

NREL Photovoltaic Reliability Workshop—Golden, Colorado

February 24–27, 2015



Agenda for Friday, February 27, 2015

PV Solar Resource Workshop

This day will revive the Solar Resource Workshop that NREL has hosted in previous years with a special emphasis on PV-specific issues. The workshop will discuss how to best understand the solar resource available to PV plants and opportunities for the community to improve over the current state-of-the-art.

The available resource for PV systems depends on the orientation (tilt and azimuth) of the PV system. Assessment of the potential solar resource for a site often uses irradiance data derived from satellite data with some input from ground sensors. In contrast, ground-based measurements at the plant typically provide the basis for monitoring the performance of a PV plant. Some plants use thermopiles, while others use reference cells to monitor the available solar resource. Some organizations measure the performance ratio of the system relative to a cleaned sensor, and others only clean the sensor when the system is cleaned.

Chairs

Manajit Sengupta
Cliff Hansen

Committee

John Dise
Robert Flottemesch
Michael Gostein
Christopher Gueymard
Aron Habte
Sarah Kurtz
Jeff Newmiller
Evan Riley
Justin Robinson
Thomas Stoffel

AGENDA Friday, February 27

7:30–8 a.m.	Continental Breakfast
8–10 a.m.	<p>Solar Resource Needs for Prediction and Monitoring of PV Performance—Cliff Hansen (Chair), Sandia National Laboratories</p> <p>8:00 - Introduction and Welcome—Manajit Sengupta, NREL, and Cliff Hansen, Sandia National Laboratories</p> <p>8:10 - The Importance of Accurate Solar Resource Assessment for Utilities—Wil Grady, Southern California Edison</p> <p>8:30 - Next Steps to Reduce Resource Uncertainty for PV Plant Performance Prediction and Verification—Evan Riley, Cypress Creek Renewables</p> <p>8:50 - The Challenges of Selecting Solar Resource Data for a New Site—Jeff Newmiller, DNV GL</p> <p>9:10 - Combining Satellite and Ground Data: What Works and What Doesn't—Adam Kankiewicz, Clean Power Research</p> <p>9:30 - Discussion: How do solar resource needs for PV differ from others? What are the needs that aren't getting met?</p>
10–10:30 a.m.	Coffee Break
10:30–11:45 a.m.	<p>Recent Progress in Solar Resource Data and Models—Jeff Newmiller (Chair), DNV GL</p> <p>10:30 - Delivering Data for the PV User from Physics-Based Satellite Models—Manajit Sengupta, NREL, and Cliff Hansen, Sandia National Laboratories</p> <p>10:50 - Quantifying and Understanding Perez Models (Past and Future) for Independent Measurement of Solar Resource Data for PV Prediction—Richard Perez, SUNY Albany</p> <p>11:10 - Deriving the Solar Resource Using PV Data—Bill Marion, NREL</p> <p>11:30 - Discussion</p>
11:45 a.m.–1 p.m.	<p>Lunch and Poster Viewing</p> <p>Viktar Tatsiankou, John P.D. Cook, Frédérick Carle, Karin Hinzer, Richard Beal The SSIM: Low-Cost Spectral Measurement</p> <p>Eiji Takeuchi, EKO Instruments Co., Ltd. Study on Performance Transition of PV System by Monitoring</p> <p>Paul Thienpont, Marie Schnitzer, Rebecca Tilbrook, Whitney Wilson How much is plant overproduction costing you? A review of the impacts of solar resource data and energy modeling on project financing</p> <p>Taylor Thomas, Dave Johnson, Patrick Morgan, Dave Heinicke, Dayle McDermitt, George Burba, Rex Peterson, John Wurm, and Bill Biggs A New Silicon Photovoltaic Pyranometer for Measuring Solar Irradiance in Meteorological and Solar Resource Applications</p> <p>Mark Campanelli Quantifying Uncertainty in PV Performance Delta Measurements</p>
1–3 p.m.	<p>Uncertainty in Irradiance Measurement for Monitoring and Quantifying PV System Performance—Tom Stoffel (Chair), Solar Resource Solutions</p> <p>1:00 - Practical Issues with Quantifying Solar Resource for PV Systems—Justin Robinson, GroundWork Renewables</p> <p>1:20 - Quantifying Uncertainty in Thermopile Measurements—Aron Habte, NREL</p> <p>1:40 - Classifications, Specifications and Characteristics of Irradiance Sensors—Anton Driesse, PV Performance Labs</p> <p>2:00 - Solar Resource Assessment: An EPC Contractor's Perspective—Owen Westbrook, Juwi Solar</p> <p>2:20 - Changing How We Look at Things: Are There Opportunities That We're Overlooking?—Sarah Kurtz, NREL</p> <p>2:40 - Discussion: Do we have a common understanding of when to use thermopiles, when to use reference cells, and when it doesn't make a difference? What are the biggest opportunities to improve measurements for solar resource monitoring for PV?</p>
3–3:30 p.m.	Coffee Break
3:30–4:45 p.m.	<p>Getting to Plane-of-Array Irradiance—Evan Riley (Chair), Cypress Creek Renewables</p> <p>3:30 - Uncertainties in Transposition and Decomposition Models: Lessons Learned—Chris Gueymard, Solar Consulting Services</p> <p>3:50 - The Value and the Challenges of Using Rotating Shadowband Radiometers as an Approach to Reducing POA Uncertainty—Justin Robinson, GroundWork Renewables</p> <p>4:10 - State of the Practice for Diffuse Measurements—Tom Stoffel, Solar Resource Solutions</p> <p>4:30 - Discussion: How do we reduce the uncertainty of PV measurements for single-axis tracked applications and other applications?</p>
4:45–5 p.m.	Workshop Wrap-up —Manajit Sengupta, NREL, and Cliff Hansen, Sandia National Laboratories
ROOM ASSIGNMENTS	<p>Solar Resource Workshop and Poster Session: Ballroom Salons A-D</p> <p>Note that Aspen/Snowmass downstairs is available at all times for side meetings as needed.</p>

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U. S.
ENERGY

Sandia National Laboratories

National Renewable Energy Laboratory
15013 Denver West Parkway, Golden, CO 80401
303-275-3000 • www.nrel.gov

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