

Save the Date!

Sandia/EPRI 2014 PV Systems Symposium (May 5-7, 2014)

May 5-6 at the Biltmore Hotel in Santa Clara, CA

May 7 at EPRI Headquarters in Palo Alto, CA

Sandia National Laboratories and the Electric Power Research Institute (EPRI) are delighted to host this symposium on technical issues related to PV systems and technologies. Core areas of focus will include PV performance modeling, distribution hosting capacity and screening methods, component reliability, as well as data-driven strategies for performing economically efficient system upkeep.

Stay tuned for registration information at: http://energy.sandia.gov/?page_id=17103.

3rd PV Performance Modeling Workshop – Mon., May 5, Biltmore Hotel (Santa Clara, CA)

A technical overview of performance modeling methods and models will initially be provided.

Subsequent dialog and interaction will then focus on three specific modeling topics:

- **Modeling Plane-of-Array Irradiance**

Content will highlight advances in methods for and validation of calculation of plane-of-array irradiance, such as accuracy and uncertainty of satellite and terrestrial databases, translation and transposition errors, and estimating and modeling soiling losses.

- **Module Performance Characterization Data Sources**

A select number of PV test labs will describe their PV module characterization measurement methods—which capture module performance under different irradiance and temperature conditions. In addition, speakers will discuss the rationales behind their differing approaches and the effect on reported results.

- **Inverter Performance Modeling**

Presentations will encompass the needed advancements for both inverter modeling and inverter performance characterization to more effectively extract the maximum possible ac output from a PV array. Among the factors that must be considered: Array voltage, ambient temperature, solar resource variability, inverter conversion and MPPT efficiencies, auxiliary loads, and ac-side requirements (e.g. power factor).

An evening session will invite system model developers and technology companies that provide services related to PV performance prediction to present or demo the latest improvements to their modeling tools and services.

PV Distribution System Modeling Workshop – Tue., May 6, Biltmore Hotel

Methods and best practices for facilitating the integration of PV into the power system—including those that assess the risk of system impact for high PV deployment levels, eliminate barriers, and reduce transactional costs—will be addressed. Topics will include: Existing and emerging codes, standards, rules, and procedures that affect solar deployment in utility distribution systems. Come learn about:

- **PV Data and Modeling Needs for Distribution Modeling**

Data and modeling needs as well as new and existing capabilities for PV screening and distribution system planning will be discussed. Takeaways will include: New methods for predicting how PV systems can impact

voltage, voltage regulation device operations, system protection, power quality, and other factors that influence the performance and safety of distribution systems.

- **Commercial Software Capabilities and Recent Improvements**

Commercial software developers will describe how to use existing distribution modeling software for evaluating the effects of PV systems on distribution planning. Discussion is also aimed at helping to determine how a stakeholder process can help accelerate software updates and enhancements.

- **PV System Screening Criteria and Hosting Capacity Developments**

Industry experts will explain the implications of recent FERC changes to the SGIP interconnection screens to the distribution system. Additional topics will involve new methods for integrating PV and determining hosting capacity.

- **Advanced Inverter Functionality**

The manner in which inverter advanced grid support functions will change the way PV and distribution systems interact will be detailed. Recent amendment in the IEEE 1547-2003 and new interconnection rules being considered in California (e.g., Rule 21) suggest that significant changes are coming!

PV Operations and Maintenance Workshop – Wed., May 7, EPRI HQ (Palo Alto, CA)

PV O&M activities, including updates on current O&M reliability efforts aimed at both improving PV system performance and reducing the levelized cost of solar electricity, will be interactively described.

Major topical focus areas for this workshop will comprise:

- **PV Reliability Operations & Maintenance (PVRM) Research, Results and Benefits**

The joint Sandia/EPRI effort to develop the PVRM database and tool will be discussed, and recent research highlights shared. The initiative's structure and longitudinal, data-driven analysis is expected to aid PV system owners, O&M providers, and financial stakeholders.

- **Advances in PV System O&M**

Industry- and national lab-led research and development activities that aim to improve upon O&M awareness and inform strategic decision-making will be explored. Coverage will include component and system reliability, plant upkeep, and lifecycle performance for both distributed and centralized PV plants.

- **The O&M Market Landscape**

O&M market developments will be examined to present a snapshot of the costs and associated benefits of both business-as-usual and cutting edge approaches. The methodology by which O&M is valued will also be investigated, as will the impact that increasingly predictable O&M costs can have on PV adoption rates.

- **Best Practice PV Design, Installation, and O&M Perspectives**

The current state-of-the art activities being employed by different O&M service stakeholders will be detailed.

- **PV O&M Standards Development**

Given the multiple efforts underway to develop new consensus standards and best practices, remaining/ongoing PV O&M knowledge gaps will be explored.

Note: A half-day session will be convened by the ASTM at EPRI on May 8th. Interested parties are welcome to participate in this ASTM WK 43549 working group meeting, which aims to develop consensus standards on the Installation Commissioning Operation and Maintenance Process (ICOMP) for PV systems.

Who should attend? All stakeholders who care about performance: Utilities, PV system developers, plant owners, integrators, independent engineers, model developers, inverter and inverter component manufacturers, researchers, and O&M providers.

Why attend? Develop active collaborations. Help define future standards. Develop solutions to issues and costs in the PV industry. Obtain information about ongoing applied research at Sandia, EPRI, and other organizations. Expand your network. Broaden the knowledge base with a focus on PV systems optimization.

Registration fee: *\$100 per individual workshop or \$300 for full symposium*

Registration information and additional details will be available soon on the 2014 PV Systems Symposium webpage: http://energy.sandia.gov/?page_id=17103.

Registration may be limited based on venue capacity.

Please note: Information and presentations from the *2013 PV Symposium* can be found at: http://energy.sandia.gov/?page_id=13688.