

Sandia Offers Approach to Help Utilities Understand Effects of PV Variability on the Grid

A report released recently by Sandia National Laboratories, the Electric Power Research Institute (EPRI), and the Georgia Institute of Technology provides a unique approach to help utilities assess the potential effects of high levels of solar photovoltaic (PV) systems on the grid. “Time Series Power Flow Analysis for Distribution Connected PV Generation” demonstrates how quasi-static time series (QSTS) simulation and high time-resolution data help capture and assess the time-dependent aspects of power flow on a circuit, while accounting for differences in PV system size and location and the variability inherent in PV power output.

The report uses QSTS simulations applied to sample feeders with high PV deployment levels to demonstrate the value of the analysis approach. The QSTS method not only assesses the time-dependent aspects of power flow, but also provides the ability to determine both the magnitude and frequency of the impact. By making this advanced methodology readily available to utilities and developers, Sandia and its partners hope to increase the deployment of high levels of PV by helping utilities understand the effects of PV variability on the power grid.

The report is available on Sandia’s PV website, and the team seeks feedback from utilities and other stakeholders on ways to continually improve the method. Plans for a collaborative website and other partnership efforts are underway, to help engage utilities and foster the adoption of QSTS simulation and analysis.

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