

## 2018 PV Systems Symposium

### Agenda

| Start  | End   |  |
|--|-------|--|
| <b>Monday, April 30, 2018</b>  |       |  |
| 16:00  | 17:00 | <b>CFV lab tour</b><br>Jim Crimmins, CFV Solar Test Laboratory   |
| <b>Tuesday, May 1, 2018</b>  |       |  |
| 7:00   | 8:00  | <b>Breakfast</b><br>(Alvarado A & B)   |
| 7:00   | 8:00  | <b>Registration</b><br>(North Atrium)  |
| 8:00   | 8:20  | <b>Welcoming Address: Joshua S. Stein</b> (Sandia)<br>"The Disruption of Future PV Developments"<br>(Alvarado D)                     |
| <b>VPPMC/PV Performance Track – PV Measurements and Standards</b> (Alvarado D) |       |  |
| 8:20   | 8:30  | <b>Jim Crimmins</b> (CFV Solar) "Overview of Module Characterization and Measurement Standards as Inputs to Performance Models"      |
| 8:30   | 8:50  | <b>Dean Levi</b> (NREL) "Improvements in Module Calibration and Their Impact on World-Wide Intercomparisons"                         |
| 8:50   | 9:10  | <b>Bruce King</b> (Sandia) "PV System Analysis for Tracking System Losses and Technology Comparisons"                                |
| 9:10   | 9:30  | <b>Govindasamy Tamizhmani</b> (Arizona State University) "Indoor Soil Deposition Chamber: Validation of Anti-Soiling Coating Claims" |
| 9:30   | 9:50  | <b>Daniel Zirzow</b> (CFV Solar) "Improvements in CFV's Outdoor IAM Measurement Method"  |
| 9:50   | 10:20 | <b>Morning Break and Group A Posters</b> (North Atrium)  |
| 10:20  | 10:40 | <b>Kyumin Lee</b> (CFV Solar) "Creating PAN Files from IEC 61853-1 Test Data: Why Using Datasheet I-V Values is a Bad Idea"          |
| 10:40  | 11:00 | <b>Markus Schweiger</b> (TUV Rheinland) "IEC 61853 Energy Rating of PV Modules - Measurement Methods and Lessons Learned"            |
| 11:00  | 11:20 | <b>Peter Johnson</b> (AWS Truepower/UL) "Consideration of Test Lab Reports to Support Bankable Energy Estimates"                     |

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| 11:20 | 12:00 | <b>Roundtable Discussion</b>  |
| 12:00 | 13:00 | <b>Lunch</b> (Alvarado A & B) |

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|---|-------|---|
| <b>PVPMC/PV Performance Track – Solar Resource Assessment for PV</b> (Alvarado D) |       |   |
| 13:00   | 13:20 | <b>Kees van den Bos</b> (Hukseflux) “Latest Developments in Solar Measurements”   |
| 13:20   | 13:40 | <b>Patrick Keelin</b> (Clean Power Research) “Detailed Analysis Using DNI and DHI Ground-Based Measurements to Tune Satellite Model”    |
| 13:40   | 14:00 | <b>Manajit Sengupta</b> (NREL) “Update of the National Solar Radiation Database (1998-2016): Version 3”                                 |
| 14:00   | 14:20 | <b>Josh Peterson</b> (University of Oregon) “Calibration Methodology of the University of Oregon Solar Radiation Monitoring Laboratory” |
| 14:20   | 14:40 | <b>Anton Driesse</b> (PV Performance Labs) "Irradiance. What is Your Sensor Really Telling You?"  |
| 14:40   | 15:20 | <b>Afternoon Break and Group B Posters</b> (North Atrium)   |
| <b>PVPMC/PV Performance Track – Improving PV Performance</b> (Alvarado D)         |       |   |
| 15:20   | 15:40 | <b>Jim Augustyn</b> (Augustyn & Co./Solar Cat Industries) “Measuring Maximum Plane-of-Array Irradiance”                                 |
| 15:40   | 16:00 | <b>Marios Theristis</b> (University of Cyprus) “Advanced Failure Diagnostic Approach for Grid-Connected Photovoltaic Systems”           |
| 16:00   | 16:20 | <b>Joe Walters</b> (University of Central Florida) “LCOE Reduction through Proactively Optimized PV System Monitoring”                  |
| 16:20   | 16:40 | <b>Jaewon Oh</b> (Arizona State University) “Decreasing PV Module Temperature with Thermally Conductive Backsheets”                     |
| 16:40   | 17:00 | <b>Roundtable Discussion</b>  |
| 17:30   | 18:30 | <b>PVPMC/PV Performance Track only -- Networking Reception</b> (Pavilion)   |
| 18:30   |       | <b>Dinner on your own</b>   |

# Wednesday, May 2, 2018

|   |       |  |
|---|-------|--|
| 7:00  | 8:00  | <b>Breakfast</b><br>(Alvarado A & B)   |
| 7:00  | 8:00  | <b>Registration</b><br>(North Atrium)  |
| <b>PVPMC/PV Performance Track – PV Performance Models</b> (Alvarado D)                            |       |  |
| 8:00  | 8:20  | <b>Ben Bourne (SunPower)</b> “A 10-Year Retrospective on PV Performance Modeling”  |
| 8:20  | 8:40  | <b>Janine Freeman (NREL)</b> “System Advisor Model Updates”  |
| 8:40  | 9:00  | <b>Mark Mikofski (DNV-GL)</b> “SolarFarmer – Accurate Modeling of Real World PV Systems”   |
| 9:00  | 9:20  | <b>Bruno Wittmer (PVsyst)</b> “Horizontal Axis Trackers with Bifacial Modules in PVsyst”   |
| 9:20  | 9:40  | <b>Stephen Kaplan (First Solar)</b> “PlantPredict Update and SDK Development for API”  |
| 9:40  | 10:00 | <b>Defne Gun (SunPower)</b> “Dynamic Snow Loss Model in PVSIM: Modeling Impact of Snow on PV Production”   |
| 10:00   | 10:40 | <b>Morning Break and Group C Posters</b> (North Atrium)  |
| 10:40   | 11:00 | <b>Amir Asgharzadeh Shishavan (University of Iowa)</b> “Bifacial PV System Performance: Investigation of Diffuse Shading Conditions”                 |
| 11:00   | 11:20 | <b>Steve Ransome (Gantner/SRCL)</b> “Using Similar Mathematical Modelling with Both Single Module IV Curve Measurements and Array Inverter Data”     |
| 11:20   | 11:40 | <b>Didier Thevenard (Canadian Solar)</b> “Reconciling a Simulation Model with Measurements”  |
| 11:40   | 12:00 | <b>Peter Johnson (AWS Truepower/UL)</b> “Do Preconstruction Estimates Align with Operational Performance?”   |
| 12:00   | 12:20 | Roundtable Discussion  |
| 12:20   | 13:20 | <b>Lunch</b> (Alvarado A & B)  |
| <b>PVPMC/PV Performance Track – Open Source Tools for PV Modeling and Monitoring</b> (Alvarado D) |       |  |
| 13:20   | 13:40 | <b>Dana Olson (DOE)</b> “Accelerating PV Cost Reduction through an Open-Source Software Ecosystem for Performance Modeling and Data Standardization” |
| 13:40   | 13:50 | <b>Will Holmgren (University of Arizona)</b> “Review of Open Source Tools for PV Modeling”   |
| 13:50   | 14:00 | <b>Michael Deceglie (NREL)</b> “RdTools: An Open Source Python Library for PV Degradation Analysis”  |
| 14:00   | 14:10 | <b>Cliff Hansen (Sandia)</b> “SunSpec Orange Button: Open Source Data Taxonomy and Software for PV”  |
| 14:10   | 14:20 | <b>Janine Freeman (NREL)</b> “Open-Sourcing of NREL’s System Advisor Model”  |
| 14:20   | 14:30 | <b>Kate Klise (Sandia)</b> “Pecos – Open Source Software for PV System Monitoring”   |
| 14:30   | 14:40 | <b>Cliff Hansen (Sandia)</b> “PVLIB Update”  |
| 14:40   | 15:20 | <b>Afternoon Break and Posters</b> (North Atrium)  |
| 15:20   | 16:45 | <b>Guided Discussion</b> on Open Source Tools for PV Modeling – Strategies and Future Directions   |
| 16:45   | 17:00 | <b>Joshua Stein (Sandia)</b> “Summary and Overview of PVPMC Workshop and Future Needs”   |
| 17:30   | 18:30 | <b>Networking Reception</b> (Tablao)   |
| 18:30   |       | <i>Dinner on your own</i>  |