Universal Interconnect Device-Northern

Contract #: 500-03-011 **Project #:** 3
Contractor: National Renewable Energy Laboratory (NREL)
Subcontractors: Northern Power Systems
Project Amount: $603,664
Match Amount: $327,106
Contractor Project Manager: Holly Thomas (303) 275-3755
Commission Contract Manager: Bernard Treanton (916) 654-4512
Status: Active

Project Description:

The purpose of this project is to develop and test a prototype Advanced Universal Interconnect Device interoperable across distributed generation (DG) technologies with enhanced functionality that will reduce interconnection cost and time. This will be an important step in improving the standardization of distributed energy resources (DER) switch devices. Northern Power System (NPS) will develop the specification for the DER Interface System using input from industry experts in the field of protection relaying and anti-islanding. NPS will also review and model various synchronization methods and use its Digital Signal Processing control hardware software platform. NPS will use its Smart-View Remote Terminal Unit and data management device to collect and store power system data and communicate and share data by internet. The prototype power module will use solid-state switching elements with a 200 amp rating and capacity from a few kilowatts (kW) to several megawatts (MW) for use with NPS power network test bed. NPS will test the DER interface system and connect the 75 kW DER power network test bed to the local utility.
Upon successful testing, a prototype unit will be shipped to NREL for Institute of Electrical and Electronics Engineers (IEEE) 1547 compliance testing.

This project supports the PIER Program objectives of:

- Improving the energy cost/value of California's electricity by developing and standardizing a new switching gear.
- Improving the reliability/quality of the California's electricity by improving DER reliability to support the grid.
- Improving the safety of California's electricity by developing advanced electronics to control DER and grid interconnection.

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Proposed Outcomes:

1. *Develop processes, standards and technology for the purpose of integrating DER in the electrical distribution system.*
2. Develop an Advanced Universal Interconnect Device that is compliant to IEEE 1547.

Project Status:
This project is active, on schedule and on budget. The project started September 2004 after the contract was approved by both parties. Northern is making good progress on the DER Prototype Component Design and will maintain the delivery schedule. A preliminary Design Review Meeting is scheduled for February 2, 2005 at Northern Power System.