

PV Module Reliability Workshop – Discussion Notes

Friday, February 27, 2015

Irradiance Measurement Uncertainty Discussion

- Angular corrections are most helpful for sunny conditions.
- If we had sub-hourly data, it would be helpful and would drive software development, then could get rid of TMY data. However, the new data would need to be validated and budgets are limited.
- What if we used a reference cell in a rotating shadowband instead of the photodiode?
- Correction factors can be useful, but what are we trying to correct to?
- PSPs are very sensitive to thermal offsets.
- Q: Is the best we can do with GHI $\pm 5\%$?
- A: With proper maintenance of hardware, it is possible to get to $\pm 2\%$.
- The estimates from satellite data to PV plant output are approaching 5% accuracy on an annual basis (would be nice to have 5% accuracy on a monthly basis).
- Albedo changes; should we be measuring the albedo? What uncertainty does this add to the transposition? The albedo can be non-uniform.
- Can measure diffuse light with a sky camera, but sky cameras are most useful for short-term forecasting.
- Q: Have we improved in our ability to characterize the performance of a PV system?
- A: Regional biases have been improved.
- If using back tracking, then you don't need to worry about row-to-row shading, but how do we treat the albedo during back tracking?
- When comparing assessment of wind and solar, wind has much larger credit so turns a larger profit while solar is more predictable. The operations and maintenance (O&M) costs for wind also have higher uncertainty. But, solar O&M costs may increase relative to what is assumed today.