Battelle Memorial Institute

Pacific Northwest Smart Grid Demonstration

Project Description

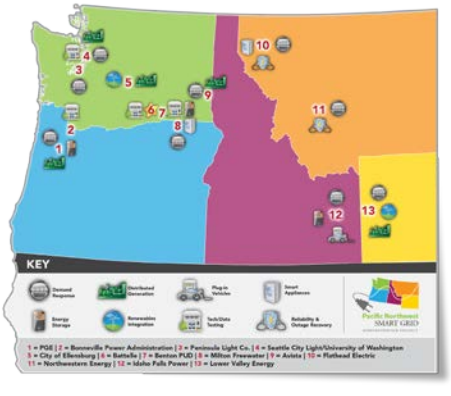
Battelle Memorial Institute is collaborating with utilities, universities, and technology partners in a Smart Grid demonstration project across five states and three climatic regions, spanning the electrical system from generation to end-use, and containing all key functionalities of the future Smart Grid. This demonstration will validate new technologies; provide two-way communication between distributed generation, storage and demand assets, and the existing grid infrastructure; quantify Smart Grid costs and benefits; advance interoperability standards and cyber security approaches; and validate new business models. More than 20 types of responsive Smart Grid assets will be tested across six regional and utility operational objectives at 15 unique distribution sites operated by 11 utilities. A base of Smart Grid technology serving more than 60,000 customers will be installed, validated, and operated. All use classes are represented in the demonstration including residential, commercial, industrial, and irrigation customers. The demonstration will develop a single integrated Smart Grid incentive-signaling approach and will test and validate its ability to continuously coordinate the responses of Smart Grid assets to meet a wide range of operational objectives. It will also be among the first to engage distributed control so that wind integration problems are mitigated. Micro-grid islanding will also be evaluated for its potential to enhance reliability for customers and relieve energy demand. Team members are committed to commercializing proven technologies.

Goals/Objectives

- Measure and validate Smart Grid costs and benefits for customers, utilities, regulators and the nation, laying the foundation for future investment
- Develop standards and communications and control methodologies for a secure, scalable, interoperable Smart Grid for regulated and non-regulated utilities
- 75 percent of the assets installed by the project will remain responsive and functioning after the demonstration term

Key Milestones

- Transactive Control Design Complete (July 2011)
- Transactive Control Initial Node Implemented and Tested (August 2012)
- Smart grid assets installed, tested and operational as of January 2013)
- Transactive control Initial Node Connected to Smart Grid (January 2013)
- Final Report to DOE, with data collection and analysis (January 2015)



Benefits

- Creation of approximately 1,500 jobs in manufacturing, installing, and operating Smart Grid equipment, telecommunications networks, software, and controls
- More cost effective, clean, reliable electricity supply
- Increased grid efficiency, reliability, and intelligence
- Customers empowered to conserve energy and avert increased energy costs

CONTACTS

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PARTNERS

3TIER Inc; Alstom Grid Inc.; IBM; QualityLogic Inc; Netezza Corporation; Bonneville Power Administration; Avista Utilities; Benton PUD; City of Ellensburg; Flathead Electric Cooperative Inc; Northwestern Energy; Idaho Falls Power; Lower Valley Energy; Milton-Freewater City Light & Power; Peninsula Light Company; Portland General Electric; Seattle City Light/University of Washington

PROJECT DURATION

02/01/2010–09/30/2015

BUDGET

Total Project Value
$177,642,503

DOE/Non-DOE Share
$88,821,251/$88,821,252

EQUIPMENT

Distribution Automation (Switches, Voltage Regulators, Circuit Reclosers, Capacitor Banks), Distributed Generation (BUGs, Wind, Hydro, Solar), Energy Storage, Controllable Loads, Advanced Meters, End-User Demand Response Devices

DEMONSTRATION STATES

Montana, Washington, Idaho, Oregon, Wyoming

CID: OE0000190

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