



Pacific Northwest
SMART GRID
DEMONSTRATION PROJECT

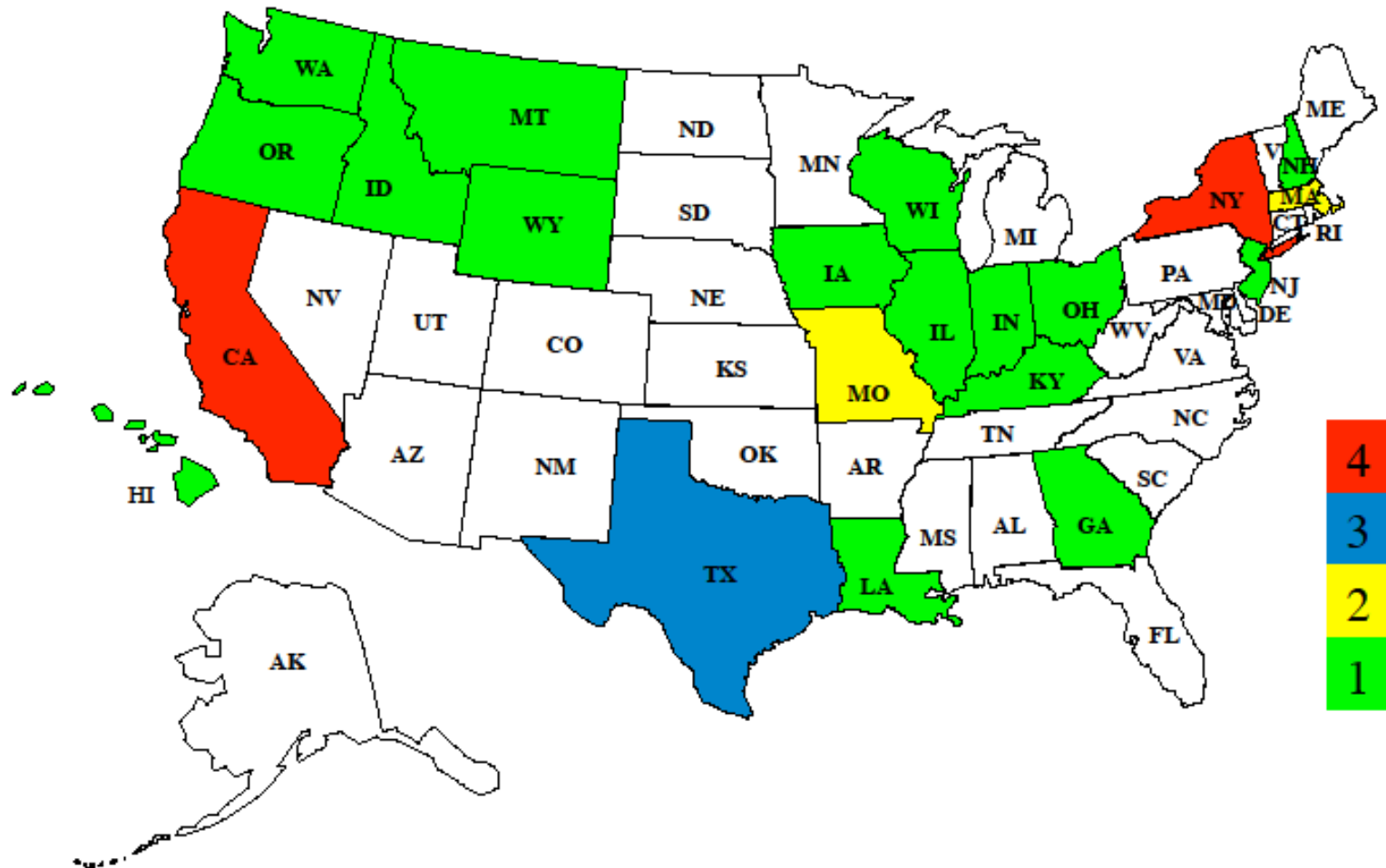
Pacific Northwest Smart Grid Demonstration

July 21, 2011

Landis Kannberg – Battelle

Smart Grid Demonstration Projects

16 Awards Support Projects in 21 States



Pacific Northwest Demonstration Project

What:

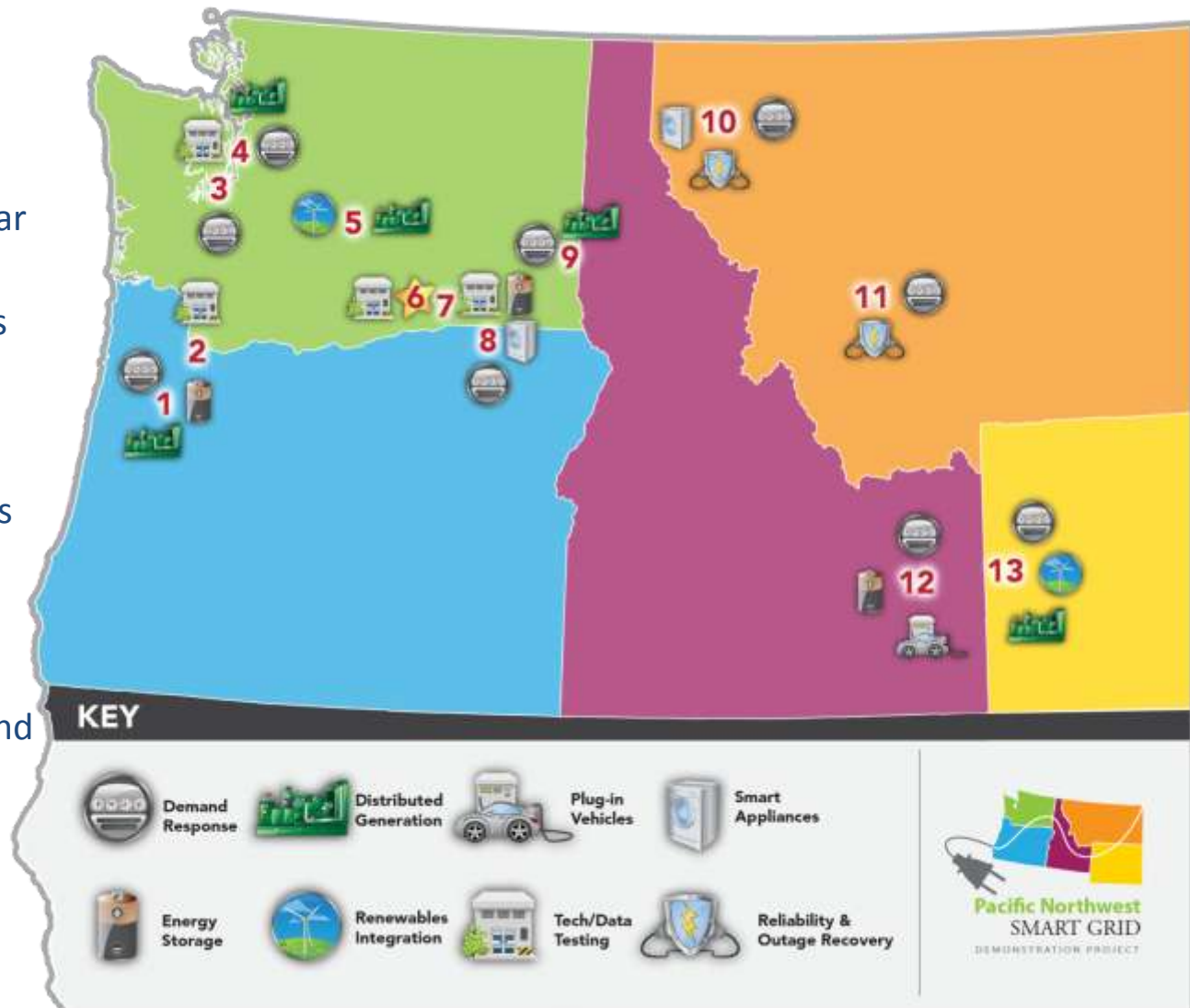
- \$178M, (\$89M private, \$89M ARRA-funded), 5-year demonstration
- 60,000 metered customers in 5 states

Why:

- Quantify costs and benefits
- Develop communications protocol
- Develop standards
- Facilitate integration of wind and other renewables

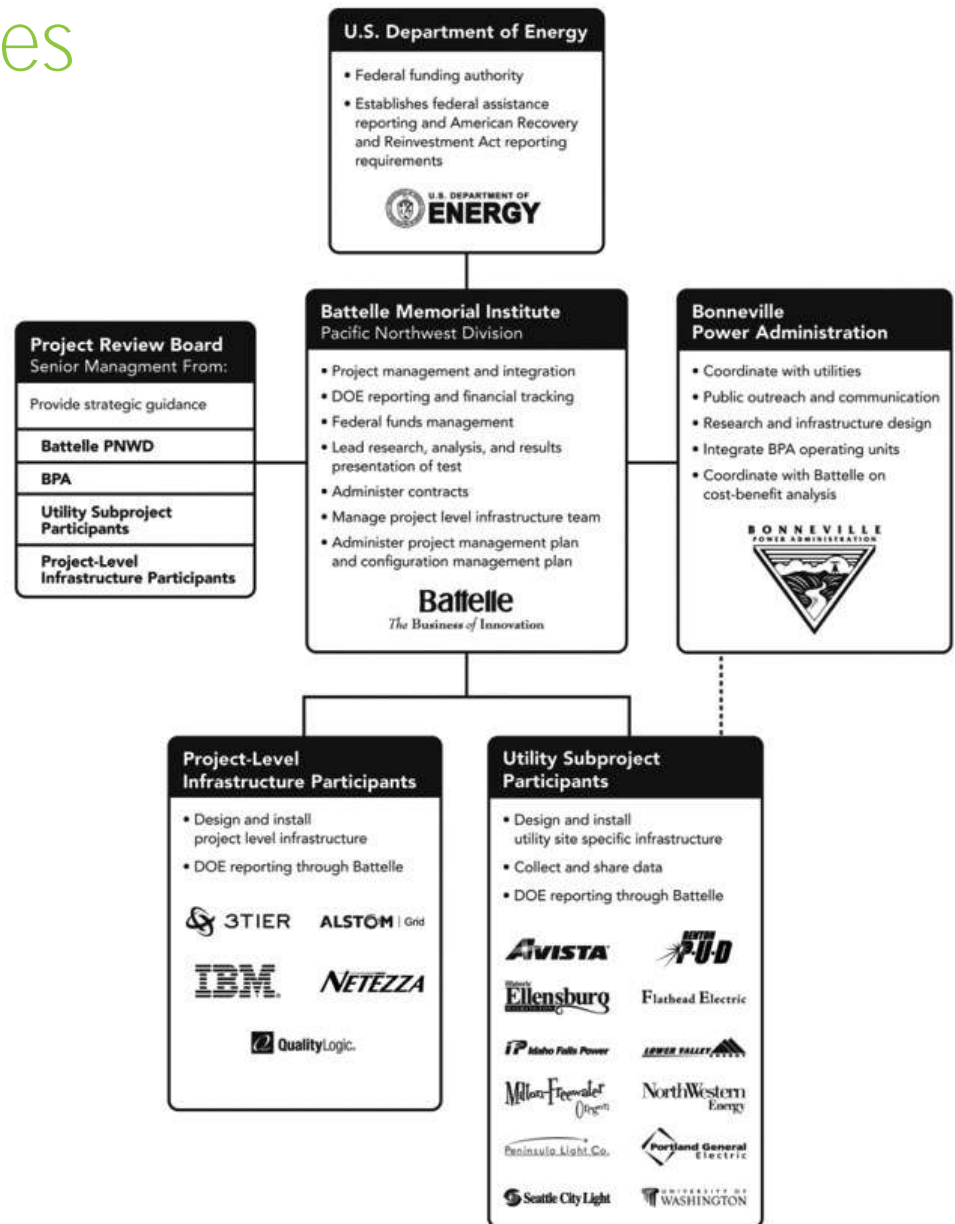
Who:

Led by Battelle and partners including BPA, 11 utilities, 2 universities, and 5 vendors



Project Structure / Roles

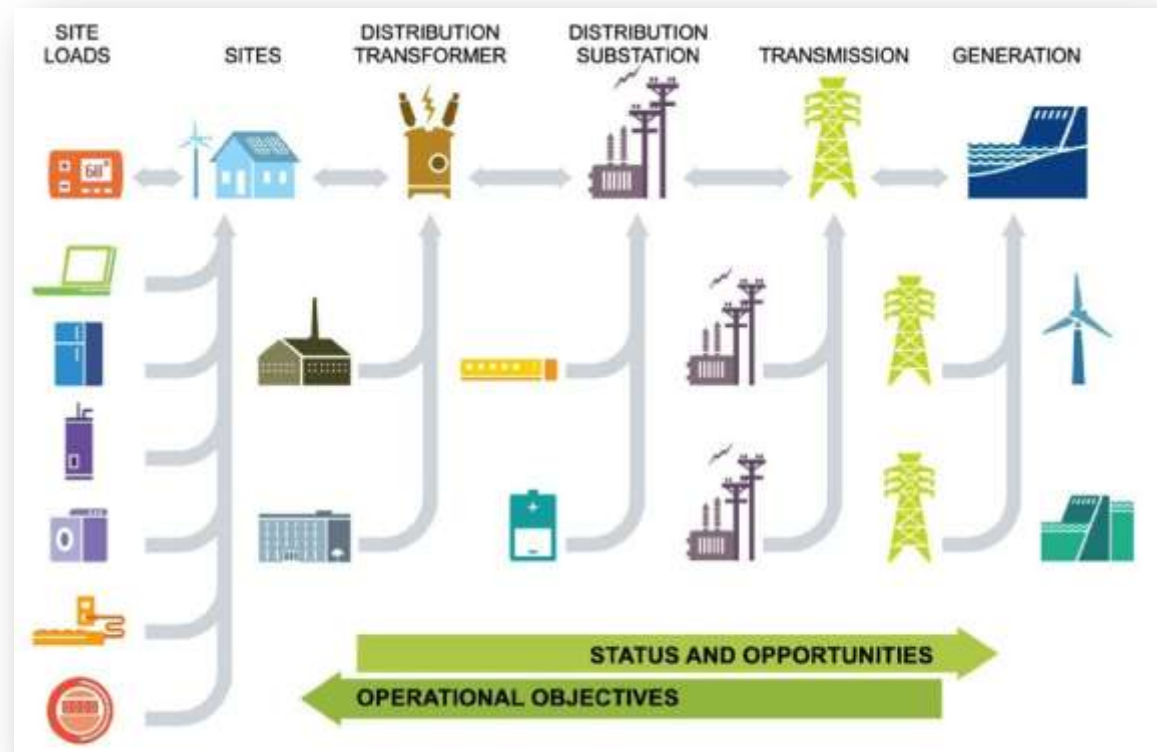
- Battelle Memorial Institute, Pacific Northwest Division
- Bonneville Power Administration
- 11 utilities and their vendors
- 5 technology infrastructure partners



Project Basics

Operational objectives

- Manage peak demand
- Facilitate renewable resources
- Address constrained resources
- Improve system reliability and efficiency
- Select economical resources (optimize the system)



Aggregation of Power and Signals Occurs
Through a Hierarchy of Interfaces

High Level Schedule Summary

- Five Year Project with four phases
- Phase 2: Release cycles
 - 3 release cycles, 8 mo/8 mo/6 mo

September 2012:
Fully operational
transactive control
system

Phase Description	2010	2011	2012	2013	2014	2015
Phase 1 - Concept Design and Baseline Functionality	8 months (2/10 - 9/10)					
Phase 2 - Detailed Design, Infrastructure Installation, Testing, and Implementation		23 months (10/10 - 8/12)				
Phase 3 - Data Collection and Analysis and Enhanced Releases				24 months (9/12 - 8/14)		
Phase 4 - Cost-Benefit Analysis Reporting and Project Closeout						8 months (6/14 - 1/15)

July 2011

Testing an Extensive Set of Assets

The project is anticipated to deploy over 90,000 assets across 68 asset system types across the 11 subprojects.

Responsive Assets	Distributed Generation	920	559 units--e.g. Ellensburg is installing 540 75-W solar panels; counted as 540 units, not as 1 solar system.
	Demand Response	10,088	Includes programmable thermostats, direct load control devices, smart appliances, and other customer devices.
	Distribution Automation	824	Sum of DA devices
	Plug-in Hybrid Vehicles	6	IFP will have some PHEV charging points, but number not quantified yet
	<i>All Responsive Assets</i>	11,863	
Enabling Assets	End user portals	14,575	Avista and UW noted here.
	Diagnostics	pending	
	AMI	65,702	
	<i>All Enabling Assets</i>	80,277	

The demonstration will create a “system of systems”, and tie together the sub-project assets....

Thanks

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