Verification of Optimal Methodology

Contract #: 500-04-008
Contractor: New Power Technologies
Subcontractors: Optimal Technologies (USA) Inc.: Cupertino Electric, Inc.
Contract Amount: $5,427,726
Match Amount: $509,750
Contractor Project Manager: Peter Evans (650) 948-4546
Commission Contract Manager: Linda Kelly (916) 654-4815
Status: Active

Project Description:
This project will demonstrate the methodology developed under PIER contract 500-01-039 to quantify the potential for greater network efficiency and performance from ideally-situated distributed energy resources (DER). In this case, a demonstration of the methodology will apply to a larger more complex investor-owned power delivery system. Additionally, this project will also evaluate the impact of changes to the configuration of the distribution system and additions on both the distribution and transmission system. This will be done by evaluating the benefits of switchable or automated distribution devices (e.g. remotely operable switches and capacitors), under varying load conditions. To complete the analysis, the range of initiatives developed using the methodology will be quantified. The project will take into account the value of network benefits, reliability enhancements, and capital and O&M cost reductions or deferrals.

The final task of this project is a field demonstration which will demonstrate the veracity of the simulation of the distribution and transmission systems as a single, integrated system, as well as the efficacy of the recommended recontrols and DER additions developed using the Methodology.

This project supports the PIER Program objectives of:

- Improving the reliability/quality of California's electricity system by developing an analytical tool that can identify where DER and other non-wire alternatives can be located to help alleviate power quality and T&D capacity and congestion problems in the State.
- Providing more choices to California consumers by helping overcome the barriers to the deployment of distributed energy resources.

Proposed Outcomes:

1. Demonstrate the Methodology developed under PIER contract 500-01-039 to use AEMPFAST (Advanced Energy Management & Power Flow Analysis System Technology) to determine idealized placement of DER.
2. Evaluate the potential network benefits of distribution-level topology reconfigurations.
3. Determine the potential network benefits of switchable or automated distribution devices under varying load conditions.
4. Assess reliability improvements as a network benefit by evaluating proposed measures.
5. Develop an expanded set of potential measures available to achieve pre-defined operation or functional objectives for the network that includes both wires and non-wires measures, with a direct basis for comparison.

Project Status:
The project is active and on schedule. The Kick-off Meeting for this project was held on November 15, 2004. Working with Southern California Edison, work has commenced on identifying the subject study circuits and data requirements for the proposed system modeling.