2017 PVLib user group meeting highlights

A PVLib user group meeting was held on May 10, 2017, in conjunction with the 8th PVPMC modeling and monitoring workshop in Albuquerque, NM. The 40 attendees were asked to comment on the current state of the PVLib (Matlab and python) and to recommend new functionality, toolbox enhancements, to describe barriers to wider use and adoption, and to convey success stories.

New functionality

Code functionality

- Allow NaN inputs, +1
- Add SMARTS code, +1, +1
- Add degradation models
- Add module temperature models, +1 with thermal capacity, +1 with transients, Hayes thermal model
- Add reverse bias current models
- Add soiling models
- Add shading calculators
- Add snow models, SAM's snow model
- Add power optimizer model
- Add recombination current to single diode models
- Add GTI DIRINT model
- Add wiring loss model
- Add battery storage model: efficiency, lifecycle maintenance, financial analysis

Applications

- Add module file generator from IV curve or datasheet
- Add 61853 energy calculator: input 61853 matrix, calculate energy based on reference climates
- Add monte carlo capability to understand sensitivities

PVPMC content

- Add estimates of uncertainty

New toolbox features

Toolbox functionality

- Add tutorials to documentation
- Create code unit tests
- Interchange of project files with other software, e.g., PAN file reader/writer

Applications

- Homework libraries, +1 support for teaching application

- Help finding inputs
- Create a PVlib logo
- Create tutorial/training material, perhaps as Coursera content, +1 live/recorded webinar

Governance

- Marketing of pvlib: participation with numfocus.org, python community, pyCon, SciPy conference, PyData, Journal of Open Source Software
- Participate with PV accelerator like Powerhouse https://powerhouse.solar
- What do we do when the current key individuals move on?
- Perhaps we need a governing body to curate an API for PV module, inverter and storage parameter sets. Perhaps NREL + SEIA. Members buy API key to submit their parameters. Governing body moderates and flags bad/outdated records. See https://pvfree.alwaysdata.net, pvfree.herokuapp.com

Success stories

- Used to identify pyranometer calibration, maintenance and installation issues
- Monitoring system: used to set thresholds
- PlantPredict is built on PVLIb, 'viewed as a bankable or validated function implementations'
- PVlib automated Actual vs. Expected for 100+ sites portfolio monthly report