

Quarterly Newsletter



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Welcome to the first issue of the Pacific Northwest Smart Grid Demonstration Project quarterly newsletter. We hope to provide you with quick, useful updates on the status of the project, as well as more in-depth information on certain aspects of the project and its individual utility sub-projects.

On the front page of each issue, we will include a “dashboard” of how the project is meeting its major milestones. We hope that this graphic will provide you with a high-level view of how well the project is progressing, as well as keep you informed of any risks and risk mitigation that might be needed.

With every edition, we will have a close-up of some aspect of the Project, introducing you to some of the key players responsible for the demonstration. We will also have a calendar that will list upcoming smart grid related conferences, events, briefings, or other dates of interest. From time to time, we will include any other information that may be useful or relevant, such as reports on other smart grid efforts elsewhere in the region or nation.

This is only one of several ways that we hope to keep the Northwest informed about the Pacific Northwest Smart Grid Demonstration Project as it moves forward on a remarkable five-year journey.

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Ronald B. Melton, PhD
Project Director
Battelle Memorial Institute

Dashboard

Initial funding from DOE in 1 st Quarter	
Initial deliverables (updated Project Management Plan, Cybersecurity and Interoperability Plan, NEPA) to DOE in 2 nd Quarter	
Project Phase I (Project Design) initiated	
All project participant contracts by 2 nd Quarter	
DOE Funding Agreement in 2 nd Quarter	

Project Objectives and Attributes

Primary Objectives:

- Develop and validate an interoperable distributed communication and control infrastructure using incentive signals
- Measure and validate smart grid costs and benefits
- Contribute to the development of standards and transactive control
- 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
- 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.

Summary of the Pacific Northwest Smart Grid Demonstration Project

What is smart grid?

Smart grid can be thought of as the convergence of the Internet and the electric power system. In addition to the two-way communication introduced by this convergence, a smart grid includes intelligent devices and sensors at all levels of the power system to improve power delivery and reliability and to increase efficiency. A smart grid enables the use of more renewable sources of power, provides consumers greater information about their own energy consumption, and helps electricity providers optimize resource use and power delivery.

What is the project?

The Pacific Northwest Smart Grid Demonstration Project is a regional project funded through a competitive process by the Department of Energy (DOE) under the American Recovery and Reinvestment Act of 2009 (ARRA). The intent of the project is to verify the viability of smart grid technology and quantify smart grid costs and benefits which can be used to validate new smart grid business models at a scale that can be readily adapted and replicated nationally. With the 50% DOE matching funds, this project has a \$178M budget.

What are the project objectives?

The primary objectives of the project are to:

- develop and validate an interoperable distributed communication and control infrastructure using incentive signals
- measure and validate smart grid costs and benefits for end-users, utilities, regulators, and others thereby laying the foundations of business cases for future smart grid investments
- contribute to the development of standards and transactive control methodologies
- apply smart grid capabilities to support the integration of renewable resources.

The project's operational objectives, as supported by the individual utility sub-projects, are to:

- manage peak demand

- facilitate wind integration
- address constrained resources
- improve system reliability
- improve system efficiency
- select economical resources.

Finally, the project's key attributes are to leave an installed operational base of smart grid assets and successful operational strategies for the region, and stimulate the regional and national economy by creating a vibrant smart grid industry in which jobs can be created and retained.

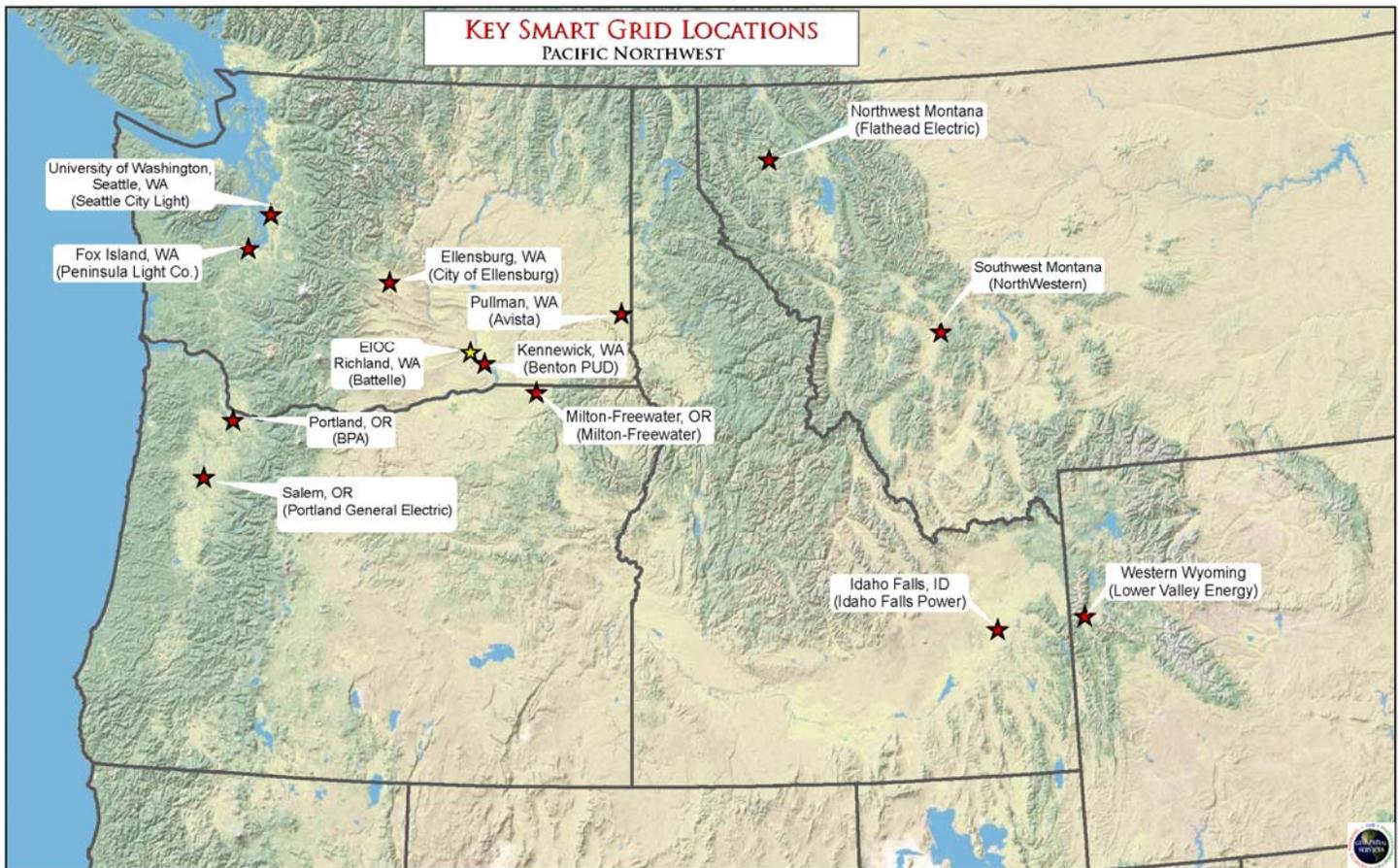
Who are the players?

Battelle is leading the effort and is responsible to DOE for project performance. Utilities with sub-projects and local objectives that support the regional effort include: Avista Utilities, Benton PUD, the City of Ellensburg, Flathead Electric Cooperative, Idaho Falls Power, Lower Valley Energy, Milton-Freewater City Light & Power, NorthWestern Energy, Peninsula Light Co., Portland General Electric, and Seattle City Light with the University of Washington.

Technology firms are also contributing to the project infrastructure (3TIER, Alstom Grid [formerly AREVA T&D], IBM, Netezza, and Quality Logic/Drummond Group), and Bonneville Power Administration will provide research and financial support. The study will include over 60,000 metered customers in Idaho, Montana, Oregon, Washington, and Wyoming.

How do all the pieces fit together?

The wide geographic area, climate, and demographics of the project will provide a rigorous test of various smart grid technologies – determine what technologies can satisfy operational objectives and also be cost-effective. No single entity could conduct this research alone; each member of the collaborative contributes to a portion of the research effort. In meeting their own local objectives, utilities will support broader regional objectives so that a comprehensive picture will emerge of what technologies work best and why across the Pacific Northwest region, and similarly situated utilities will have guidance for making their own smart grid investments.



How will it work?

Utilities will generate data on various smart grid technologies. Infrastructure companies will provide communication, software, and other systems to connect the utility sub-projects to the Electricity Infrastructure Operations Center (EIOC) at Battelle in Richland, WA where the data will be collected and analyzed. Battelle is also responsible for assuring that the project complies with established reporting requirements and will distribute funds to the project participants. Bonneville Power will conduct external outreach and education activities.

What is the project timeline?

DOE approved the project on November 24, 2009 and a cooperative agreement between DOE and Battelle was signed on January 22, 2010. The five-year project formally started on February 1, 2010. The first six months will be dedicated to the high-level design of the “system of systems” that will connect the utility sub-projects to the

EIOC as planned. For the next 24 months, the project participants will be purchasing, installing, and testing their facilities and systems. All aspects of the project will be operational and running for the next 24 consecutive months, generating data about all the smart grid technologies and processes being evaluated. Finally, the last six months will be spent evaluating the project, finalizing the cost benefit analysis, and planning for successful aspects of the project to transition to full implementation. Along the way, the project will share what it is learning with others who are interested in and pursuing smart grid technologies.

Why is this important to the region?

The project will provide economic stimulus, with up to 1,500 jobs created or retained at the peak of the project. It will spur adoption of new technology, help to update an aging electricity delivery system infrastructure, and

enhance reliability. The cost-benefit analysis will guide utility decisions on their future investments and increased automation will help them deliver improved services with the same—or fewer—resources, resulting in greater value to their own customers. Two-way communication from electricity generation to the consumer will help optimize the system, helping keep costs down and rates lower than they would otherwise be. Better integration of renewable resources has the potential for reducing greenhouse gas emissions and carbon footprints, and better managed demands can defer expensive investments. Non-participating utilities can also learn from the project, accelerating the adoption of the most cost effective technologies and helping them avoid costly mistakes. Interoperability will be promoted, so that utilities can diversify their suppliers (and consumers will be able to choose their own appliances, electronic devices, etc.), leading to more competitive markets and helping avoid risks associated with having a single supplier. And consumers will have more information about their own energy consumption so that they can become more aware, have more choices, and contribute to a more energy-aware future.

Project Milestones

Funding Agreement with DOE:

All funds for the project have been obligated. The initial funding agreement between Battelle and DOE was signed on January 22, 2010. It authorized funding 3% of the \$178M budget for three items: Update of the Project Management Plan, Cyber Security and Interoperability Report, and NEPA work. On August 13, DOE released an additional \$47M for all project activities. Finalization of the complete funding agreement with the release of remaining funds is expected in early fall. This delay is due to the large workload associated with DOE's processing of smart grid activities under the stimulus funding package.

Project Participant Cooperative Agreements:

Agreements between Battelle and most participants are in place; a few outstanding items for the more complex activities will be resolved by the end of the quarter. Supporting statements of work for all utilities' sub-projects are complete and approved, clarifying details of individual utilities' activities and assets being acquired for the demonstration. The agreement between Battelle and Bonneville Power Administration to support the research effort was signed in the first quarter of 2010.

Next Steps

- Complete Project Phase I (Conceptual Design)
- Begin Project Phase II (Build-Out: installation and testing of equipment).