

Senior Design Project Description for SPRING 2016

Project Title: Non-invasive Tracking of Utility-scale PV Plants via QSSPC (EPRI_PVTR)

Supporter: EPRI

Supporter Technical Representative: ASSIGNED

Faculty Mentor: _____ ASSIGNED TBD (check one)

Single Team _____ Dual Team _____ (check one)

Personnel (EN/ET): 4 E, _____ Cp, _____ Cv, _____ M, 1 SE

(Complete if the number of students required is known)

Expected person-hours: (250 per student)

Description of Project:

Current-voltage (I-V) measurements provide unique and essential insight into the quality of PV cells and modules. All PV module manufacturers perform this test; however, it is seldom used once the modules are installed in the field. Measuring I-V in the field requires technicians physically unplugging and measuring a string of modules (usually less than 20) or each individual module. Tracking I-V performance in utility-scale PV installations, which may have hundreds of thousands of modules, is laborious, expensive, and could take years to measure each individual module. More frequent and inclusive I-V measuring would provide plant owners and operators additional knowledge of the health of their plant and proactively identify electrical issues with modules. Unfortunately, the costs of performing in-field I-V tracking currently outweigh the known benefit.

In this project, the feasibility of a remote I-V measurement will be determined.

Initial Project Requirements (e.g. weight, size, etc.):

The quasi-steady state photo conductance technique, known to work at the cell and module level, will be applied at the utility-scale level.

Expected Deliverables/Results:

A complete description of results of the feasibility study will be provided.

List here any specific skills or knowledge needed or suggested (If none please state none):

None