Technology Innovation Project

Project Brief

TIP 35: Pacific Northwest Smart Grid Demonstration Project

Context

Over the past decade, the Pacific Northwest has pioneered many advancements for the nation's emerging smart grid technology, utility applications, customer engagement strategies and policy. The Pacific Northwest Smart Grid Demonstration Project takes the region's smart grid agenda to a new level.

Description

BPA is a participant in this $178 million project led by Battelle Memorial Institute, Pacific Northwest Division. The project includes eleven utilities and five infrastructure partners. The five-year project involves 112 megawatts of responsive resources featuring both load and generation, which will be coordinated by a transactive signal, as of Sept. 2012. These assets include everything from home energy systems, distributed generation, batteries, and numerous other resources on a targeted list of smart grid assets. This project is a significant investment in the BPA Technology Innovation portfolio – BPA is contributing $10 million with an additional $10 million coming from DOE as matching funds.

Project participants will use and test a variety of smart grid technologies such as smart appliances, smart meters, distributed generation, in-home displays, home-area networks, voltage optimization tools, and electric vehicles. The project also will explore ways to improve the integration of renewable energy resources such as solar and wind.

Developing a business case is a centerpiece of the BPA participation in this project. In fact, the effort to show whether smart grid investments are smart economically for the long run was featured in a recent White House report. It states that the project is "Validating the value of smart grid technologies in the Pacific Northwest through the creation of a regional business case."

The business case will show whether the benefits outweigh the costs so the region can know what technologies will be sustainable and best for long-term capital investments.

BPA's role is as follows:

- Coordinate with Battelle and participating utilities to develop a smart grid business case based on data from utilities, customers and project vendors to inform a cost-benefit analysis
- Lead public outreach and communication with governments (states, northwest delegation, tribes, others), nonpartner utilities, educational institutions, energy and regulatory organizations (WECC, NERC, NWPCC, NWPPA, etc.), the general public and other regional demonstration projects
- Support research and infrastructure design, interoperability efforts, as well as integrate BPA data streams to the system
- Integrate BPA operating units for policy and standards development, resource planning, wind integration, and coordination with demand-response programs

Why It Matters

With increased communication and information, smart grid can monitor activities in real time, exchange data about supply and demand, and adjust power use to changing load requirements.

Smart grid can help meet increasing power demands, reduce greenhouse gas emissions, promote energy independence, enhance reliability, and help improve national security.

Here in the Pacific Northwest, smart grid can help reduce demands on the hydro system, which is good for fish, ratepayers, and consumers. It can help integrate variable resources such as wind into the transmission grid. And it can help contain power system costs. Smart grid adds value by offering consumers choices, just as cell phones provide many more options and flexibilities than old-fashioned rotary phones.

Goals and Objectives

The Pacific Northwest Smart Grid Demonstration Project will engage the following:

- Validate new smart grid technologies and business models
- Provide two-way communication between distributed generation, storage, and demand assets and the existing grid infrastructure
- Quantify smart grid costs and benefits
- Advance standards for "interoperability" (seamless integration of all elements of the electric system) and cyber security approaches

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Project Start Date: November 25, 2009

Project End Date: January 31, 2015

Funding

Total Project Cost:	$178,397,879
BPA Share:	$10,397,879
External Share:	$168,000,000
BPA FY2014 Budget:	$1,000,000

Milestones (project milestones unless noted as BPA specific)

09/31/12 – Final release of transactive control system (Phase 2).
08/31/14 – Completion of data collection (phase 3).
01/31/15 – Final reports and cost-benefit analysis completion to DOE (phase 4).

For More Information Contact

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Links

Pacific Northwest Smart Grid Demonstration Project Home Page: http://www.pnwsmartgrid.org/

Participating Organizations

Battelle – Pacific Northwest National Laboratory

Technology Partners:

- 3TIER, Inc.
- Alstom Grid
- IBM
- Netezza Corp.
- QualityLogic, Inc

Utilities (subprojects):

- Avista Utilities (City of Pullman and Washington State University)
- Benton PUD (Kennewick, WA & surrounding area)
- City of Ellensburg (Renewable Energy Park)
- Flathead Electric Cooperative, Inc. (Libby, Haskill, MT)
- Idaho Falls Power (Idaho Falls, ID)
- Lower Valley Energy (Jackson, Afton, Hoback, WY)
- Milton-Freewater City Light & Power (Milton-Freewater, OR)
- NorthWestern Energy (Helena, Philipsburg area, MT)
- Peninsula Light Company (Fox Island, WA)
- Portland General Electric (Salem, OR)
- University of Washington and Seattle City Light (University of Washington's Seattle campus)