



SOLAR 2014

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JULY 07-09 2014

<http://solar2014.org>

CONFERENCE PROGRAM

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Why not view the program with our Mobile App?

→ www.intersolar-app.us

Wednesday, July 9, 2014		Room
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49	CSP Technology & Applications	Sutter
50	Solar Resource Instrumentation and Uncertainty	Intercon. Ballroom C
51	Initiatives Toward Carbon Neutral Buildings & Cities	Intercon. Ballroom B
52	Special Forum: Women in Renewables	Intercon. Ballroom A
54	SHC Innovations and Research	Sutter

ASES TECHNICAL DIVISION MEETINGS

Intercontinental Hotel Level 5, Howard Room

Monday, July 7, 2014

- 9:00am–10:30am Sustainability Division
- 11:00am–12:30am Emerging Professionals Division
- 1:30pm–3:00pm Passive Solar Division
- 3:30pm–5:00pm Resource Assessment Division

Tuesday, July 8, 2014

- 9:00am–10:45am Thermal Division
- 11:15am–1:00pm CSP Division
- 2:00pm–3:45pm Transportation Division
- 4:15pm–6:00pm Wind Division

Wednesday, July 9, 2014

- 9:00am–10:45am Solar Electric Division
- 11:15am–1:00pm Water & Energy Division

SOLAR 2014 SPECIAL MEETINGS & EVENTS

Monday, July 7, 2014

12:30pm–1:30pm Society of Building Science Educators (SBSE) Annual Meeting, Intercontinental Hotel, Level 5, Howard Room

Tuesday, July 8, 2014

6:00pm–8:00pm ASES Awards & Fellows Reception, San Francisco City Club, 155 Sansome St. (Awards presentation at 6:30pm sharp!)

Wednesday, July 9, 2014

1:30pm–3:00pm ASES Annual Membership Meeting, Intercontinental Hotel, Level 5, Intercontinental Ballroom C

SOLAR 2014 CONFERENCE & TECHNICAL REVIEW COMMITTEE

Brian Allen, Technical Review Committee Chair

Alfredo Fernandez-Gonzales, Passive Solar Conference Chair

Jan Kleissl, Resource Assessment Track

Paulette Middleton, Sustainability & Policy Track

Ron Gehl, SHC Track (Thermal)

Kevin Boxer, SHC Track (CSP)

Megan Amsler, Wind Track

Trudy Forsyth, Wind Track

Scotte Elliott, Transportation Track

Vera Gude, Water & Energy Track

Marlene Brown, Photovoltaics Track

PRICING

ASES Conference Packages	On-site July 5–July 11
■ ASES Full Conference Package	\$965
■ Solar Heating & Cooling Package	\$515
ASES Day Tickets	
Monday	\$575
Tuesday	\$575
Wednesday	\$335

Your Benefits

All Solar2014 attendees (Full Package, Day Tickets) get free admission to the expo halls and can visit Intersolar's concurrent conference sessions free of charge.

Discounts

The following discounts are available for qualified individuals:
 ASES Student Members (must prove active student status) – 50%
 ASES Professional, Business & Life Members – 25%

Organizer



Register now!

Online: → <http://solar2014.org/attend>

On-site: InterContinental Hotel, Level 3



ASES CONFERENCE SESSIONS

InterContinental Hotel, Level 5

Monday, July 7, 2014

9:00am–10:30am	Solar Resource Applications	Building Science Education & Research	PV Implementation Issues
Coffee Break			
11:00am–12:30pm	Solar Resource Applications – GIS & Shading	Advances in Passive Solar Design	Energy, Water and Wastewater Conservation
Lunch Break			
1:30pm–3:00pm	Solar Forecast Methodological Advances	Versatile Applications of Solar	Issues in Net-Metering and RPS
Coffee Break			
3:30pm–5:00pm	Diverse Solar-Related Markets	Emerging Architecture	Concepts in PV
5:30pm–7:00pm	Intersolar's Official Opening Ceremony		
7:00pm	Intersolar's Welcome Reception (Pacific Terrace)		

Tuesday, July 8, 2014

9:00am–10:45am	Solar Power Forecast Applications	Building Simulation & Design Tools	Distributed Wind Technology & Resources
Coffee Break			
11:15am–1:00pm	Solar Variability	Passive & Net Zero Energy Homes	Community Solar Strategies
Lunch Break			
2:00pm–3:45pm	Special Forum: 60 Years of ASES & ISES	Advances in Building Components & Systems	Distributed Wind Policy & Markets
Coffee Break			
4:15pm–6:00pm	Solar Resource Data Advances	Passive & Net Zero Energy Exemplary Buildings	Emerging Transportation
5:00pm–10:00pm	Solar Summerfest (Metreon Rooftop)		

Wednesday, July 9, 2014

9:00am–10:45am	The State of Renewables Resource Assessment	Daylighting: Design Issues & Simulation	Education Tools and Success Stories
Coffee Break			
11:15am–1:00pm	Solar Resource Instrumentation and Uncertainty	Initiatives Toward Carbon Neutral Buildings & Cities	Special Forum: Women in Renewables
1:15pm–3:00pm			

Packages ■ ASES Full Conference Package ■ Solar Heating & Cooling Package

Topics ■ Passive Buildings ■ Resource Assessment ■ Photovoltaics ■ Sustainability ■ Transportation

MEETINGS

(ASES Members Only)

INTERSOLAR WORKSHOPS

InterContinental Hotel, Level 3 & 4

	Sustainability Division Meeting
Voice of the Electric Driver	Emerging Professionals Division Meeting
New Opportunities for Solar Heating & Cooling	Passive Solar Division Meeting
The Great SHC Installation Debate	Resource Assessment Division Meeting

Power Electronics for Photovoltaics	Considerations for Commercial PV and Solar Farms (NABCEP CEU: 6)
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Solar Incentives and Barriers	Thermal Division Meeting
Sustainable Transportation Infrastructure & Applications	CSP Division Meeting
SHC Policy and Applications	Transportation Division Meeting
CSP Industrial Processes & Utility Hybrids	Wind Division Meeting

Performance Modeling (NABCEP CEU: 3.5)	
Advanced Battery-based PV System Design & Maintenance (NABCEP CEU: 3.5)	

CSP Technology & Applications	Solar Electric Division Meeting
SHC Innovations and Research	Water & Energy Division Meeting
	ASES Annual Membership Meeting

Operations and Maintenance (NABCEP CEU: 3.5)	

Subject to change

Water and Energy

Distributed Wind

■ Full Day Workshop

■ Half Day Workshop

SOLAR RESOURCE APPLICATIONS

FACTS

Date	Monday, July 7, 2014
Time	9:00am–10:30am
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Financiers, Off-Grid / Microgrid Planners, Solar Resource Engineers, Solar Resource Scientists

Summary

This session covers applications of solar resource data to designing off-grid power systems and grid integration challenges.

MONDAY, JULY 7, 2014

POSTER: Network Solarlarimetric Elética Hydro Company Of San Francisco
Jose Bione Melo Filho, Instituto Federal de Pernambuco, Brazil

Grid Integration Challenges for a Zero Net Energy Future
Smita Gupta, Principal Energy Consultant, Itron, U.S.

Near Real-Time Satellite-Derived Irradiance Modeling System
Sergey Koltakov, Head of Science, Locus Energy, U.S.

Development of the Model Presuming Values of UV-A Solar Irradiation Observed in Japan
Hayato Hosobuchi, Assistant Professor, Department of Architecture and Environment Systems, Akita Prefectural University, U.S.

Simulating of Combined Renewable Energy Systems For Autonomous Electrical Energy Supply
Igor Tyukhov, Head of Renewable Energy Sector,
Moscow State University of Mechanical Engineering, Russia

BUILDING SCIENCE EDUCATION & RESEARCH

FACTS

Date	Monday, July 7, 2014
Time	9:00am–10:30am
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architecture and Engineering Faculty & Students, Building Scientists, Energy Consultants, R&D Companies

Summary

During this session delegates will learn about recent advances in architecture, engineering, and building science education and research in universities throughout North America. Academic faculty and their students will introduce innovative pedagogical practices for the advancement of solar architecture design and construction.

MONDAY, JULY 7, 2014

Modern Architecture and Theories of Solar Orientation

Anthony Denzer, Associate Professor, University of Wyoming, U.S.

Reflection: Understanding Solar Geometry Geometrically

Brian Lockyear, Principal, Slate Shingle Studio, U.S.

Designing with Light

Troy Peters, Associate Professor, College of Architecture, Design,
and Construction Management, Wentworth Institute of Technology, U.S.

Using a Passive-First Daylighted Artificial Sky

Bruce Haglund, University of Idaho, U.S.

We Don't Know What We Don't Know: Data Mining Benchmarking Retail Banking Center Performance Assets for Sustained Behavioral Transformation

Dale Brentrup, School of Architecture, UNC Charlotte, U.S.

PV IMPLEMENTATION ISSUES

FACTS

Date	Monday, July 7, 2014
Time	9:00am–10:30am
Room	Level 5, Intercontinental Ballroom A InterContinental Hotel
Target Groups	For those interested in the more technical side of PV, and those who want some practical, useful and beneficial information. Presenters are from Universities and private businesses

Summary

Attend this session to explore a range of PV technology and implementation issues.

MONDAY, JULY 7, 2014

POSTER: Technical and Economic Analysis Of A Photovoltaic Plant Up To 5MW As A Solution for Distributed Generation in the Semi-Arid Region Of Northeastern Brazil

Jose Bione Melo Filho, Instituto Federal de Pernambuco, Brazil

Real Time Grid Support Functionality Deployed on 19 MW PV Site

Greg Lindner, SCADA Engineer, Juwi Solar Inc, U.S.

Solar PV System Safety

Charles Ladd, Engineering Manager, Renewable Energy, Black & Veatch, U.S.

Jemez Pueblo Solar Power Study

Tom Acker, Professor, Mechanical Engineering,
Northern Arizona University, U.S.

Testing a Method for De-Energizing Solar Panels for Firefighting

David Starling, Assistant Professor, Physics, Penn State Hazleton, U.S.

How Wind Loads Affect Project Financing

David Banks, CPP Inc, U.S.

SOLAR RESOURCE APPLICATIONS GIS AND SHADING

FACTS

Date	Monday, July 7, 2014
Time	11:00am–12:30pm
Room	Level 5, Intercontinental Ballroom C InterContinental
Target Groups	Financiers, Solar Resource Engineers

Summary

This focused session covers Geographic Information System (GIS) applications for solar resource mapping, site suitability determination, and grid integration. Shading impacts on solar power generation are also discussed.

MONDAY, JULY 7, 2014

A GIS Approach to Developing a Distributed Generation Plan in the Town of Normal IL.

Zachary Rose, Undergraduate Student, Department of Technology, Illinois State University, U.S.

Sensitivity of Shading Calculations to Horizon Measurement Accuracy

Joseph Ranalli, Assistant Professor of Engineering, Engineering, Penn State Hazleton, U.S.

Effect of Shading on Different PV Technologies and How to Minimize the Impact

Yuwei Bei, Arizona State University, U.S.

Bringing Solar Site Analysis to Smartphones

Joseph Ranalli, Assistant Professor of Engineering, Engineering, Penn State Hazleton, U.S.

King Abdullah City (KACARE) Renewable Resources Monitoring and Mapping (RRMM) Project

Hussain Shibli, RRMM Project, KACARE, Saudi Arabia

ADVANCES IN PASSIVE SOLAR DESIGN

FACTS

Date	Monday, July 7, 2014
Time	11:00am–12:30pm
Room	Level 5, Intercontinental Ballroom B InterContinental Hotel
Target Groups	Architects, Building Scientists, Energy Consultants Engineers, Project Developers & Planners, R&D Companies

Summary

During this session delegates will learn about recent developments in building components and their application to passive solar design. Experts will present case studies of passive solar buildings in different regions, predicted and simulated performance of specific building components, and the application of new simulation software to aid the design of passive solar buildings.



MONDAY, JULY 7, 2014**Where Should We Focus Passive Solar Design Efforts?**

Alexandra Rempel, Research Assistant Professor,
Environmental Studies Program, University of Oregon, U.S.

Passive Solar Design Approaches on the Northern California Coast

Alexandra Rempel, Research Assistant Professor,
Environmental Studies Program, University of Oregon, U.S.

Thermal Mass and Time Lag: Calculating Heating and Cooling Energy from a Building Roof/Wall

Chenchuan Qian, Student, Architecture,
University of Southern California, U.S.

Assessment of Passive Solar Heating Retrofit Opportunities in Existing Residential Build in Las Vegas, Nevada

Rhett Noseck, University of Nevada, Las Vegas, U.S.

Water Wall Prototype for Passive Solar Heating Retrofit Applications

Rhett Noseck, University of Nevada, Las Vegas, U.S.

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ENERGY, WATER AND WASTEWATER CONSERVATION

FACTS	
Date	Monday, July 7, 2014
Time	11:00am–12:30pm
Room	Level 5, Intercontinental Ballroom A InterContinental Hotel
Target Groups	Environmental Engineers, Environmentalists, Legal and Regulatory Bodies, Membrane, Pump, Filtration Manufacturers, Project Managers, Research Scientists, Small and Large-Scale Renewable Energy Groups, Solar and Wind Energy Manufacturers, Sustainability Groups, Water and Energy Scientists, Water, Wastewater, Desalination Utility Managers, Designers and Planners

Summary

Participants will discuss the water - energy nexus, infrastructure needs, potential for future developments in the water and energy industry, coordinated planning for water and energy utilities (water treatment and power plants), and water supply, reuse, conservation, desalination and recovery technologies.

MONDAY, JULY 7, 2014**POSTER: Application of Solar Power in Sustainable Food Production System**

Kevin Anderson, Professor Mechanical Engineering, California State Polytechnic University at Pomona, U.S.

POSTER: Testing and Modeling of a Novel Solar Pool Cover

Kevin Anderson, Professor Mechanical Engineering, California State Polytechnic University at Pomona, U.S.

Innovative Application of Thermal Energy Storage for Energy Conservation and Water Desalination in Power Plants

Veera Gnanaswar Gude, Assistant Professor, Civil and Environmental Engineering, Mississippi State University, U.S.

Energy Storage for Desalination

Veera Gnanaswar Gude, Assistant Professor, Civil and Environmental Engineering, Mississippi State University, U.S.

A Hybrid Solar/Mechanical Water Pump in Nicaragua

Richard Komp, President, Maine Solar Energy Association, U.S.

The Great California Drought-Crisis, Opportunity, and Appropriate Technology

Ken Haggard, Principal Architect, San Luis Sustainability Group, U.S.

Bioelectrochemical Wastewater Treatment and Desalination

Veera Gnanaswar Gude, Assistant Professor, Civil and Environmental Engineering, Mississippi State University, U.S.

VOICE OF THE ELECTRIC DRIVER

FACTS

Date	Monday, July 7, 2014
Time	11:00am-12:30pm
Room	Level 5, Sutter, InterContinental Hotel
Target Groups	Anyone considering the purchase of an Electric Vehicle, EV Drivers, Sustainable Transportation Advocates and Professionals.

Summary

Are you thinking about joining the EV movement? If so, this session will provide you with valuable insight into what it's like to drive electric. Attendees will learn about electric vehicles from the end-user perspective from a panel of Electric Vehicle owners who will talk about their vehicles, use experiences, pros and cons, and lessons learned. At the conclusion of the individual presentations the panel will answer questions from the audience. Speakers TBA.



SOLAR FORECASTS METHODOLOGICAL ADVANCES

FACTS

Date	Monday, July 7, 2014
Time	1:30pm–3:00pm
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Forecast Providers, Solar Resource Scientists, Meteorologists Meteorologists, Forecast Providers, Solar Resource Scientists

Summary

Solar forecasting facilitates economical integration of large amounts of solar power into the grid. Talks in this session will cover recent methodological advances, such as data assimilation, new algorithms, probabilistic forecasting, and a review of the International Energy Agency (IEA) solar forecasting task.

MONDAY, JULY 7, 2014

Overview and Status of the IEA/SHC

Solar Resource Assessment and Forecasting Task

David Renné, Owner, Dave Renne Renewables, U.S.

Recent Advances in Solar Variability Modeling and Solar Forecasting at UC San Diego

Jan Kleissl, Professor, Center for Energy Research, University of California, San Diego, U.S.

New Irradiance Models for Solar Power

Sue Haupt, Director, Weather Systems & Assessment, Research Applications, National Center for Atmospheric Research, U.S.

The Impact of Profiler Data Assimilation on Accuracy of Solar Power Forecasts

Elena Novakovskaia, DNV GL, U.S.

Probabilistic Forecasts of Solar Insolation

Nir Krakauer, Department of Civil Engineering, City College of New York, U.S.

VERSATILE APPLICATIONS OF SOLAR

FACTS

Date	Monday, July 7, 2014
Time	1:30pm–3:00pm
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Educators, Innovators, Investors, Policy Makers, Renewable Energy Advocates

Summary

Attend this session, learn about, and be inspired by the wide range of solar uses around the world to address energy needs for all during normal and disaster situations.

MONDAY, JULY 7, 2014

Developing a Simple, Cost Effective PV Installation Model for Low-to-Moderate Income Home Owners

John Kiely, President, Vistula Management Company, U.S.

Disasters: Expanding Market for Solar

William Young, Senior Engineer, Florida Solar Energy Center (retired), SunTree Consulting, U.S.

Solar Development in Indian Country

Jennifer Carleton, Partner, Brownstein Hyatt Farber Schreck, U.S.
Josh Hicks, Partner, Brownstein Hyatt Farber Schreck, U.S.

Feeding Two Birds With One Feeder: Providing Solar Energy While Controlling Malaria

Numair Latif, UNM, U.S.

Utility Scale Solar 2013: An Empirical Analysis of Project Cost, Performance, and Pricing Trends in the United States

Samantha Weaver, Senior Research Associate, Electricity Markets & Policy Group, Lawrence Berkeley National Laboratory, U.S.

Lattice Boltzmann Simulations on Water Cooling of Concentrated Photovoltaic-Thermal Receivers

Yan Su, Assistant Professor, University of Macau, Macau, China

ISSUES IN NETMETERING & RPS

FACTS

Date	Monday, July 7, 2014
Time	1:30pm–3:00pm
Room	Level 5, Intercontinental Ballroom A, InterContinental Hotel
Target Groups	Advocates, Educators, Businesses, Innovators, Investors, Solar Energy Policy Makers

Summary

Join us for a lively exploration of issues in Netmetering and RPS issues in the North American market.

MONDAY, JULY 7, 2014

American PV Outgrow Incentives

Dr. Benedict O'Donnell, Heliocentric Solutions Lt., U.S.

Tracking the Sun: Pricing Trends in US Solar Markets

Mr. Naim Darghouth, Principal Research Associate, Electricity Markets & Policy Group, Lawrence Berkely National Laboratory, U.S.

The Battle over RPS & Netmetering in the United States

Speaker(s) TBA

NEW OPPORTUNITIES FOR SOLAR HEATING & COOLING

FACTS

Date	Monday, July 7, 2014
Time	1:30pm–3:00pm
Room	Level 5, Sutter, InterContinental Hotel
Partner	California Solar Energy Industries Association (CALSEIA)
Target Groups	Architects, Component Manufacturers, Distributors, Energy Consultants, Equipment & Material Manufacturers, Government Agencies, Installers & Integrators, Manufacturers, Project Developers & Planners, Research & Development Companies, Roofing Companies, Trade Associations

Summary

With unnaturally low natural gas prices combined with dropping PV prices, how can solar heating and cooling technologies compete? Is this industry limited to the residential swimming pool market or is this technology a future driver of meeting the state's carbon goals? How can California bring solar thermal to scale? Come join a lively conversation about the future of solar heating & cooling in California and beyond.

MONDAY, JULY 7, 2014

Welcome and Introduction

Gary Gerber, President and CEO, Sun Light & Power, U.S.

New Opportunities for Solar Heating & Cooling – Strategies for Reviving the Solar Thermal Market

- Serge Adamian, President, SunChiller, U.S.
- Andy Mannle, Vice President of Strategic Development, Promise Energy, U.S.
- Les Nelson, Vice President, International Association of Plumbing & Mechanical Officials (IAPMO), U.S.
- Rick Reed, President, SunEarth, U.S.

DIVERSE SOLAR-RELATED MARKETS

FACTS

Date	Monday, July 7, 2014
Time	3:30pm–5:00pm
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Advocates, Educators, Innovators, Investors, Policy Makers, Researchers, Solar Energy Businesses

Summary

Join this session and find out about familiar and not so familiar ways that solar markets are growing.

MONDAY, JULY 7, 2014

Estimated Copper Demand from Projected Solar Electric Generating Capacity
Zolaikha Strong, Director of Sustainable Energy, Copper Development Association, U.S.

When 1 + 1 = 3: Can We Capture the Synergies Between Distributed Solar and Demand-Side Resources?

Jill Cliburn, President, Cliburn and Associates, LLC, U.S.

Distributed Solar as a Service NOT a Lease

Dell Jones, Manager Solutions Architecture - Solar, Schneider Electric, U.S.

What's Behind Your SREC?

Sandra Brown, Associate, Energy Services Division, The Cadmus Group, Inc., U.S.

Preparing for 2017, and the Drop to 10% in the Investment Tax Credit (ITC)

Ed Feo, COO and Managing Director, Coronal Management, U.S.

Technology Decision Making in Aftermath of the AD & CVD Duties

Albie Fong, Key Account Executive, Talesun Solar, U.S.

Breaking the Barrier on Superfund Solar Project Development:

New Market Opportunity

Geoffrey Underwood, Developer, Hanwha Q CELLS, U.S.

EMERGING ARCHITECTURE FORUM

FACTS

Date	Monday, July 7, 2014
Time	3:30pm–5:00pm
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architects, Building Scientists, Engineers, Government Agencies, Project Developers & Planners

Summary

In this forum delegates will learn about the design process and technical issues surrounding the development and construction of an innovative net-zero energy building: The Bullitt Foundation Center in Seattle, WA. This forum will also address the integrated design approach used to design a high-performing building in a densely populated urban environment.

MONDAY, JULY 7, 2014

Introduction and Background

Denis Hayes, President, Bullitt Foundation, U.S.

Architectural Design + Post-Occupancy Data Discussion

Robert Peña, Associate Professor, Department of Architecture, University of Washington, U.S.

Engineering and Integration of the Renewable Energy Systems, Addressing Resulting Policy and Code Changes

Steven Strong, Founder, Solar Design Associates, U.S.

CONCEPTS IN PV

FACTS

Date	Monday, July 7, 2014
Time	3:30pm–5:00pm
Room	Level 5, Intercontinental Ballroom A, InterContinental Hotel
Target Groups	For those interested in analysis, solar siting, PV characterization and energy rating, optimization and other practical and useful information about PV

Summary

Join us for a wide-ranging exploration of various innovative concepts in leveraging PV in the marketplace.

MONDAY, JULY 7, 2014

Automated Solar Power Performance Analysis

Emma Rudie, Locus Energy, U.S.

Siting Solar PV at Airports

Joyce McLaren, Senior Energy Analyst, Strategic Energy Analysis, NREL, U.S.

Impact of Dust On Photovoltaic Efficiency: Research Challenges And Mitigation Approaches

Ash Ragheb, Associate Professor, College of Architecture and Design, Lawrence Technological University, U.S.

Supply Chain - Critical to Project Success

Mark Turley, Market Leader - Renewable Energy, Development, Alexandria Industries, U.S.

Energy Rating – The Figure of Merit for ACPV Modules

Patrick Chapman, Chief Technology Officer, SolarBridge Technologies, Inc., U.S.

PV for Electric Vehicle Charging: Evaluating the Business Case

Joyce McLaren, Senior Energy Analyst, Strategic Energy Analysis, NREL, U.S.

SOLAR HEATING & COOLING FORUM: THE GREAT INSTALLATION DEBATE

FACTS

Date	Monday, July 7, 2014
Time	3:30pm–5:00pm
Room	Level 5, Sutter, InterContinental Hotel
Target Groups	Architects, Component Manufacturers, Distributors, Energy Consultants, Equipment & Material Manufacturers, Government Agencies, Installers & Integrators, Manufacturers, Project Developers & Planners, Research & Development Companies, Roofing Companies, Trade Associations

Summary

In this forum, a panel of four to five experts from the industry discuss three to five burning issues from the past year in our industry. After short comments from each speaker and rebuttals from the dais, the microphone is opened to the audience for discussion before moving on to the next topic. Occasionally, a speaker will bring some slides to illustrate a point, but most comments are informal and verbal. This is an annual event for the ASES Solar Thermal Division, with spirited discussion about best practices and state-of-the-art technology.

MONDAY, JULY 7, 2014

Moderator

Ron Gehl, President, EOS Research, U.S.

Panelists

- Ed Murray, President, Aztec Solar, U.S.
- Justin Weil, President, SunWater Solar, U.S. (invited)
- August Goers, VP of Engineering, Luminalt, U.S. (invited)
- Skip Fralick, Energy Engineer, Solar Water Heating ,CCSE, U.S. (invited)
- Don Rodes, Solar Lab, U.S. (invited)



SOLAR POWER FORECAST APPLICATIONS

FACTS

Date	Tuesday July 8, 2014
Time	9:00am–10:45am
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Forecast Providers, Meteorologists, Solar Resource Scientists

Summary

Solar forecasting facilitates economical integration of large amounts of solar power into the grid. In this session the latest forecast models for solar, wind, and net load will be presented. The value of post-processing models to enhance forecast accuracy will be demonstrated.

TUESDAY JULY 8, 2014

A New Operational Composite Solar Radiation Forecast Model

Richard Perez, Research Professor, ASRC, University at Albany, U.S.

Distributed Solar and Net Load Forecasts for Utilities

John Williams, Project Scientist, Research Applications Laboratory, National Center for Atmospheric Research, U.S.

The Application and Evaluation of an Analog Ensemble Method for Short-Term Solar Irradiance Forecasting

John Zack, AWS Truepower, LLC, U.S.

Evaluating Spatial Granularity of Solar Forecasting

Thomas Vargas, Associate Mechanical Engineer, Energy Research & Development, SMUD, U.S.

A Solar and Wind Integrated Forecast Tool (SWIFT) Designed for the Management of Renewable Energy Variability on Island Grid Systems

John Zack, AWS Truepower, LLC, U.S.

BUILDING SIMULATION & DESIGN TOOLS

FACTS

Date	Tuesday July 8, 2014
Time	9:00am–10:45am
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architects, Building Scientists, Energy Consultants, Engineers, R&D Companies

Summary

During this session delegates will learn about recent advances in building simulation and modeling tools. Building modeling experts will discuss techniques and software platforms to model whole building performance, isolated building components, and external shading strategies.

TUESDAY JULY 8, 2014

POSTER: Stochastic Calibrated Approach for Energy Performance of Existing Office Buildings

Seong-Hwan Yoon, School of Civil and Architectural Engineering, SungKyunKwan University, Korea

Beyond the Energy Model: Holistic Approaches to Simulation in Design

Nathan Kegel, IES, U.S.

A Parametric Fenestration Design Approach for Optimizing Thermal and Daylighting Performance in Complex Urban Settings

Alejandro Gamas, University of Southern California, U.S.

Performative Shading Design: Parametric Based Measurement of Shading System Configuration Effectiveness and Trends

Tyler Tucker, Student, Architecture, University of Southern California, U.S.

Performance Prediction of a Building Using Energy Efficient Building Materials In India

Ranjana Jha, Associate Professor, Dept. of Physics, Netaji Subhas Institute of Technology, Delhi University, India

DISTRIBUTED WIND TECHNOLOGY & RESOURCES

FACTS

Date	Tuesday July 8, 2014
Time	9:00am–10:45am
Room	Level 5, Intercontinental Ballroom A, InterContinental Hotel
Target Groups	Computer Modelers Using FAST or MSC ADMS, Distributors, Distributed Wind Energy Stakeholders, Educators, End Users, Energy Consultants, Government Agencies, Installers, Investment Companies, Trade Associations, Utilities, Wind Turbine and Lower-Tier Manufacturers, Wind Turbine Blade Designers

Summary

Come learn about current model results for both residential and utility-grade wind markets. For the utility grade model, the wind resource has become less sensitive due to changes in wind turbine technology such as higher towers and larger rotors that compensate for poorer wind resource areas. Decades of wind-wildlife research will be summarized and presented as it applies to distributed wind technology. New small wind turbine modeling capability has been developed for pre-curved, pre-swept blades, allowing for easy comparison of different wind turbine rotor designs.

TUESDAY JULY 8, 2014

POSTER: Advanced Offshore Measurements for Windfarms

Joerg Bendfeld, University of Paderborn, Germany

Wind Energy Modeling for Residential-Scale Wind Power

Teuku Indra, School of Earth Sciences and Environmental Sustainability, Northern Arizona University, U.S.

Swept Blade Aeroelastic Model for a Small Wind Turbine

Sang Lee, Research Engineer, National Renewable Energy Lab, U.S.

A Historical Perspective of Wind-Wildlife Challenges – How This May Affect Wind

Karin Sinclair, Senior Project Leader, NREL, U.S.

New National Wind Potential Estimates for Modern and Near-Future Turbine Technologies

Joseph Roberts, NREL, U.S.

SOLAR INCENTIVES AND BARRIERS

FACTS

Date	Tuesday July 8, 2014
Time	9:00am–10:45am
Room	Level 5, Sutter, InterContinental Hotel
Target Groups	Advocates, Businesses, Educators, Innovators, Investors, Researchers, Solar Energy Policy Makers

Summary

Come to this session to hear about regulations, policies, and other actions that are helping (or slowing down) the growth of solar around the country.

TUESDAY JULY 8, 2014

Assessing the Cost of State RPS Policies: Results to-Date

Galen Barbose, Research Scientist, Electricity Markets and Policy Group, Lawrence Berkeley National Laboratory, U.S.

Effect of Federal Power Plant Carbon Standards on Photovoltaic Markets

David Wooley, Of Counsel, Keyes, Fox & Wiedman LLP, U.S.

PV The Zero Hero

Thomas Hoff, President, Research and Consulting, Clean Power Research, U.S.

Financial Impacts of Distributed PV on Utility Rates and Profitability

Andrew Satchwell, Lawrence Berkeley National Lab, U.S.

The DOE's Loan Programs Office (LPO), A Financing Force for the Clean Energy Economy

Douglas Schultz, Director of Loan Origination Loan Programs Office, U.S. Department of Energy, U.S.

SOLAR VARIABILITY

FACTS

Date	Tuesday July 8, 2014
Time	11:15am–1:00pm
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Financiers, Solar Resource Engineers, Solar Resource Scientists, Utility Solar Planners

TUESDAY JULY 8, 2014

POSTER: Applying the Kriging Method to Predicting Irradiance Variability at a Potential PV Power Plant
Samuel Monger, Northern Arizona University, U.S.

POSTER: Natural Variability Of Irradiance and Power – Simple Variability Metrics for Photovoltaic Power Plants
David Willy, Instructor/Research Engineer, Mechanical Engineering, Northern Arizona University, U.S.

Development of a Surface Area Metric (SAM) to Characterize Variations in the Solar Irradiance
Eric Morgan, Postdoctoral Researcher, Mechanical Engineering, Northern Arizona University, U.S.

Comparison of Solar Irradiance Smoothing Using A 45-Sensor Network And The Wavelet Variability Model
Ana Dyreson, M.S. Candidate, Mechanical Engineering, Northern Arizona University, U.S.

Novel Solar Variability Clustering Algorithm for Utility Planning and Operations
Athanasios Zagouras, Post Doc, Department of Mechanical & Aerospace Engineering, UCalifornia-San Diego, U.S.

Solar Irradiance Variations in the Regulation and Sub-Regulation Time Frames
Tom Acker, Professor, Mechanical Engineering, Northern Arizona University, U.S.

Comparison of Solar Irradiance and Power Ramp Detection Algorithms
Tom Acker, Professor, Mechanical Engineering, Northern Arizona University, U.S.

PASSIVE & NET ZERO ENERGY HOMES

FACTS

Date	Tuesday July 8, 2014
Time	11:15am–1:00pm
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architects, Building Scientists, Energy Consultants, Engineers, Government Agencies Project Developers & Planners, R&D Companies

Summary

During this session delegates will learn about recent trends and technologies used to design and construct net-zero energy homes. Experts will present built case studies and design competition entries of net-zero energy homes in different regions.

TUESDAY JULY 8, 2014

POSTER: Integrative Photovoltaic Shadings in a Net-Zero-Energy Solar House
Mona Azarbayjani, Assistant professor, Architecture, UNC Charlotte, U.S.

POSTER: A Desert Oasis: The UNLV Solar Decathlon House
Eric Weber, Assistant Professor, School of Architecture,
University of Nevada-Las Vegas, U.S.

**The Passive Design and Engineering Systems in Univ. of Nevada,
Las Vegas' Solar Decathlon 2013 Entry DesertSOL**
Jinger Zeng, UNLV, U.S.

**Overcoming Challenges of Building a Passive House in the Production Home
Environment**
Andrew Poerschke, IBACOS, U.S.

Eco-Fab: A Climatically Responsive Alternative to Manufactured Housing
Sandy Stannard, Professor, Department of Architecture, Cal Poly San Luis
Obispo, U.S.

Residential ZNE Retrofit EE, DR, IES, HEMS + PV – a Tall Loading Order
Rob Hammon, President, BIRAenergy, U.S.

COMMUNITY SOLAR STRATEGIES

FACTS

Date	Tuesday July 8, 2014
Time	11:15am–1:00pm
Room	Level 5, Intercontinental Ballroom A, InterContinental Hotel
Target Groups	Businesses, Educators, Innovators, Investors, Policy Makers, Researchers, Solar Energy Advocates

Summary

Join this session and learn about how community solar is advancing solar energy around the world and across economies.

TUESDAY JULY 8, 2014

The Long View on Community Solar

Jill Cliburn, President, Cliburn and Associates, LLC, U.S.

Social and Economic Impacts of Implementing a Distributed Generation Plan in the Town of Normal, IL

Jamie Cross, Graduate Assistant, Department of Technology, Illinois State University, U.S.

Open Standards for Shared Renewables

Joy Hughes, Founder, Solar Gardens Institute U.S.

All Energy is Local - Germany's Tools for Community-Based Energy Policy

Jaimes Valdez, Energy Policy Analyst, Bureau of Planning and Sustainability, City of Portland, U.S.

Community Solar Garden Program Design and Economics

Joyce McLaren, Senior Energy Analyst, Strategic Energy Analysis, NREL, U.S.

SUSTAINABLE TRANSPORTATION INFRASTRUCTURE & APPLICATIONS

FACTS

Date	Tuesday July 8, 2014
Time	11:15am–1:00pm
Room	Level 5, Sutter, InterContinental Hotel
Target Groups	Engineers, EV Drivers, Solar Developers, Policy Makers, Sustainable Transportation Advocates and Advocates and Professionals, Transportation Fleet Managers

Summary

A series of presentations will be delivered from sustainable transportation researchers, developers and industry experts on topics including: Evaluating the Business Case for Solar EV Charging Stations, Solar Powered Public Transportation Systems, Cost and Efficiency Advantages of Solar Charged Transportation, the Present and Future of Biodiesel Production, Solar Electric Tractors, and Sustainable Mobility Systems for Silicon Valley.

TUESDAY JULY 8, 2014

Solar Electric Tractor

Stephen Heckerth, Owner, Agriculture, Solectrac, U.S.

University Teams Developing a Solar Powered Public Transportation System

Ron Swenson, INIST, U.S.

Sustainable Mobility Systems for Silicon Valley

Ron Swenson, INIST, U.S.

Leveling the Playing Field for Solar Charged Transportation

Stephen Heckerth, Owner, Agriculture, Solectrac, U.S.

Biodiesel Production – Present & Future

Veera Gnaneswar Gude, Assistant Professor, Civil & Environmental Engineering, Mississippi State University, U.S.

ASES AND ISES: CELEBRATING 60 YEARS OF COLLABORATION AND INNOVATION

FACTS

Date	Tuesday July 8, 2014
Time	2:00pm–3:45pm
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Businesses, Educators, Investors, Policy Makers, Researchers, Solar Energy Advocates

Summary

This year marks the 60th anniversary of the formation of the Association for the Advancement of Solar Energy in Phoenix, Arizona. In the 1960s, AFASE changed its name to the Solar Energy Society, and in 1970, following an international solar energy conference in Melbourne, Australia, SES became known as the International Solar Energy Society (ISES), and ASES and Australia-New Zealand (ANZ) were established as its first Sections.

Since that time more than 60 Sections of ISES have formed, and around 40 remain active today, representing countries on all five inhabited continents. Many of these Sections, such as ASES, have remained very influential in their countries in fostering and promoting renewable energy research, development and deployments.

To commemorate the 60th anniversary of these groundbreaking societies, SOLAR 2014 features a forum, moderated by ISES President Dave Renné and Paulette Middleton. Invited presenters include Yogi Goswami, Larry Sherwood, Jim Augustyn, Richard Perez, Larry Kazmerski, Ron Swenson, Frank deWinter, Jeffrey Brownson, Dave Panich, John Perlin, Seth Masia, Eicke Weber and Carly Rixham.

ADVANCES IN BUILDING COMPONENTS & SYSTEMS

FACTS

Date	Tuesday July 8, 2014
Time	2:00pm–3:45pm
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architects, Building Scientists, Energy Consultants, Engineers, Project Developers & Planners, R&D Companies

Summary

During this session delegates will learn about recent developments in building components and systems for sustainable buildings. Experts will present experimentally measured data as well as predicted or simulated performance of specific building components and their potential application in contemporary buildings.

TUESDAY JULY 8, 2014

Understanding the Dynamic Performance of Envelope Assemblies
Harvey Bryan, Professor, The Design School, Arizona State University, U.S.

A Parametric Simulation Study on Kinetic Envelopes
Dr. Julian Wang, Texas A&M University, U.S.

**Performance of Double Skin Facades:
Daylight and Visual Comfort in Office Spaces**
Elham Motevalian, University of Southern California, U.S.

**Optimized Optical Structures for Active Modulated
Reflectance Roofing System**
Daniel Wolfe, Electrical and Computer Engineering,
University of Delaware, U.S.

**Technologies for “Real-Time Performance M&V and Commissioning”
Using BAS and EMCS in Existing Buildings**
Soolyeon Cho, Assistant Professor, Architecture, North Carolina State
University, U.S.

DISTRIBUTED WIND POLICY & MARKETS

FACTS

Date	Tuesday July 8, 2014
Time	2:00pm–3:45pm
Room	Level 5, Intercontinental Ballroom A, InterContinental Hotel
Target Groups	Distributors, Educators, End Users, Energy Consultants, Government Agencies, Hybrid System Developers, Installers, Investment Companies, TradeAssociations, Utilities, Wind Turbine and Lower-Tier Manufacturers

Summary

Learn about the current U.S. distributed wind market and projections for distributed wind turbine markets. DWEA goals and the impact on jobs, business and delivered cost of energy will be shared. DoE funded, NREL-led procurements to reduce the costs of US manufactured turbines under the Competitiveness Improvement Project will be discussed. A Distributed Wind market diffusion model will be presented that can be used to characterize the distributed wind market. And a short overview of a global IRENA study on quality assurance methods for developing incremental, affordable SWT (and Solar Water Heating) quality will be given.

TUESDAY JULY 8, 2014

POSTER: Reduction of Offshore Wind Power Feed-In Fluctuations via Power to Gas Storage Systems
Joerg Bendfeld, University of Paderborn, Germany

US Support for Wind Technology Improvements
Karin Sinclair, Senior Project Leader, NREL, U.S.

Distributed Wind Market Diffusion Model
Robert Preus, Distributed Wind Technical Lead, National Wind Technology Center, National Renewable Energy Laboratory, U.S.

Quality Assurance for Solar Water Heaters and Small Wind Turbines in Emerging Markets
Trudy Forsythe, Wind Advisors Team, U.S.

SOLAR HEATING COOLING POLICY AND APPLICATIONS

FACTS

Date	Tuesday July 8, 2014
Time	2:00pm–3:45pm
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architects, Building Scientists, Energy Consultants, Engineers, Project Developers & Planners, R&D Companies

Summary

This session will cover current topics on the solar heating and cooling policy front, along with innovative real-world applications of solar thermal technology. The wide range of presentations include long-term performance prediction, implementation of cooling and dehumidification methods, energy savings through solar cooking and solar thermal in deep energy retrofits.

TUESDAY JULY 8, 2014

An Analysis of Solar Air Collectors Driving A Small Absorption Chiller
Curt Robbins, Research Engineer, Division of Atmospheric Sciences, Desert Research Institute, U.S.

Solar Thermal Case Study: Deep Energy Retrofit
Chris Wetherby, Solar Department Head, Stiebel Eltron U.S. , U.S.

Quantifying Energy Savings of Thermal Solar Cookers in U.S. Households
Natalia Blackburn, Professional Mechanical Engineer, Partner Energy, U.S.

**A Solar Desiccant Dehumidification System:
Design, Construction and Assessment**
Ella Willard-Schmoe, University of Massachusetts Lowell, U.S.

**One Standardized Plumbing Diagram Does it all for
Thermal Combisystems (Almost)**
Bristol Stickney, Chief Technical Officer, SolarLogic LLC, U.S.

SOLAR RESOURCE DATA ADVANCES

FACTS

Date	Tuesday July 8, 2014
Time	4:15pm–6:00pm
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Solar Resource Engineers, Financiers, Solar Resource Scientists

Summary

Solar resource datasets are continually become more accurate benefiting solar developers and financiers. This session presents the newest satellite, reanalysis, and ground measurement datasets developed in the public and private sector.

TUESDAY JULY 8, 2014

Improvement of Turbidity-Based Clear Sky Models for Direct Normal Irradiance

Richard Inman, PhD Student, Department of Mechanical and Aerospace Engineering, University of California, San Diego, U.S.

Deriving the DNI from the GHI of the NASA GEWEX SRB Data Using a Global-to-Beam Model: Improvement and Extension of the NASA SSE Datasets

Taiping Zhang, Senior Research Scientist, Resource Assessment & Forecasting Group, SSAI/NASA Langley Research Center, U.S.

A Physics Based Satellite Product for Use in NREL's National Solar Radiation Database

Manajit Sengupta, Senior Scientist, Resource Assessment and Forecasting Group, NREL, U.S.

Improved Techniques for Resolving Differences between Pyranometer and Satellite Irradiance Measurements

Mark Liffman, Clean Power Research, U.S.

How Good are the Second Generation Reanalysis Datasets?

William Gustafson, Scientific Programmer, Architecture, University of Oregon, U.S.

The Estimated CIE Sky Luminance Distributions' Frequencies and the Circumsolar Size Using TMY Weather Files

Mojtaba Navvab, University of Michigan, U.S.

Satellite-Based Solar Resource Data: Validation Statistics Versus User's Uncertainty

Marcel Suri, GeoModel Solar, Bratislava, Slovakia

PASSIVE & NET ZERO ENERGY EXEMPLARY BUILDINGS

FACTS

Date	Tuesday July 8, 2014
Time	4:15pm–6:00pm
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architects, Building Scientists, Energy Consultants, Engineers, Government Agencies, Project Developers & Planners, R&D Companies,

Summary

In this session delegates will learn valuable design lessons obtained from the post-occupancy evaluation results from several exemplary passive and net-zero energy buildings designed throughout the past twenty five years. Experts will present built case studies from different time periods that have as common thread an innovative and pioneering attitude toward sustainable design.

TUESDAY JULY 8, 2014

A Passive Pioneer Building after 25 Years

John Reynolds, Professor Emeritus, Architecture, University of Oregon, U.S.

The Cal Poly Pomona Lyle Center for Regenerative Studies – A 20 Year Retrospective

Betsey Dougherty, FAIA, LEED AP BD+C, Architect,
Dougherty + Dougherty Architects LLP

Integrated Design, Modeling, and Monitoring Of Air Quality and Comfort in Naturally-Ventilated Build

Dr. David Ogoli, Architecture, Judson University, U.S.

Living Proof: The Net Zero Energy Bullitt Center

Robert Peña, Associate Professor, Department of Architecture,
University of Washington, U.S.

EMERGING TRANSPORTATION FORUM

FACTS

Date	Tuesday July 8, 2014
Time	4:15pm–6:00pm
Room	Level 5, Intercontinental Ballroom A, InterContinental Hotel
Target Groups	Anyone interested in the role of transportation in modern, industrialized society

Summary

Sustainable transportation is not some pie-in-the-sky vision; it's actually emerging. The required technologies are available to mainstream consumers in today's marketplace. This session brings together speakers from Plug In America, the Electric Auto Association, and the Sierra Club to discuss steps everyone can take to hasten the shift to transportation sustainability.

TUESDAY JULY 8, 2014

- Ron Freund, Chairman, Electric Auto Association, U.S.
- Dave Erb, Mechatronics Engineering, University of North Carolina at Asheville, U.S.
- Paul Scott, Co-Founder, Plug In America, U.S.

CSP INDUSTRIAL PROCESSES AND UTILITY HYBRIDS

FACTS

Date	Tuesday July 8, 2014
Time	4:15pm–6:00pm
Room	Level 5, Sutter, InterContinental Hotel
Target Groups	Investors, Potential Users of CSP Technologies, Utilities

Summary

Did you think solar heat was just for swimming pools? Not so! Any heat-seeking application in a sunny area can make use of flate plate, evacuated tube, or concentrating solar thermal collectors for a clean and cost effective source of energy. In this session you'll hear about actual installed projects, as well as the utility perspective on using solar heat.

TUESDAY JULY 8, 2014

POSTER: Reducing Building's Electricity Peak Demand through the use Passive and Active Thermal Energy Storage Mechanisms
Santiago Naranjo Palacio, Cornell University, U.S.

Moderator

Alison Mason, U.S.

Panelists

- Alison Mason, Principal, SunJuice, U.S.
- Bud Beebe, Sr. Project Manager, Energy R&D, SMUD, U.S.
- Matthew Stuber, Co-Founder and Director of Process Systems Engineering, WaterFX, U.S.
- John O'Donnell, VP of Business Development, Glasspoint, U.S.



THE STATE OF RENEWABLES RESOURCE ASSESSMENT

FACTS

Date	Wednesday July 9, 2014
Time	9:00am–10:45am
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Financiers, Solar Resource Engineers, Solar Resource Scientists

Summary

The requirements for quality and quantity of solar resource data are rapidly increasing. Four experts will be presenting and taking questions: Justin will target some of the more sophisticated resources assessment standards, specifications, and requirements (e.g. as issued by Southern California Edison, California ISO, and ASTM). Hardware configurations, system integration, and placements will be covered. Frank will discuss bankability challenges and solutions for solar resource data for project financing. Manajit will cover NREL funded research on solar measurement and modeling. Jan will present new sensor developments and applications such as the cloud speed sensor and UC San Diego sky imager.

WEDNESDAY JULY 9, 2014

- Justin Robinson, Groundworks, U.S.
- Manajit Sengupta from the NREL, U.S.
- Frank Vignola, University of Oregon, U.S.
- Jan Kleissl, University of California, San Diego, U.S.

DAYLIGHTING: DESIGN ISSUES & SIMULATION

FACTS

Date	Wednesday July 9, 2014
Time	9:00am–10:45am
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architects, Building Scientists, Energy Consultants, Engineers, Lighting Designers, R&D Companies

Summary

During this session delegates will learn about recent advances in daylighting simulation and design. Lighting experts will discuss systems and techniques that capture the benefits of daylighting in buildings through the use of a holistic design approach and/or the integration of new façade components.

WEDNESDAY JULY 9, 2014

Design Challenges in Daylighting A 650,000 SF Shipping and Distribution Warehouse

Ramana Koti, Lord Aeck Sargent, U.S.

A Framework to Support the Development of Manually Adjustable Light Shelf Technologies

Shamim Javed, PhD Candidate, Environmental Design & Planning, College of Architecture & Urban Studies, Virginia Tech, U.S.

Analyzing Daylight in Central Atrium Build with Monitor Roof Aperture

Mahsan Mohsenin, NCSU, U.S.

A Comparative Dialogue - Spatial Daylight Autonomy (sDA) and Useful Daylight Illuminance (UDI)

Dale Brentrup, Professor, Integrated Design Research Labs, School of Architecture; UNC Charlotte, U.S.

Using DIVA for Assessing Climate-Based LEED Daylight Credit

Jianxin Hu, Assistant Professor of Architecture, Architecture, North Carolina State University, U.S.

EDUCATION TOOLS AND SUCCESS STORIES

FACTS

Date	Wednesday July 9, 2014
Time	9:00am–10:45am
Room	Level 5, Intercontinental Ballroom A, InterContinental Hotel
Target Groups	Advocates, Businesses, Innovators, Investors, Policy Makers, Researchers, Solar Energy Educators

Summary

Attend this session and learn how groups around the world are changing attitude and actions about solar energy.

WEDNESDAY JULY 9, 2014

POSTER: Case Study of Renewable Energy Retrofits for a Farmhouse in Maui Hawaii

Kevin Anderson, Professor, Mechanical Engineering, Solar Thermal Alternative Renewable Energy Lab, California State Polytechnic University at Pomona, U.S.

Open Educational Resource Model in Solar Energy through e-Education

Jeffrey Brownson, Energy & Mineral Engineering, Penn State, U.S.

Student Labs on Renewable Energy as a Tool to Enhance of Awareness of Using Clean Energy and Engineering Skills

Igor Tyukhov, Head, Renewable Energy Sector, Moscow State University of Mechanical Engineering, U.S.

Data Mining Building Performance; Gaming a Sustained Behavioral Transformation

Emily Boone, School of Architecture, UNC Charlotte, U.S.

Strategic Communications to Expand the U.S. Solar Market

Monique Hanis, Director of Communications, Formerly SEIA and SFI, U.S.

CSP TECHNOLOGY & APPLICATIONS

FACTS

Date	Wednesday July 9, 2014
Time	9:00am–10:45am
Room	Level 5, Sutter, InterContinental Hotel
Target Groups	Potential Users of CSP Technologies, Utilities, Investors

Summary

CSP has reached some notable milestones over the last several months, including the commissioning of the Ivanpah and Genesis utility-scale power plants. It's an exciting time for CSP, as technological innovation and creative applications continue to build steam within the industry. This session will cover a variety of topics, including co-generation, heat storage, mobile and rooftop applications, and some economic and political considerations both locally and abroad.

WEDNESDAY JULY 9, 2014

Thermal CSP for Geothermal Power

Alison Mason, Principal, SunJuice, U.S.

Heat Transfer Enhancement Strategies for Inorganic Salt PCMs for Solar Thermal Storage Systems

Philip Myers, Research Assistant, Department of Chemical and Biomedical Engineering, University of South Florida, U.S.

Economics and Sustainability of Solar Syngas

Julia Nicodemus, Assistant Professor, Engineering Studies, Lafayette College, U.S.

Key Parameters Affecting Concentration Ratio of a Solar Concentrator Based on Lens-Lens Beam Generator Configuration

Mohamed Mostafa Tawfik, Eng., Mechanical Power Engineering, Mansoura University, U.S.

Gas-Solid Regenerative Thermochemical Storage for Mobile Concentrating Solar Power Systems

Ryan Melsert, Senior Mechanical Engineer, Advanced Energy & Transportation Technologies, Southern Research Institute, USA

SOLAR RESOURCE INSTRUMENTATION AND UNCERTAINTY

FACTS

Date	Wednesday July 9, 2014
Time	11:15am–1:00pm
Room	Level 5, Intercontinental Ballroom C, InterContinental Hotel
Target Groups	Financiers, Solar Resource Engineers, Solar Resource Scientists

Summary

Accurate solar resource instrumentation is in high demand for solar power siting analysis. Talks in this session cover the development of new instruments and improved methods for correcting or quantifying the uncertainty of existing instruments.

WEDNESDAY JULY 9, 2014

Calibration and Measurement Uncertainty Estimation of Radiometric Data
Aron Habte, National Renewable Energy Laboratory, U.S.

Multipyranometer Arrays and Machine Learning to Evaluate Direct Normal Irradiance

Vivek Srikrishnan, Pennsylvania State University, U.S.

Spectroradiometer Intercomparison and Impact on Characterizing Photovoltaic Device Performance

Aron Habte, National Renewable Energy Laboratory, U.S.

Effects of Changing Spectral Radiation Distribution on Performance of Photodiode Pyranometer

Frank Vignola, Director Solar Radiation Monitoring Laboratory, Physics, University of Oregon, U.S.

Reducing Irradiance Measurement Uncertainty of Operating Ground Stations Through Field Test and Parametric Correction Function Derivation

James Augustyn, President, Augustyn & Company, U.S.

PV Module Performance after 30 Years

Frank Vignola, Director Solar Radiation Monitoring Laboratory, Physics, University of Oregon, U.S.

INITIATIVES TOWARD CARBON NEUTRAL BUILDINGS & CITIES

FACTS

Date	Wednesday July 9, 2014
Time	11:15am–1:00pm
Room	Level 5, Intercontinental Ballroom B, InterContinental Hotel
Target Groups	Architects, City Planners, Government Agencies, Project Developers & Planners

Summary

In this session delegates will learn about new and exciting initiatives across the world to reduce greenhouse gas emissions at the building, community and city scales. Experts will present, through a series of case studies, the various approaches that may be taken to promote the development of carbon neutral buildings and cities.

WEDNESDAY JULY 9, 2014

The Uniqueness of the Israeli Green Building Standard for Achieving Sustainable Passive Solar and Low Energy Architecture
Edna Shaviv, Professor of Architecture, Faculty of Architecture and Town Planning, Technion – Israel Institute of Technology, Haifa, Israel

Objective Measure of Build Energy Performance Using Data Envelopment Analysis
Seong-Hwan Yoon, School of Civil and Architectural Engineering, SungKyunKwan University, Korea

Evolution of a "Net Zero" Home: 4-Year Results from a Passive/PV Powered Residence
Douglas Boleyn, Solar Oregon, U.S.

Carbon Reduction Plan for Downtown Los Angeles, a Design Studio
Pablo La Roche, PhD, Architecture, Cal Poly Pomona University, U.S.

SPECIAL FORUM: WOMEN IN RENEWABLES

FACTS

Date	Wednesday July 9, 2014
Time	11:15am–1:00pm
Room	Level 5, Intercontinental Ballroom A, InterContinental Hotel
Target Groups	This session is open to everyone but it is targeted to women who are currently part of, or looking to be involved in renewables.

Summary

We need more women technically involved in the renewables field. This is an all women forum filled with dynamic women from California who have spent their careers in renewable energy. Come listen to their stories and network with other women in solar.

WEDNESDAY JULY 9, 2014

- Anna Bautista, Director of Construction, Grid Alternatives
- Jan Hamrin, Principle Partner HMW International, Sustainable Energy Planning and Programs
- Claudia Wentworth, Chief Executive Officer, Quick Mount PV
- Christie McCarthy, Director of Marketing Vista Solar and Creotecc Solar Mounting Systems



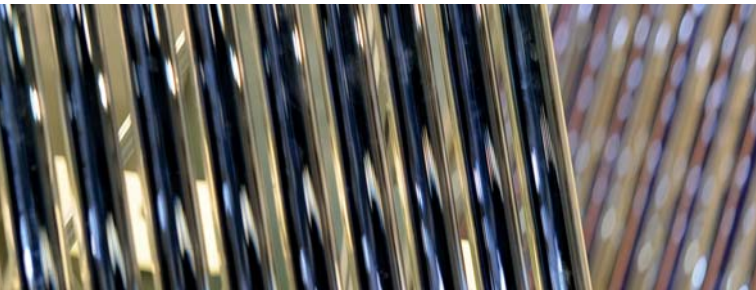
SOLAR HEATING & COOLING INNOVATIONS AND RESEARCH

FACTS

Date	Wednesday July 9, 2014
Time	11:15am–1:00pm
Room	Level 5, Sutter, InterContinental Hotel
Target Groups	Collector Manufacturers, Equipment & Material Manufacturers, Component Manufacturers, Distributors, Installers & Integrators, Project Developers & Planners, Energy Consultants, Research & Development Companies, Roofing Companies, Trade Associations

Summary

The first “modern” solar water heater was built more than 100 years ago, but innovation in solar heating and cooling continues unabated. This session will highlight advances in solar thermal methods, including collector design, integration with complementary technology and performance modeling.



WEDNESDAY JULY 9, 2014**POSTER: A Numerical Simulation Study for the Performance of a Multi-Tank Large Solar Hot Water System**

Ru Yang, Professor, Mechanical and Electro-mechanical Engineering, National Sun Yat-Sen University, China

Dual Tank Solar-Assisted Heat Pump Configuration Optimization

Carsen Banister, Ph.D. Candidate, Department of Mechanical and Mechatronics Engineering, University of Waterloo, U.S.

Performance of an Aluminum-Based Minichannel Solar Collector for Water Heating Applications

Van Duong, School of Engineering, University of California, Merced, U.S.

CFD Study of the Thermal Stratification in Tank-In-Tank Solar Combisystem

Eshagh Yazdanshenas, Building Performance Analyst, Skidmore, Owings & Merrill LLP (SOM), U.S.

Advances Enabling Ultra-Low-Cost Polymer Solar Water Heaters (SWHs)

Jay Burch, Thermal Systems Analysis, LLC, U.S.

New Textile-Based Hybrid PV/T System

Barbara Pause, PhD, Textile Testing & Innovation, LLC, U.S.

Simplified Solar Water Heater Simulation Using on a Multi-Mode Tank Model

Craig Christensen, Principal Engineer, Build and Thermal Systems Center, NREL, U.S.

Combining Multiple Heat Sources in a Standardized Combisystem Plumbing Design

Bristol Stickney, Chief Technical Officer, SolarLogic LLC, U.S.

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