair of the American Institute of Architects Committee on the Environment (COTE)

Musco Martin, AIA, Associate of Wallace Roberts Todd & Partners, Philadelphia, Pennsylvania

Sandra Mendler, AIA, Associate of HOK San Francisco and Past-chair, AIA-COTE

The American Institute of Architects (AIA) has represented the professional interests of America’s architects since 1857. The AIA Committee on the Environment (COTE) is the Institute’s forum for the compilation, exchange and dissemination of environmental information integral to design and the practice of architecture. To learn more, call the AIA information line at 800-242-3837 or visit their homepage at www.e-architect.com/pia/cote.

Monday afternoon

Conference Program

Building on America's Secure Energy

This forum will discuss how the perceived value of solar energy can be translated to a marketable idea that is integrated into planned developments across America. What is the impact of such an undertaking? What are the benefits to America, its energy consumers, governing agencies and its builders – the critical link for delivery of products to market? How can the perceived values of renewable energy sources (solar) be inculcated into the American mainstream and provide for America's secure energy through value pricing, robust incentives and high consumer demand? How can we bridge the chasm that exists between the high level of awareness for renewable energy resources but the low level of consumer investment?

Speakers will include:

Rick White, California Solar
Dave Holt, Sunwise Technologies
Arthur Rudin, Sharp Electronics

California RD&D Projects

Moderator, Joseph McCabe, California Energy Commission

\$30 million in renewables RD&D contracts were awarded in 2001 from the California Energy Commission's Public Interest Energy Research in Renewables section. These projects are beginning to produce results. The projects are uniquely coupled to the California electricity market by teaming with the utilities, increasing the likelihood of project successes. A panel will discuss how these projects are producing lower cost, higher valued electricity from renewables.

Industry Update—New Opportunities in the Federal Market

Industry Updates at SOLAR 2003 will be organized by the Solar Energy Industries Association. They will focus on providing industry with up-to-the-minute knowledge of national markets and policies, along with the skills needed for success.

Panelists from a variety of Federal agencies will discuss the growing market opportunities within their agencies—both for their own usage and for their targeted “customers.” There is a growing roster of programs and facilities out there under the Federal umbrella. This update will give you the concrete facts you need to take maximum advantage of these programs.

Building Testing and Measurement

Indoor Environmental Quality in Green Buildings
W. Grondzik, Florida A&M University

Field Measurement of Indoor Air Quality
J. Kearney, R. Brouwer and J. Kim, University of Michigan

Preheating Ventilation Air Using Earth Tubes
T. Lee and J. Love, The University of Calgary, EVDS, CANADA

Revisiting Passive Solar Heating—A Direct Comparison of Five Different Passive Solar Test-rooms in Muncie, Indiana
A. Fernandez-Gonzalez, Ball State University

Defining the Optimum Dimensions of Test-Cells to Research Thermal Comfort in Passive Solar Buildings—A Direct Comparison Study
A. Fernandez-Gonzalez, Ball State University

Designing Schools

High Performance Schools—Sustainable Designs for Improved Learning, Environment and Economy
P. Plympton, Z. Chaudhry, K. Epstein, P. Kappaz and M. Stone, National Renewable Energy Laboratory

Energy Retrofit of an Elementary School—Building for Optimum Comfort and Cost
A. Sayyed, The Weidt Group

Daylighting Performance of Light Shelves in Classrooms
A. Sayyed, The Weidt Group

A Correlation of the Distribution of Daylight & Heat Gain in a Space as an Impact of the Reflected Component
A. Sethi, Arizona State University

4:00 pm

Spirit and Sustainability

This popular seventh annual session will again focus on how what we do to sustain ourselves is as key to our work as what we do to sustain our planet. Maintaining inner strength to persevere is critical now, as our environment and sensible energy systems are attacked from every side. We will come together to reinforce our belief that, as Ghandi said, we must become the change we wish to see in the world, and to reinforce our belief in what we are doing.

Speakers this year will be:

Sean Culman, AIA, San Francisco, who will introduce us to Thomas Berry's book *Great Work*.
Gail Vittori, AIA, co-Director of the Center for Maximum Potential Building Systems, Austin (invited)
Polly Cooper, AIA, San Luis Obispo Sustainability Group (invited)
Gary Olp, AIA, Principal, Gary G. Olp Architects, Dallas (invited)

7:00 pm

Emerging Architecture

As it has in past years, this special forum will showcase exciting, cutting edge projects, both regional and national. Highly visual and inspiring!

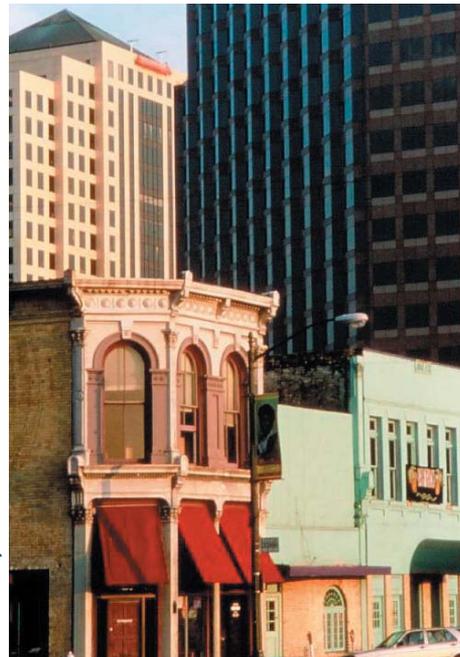


Photo courtesy of the Austin Convention & Visitors Bureau

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) is an international organization of more than 50,000 people with chapters throughout the world. ASHRAE is organized for the sole purpose of advancing the arts and sciences of heating, ventilation, air-conditioning and refrigeration for the public's benefit through research, standard writing, education and publications. To learn more, call ASHRAE headquarters at (404) 636-8400 or visit their web site at www.ashrae.org.

This is a preliminary program. The final program is subject to change, and will be distributed at the conference.

Tuesday morning

Conference Program

Tuesday, June 24, 2003

8:00 am

Conference Opening Plenary

Welcome

Roger Duncan, Austin Energy, SOLAR 2003 Conference Chair

Mike Nicklas, Chair, American Solar Energy Society

David Garman, Assistant Secretary for Energy Efficiency & Renewable Energy, U.S. Department of Energy

Gilbert M. Grosvenor, Chairman of the National Geographic Society's Board of Trustees, its Education Foundation and National Geographic Ventures.

John Mogford, Group Vice President for Renewables and Alternatives, Beyond Petroleum, Ltd.

10:30 am

Adaptive, Full-Spectrum Solar Energy Systems

Adaptive, full-spectrum solar energy systems represent a new, systems-level approach to solar energy that holds the promise of dramatically improving its end-use efficiency and affordability. It more efficiently uses different portions of the solar spectrum simultaneously for multiple end-use applications such as solar lighting and distributed power generation. A research team consisting of University of Nevada, Oak Ridge National Lab, Science Applications International Corporation, 3M Corporation, JX Crystals Inc., Honeywell Inc., University of Arizona, Ohio University, University of Wisconsin, and Rensselaer Polytechnic Institute has shown that this technology is technically feasible and that it has the potential of significantly reducing the electric lighting requirements in commercial buildings.

Presenters include:

Jeff Muhs, Oak Ridge National Lab

Bill Beckman, University of Wisconsin, Madison

Byard Wood, University of Nevada, Reno

Real Stories from Real Buildings (Part I)

Session Moderators, Alison Kwok, University of Oregon and Walter Grondzik, Florida A&M University

For the past several years students, faculty, and practitioners throughout North America (and internationally) have used methods and equipment from the Vital Signs curriculum project to examine the performance of buildings in use. The concept is simple: visit real buildings, make measurements on site, discuss the design with the architect if possible, talk to real building users, and develop understandable conclusions that can inform future design efforts and building operations. Presentations will include:

Light Levels and Shading in Computer Lab in New Residence Hall
J. Carney, Rice University

California High Performance Schools Tool Kit
S. Bosch and T. Messadi, Georgia Institute of Technology

A Tale of Six University Buildings—Benchmarking the Capital Building Process
T. Mainville, B. Everidge, J. McCabe and D. Brentrup, University of North Carolina, Charlotte

The Solar Corridor—Thermal Comfort in the Gerlinger Sunspace
J. Black, University of Oregon

Are you a student or intern in the field of engineering, environment or architecture? Then consider entering the SOLAR 2003 student poster contest.

Collegiate Poster Presentation Contest

All college/university full-time students and architectural interns are eligible to participate. Your poster presentation can address any subject related to renewable energy (such as solar – PV and thermal, wind, geothermal, biomass...), and energy efficiency and daylighting in architectural design. For architectural interns, we encourage you to submit model home designs to complement your poster presentation. Each poster will be judged 50% on content and 50% on presentation. The prizes are:

SOLAR 2003 registration fee will be waived for all contestants.

1st Place

ASES membership for one year + ASES 2003 CD proceedings + \$500

2nd Place

ASES membership for one year + ASES 2003 CD proceedings + \$300

3rd Place

ASES membership for one year + ASES 2003 CD proceedings + \$200

The posters will be on display Sunday, June 22—Tuesday, June 24, 2003. Judging will take place Monday at noon. A one page abstract describing your poster (maximum size 44 in. x 44 in.) must be submitted to Dr. Byard Wood, bdwood@unr.edu, before April 15, 2003.

More SOLAR 2003 conference details are available at our web site: www.ases.org.

For further information about the poster contest, contact Dr. Byard Wood, Student Poster Session Chair at the University of Nevada, Reno. Phone: (775) 784-6906; email: bdwood@unr.edu.

BIPV Systems and Analysis

Thermal Analysis of a Wall-Mounted Building Integrated Photovoltaic System
Q. Lin and S. Harrison, Queen's University, CANADA

Monitored Efficiency of a PV-Thermal Collector

C. Munger, Solar Design Associates and J. Duffy, University of Massachusetts, Lowell

PV Roofing System Development Under CEC's PIER Grant Program

S. Heckeroth, Bekaert ECD Solar Systems, LLC

Measured Performance of Building Integrated Photovoltaic Panels - Round 2

B. Dougherty, H. Fanney and M. Davis, National Institute of Standards and Technology

A TRNSYS Model of a Full Spectrum Hybrid Lighting System

G. Schlegel, S. Klein and W. Beckman, University of Wisconsin, Madison; B. Wood, University of Nevada, Reno and J. Muhs, Oak Ridge National Laboratory

The American Solar Energy Society (ASES) is the national individual membership organization dedicated to promoting solar energy. ASES publishes SOLAR TODAY magazine, organizes the National Tour of Solar Buildings, sponsors the annual National Solar Energy Conference and advocates for government policy initiatives. For more information, contact ASES at ph: (303) 443-3130, fx: (303) 443-3132, e-mail ases@ases.org, or to register on-line go to www.ases.org

This is a preliminary program. The final program is subject to change, and will be distributed at the conference.

Tuesday morning–afternoon

Conference Program

Transportation

Efficiencies of Hydrogen Storage Systems Onboard Fuel Cell Vehicles
V. Ananthachar and J. Duffy, University of Massachusetts, Lowell

Vehicle Integrated PV—A Clean and Secure Fuel for Hybrid Electric Vehicles
S. Letendre, Green Mountain College; R. Perez, ASRC, The University at Albany and C. Herig, National Renewable Energy Lab

The Kiteship Project—Chapter 5 in the Continuing Saga
F. de Winter, D. Culp, D. Jordan and R. Swenson, Kiteship Corporation

Security

World Oil Depletion and Its Implications for Energy Policy
J. Richter, Great Lakes Renewable Energy Association

Rating for States for Energy Security—A Renewable Energy Perspective
J. Gordes, Environmental Energy Solutions; S. Gouchoe and S. Kalland, NC Solar Center at NCSU

Problems and Solutions to Training Disaster Organizations on the Use of PV
W. Young, Florida Solar Energy Center

Distributed PV's Contribution to America's Energy Security—Revenue Protection for the Federal Government
T. Hoff, Clean Power Research and C. Herig, National Renewable Energy Lab

Connecticut's High-Value PV Program—A State Model to Strengthen Energy Security
J. Gordes, Environmental Energy Solutions

Ventilation

Wind Catcher Traditions for Passive Cooling
J. Cook, Arizona State University

Applying Computational Fluid Dynamics to Analyze Natural Ventilation & Human Comfort in Buildings
V. Sami, Arizona State University

Analyzing the Effects of Water Features on Architectural Spaces Using CFD Software
V. Kapurs, Arizona State University

Using a Helium Bubble Generator to Visualize Airflow Patterns In and Around Building Models
R. Al-Shaali, P. Koenig and M. Schiler, University of California, Los Angeles

Effects of Window Size and Mass on Thermal Comfort Using an Intelligent Ventilation Controller
P. La Roche and M. Milne, University of California, Los Angeles

Reaching the Public

Cigarettes to Soaps—Learning How to Market Clean Energy to Prime Time
S. Cronk and B. Andruszewicz, Energy Matters LLC

Ann Arbor Sun Dragon
D. Konkle, City of Ann Arbor

Aesthetics—Ignore at Our Peril
A. Amon, Alt.Technica Ltd.

Enhancing the Educational Value of Green Buildings with Data Monitoring Displays
M. Arner, Heliotronics, Inc.

Heeding the Needs of Home Improvement Decision Makers
M. Milne, University of California, Los Angeles

2:00 pm

Solar Schools—Learning Labs for the Community

Moderator, Vicki Colello, IREC's Schools Going Solar Clearinghouse

Solar schools programs are flourishing and proliferating across the country. The apparent success of these programs engenders many questions of all the various players in these efforts. This session will bring together program implementers, educators and others who can answer these questions from their perspectives and experience. Speakers will be drawn from various regions of the country. A local teacher with experience in teaching energy in a solar school will be included on the panel.

What Does Sustainability Mean?

Moderator, Rob Nelson, President, Heliakos and Chair of the ASES Sustainability Division

A roundtable discussion on the meaning of sustainability. The speakers will provide a variety of viewpoints. Areas of discussion will include:

- Looking back on 10 years of the ASES Sustainability Division
- Is sustainability enough?
- How do we measure sustainability?

Water Purification and Low-Temperature Applications

Inexpensive Personal Solar Water Pasteurizer
F. Husson, Solar Solutions and D. Andreatta, S.E.A. Inc.

A Novel Solar Water Pasteurization System
W. Duff, Colorado State University

Solar Distillation Applied in Texas
B. Gupta, G. Vogel, W. Amos and M. Cormier, SolAqua, Inc. and S. Eby-Martin and R. Foster, El Paso Solar Energy Association

A Water Purification System for Remote Villages Utilizing Ultraviolet Radiation and Photovoltaics
J. Hart, M. MacDonald, S. Montminy and J. Duffy, University of Massachusetts, Lowell

Solar Salt Pond
E. Truelove, Midwest Sustainable Collaborative

Tools for Analysis, Design and Presentation

Design Tool for Complex Solar Systems to Meet Reliability Goals
N. Suwapaet and J. Duffy, University of Massachusetts, Lowell

Validation of a Simplified PV Simulation Engine
R. Perez and R. Reed, ASRC, The University at Albany and T. Hoff, Clean Power Research

Building Integrated Photovoltaic Power Calculation Design Tool
J. Henson, Arizona State University

Web-based Monitoring System Used to Evaluate the Performance of a 2 kW Photovoltaic Energy System
A. Tovar and R. Swenson, EcoSystems

Developing a High-Performance, Low-Cost Remote Monitoring Solution for PV
S. Wiese, Conservation Services Group and C. Wright, Wright Consulting Service

Predicting Long-Term Performance of Photovoltaic Arrays Using Short-Term Test Data and an Annual Simulation Tool
G. Barker, Mountain Energy Partnership and P. Norton, National Renewable Energy Lab

The Interstate Renewable Energy Council (IREC) works to accelerate the sustainable utilization of renewable energy sources and technologies in and through state and local government and community activities. IREC supports market-oriented services targeted at education, coordination, procurement, technology transfer and linkage with national laboratories and associations, collaboration with industry, uniform guidelines and customer protection. Visit their web site at irecusa.org.

This is a preliminary program. The final program is subject to change, and will be distributed at the conference.

Tuesday afternoon–Wednesday morning

Conference Program

Hydrogen and Fuel Cells

Hydrogen Production

S. Mirabal, N. Goel, H. Ingle and D. Goswami, University of Florida

Modeling, Heat Transfer and System Integration for a 4kW Regenerative PEM Fuel Cell System
A. Das and J. Duffy, University of Massachusetts, Lowell and M. Kimble, ElectroChem, Inc.

Financial Worksheet for Computing the Levelized Cost (US\$/Gasoline Gallon Equivalent) of Hydrogen Vehicle Fuel Generated at a Model Wind Electric Powered Hydrogen Electrolyzer Plant

M. Stavy, Consulting Energy Economist

International Hydrogen Transmission Test Facility (IHTTF)—Demonstrating Synergy in Large-Scale Harvest of Windpower, Biomass, and Other Renewable Energy Resources
W. Leighty, The Leighty Foundation

Residential Buildings

Donoho/O'Keefe Residence—A Residential Remodel in a Hot Humid Climate
L. Holder III and L. Holder IV, L.M. Holder III, AIA

Passive Thermal Performance of Chez Soleil, Self Sufficient in Central Texas
P. Breaux, Texas Solar Energy Society

Passive Solar Off-Grid Home
K. and S. Bakeman

Results of Design and Construction of a Zero Energy Home at Amory Park del Sol
J. Leggett Sikora, J. Wiehagen and M. Sewall, NAHB Research Center

No Furnace—Habitat for Humanity Passive Solar Homes in Michigan's Upper Peninsula
M. Kindred, Copper Country Habitat for Humanity

Passive Cooling

Effect of Outdoor Green Areas on Air Temperature and Humidity Conditions Around Buildings in Chicago, IL
D. Mwale Ogoli, Judson College

Cool Materials and Assemblies—Thermal Performance of Paving Materials
J. Cook, H. Bryan and V. Agarwal, Arizona State University

Personal Cooling—Cooling by Conduction
H. Bryan and Al Deshmukh, Arizona State University

Using RadTherm Software as an Architectural Design Tool
B. Edmonds, Arizona State University

4:00 pm

Emerging Transportation

This session will build on the success of the past three sessions in Washington, DC, Madison, WI and Reno, NV in featuring available technology and highlighting the interconnectedness of transportation and the built environment.

Wednesday, June 25, 2003

8:30 am

Passive Conference Plenary

Sustainability—A Social Imperative

Solar Energy—People Power and the Big Bang for the Buck
Richard Halpin, Executive Director, American YouthWorks

Inspiring Your Client To Do the Right Thing
Peter Pfeiffer, Principal, Barley + Pfeiffer Architects, Austin, Texas

Annual Conference Plenary

Future of Energy

Future Energy Technology

Roger Duncan, VP, Austin Energy

Can Our Global Economy Run on Carbon-emission-free and Sustainable Power Sources?
Prof. Martin Hoffert, Professor of Physics, New York University

Nanotechnology and Energy

Steve Gillett, University of Nevada, Reno

10:30 am

Sustainable, Secure Energy—Making the Environmental and Social Benefits of Renewable Energy Really Count

Moderator, Paulette Middleton, Panorama Pathways

As our country continues to search for greater security, the attributes of renewable energy become even more significant. Similarly, as the adverse environmental side-effects of non-renewable energy continue to persist and grow, the quest for more sustainable clean energy is becoming even more important. This session will provide a variety of presentations illuminating the environmental and social benefits of renewable energy and exploring how best to measure these attributes and communicate them to decision makers and the public.

Certification and Accreditation Programs for Solar Electricity

Moderator, Jane Weissman, Board Member, North American Board of Certified Energy Practitioners

Since the last Solar Forum, there have been real gains to set professional standards for solar practitioners and training programs. The North American Board of Certified Energy Practitioners (NABCEP) has established a national set of recommended certification standards for knowledge and skills competencies for photovoltaic installers, is setting a framework for similar certification standards for other technologies as the demand grows, and is launching a voluntary national certification program. In addition, the Institute for Sustainable Power is accrediting training programs and certifying instructors.

This session will give conference attendees the opportunity to learn about key elements to the certification program and the framework for this voluntary credential. Attendees will be given important information on the certification and accreditation processes.

PV Economics for Grid-Connected Applications

An Analysis of the Statistical Relationship Between Photovoltaic Generation and Electric Utility Demand in the Minneapolis-St. Paul (MN) Metropolitan Area from 1997-2000
M. Taylor, Minnesota Department of Commerce, State Energy Office

Solar and Power Markets—Peak Power Prices and PV Availability for the Summer of 2002
S. Letendre, Green Mountain College; R. Perez, ASRC, The University at Albany and C. Herig, National Renewable Energy Lab

An Analysis of the Value of PV Production Under Different Time of Use Rates
J. Szaro, Florida Solar Energy Center

Quantifying Residential PV Economics—Payback vs. Cash Flow
R. Perez, ASRC; L. Burtis, New York Shines; T. Hoff, Clean Power Research; S. Swanson, Pace University and C. Herig, National Renewable Energy Lab

Financial Payback on California Solar Electric Systems
A. Black, OnGrid Solar Energy Systems

PV and Batteries—Value Added Sales in ISO Load Response (Peak Power) and Regulation Markets
C. Cook, E3 Energy Services, LLC

The Society of Building Science Educators (SBSE) is an association of university educators and practitioners in architecture and related disciplines who support excellence in the teaching of environmental science and building technologies. SBSE publishes a newsletter, maintains a web site and conducts annual retreats and workshops. Visit their website at SBSE.org.

Wednesday morning–afternoon

Conference Program

Resource Assessment, Modeling and Applications

Solar Resource Assessment Methods for the United National Environment Programme's Solar and Wind Energy Resource Assessment (SWERA) Project

D. Renné, National Renewable Energy Lab; R. Perez, ASRC, The University at Albany; C. Schillings, F. Trieb and R. Myer, German Aerospace Center (DLR), GERMANY; e. Pereira, Instituto Nacional de Pesquisas Espaciais, BRAZIL and M. Vipradas, Tata Energy, INDIA

Producing Satellite-Derived Irradiances in Complex Arid Terrain

R. Perez, ASRC, The University at Albany; P. Ineichen, U. Geneva; M. Kmiecik, ASRC; K. Moore, IED and D. Renne and R. George, NREL

Progress on Updating the 1961-1990 National Solar Radiation Database

D. Renné, S. Wilcox, B. Marion, R. George, D. Myers and T. Stoffel, National Renewable Energy Lab; R. Perez, ASRC, The University at Albany and P. Stackhouse, Jr., NASA/Langley Research Center

Beam-Tilted Correlation

F. Vignola, University of Oregon

Solar Resource Assessment in the Foggiest City on Earth

J. Augustyn and T. Geer, Augustyn + Company and F. Schwartz and D. Appel, San Francisco Public Utilities Commission

The Effect of Aberrations in TMY2 Data on Simulation Results of Solar Systems

G. Vijayakumar, S. Klein and W. Beckman, University of Wisconsin, Madison

Low Temperature Solar Thermal Applications

Performance Evaluation of a Solar System Consisting of a Building Integrated Solar Thermal Roof Collector and a Phase Change Material Thermal Storage

M. Hassan and Y. Beliveau, Virginia Tech

Segmented Thermal Storage

D. Crandall and E. Thacher, Clarkson University

Design and Development of a Low-Cost ICS Solar Water Heater

D. Bourne and E. Lee, Davis Energy Group, Inc.

Geographical Variation of the Performance of Multi-Use Unglazed Collector Systems

J. Burch, J. Salasovic and C. Christensen, National Renewable Energy Laboratory and J. Thornton, TESS

Building Integrated Solar Thermal Roof for Heating Pentagon Emergency Generator

J. Archibald, American Solar, Inc.

Sustainable Design Process

An Optimization Methodology for Buildings on the Path to Zero Net Energy

C. Christensen, National Renewable Energy Lab; B. Stoltenberg, University of Colorado and G. Barker, Mountain Energy Partnership

How Green Is My Building? Application of Ecosystem Services Criteria for the Assessment of "The Farmhouse"

V. Olgyay and J. Herdt, ENSAR Group, Inc.

A Design Process for Sustainable Residential Architecture in the Desert Southwest—Does an Integrated Design Process Work?

M. Yoklic and M. Carnevale, University of Arizona

Liberating Sustainable Development—The Process Imperative

O. Jackson, Sustainable Systems and Design International

Daylighting Examples

The Medical Significance of Daylight in Design

P. Mead and L. Holder, III, L.M. Holder III, AIA

Daylighting—Creating Effective Sunlight Control

G. Franta, V. Olgyay and J. Hainline, ENSAR Group, Inc.

Daylighting at the Austin Bergstrom International Airport Terminal After More Than Five Years of Operation

L. Holder III and L. Holder IV, L.M. Holder III, AIA

2:00 pm

The Dawning of Solar Electric Architecture

Steven Strong, Solar Design Associates, will present a highly visual world overview of building-integrated PV activity including a description of component and systems development using the best built examples of Solar Electric Architecture from the U.S., Europe and Japan. These early PV-powered buildings provide a window into the coming new era of environmentally responsive, energy-producing buildings where this elegant, life-affirming technology will become an integral part of the built environment.

Sustainability Lessons Learned

This session will focus on both successful and not so successful projects, with a discussion of what worked and what didn't. Sandra Mallory, from Environmental Works Community Design Center has been invited to present her paper on *Sustaining Affordable Communities*. Other presenters will be invited.

Industry Update—Policies and Trends for the Grid-Connected Market

Industry Updates at SOLAR 2003 will be organized by the Solar Energy Industries Association. They will focus on providing industry with up-to-the-minute knowledge of national markets and policies, along with the skills needed for success.

Grid connection is becoming the dominant market for PV. Leaders in the field of solar energy will bring you up to speed on the current status of the grid-connected market. Also featuring a quick briefing on effective policies for growing the grid-connected sector—from RPS to the ITC, policy experts on the state and federal level will finally tell you exactly how they work, and why they don't.

PV System Analysis

Solar Audit Assistance Tool

R. Celantano, Celantano Energy Services

Overview of Amorphous Silicon (a-Si) Photovoltaic Installations at SMUD

D. Osborn, Spectrum Energy, Inc.

PV System Review and Performance Evaluation for the California Market—A Consumer Awareness View of Available Systems

W. Brooks, J. Newmiller, T. Townsend, and C. Whitaker, Endecon Engineering

Facilitating Solar Electric Plant Construction—An Innovative Model in Long Island, NY

J. Hoffner, J. Jackson and D. Porazzo, Conservation Services Group

Grid Interactive Inverter—Design Verification Report

T. Booth, Xantrex Tech

Materials in Solar Thermal Applications

Performance of Polymer Tubes in Hot Chlorinated Water

D. Walter, S. Mantell and J. Davidson, University of Minnesota

Scaling in Polymer Tubes Used in Solar Water Heating Systems

J. Davidson, L. Francis, M. Kingsley, R. Rye and M. Emery, University of Minnesota

Manifold Design for Polymer Heat Exchangers in Solar Hot Water Applications

T. Pongratz, S. Mantell and J. Davidson, University of Minnesota

Lessons Learned from the Copper Corrosion Experiences in the Civano Community, Tucson, Arizona

V. Rauluk, Greater Tucson Coalition for Solar Energy; D. Menicucci, Sandia National Labs and S. Gorman, Thermal Conversion Technology

The Solar Energy Industries Association (SEIA) is the national trade association of solar energy manufacturers, dealers, distributors, contractors and installers. SEIA's primary mission is to expand the use of solar technologies in the global marketplace. National members combined with chapter members in 22 states exceed 500 companies providing solar thermal and solar electric products and services. To learn more about SEIA call (202) 628-7475 or visit their homepage at www.seia.org.

This is a preliminary program. The final program is subject to change, and will be distributed at the conference.

Wednesday afternoon—Thursday morning Conference Program

Regional Incentives and Development Activities

Evaluating the Feasibility of a Region-Wide Effort to Pursue Renewable Energy Technology as a Tool for Economic Development

A. Ledbetter and K. Heinemeier, Brooks Energy and Sustainability Laboratory and E. Gerlach and M. Cline, Center for Economic Development

The Effectiveness of State Financial Incentives for Renewable Energy

S. Gouchoe, V. Everette and R. Haynes, North Carolina Solar Center, NCSU

The Evolution of State Clean Energy Fund Support for PV

M. Bolinger and R. Wiser, Lawrence Berkeley National Laboratory

Renewable Energy R&D State-Mandated Renewable Portfolio Standards

B. Vincent, Sacramento Municipal Utility District

Commercial Buildings

Green Against the Grain

S. Dent, Dent & Nordhaus, Architects

LESS is More—Lessons Learned from the Low Energy Super Store

G. Hubbard, Davis Langdon Schumann Smith; G. Franta, ENSAR Group and N. Clanton, Clanton Associates

Modeling Energy Use in the Commercial Sector in Saudi Arabia—Retail Store as a Study Case

M. AlZain, King Abdulaziz University

The Studio

H. Alan, Howard Alan Architect

Energy Security and Sustainable Design

J. Hainline, G. Franta and V. Olgyay, ENSAR Group Inc.

4:00 pm

Passive Conference Closing Plenary

Thursday, June 26, 2003

8:30 am

Annual Conference Plenary

Renewable Energy—Our True Security

California Renewables After Deregulation

Laura Doll, CEO, California Power Authority

Renewable Energy—An Indigenous Resource to Support National Security

Marjorie L. Tatro, Director, Energy and Transportation Security Center, Sandia National Laboratories

Title to be announced

Allen Barnett, CEO, AstroPower



Photo courtesy of the Austin Convention & Visitors Bureau

The Solar Rating and Certification Corporation (SRCC) provides independent certification, national recognition, product credibility and standardized comparisons of solar energy products. SRCC programs serve three primary constituencies — the solar energy industry, solar consumers and state and federal regulatory bodies. All three constituencies benefit from the SRCC programs by obtaining a national state-of-the-art rating system, a mechanism to develop consumer confidence and rational and defensible criteria for tax credit qualification and other solar incentive programs. Visit www.solar-rating.org.

10:30 am

Solar Means Safety—A National and Local Perspective for Using Distributed Technologies for Safety and Energy Security

Moderator, Jane Pulaski, Interstate Renewable Energy Council

This session will feature a wide array of stakeholders involved in using PV for safety and security. Learn what cities, states and the federal government are doing to use solar energy technologies as a solution to our nation's energy problems in a post 9/11 world.

State-Based Programs

Assessing Wisconsin's Public Benefit Renewable Energy Program

D. Wichert and A. Serchuk, Wisconsin Division of Energy

Solar PV in Washington—It's Out There!

G. Shaver, Washington State University

The First Two Years of Results for Arizona's Environmental Portfolio Standard

R. Williamson, Arizona Corporation Commission

Strategic Value Analysis for Renewable Technologies at the California Energy Commission's Public Interest Energy Research Program

P. Sethi and J. McCabe, California Energy Commission

Qualitative and Statistical Analysis of the Florida Photovoltaic Rebate Program

J. Szaro, Florida Solar Energy Center

Global Electrification

Solar Powered Information and Communication Technologies in Deep Rural Communities

R. Swenson and A. Baer, EcoSage Corporation

Renewable Energy in the Galapagos Islands

D. Ley, Sandia National Laboratories

Megawatts of PV—Objectives and Sustainable Vision for Chinese Township Electrification Program

J. Ku and D. Lew, National Renewable Energy Lab

Renewable Energy for Protected Areas of the Yucatan Peninsula

A. Rubio, Ecoturismo y Nuevas Tecnologias S.A. de C.V., R. Foster, SWTDI - New Mexico State University and C. Hanley and M. Ross, Sandia National Laboratories

Utilizing Photovoltaics to Support Distance Education in the State of Chihuahua, Mexico

R. Foster and L. Estrada, SWTDI - New Mexico State University; J. Colmenero, Coordinacion Estatal de Educacion a Distancia Chihuahua State Government, MEXICO; L. Ojinaga-Santana, Winrock International and M. Ross, Sandia National Laboratories

PV System Implementation

Review of State Imposed Interconnection Requirements

P. Williams and C. Handleman, Heliotronics, Inc.

San Francisco Solar Power Plant—Moscone Convention Center

D. Appel, San Francisco Public Utilities Commission

PV in Commercial Buildings—Mapping the Breakeven Turnkey Value of Commercial PV Systems in the U.S.

C. Herig, National Renewable Energy Lab; S. Gouchoe, North Carolina Solar Center; R. Perez, ASRC, The University at Albany and T. Hoff, Clean Power Research

A Contrast in Code Enforcement

K. Lynn and J. Szaro, Florida Solar Energy Center

Interconnection of PV Systems to the Grid - The Utility Accessible External Disconnect Switch—Critical Safety Component or Useless Equipment Requirement?

C. Cook, E3 Energy Services, LLC

Thursday morning—afternoon

Conference Program

Solar Thermal Systems for Cooling and Generation

Design, Installation and Early Operation of a Roof-Integrated Solar Cooling and Heating System
R. Gee, G. Cohen, R. Winston and K. Greenwood, Duke Solar LLC and B. McGuffey, North Carolina Solar Center

Improved Configuration of a Novel Thermodynamic Power and Cooling Cycle
S. Vijayaraghavan and D. Goswami, University of Florida

A Solar Liquid-Desiccant Air Conditioner
A. Lowenstein, AIL Research, Inc.

Testing of Thermocline Filler Materials and Molten-Salt Heat Transfer Fluids for Thermal Energy Storage Systems in Parabolic Trough Power Plants
D. Brosseau, R. Edgar, K. Welch and J. Moreno, Sandia National Laboratories

Solar Convective Generator—Is It a Practically Viable Method of Harnessing Solar Energy?
V. Potnis, Arizona State University

Vote Renewables

Moderator, Frank Laird

The session will provide participants with practical information about developing a Vote Renewables initiative in their communities. Building upon the Vote Solar victory in San Francisco, speakers will address ways that local governments can finance green power purchases and renewable energy projects using capital raised from municipal bonds. Speakers will provide participants with information ranging from how to determine if your community is a good candidate for such an initiative to insight into what is required to organize a successful campaign.

2:00 pm

Real Stories from Real Buildings (Part II)

Session Moderators, Alison Kwok, University of Oregon and Walter Grondzik, Florida A&M University

For the past several years students, faculty, and practitioners throughout North America (and internationally) have used methods and equipment from the Vital Signs curriculum project to examine the performance of buildings in use. The concept is simple—visit real buildings, make measurements on site, discuss the design with the architect if possible, talk to real building users, and develop understandable conclusions that can inform future design efforts and building operations. Presentations will include:

Measuring Occupant Behavior in Residential Communities
J. Seryak and K. Kisko, University of Dayton

Controlling Comfort by Controlling Surface Temperatures
V. Gooje, A. Bhargava, D. Scheatzle and H. Bryan, Arizona State University

Occupants' Control of Operable Windows in Naturally Ventilated Office Building—A Pilot Study
V. Inkarojrit, University of California, Berkeley

Passive Cooling—A Case Study of the Evaporation Phenomenon
H. Bryan and R. Alfini, Arizona State University

Industry Update—Leveraging Local Media and Politics

Industry Updates at SOLAR 2003 will be organized by the Solar Energy Industries Association. They will focus on providing industry with up-to-the-minute knowledge of national markets and policies, along with the skills needed for success

Experienced Capitol Hill media pros will tell you how you how to effectively leverage local media, letters to the editor, opinion pieces, etc. to promote your products, increase public awareness and influence policy.

Solar System Applications

Commercialization of Solar-Powered Refrigeration Systems
M. Ewert, University of Massachusetts Lowell

Energy Efficient Solar Powered Ceiling Fans
M. Lubliner, Washington State University Energy Program; M. Nelson, Western Sun; F. Hankins, RCH Fanworks and D. Parker, Florida Solar Energy Center

Water Pumping with AC Motors and Thin-Film Solar Panels
B. Vick, B. Neal and R. Clark, USDA - Agricultural Research Service and A. Holman, WTAMU - Alternate Energy Institute

High-Efficiency Generators Can Increase the Economic Attractiveness of Small, Grid-Independent PV Installations
K. Roth and P. Teagan, TIAX LLC

Improving the Return on Investment of Solar PV
P. Savage, B. Wilhelm and B. Hartman, Nextek Power Systems, Inc.

Concentrators for Mid- And High-Temperature Applications

Five Year Novel ICPC Solar Collector Performance
W. Duff, Colorado State University; R. Winston and J. O'Gallagher, Enrico Fermi Institute, University of Chicago; J. Gergum, Sacramento State university and T. Henkel, Solar Enterprises International

Prospects for Low-Cost, Mid-Temperature Collectors Combining Evacuated Receivers with Nonimaging External Reflectors
R. Winston and J. O'Gallagher, Enrico Fermi Institute, University of Chicago; R. Gee, Duke Solar and R. Mahoney, Sandia National Laboratories

Non-Imaging Devices for Uniform Irradiance on Planar Surfaces for Parabolic Concentrators
D. Dye and B. Wood, University of Nevada, Reno

A Simple Model for Cost-Performance Optimization of Concentrating Dish
R. Winston and J. O'Gallagher, Enrico Fermi Institute, University of Chicago

Demonstration of a Novel Mirror Facet for Solar Concentrators
M. Featherby and R. Davenport, Science Applications International Corporation

Comparison Tests of a Solar Dish Concentrating System with a Stirling Engine and a Photovoltaic Receiver
R. Taylor and R. Davenport, Science Applications International Corp.

Development of a Slat-Array Photovoltaic Concentrator
S. Vasylyev, SVV Technology Innovations, Inc.

Utility-Based Programs

Austin Energy's GreenChoice Program—A National Model for Green Energy Marketing
M. Kapner, Austin Energy

Solar Power Industry Outlook in the City of Los Angeles
T. Honles, Los Angeles Department of Water and Power

Supporting Solar Through Green Power Markets
L. Bird, B. Swezey and C. Herig, National Renewable Energy Laboratory

Utility Success Stories in Solar Water Heating
R. Richmond, Hawaiian Electric Company; D. Jones, Jacksonville Electric Authority; S. Still, Eugene Water and Electric Board; J. Curry, Lakeland Electric and C. Bircher, Wisconsin Public Service

Solar Water Heating as an Instrument for Global Action of Climate Changing
O. Dintchev, Technikon Northern Gauteng, SOUTH AFRICA

4:00 pm

Annual Conference Closing Plenary

The Texas Renewable Energy Industries Association (TREIA) is a statewide non-profit organization of companies and individuals involved in solar, wind, biomass, geothermal and hydro electric energy products and/or services. For more information call (512) 345-5446 or visit the web site at www.treia.org



Special Events

Sun Run

Saturday, June 21, 8:00 am

Come early and experience the unique character of Austin. Celebrate the Solstice with a 5K race and fun run in a festival atmosphere. Walkers welcome. Wind Sprints (short races) for kids! Join local environmental advocates, business leaders, wired-for-weird creative community caped crusaders and innovative technology talent in a race for the future.

Registration for this event will be handled separately and proceeds will benefit the Texas Solar Energy Society. When registration opens in early May, please go to the TXSES home page at www.txses.org and follow the link to the Sun Run.

ASES Chapters Caucus

Saturday, June 21, 1:00 – 9:00 pm

For representatives of ASES chapters and forming chapters, a networking and training program. Topics will include National Tour of Solar Buildings, membership and fund-raising issues. There will also be local and national updates on energy policy issues.

This year, attendees will have the opportunity to meet with representatives from DOE's Million Solar Roofs partnership program.

Representatives are encouraged to bring brochures and newsletters to share.

\$20.00 includes dinner, breaks and materials. Pre-registration is required.

IREC Meetings

Saturday, June 21, 8:30 am – 12 noon

Interstate Renewable Energy Council's Board of Directors Meeting (*Directors Only*)

Saturday, June 21, 1:30 – 4:00 pm

Interstate Renewable Energy Council's Special Topic Forum

Topic this year is *Understanding & Improving the PV Permitting Process*

Sunday, June 22, 8:30 am – 5:00 pm

Joint Annual Meeting of IREC and DOE's Million Solar Roofs Partnerships

Exhibit

Open daily to the public (Sunday evening through Wednesday afternoon) at the Austin Convention Center

Over 80 exhibitors demonstrating renewable energy products and programs.

Opening Night Reception

Sunday, June 22, 6:00 – 8:00 pm

Women in Solar Energy (WISE) Luncheon

Monday, June 23, noon – 2:00pm

Opportunities to network with your peers, and discuss the challenges and rewards women encounter working in a non-traditional field. Organized by Marlene Brown, Sandia National Labs and Laurie Stone, Solar Energy International.

\$25.00 per person includes luncheon.

General Reception

Monday, June 23, 6:00 – 8:00 pm

Advocacy Training

Tuesday, June 24, noon – 2:00 pm

Working Together for Change—Building an Alliance of Renewable Energy Organizations

Moderator, Joel Stronberg

The session will provide participants an opportunity to hear what other renewable energy organizations are doing. Invited to speak are the executive directors of the National Geothermal Association; the American Wind Energy Association; the Solar Energy Industries Association; and the National Hydro Association. The speakers will offer an overview of their organization's policy priorities and programs. The panel will address opportunities for cooperation between their organizations and ASES.

\$15 registration fee includes lunch.

Professional Poster Author Q&A

Tuesday, June 24, noon

Reception & Grand Awards Banquet

Tuesday, June 24, 6:00 pm

Bruce Sterling, author and journalist from Austin will be the featured banquet speaker. Bruce is a contributing editor of WIRED magazine. His most recent book is *TOMORROW NOW: Envisioning the Next 50 Years*.

Texas Food & Follies

Wednesday, June 25, 6:00 – 10:00 pm

Here's a Texas experience you'll remember 'til Aunt Molly's cow gives chocolate milk.

From 6:00 to 8:00 pm it's suppertime! Put on the feedbag at the world famous *Stubb's Bar-B-Q Restaurant*—the venerable atmospheric Austin café and club favored by the likes of Russell Crowe and Brad Collins. Circle around the pool table for a buffet that includes your fill of succulent meats and homemade fixin's, plus peach cobbler (alcohol extra). And yes, a full vegetarian buffet, too (hey, this is Austin—we can pull it off). You won't leave here hungry.

Then amble down the street two blocks for a special command performance of one of the country's premier comedy troupes—*Esther's Follies*. They'll welcome us to their home venue in the heart of Austin's entertainment district. Drinks will be available at the cash bar before the show, which begins at 8:30 pm. Then settle in for Esther's special brand of savage and savvy satire and musical parody. Just like at Stubb's, no cows will be sacred! When you pick yourself up off the floor around 9:45 (pm), pull a group together to explore the clubs and hotspots on 6th Street that have made Austin the "Live Music Capital of the World." Don't forget your boots!!

\$50.00 per person includes meal and entertainment.

Closing Plenaries

Passive Conference – Wednesday, June 25, 4:00 pm

Annual Conference – Thursday, June 26, 4:00 pm

Closing plenary sessions for each conference will be a recap of the highlights of the conference, a stimulating discussion of what we've learned and how we can use that knowledge, and an inspiring call to action for all of us!

The Texas Solar Energy Society (TXSES) is a non-profit organization open to anyone with an interest in renewable energy. It is dedicated to increasing awareness of the uses and benefits of solar and other renewable energy sources. For more information call (512) 326-3391 or (800) 465-5049 or go to www.txses.org.

Workshops

#W1

Women's Photovoltaic Design & Installation

Tuesday, June 17—Saturday, June 21, 8:30 am – 5:30 pm daily
(\$275) includes daily lunch
Participants: Min 8/Max 30

*Marlene Brown, Sandia National Laboratory
Debby Tewa, 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 classwork will be held. Dormitory style lodging with kitchen privileges has been arranged for \$16.50 per person per night. Lunch, some of which will be prepared in solar ovens on site, is included in the registration fee.

Why women only? Many women have little or no electrical experience. Due to women's lack of training in technology, they may be wary of attending a coed course with men who have grown up using power tools. Providing a supportive learning atmosphere, an all-women workshop may help overcome the social, political and economic barriers that keep some women from entering the PV field.

#W2

A Sustainable Home Water Supply—Rainwater Harvesting

Saturday, June 21, 8:30 am – 12:30 pm (\$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.

#W3

Solar Domestic Hot Water

Saturday, June 21, 8:30 am – 12:30 pm (\$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.

#W4

Green by Design

Saturday, June 21, 1:30 – 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.

#W5

Selling Distributed Generation

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

Scott Sklar, President, The Stella Group, Ltd.

This workshop will cover tactics for profitably selling on-site energy, including case studies, rules of thumb, state programs in clean energy, clean air act compliance and homeland security. While solar will be a focus, small wind, combined heat and power, fuel cells, heat engines, advanced controls and batteries, and modular biomass will also be covered, as well as natural gas micro generation. Participants will receive copies of the class presentations plus Fact Sheets.

#W6

Energy for Teachers

Saturday, June 21, 1:30 – 5:30 pm (\$15)
Participants: Min 10 /Max 30

*Kirstin Wilsey, Watt Watchers of Texas
Steve Cook, The Energy Center, UT-El Paso, and Watt Watchers of Texas*

Education materials available from the Texas State Energy Conservation Office will be presented through hands-on activities contained within them. Teachers will experience the award winning *Infinite Power of Texas* Lesson Plans and Fact Sheets that are available for FREE! These lesson plans were developed by a team of professional educators and renewable energy experts, using information from the fact sheets as a starting point for building knowledge. Teachers will also learn about the Knowledge is Power Energy Efficiency Curriculum



Workshops

Supplement for K-8 grades. Knowledge is Power provides teachers with experiential lessons that teach the importance of energy efficiency in our homes and schools. All of the materials are correlated to the Texas Essential Knowledge and Skills (TEKS). This session will also include information about the U.S. Department of Energy's Junior Solar Sprint Program, which is a classroom based, hands-on educational program for 6 - 8 grade students. JSS 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.

#W7

Designing High Performance Sustainable Buildings

Sunday, June 22, 8:30 am – 12:30 pm (\$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, 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 laptop computer running any version of Windows, and we will install the latest version of HEED for you. Free software download available for all.

#W8

Daylighting and Passive Design for Heating AND Cooling Climates

Sunday, June 22, 8:30 am – 12:30 pm (\$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.

#W9

Latin American Renewable Energy Development

Sunday, June 22, 8:30 am – 12:30 pm (\$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 U.S. 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.

#W10

Solar and Radiant Heating

Sunday, June 22, 8:30 am – 5:30 pm (\$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.

#W11

Tapping the Hybrid Potential—Wind for the Solar Installer

Sunday, June 22, 8:30 am – 5:30 pm (\$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.

#W12

Building Integrated PV

Sunday, June 22, 8:30 am – 5:30 pm (\$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 end 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.



Tours

Tours will depart from and return to the Austin Convention Center

#T01

Green Built Homes I

Saturday, June 21, 8:30 am – 12:30 pm (\$45)
Participants: min 10/ max 56

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

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. Included in this morning tour are homes from luxurious to modest, remodeling projects to custom-built. Experience the unique feeling of being inside an extremely energy efficient, large, rammed earth home. Then travel through lovely park grounds to get to a conversion project, from foundation up, using all natural, non-toxic materials and finishes. This L. M. Holder, III home/office project (a session case study) exemplifies the day-lighting for which the firm is well known. A smaller neighborhood remodeling project is the next stop, demonstrating tried and true passive design for solar heat gain mitigation and use of sustainable, local materials. This tour's final destination will be to see the award-winning American YouthWork's Casa Verde projects, the program highlighted in Wednesday's opening plenary. These simple, exceptionally energy efficient homes are the product of a unique community partnership harnessing the energies of at-risk youth, community needs and sustainable construction practices.

#T02

Solar Installations

Saturday, June 21, 8:30 am – 12:30 pm (\$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 endangered species, and hundreds of native plants, animals and birds) to view their roof-mounted PV system.

#T03

Green Built Commercial

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

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

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 One World Theater, a project of Living Architecture, features RASTRA (an alternative concrete block system made with recycled polystyrene) and straw bale construction, split mini

heat pumps, and appropriate solar orientation for cooling climates. Directly across the picturesque valley, we will visit the Church of Conscious Harmony, an appropriately awe-inspiring structure made of straw bale that collects the rain off its many pitched roofs. A more traditional downtown facility houses the American YouthWorks program and exemplifies their commitment to green building through design and material choices. And finally, the tour will include a stop by Pickle Elementary School, a building whose sustainable elements save on water and electricity usage as well as maintenance costs. Some of these sustainable elements include day lighting and harvested rainwater that is used by the air-conditioning system to reduce reliance on city water.

#T04

Rainwater Collection Systems

Saturday, June 21, 1:30 – 5:30 pm (\$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 or not you take the workshop, 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 for gardens and landscapes, and others used as the sole source of household supply. Light commercial applications are also included. In addition, one site uses PV power to deliver the collected water to its point of use, providing another key to total utility independence.

#T05

Center for Maximum Potential Building Systems

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

Guide—Pliny Fisk and Gail Vittori, Co-Directors, CMPBS

You've heard about it 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.

#T06

Green Built Homes II

Sunday, June 22, 1:30 pm – 5:30 pm (\$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 demonstrating 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 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

Tours & Logistics

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 #01.

#T07

Solar San Antonio

Sunday, June 22, 8:30 am – 5:30 pm (\$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 toward downtown, you'll pass by a retail outfit solely dedicated to solar products. Savor Texas traditions at the Institute of Texas Cultures and see their newly installed PV system, a shaded-parking structure. 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 café, 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.

Ground Transportation

If you are traveling to Austin by air, you can get to the Radisson Hotel by taking the SuperShuttle. Upon arrival at the airport, please go to the SuperShuttle ticket counter located near baggage claim near the car rental counters. No reservation is necessary. Vans are assigned on a first come first served basis, and service is available 24 hours a day, 365 days a year. Please call (512) 929-3900 with any questions. The fare is \$12 one way and \$20 round trip.

Conference Location

SOLAR 2003 presentations and exhibit hall will be at the

Austin Convention Center

500 East Cesar Chavez Street

Austin, TX 78701

(512) 476-5461

Lodging

We have reserved a block of rooms for the SOLAR 2003 conference hotel

Radisson Hotels & Suites Austin

111 Cesar Chavez Street

Austin, TX 78701

National Reservations: (800) 333-3333

The conference rate of \$121/night is available until May 21, 2003. Reservations made after that date are subject to availability. To receive our conference room rates, please mention SOLAR 2003 when registering. All reservations must be guaranteed to a credit card for a deposit of one night's room and tax. All reservation cancellations must be received by 6:00 pm on the day of arrival to avoid a charge of one night's room and tax.

You may also wish to consider:

Habitat Suites, a Green Hotel for the discriminating environmental choice

500 E. Highland Mall Blvd.

Austin, TX 78752

6 miles or about 15 minutes from Convention Center *via your own transportation*. Please visit them at www.habitatsuites.com to view the property and learn about their environmental features. Contact Natalie Marquis at info@habitatsuites.com or at (800) 535-HOME.

Hostelling International Austin

2000 S. Lakeshore Blvd.

Austin, TX 78741

1-800-725-2331

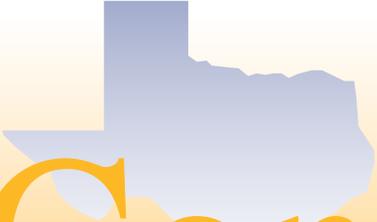
www.hiaustin.org

A very limited number of dormitory-style rooms are available at the rate of \$16.50 per night. HI-Austin is approximately 2 miles from the Convention Center *via your own transportation*. Please mention "SOLAR 2003 Conference" when you call or book your reservation on-line.

There are other hotels nearby. For a list, please go to www.ases.org



Photos courtesy of the Austin Convention & Visitors Bureau



Committees

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Jason McLennan, AIA, Elements
John Reynolds, University of Oregon

PARTICIPATING ORGANIZATIONS

The American Institute of Architects Committee on the Environment (AIA)
The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
Interstate Renewable Energy Council (IREC)
The Society of Building Science Educators (SBSE)
Solar Energy Industries Association (SEIA)
The Solar Rating and Certification Corporation (SRCC)
Texas Solar Energy Society (TXSES)
The Texas Renewable Energy Industries Association (TREIA)

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SOLAR 2003 Registration Form

Name (appears on your conference name badge) _____

Company or Affiliation _____

Address _____

City _____ State _____ Zip _____ Country _____

Phone _____ Fax _____ e-mail _____

Please check all memberships that apply:

AIA ASES ASHRAE IREC SEIA SRCC SBSE TXSES TREIA

Registration Fee

- Full Conference registration includes: Attendance at conference sessions beginning Monday, June 23 through Thursday, June 26, Welcome Reception, admittance to exhibits, Grand Awards Banquet and Conference proceedings on CD-ROM.
- Student and one day registrations do not include banquet or proceedings.
- Conference registration does not include travel, meals, lodging, workshops, tours or special events.

	<i>Before May 21</i>	<i>After May 21</i>		
Member (<i>checked above</i>)	\$395	\$475		
Non-Member	\$475	\$550		
Student (<i>with ID</i>)	\$25	\$25		
One Day	\$225	\$265	(<input type="checkbox"/> Monday <input type="checkbox"/> Tuesday <input type="checkbox"/> Wednesday <input type="checkbox"/> Thursday)	Registration \$ _____

Proceedings

Conference proceedings are available in book format or on searchable CD-ROM. A copy of the CD-ROM is included with full Conference registration. Additional proceedings may be purchased. Both versions include papers from both the Annual and Passive Conferences.

Proceedings in book format (paper) \$75
 Proceedings on CD-ROM \$75
 Proceedings \$ _____

Membership

(*Joining ASES or TXSES now entitles you to register for the conference at the Member rate*)

ASES Membership \$70 (USA), Canada \$85, Other non-US countries \$95
 ASES Student (with proof of student status) Membership \$25
 Texas Solar Energy Society (TXSES) Membership \$25 (Individual)
 Membership \$ _____

Special Events

ASES Chapters Caucus, includes dinner \$20
 Women in Solar Energy (WISE) Luncheon \$25
 Grand Banquet \$50 Pork Tenderloin Mahi Mahi Vegetarian Wellington
 Texas Food & Follies \$50
 Advocacy Training, includes lunch \$15
 Special Events \$ _____

Workshops (Circle choices)

W01. Women's Photovoltaic Design and Installation \$275
 W02. A Sustainable Home Water Supply—Rainwater Harvesting \$45
 W03. Solar Domestic Hot Water \$45
 W04. Green by Design \$50
 W05. Selling Distributed Generation \$55
 W06. Energy for Teachers \$15
 W07. Designing High Performance Sustainable Buildings \$60
 W08. Daylighting & Passive Design for Heating & Cooling Climates \$60
 W09. Latin American Renewable Energy Development \$45
 W10. Solar and Radiant Heating \$140
 W11. Tapping the Hybrid Potential—Wind for the Solar Installer \$150
 W12. Building Integrated PV \$160

Tours (Circle choices)

T01. Green Built Homes I \$45
 T02. Solar Installations \$45
 T03. Green Built Commercial \$45
 T04. Rainwater Collection Systems \$45
 T05. Center for Maximum Potential Building Systems \$25
 T06. Green Built Homes II \$45
 T07. Solar San Antonio \$60

Workshop \$ _____

Tour \$ _____

Payment Visa MasterCard Amex Check Enclosed

Total Amount Paid _____

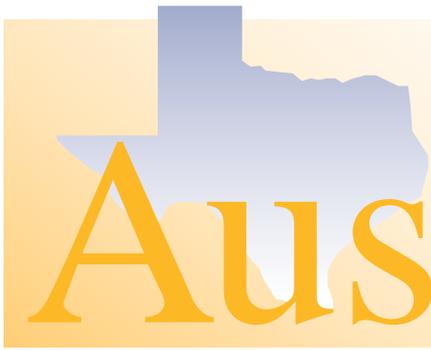
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Signature _____

If you or anyone in your party has a disability and require accommodation in order to fully participate, please check here.

Refunds: Cancellation requests must be made in writing and will be charged a \$50 handling fee. No refunds will be made after June 1, 2003.

Register online and get the latest program information at www.ases.org



Austin

Entering Austin City Limits

Known for its casual and playful nature, Austin is the playground of Texas. Situated at the center of the Lone Star State, it stands as the gateway to the Texas Hill Country and the Highland Lakes. As the state capital and home to the University of Texas, the city supports a politically charged and culturally rich environment. It's hip, trendy, and high-tech. A large creative population—primarily musicians and artists—enhance its eclectic nature.

Natural Appeal

Blessed with a temperate year-round climate and 300 days of sunshine a year, Austin lives for the outdoors. Nature trails, parks and wilderness preserves create an oasis in the heart of the city. Town Lake bisects the center of downtown and is bordered by 10 miles of hike-and-bike trails where devoted joggers, walkers and cyclists flock every hour of the day.

From April through October, 1.5 million Mexican free-tail bats live under the Congress Avenue Bridge that spans Town Lake. Onlookers flock to the shores nightly to watch the nocturnal creatures emerging from beneath the bridge.

Historical View

Originally a buffalo hunting ground favored by Tonkawa Indians, Austin was permanently settled in 1838 as a trading post. Now, more than a million people live in the city named for Stephen F. Austin, who colonized Texas.

The Texas State Capitol, an imposing pink granite structure, commands a stately presence in downtown. Actually 14 feet taller than the nation's capitol, the Texas Statehouse is the largest domed statehouse in the country.

Texas' larger-than-life history comes together under one roof at the new Bob Bullock Texas State History Museum, which features intriguing artifacts, interactive exhibits, multimedia shows, and an IMAX Theatre.

Musical Talent

In the city where the music never stops, live music plays at more than 100 venues on any given evening. A little blues, a little country, the beat of rock and roll, and even a few jazz licks puts Austin music into a distinctive music genre that's difficult to label. The largest concentration of music venues is found downtown in the Warehouse District and along Sixth Street, a six-block stretch of bars and restaurants.

Now in its 28th season, Austin City Limits continues to be the best show in town. The long-running PBS series showcases American music and Texas music in particular.

Cultural Scene

Austin is one of only a few U.S. cities with professional ballet, symphony, opera, and theater companies. With 20 museums, dozens of galleries, and as many as 35 theater companies, the city is experiencing a cultural renaissance.

Renovation begins this summer to convert Palmer Auditorium into a spectacular performing arts center by Fall 2004. Many of the city's cultural resources are found on the campus of the University of Texas, where the Blanton Museum of Art opens a new facility in 2005 and the Harry Ransom Center completes a renovation in early 2003.

The Lyndon B. Johnson Library and Museum, also located on campus, remains the most visited of the nation's presidential libraries. A scale replica of the Oval Office, artifacts from Air Force One, and volumes of official papers chronicle the rise of a young man who would be president from Central Texas.



Photos courtesy of the Austin Convention & Visitors Bureau

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Boulder, CO 80301

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