Quarterly Update

Pacific Northwest SMART GRID DEMONSTRATION PROJECT

Fall 2012

Celebrating success – then, now and for the future

This October, the Pacific Northwest "turned on the switch" of the largest smart grid demonstration project in the nation. That means the project has begun to collect test case data for the smart grid assets installed by the utility participants. This data will provide valuable insights into the costs and benefits of these technology investments.

This is a tremendous achievement that has been nearly three years in the making. Or you could say it's a continuation of more than a decade of smart grid research in the Pacific Northwest. Our region is truly a hotbed of smart grid activity… from the early "GridWise" projects in the Olympic Peninsula which tested communication and consumer acceptance, to recent developments in showing which technologies and programs will bring the best value to our region.

This edition of the PNWSGDP quarterly update is all about celebrating our progress so far, but with an eye to the future as we still have much work to be done with this ground-breaking smart grid project. Our unique smart grid signals are flowing between Battelle and the utilities. We are in the process of end-to-end testing of the transactive control system. As this testing completes we look forward to engaging the responsive elements of the utility systems.

Ron

Ronald B. Melton, PhD
Project Director

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Project Objectives and Attributes

Primary Objectives:

- Develop and validate an interoperable distributed communication and control infrastructure using transactive control signals;
- Measure and validate smart grid costs and benefits;
- Contribute to the development of standards and transactive control; and
- Apply smart grid capabilities to support the integration of renewable resources.

Operational Objectives:

- Manage peak demand;
- Facilitate wind integration;
- Address constrained resources;
- Improve system reliability;
- Improve system efficiency; and
- Select economical resources.

Key Attributes:

- Leave an installed operational base of smart grid assets and successful operational strategies for the region.
- Stimulate the regional and national economy by creating jobs and a vibrant smart grid industry.

Lighting up the largest smart grid demonstration in the nation

Highlighted by appearances from Senators Patty Murray (D-WA) and Maria Cantwell (D-WA), a press conference at the University of Washington in Seattle officially kicked off the "go-live" phase of the Pacific Northwest Smart Grid Demonstration Project.

"Lighting up the largest smart grid demonstration in the nation" was the official theme of this event, which was part of the university's overall Sustainability Week celebration. But many of the press conference speakers focused on a more subtle aspect of the project – the unparalleled collaboration that brought such a large and diverse group of partners together.

As Senator Cantwell remarked, "Looking around this room, it's clear we have the talent, technology and tools to become a leader in the energy economy of the future. So congratulations to all of the project's partners and the students who are making this possible."

BPA's Deputy Administrator Bill Drummond summed up how the regional cooperation started at the top, with our elected officials, and trickled down to the heart and soul of the smart grid project – the people who are implementing the technologies and programs in their homes, businesses and even dormitories.

"I want to thank Senator Murray for her leadership on the Appropriations Committee, for securing the funding that took this project from a small demonstration to a major initiative," Drummond said.

"And I want to thank Senator Cantwell for championing Smart Grid, including sponsoring legislations that provided framework for smart grid demonstrations nationally. I also want to thank our utilities, Pacific Northwest National Laboratory, and our end-use partners – the consumers of electricity – for making this a collaborative effort."

Battelle's Senior Vice President Mike Kluse touted the Pacific Northwest's predisposition in leading the nation's smart grid transformation: "The unparalleled collaboration across our region's rich resources has been key to the success of this project. The PNW Demo is a first-of-its-kind opportunity to bring together the entire ecosystem of partners: national labs and premier research institutions like the University of Washington, technology companies, students, and the utilities themselves, to engineer the grid of the future," noted Kluse.

UW students Evann Sawyers Rouse and Duncan Clausen discuss their projects with Senators Maria Cantwell (D-WA) and Patty Murray (D-WA). BPA's Deputy Administrator Bill Drummond and Charles Kennedy, UW's Associate Vice President for Facility Services are in the background.

"It is this kind of groundbreaking collaboration that will be needed going forward to overcome the challenges we face in modernizing our grid. And this region is ideally suited to lead the way."

The University of Washington proved to be the perfect spot for the kick-off, with the enthusiastic students sharing the details of their projects with dignitaries at the event. Their contagious passion for sustainability was the highlight of numerous news reports.

For example, Oregon Public Broadcasting led their coverage with a student showing Senator Cantwell an energy monitoring device attached to lamps that she controlled with her smart phone. The Seattle Times

focused on the students' excitement in helping the University cut its energy bills.

For UW Provost, Ana Mari Cauce, pride for the students, and the smart grid demonstration, was obvious in her remarks. "The University of Washington is recognized as a national leader in sustainability within the higher education community," she said. "The project provides an exciting opportunity for testing how 21st century technology can reduce energy consumption. Given our students' keen interest in the environment, it is appropriate that much of our research on smart grids will occur within our residence halls and that the initial research will be conducted by students in our Program on the Environment."

The kick-off in Seattle is the first in a series of celebrations around the region, as milestones help demonstrate the project's success.

For more on UW's role in the project, click here

For an overview of the project, click here

To read DOE's write-up, click here.

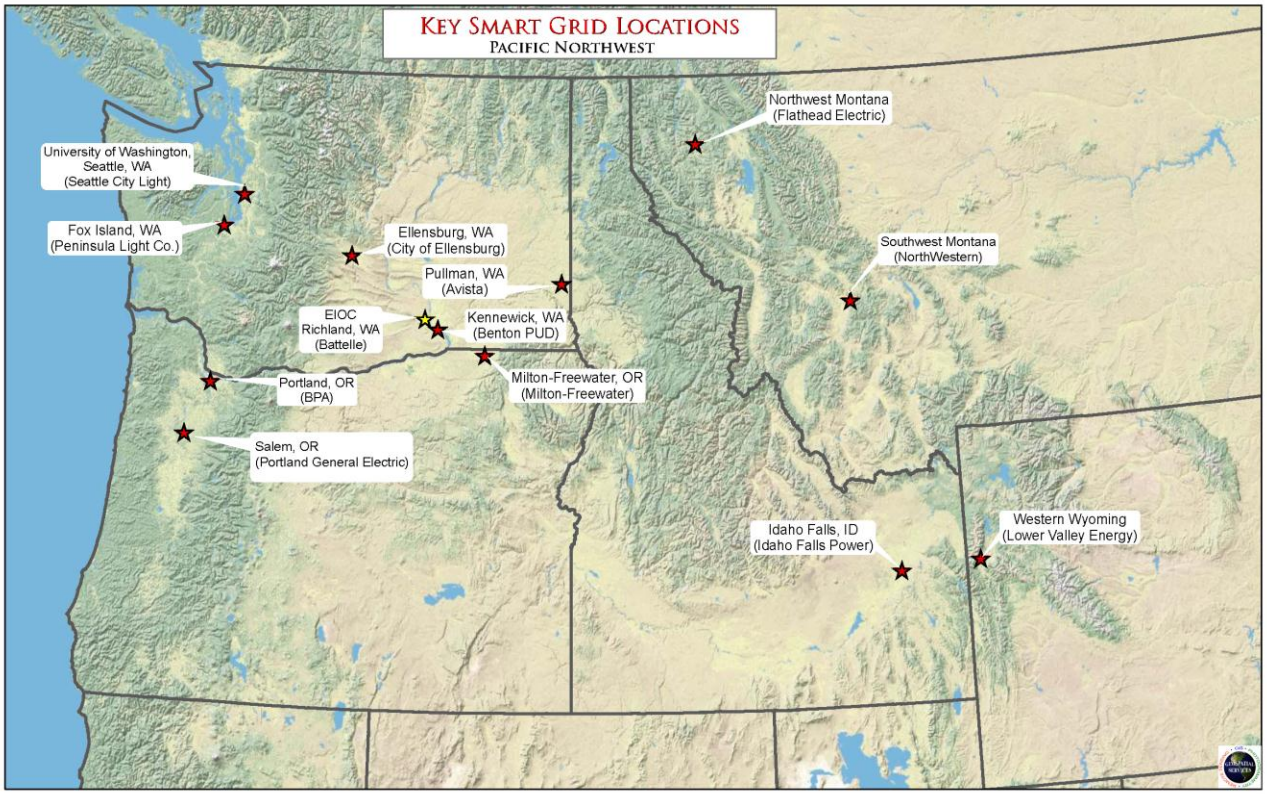
Other notable events

- The Pacific Northwest Smart Grid Demonstration Project was the featured U.S. smart grid demo at meeting of "Implementing Agreement for a Co-operative Programme on Smart Grids," in France on Sept. 24 – 26. The U.S. Department of Energy specifically requested for Project Director Ron Melton to present at this event, which was sponsored by the International Smart Grid Action Network.
- "The Pacific Northwest: The Smart Energy Frontier." That was the theme of the Bonneville Power Administration's platinum sponsorship at this year's GridWeek in Washington, D.C. Oct. 2 – 4. This opportunity provided an excellent venue for PNWSGDP information sharing, including featured speaking, a special media event and panel discussions from BPA, Battelle, technology vendors and utility partners. BPA also staffed booth that was packed with visuals including banners, a phasor measurement unit, smart meter, home energy management devices and numerous fact sheets.

BPA's booth at GridWeek, Oct. 2 – 4 in Washington, D.C.

Outreach calendar:

- Nov 13: Ron Melton to present at Washington State University's ESI Seminar Series in Pullman, Wash.
- Nov. 13 – 14: Project to present at The Washington Energy Summit/Future Energy Conference
- Dec. 3-6: Project to present at Grid-Interop in Irving, Texas
- February 24-27: Project to present at IEEE ISGT conference in Washington, DC.



Project description

The Pacific Northwest Smart Grid Demonstration project is a regional endeavor funded by the Department of Energy under the American Recovery and Reinvestment Act of 2009. The goal is to verify the viability of smart grid technology and quantify smart grid costs and benefits. This information will help validate new smart grid business models at a scale that can be adapted and replicated nationally.

With the 50 percent DOE matching funds, this project has a $178 million budget.

Smart grid can help meet increasing power demands, reduce greenhouse gas emissions, promote energy independence, enhance reliability and help improve national security. It is a system that uses technology to enhance power delivery and use through intelligent two-way communication. Power generators, suppliers and users are all part of the equation.

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 technology includes everything from interactive appliances in homes to substation automation and sensors on transmission lines.

The regional project, the largest smart grid demonstration project in the nation, is led by Battelle Memorial Institute, Pacific Northwest Division. Participants include the Bonneville Power Administration, utilities, universities and infrastructure partners. It includes 112 megawatts of responsive resources and will last for five years.