

B O N N E V I L L E
P O W E R A D M I N I S T R A T I O N

BPA's Non-Wires Solutions Overview

● **How are we changing the Pacific Northwest?**

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Overview

- BPA Profile
- Energy Efficiency's legacy
- Current efforts
- Overview of the EnergyWeb
- How Gridwise/EnergyWeb fits regional and national efforts
- Solving real problems in the region
- Leveraging BPA dollars



BPA Profile

- Congress created the Bonneville Power Administration in 1937 to market and transmit the power produced at Bonneville Dam
- BPA markets the power from 31 federal dams and one non federal nuclear plant in the Pacific Northwest, and maintains one of the largest and most reliable transmission systems in the United States
- BPA's service area includes Oregon, Washington, Idaho, western Montana and small parts of Wyoming, Nevada, Utah, California, and eastern Montana
- BPA sells wholesale power to publicly owned and investor-owned utilities, large industries, and federal entities



BPA Profile (Continued)

- **BPA sells or exchanges power with utilities in Canada and other parts of the western United States**
- **BPA is a nonprofit funded by Northwest ratepayers**
- **About half of all the power used in the Northwest comes from BPA**
- **More than 80 percent of the power BPA sells is hydroelectric**
- **About 60 percent of the region's electricity comes from hydropower**
- **BPA provides about three-fourths of the region's transmission lines**



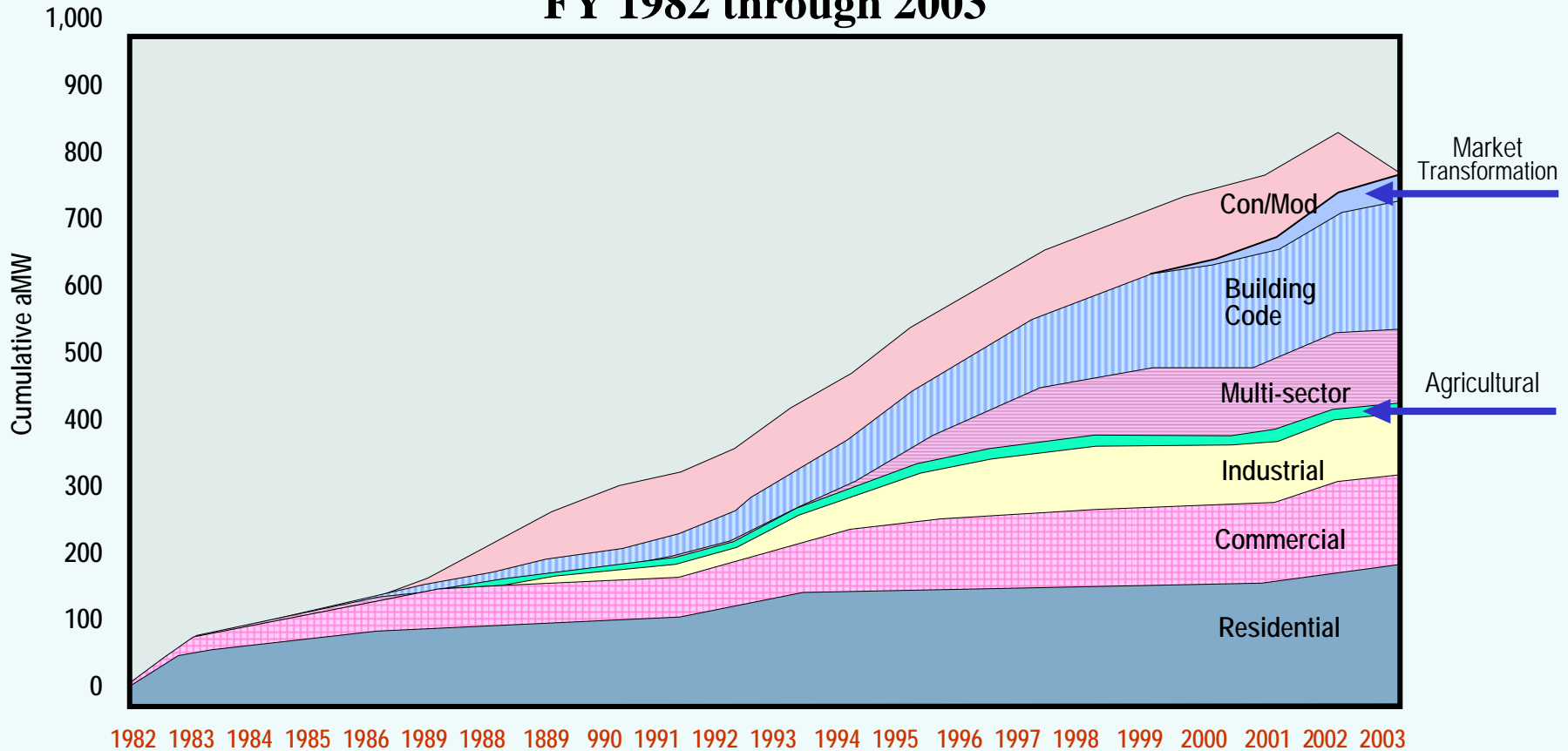
BPA's Energy Efficiency Mission

- Northwest Power and Conservation Act of 1980 mandates BPA to meet load growth in the Northwest
- Conservation is the first “resource of choice” and gets a 10 percent credit for cost-effectiveness
- Since 1980, BPA has pursued energy efficiency through a variety of initiatives and funding levels
- Since 1980, conservation is the second largest source of power in the Pacific Northwest, exceeded only by hydropower



BPA's Historical Conservation Savings

Adjusted Cumulative Savings (aMW) FY 1982 through 2003



Only Grande Coulee and John Day dams produce more energy on an average annual basis than BPA's conservation programs.



Delivered and Planned Savings

BPA's Existing Conservation Programs (Current Rate Period, in aMW)

<u>Programs</u>	<u>01</u>	<u>02</u>	<u>03</u>	<u>04</u>	<u>05</u>	<u>06</u>	<u>Total</u>	
	----- delivered -----					///	planned	
C&RD/CRC	4.6*+	16.4+	16.3+	14.0+	10.3+	5.0	66.6	
Bilateral Contracts (ConAug/CAA/3 rd Party)	3.7*	21.5	20.7	14.6	15.0	20.0	95.5	
Market Transformation	--	12.0	16.0	14.0	17.0	12.0	71.0	
Low Income Wx	--	0.3	0.3	0.3	0.3	0.3	1.5	
Fed. Reimbursable (non-ConAug)	0.3*	0.0	0.1	0.1	0.3	3.0	3.8	
Totals	8.6*	50.2	53.4	43.0	42.9	40.3	238.4#	
+++++								
Rate Period Target (Steady Production)	44.0	44.0	44.0	44.0	44.0	44.0	220.0	

Note: BPA's target from all conservation programs is **220 aMW** minus the **198.1 aMW** we achieved in FYs 01, 02, 03, 04 and 05 = **21.9 aMW left to capture** in FY 06.

+ - The **actual** numbers include the aMW savings associated with the C&RD donations to the Alliance and the Energy Trust of Oregon; they exclude the irrigation scheduling savings since they have less than a 1-year measure life.

* - Because of the 2000-01 energy crisis, BPA started these programs 8 months earlier than the planned 10/1/01 launch date.

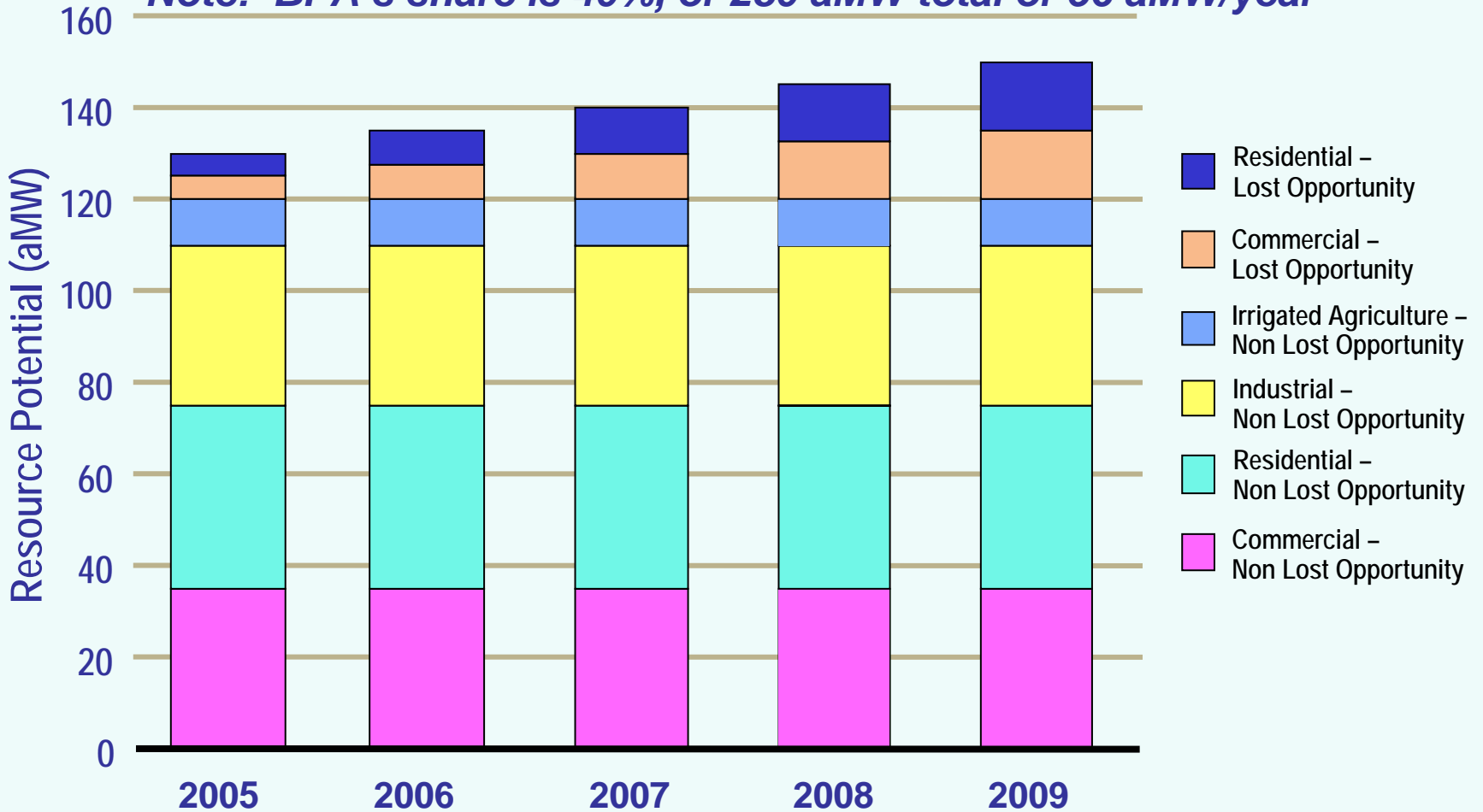
- This number represents the potential savings that could result from the approved funding levels for BPA's conservation programs over the rate period. Because all programs will not be completed at the targeted level, these preliminary numbers will be adjusted as we get closer to BPA's 220 aMW target.



Regional Conservation Resource Acquisition Targets

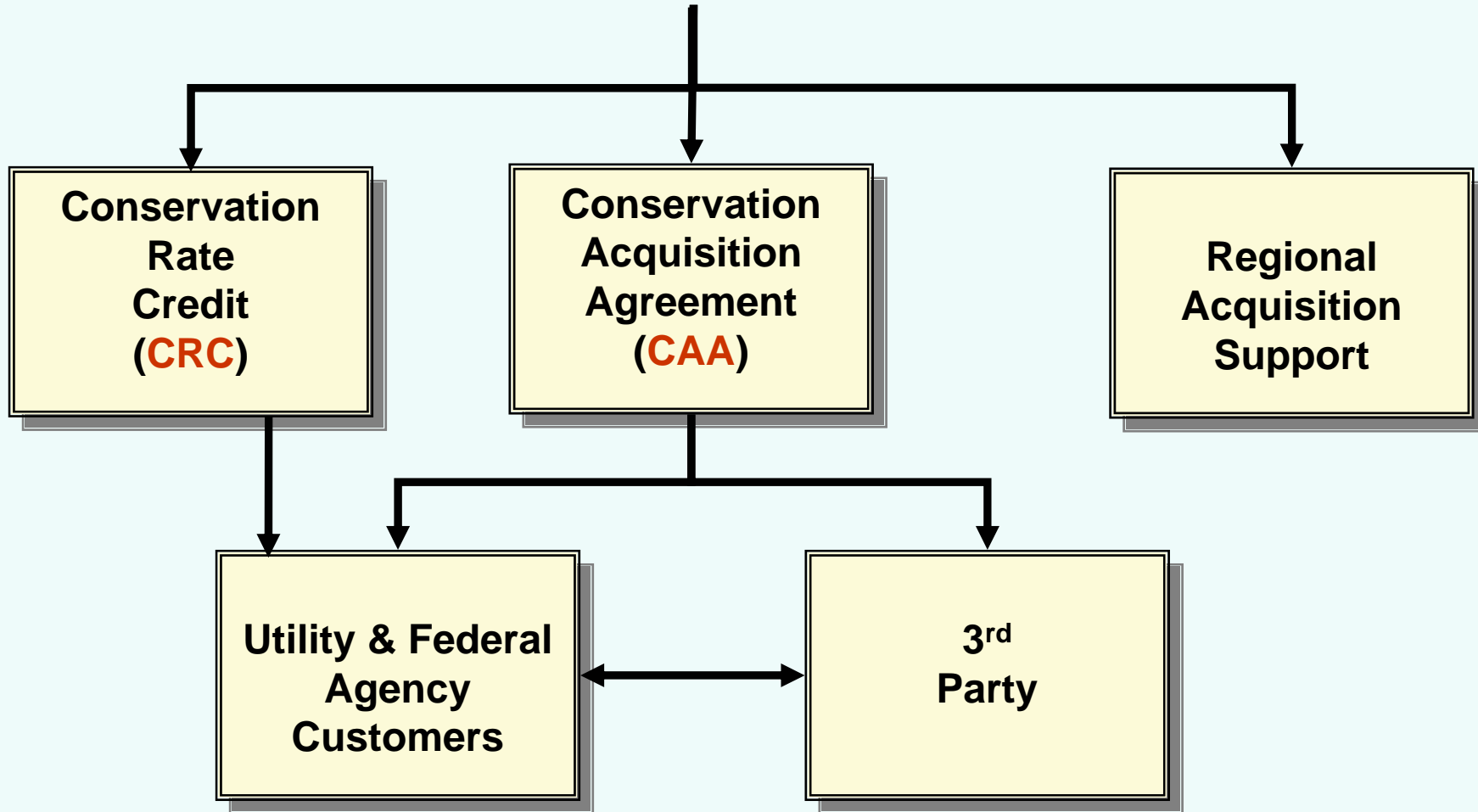
From 2005 through 2009, capture 700 aMW savings

Note: BPA's share is 40%, or 280 aMW total or 56 aMW/year



Post-2006 Conservation Program

Proposed Structure, including Early Start Utilities

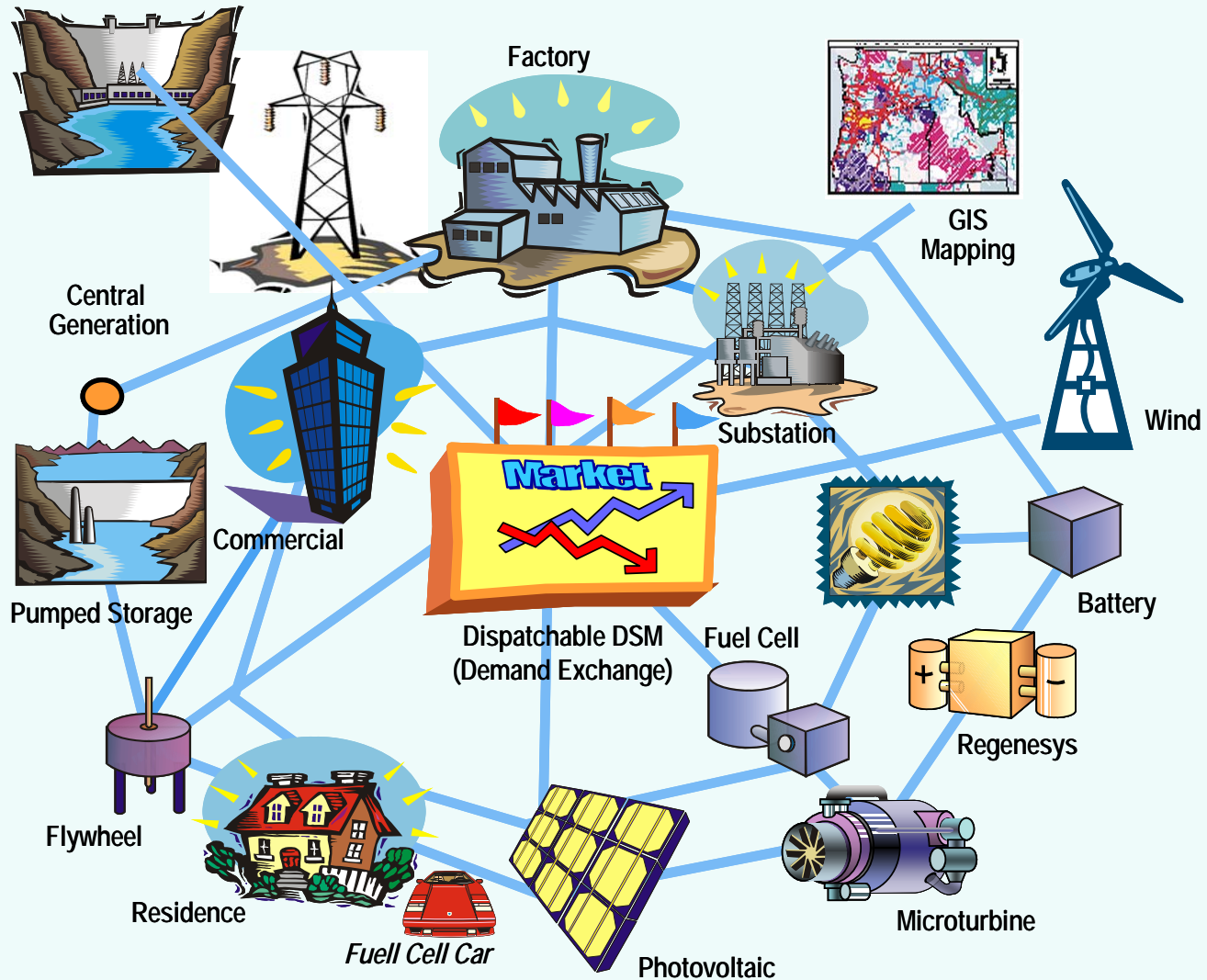


Gridwise Energy Web/Non-Wires History

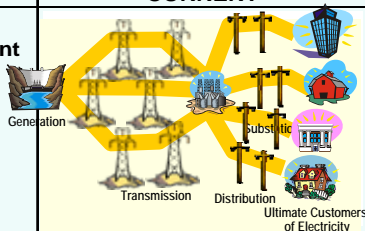



- Early 1999
 - EnergyWeb concept evolves out of BPA strategic planning on Conservation and Renewables
- 2001
 - EnergyWeb is cover article for July 2001 *Wired* magazine
 - <http://www.wired.com/wired/archive/9.07/juice.html>
- 2002
 - EnergyWeb concept leads to first Non-Wires report (E3, Erik Hirst, Tom Foley)
 - http://www.transmission.bpa.gov/PlanProj/Non-Wires_Round_Table/NonWireDocs/bpa_tbl_planning.pdf
 - Non-Wires Round Table is formed
 - http://www.transmission.bpa.gov/PlanProj/Non-Wires_Round_Table/default.cfm?page=arc



EnergyWeb



The Energy Future

	CURRENT	ENERGY WEB TRANSITIONAL PROGRAMS		FUTURE
Stage of development				
Organization:	Linear	Smart Network		Self Healing Network
Goal: (10 years from now WSJ mentions Smart Energy and the world thinks PNW, just like saying chips and think Silicon Valley)	Universal service & Reliable power for all consumers	<ol style="list-style-type: none"> 1) to optimize loads on the electrical network 2) reduce costs to consumers and utilities 3) facilitate the integration of renewable resources 4) increase electrical system reliability 5) reduce environmental impacts of load growth 	100% Load Factor 100% overtime All load met near real time with lowest cost (Integrated Resource Planning on a grand scale)	H2 economy - sustainable, renewable & clean (no imported oil/energy?)
Basis:	Iron in ground technologies Hydro & fossils	Emerging Tech - Supports grid with temporal & locational value intelligence	Processing power, communication & control advances balances all loads and resources in real time	Efficiency valued over all else, very secure, 100% renewable generation, H2 stored for peaks
Concept Supporters:	Consumers, regulators, utilities, RTO - ISO's, ETO, NEEA, Unions	BPA, BC Hydro, DOE, PNNL, CIEDS, EPRI, E2I, NGO's, NWETC, PDC, CTED, CEC, Universities	VCs, Start ups, Investors, PGE, Pacific, NW Natural (with return on investment), Portland Business Alliance	DOE, NWAHA, NHA, NGO's
Sector:	All users	Public	Private	Govt., NGO
Reasons:	System works well	Economic growth & new jobs	Make \$ & grow jobs	Research/Policy
How to make it happen:	In place	Support for regional conferences like BPA Non Wires Solutions in Sept. & NWETC, PBA Smart Energy meetings, broaden the BETC to include new technologies that lower long term utility costs and support system reliability - for end users	Technology Innovation cost recovery for utilities (PUC), regulatory change to encourage adoption of new technology purchases by utilities, involve high tech compnies like Intel, HP	Fund Technology Innovation for system efficiency & prioritize needs/technology via a public board



EnergyWeb/Non-Wires Solutions (NWS)

- BPA searches for cost-effective solutions for transmission from an engineering, economic, and environmental perspective

- EnergyWeb and Non-Wires Solutions
 - Founding Member of Gridwise Alliance
 - Participant in EPRI's Intelligrid Initiative
 - Pursuing Pacific Northwest Initiatives (e.g., Northwest Energy Technology Collaborative)

- All efforts are under the NWS umbrella

- BPA is integrating NWS into its transmission planning process



Non – Wires Solutions (NWS)

- The Bonneville Power Administration (BPA) wants to ensure it is providing the most cost-effective solutions for the region's transmission needs, from an engineering, economic, and environmental perspective
- BPA is investigating how to fully and effectively integrate Non-Wires Solutions into its transmission planning process



NWS – Accomplishments

- **Established a Non-Wires Round Table**
 - Meets quarterly
 - Comprised of regional stakeholders & industry leaders

- **Addresses barriers to NWS implementation**
 - Lost revenues for BPA and distribution utilities
 - Lack of incentives for distribution utilities to do accurate forecasting
 - Lack of coordination and transparency in transmission planning process
 - Poor price signals
 - Reliability of NWS to transmission upgrades
 - Funding, implementation – who is responsible?



NWS – Accomplishments (Continued)

- Completed a number of NWS analyses, developing BPA's expertise
 - 2003 Analyses
 - Olympic Peninsula
 - Kangley-Echo Lake
 - Lower Valley
 - 2004 Analyses
 - North Idaho
 - Southern Oregon Coast
 - Olympic Peninsula Detailed Study
 - EE Measures Reliability Study
 - RFP for Pilot Demonstrations



Non-Wires – Accomplishments (Continued)

- 2005 Activities

- Screen all transmission projects for non-wires opportunities
- Pursue implementation of non-wires solutions for Olympic Peninsula project deferral

- 2006 Activities

- Continue pilots in the field
- Complete detailed study of southern Oregon coast resource availability
- Screen all transmission projects for potential NWS



Sample Project

Developed draft package of NWS measures for the
Olympic Peninsula Transmission Project Deferral
(MWs shown are all in public's service territory)

PROJECT COMPONENTS	EXPECTED MW
Demand Response	≥ 16
Direct Load Control (DLC)	≥ 20 (5 from pilots)
Distributed Generation (DG)	0
Energy Efficiency	<u>15</u>
Total	51



Olympic Peninsula Transmission Project Deferral

- Five (5) year transmission deferral needs about 50 MW
- Proposed non-wires solution measures capable of at least 5-year deferral
- Portfolio passes Total Resource Cost Test
- Puget Sound Energy through DG & EE could potentially contribute additional MW
- BPA's Transmission Business Line NWS portfolio costs less than avoided cost of transmission



NWS Solutions – What We Are Doing?

Designed and implemented pilot program (FY 2004-2006) to test non-wires measures in addressing transmission needs

- Pilots in test phase:

- Demand Reduction (DEMX)
- DG Aggregation (Completed)
- Ashland Direct Load Control
- Richland Commercial Bldg Control
- Richland Micro Turbine
- Olympic Peninsula Direct Load Control
- Irrigation Motor Load Control
- Integration of Pacific Northwest Lab & Montana Tech Smart Energy Initiatives



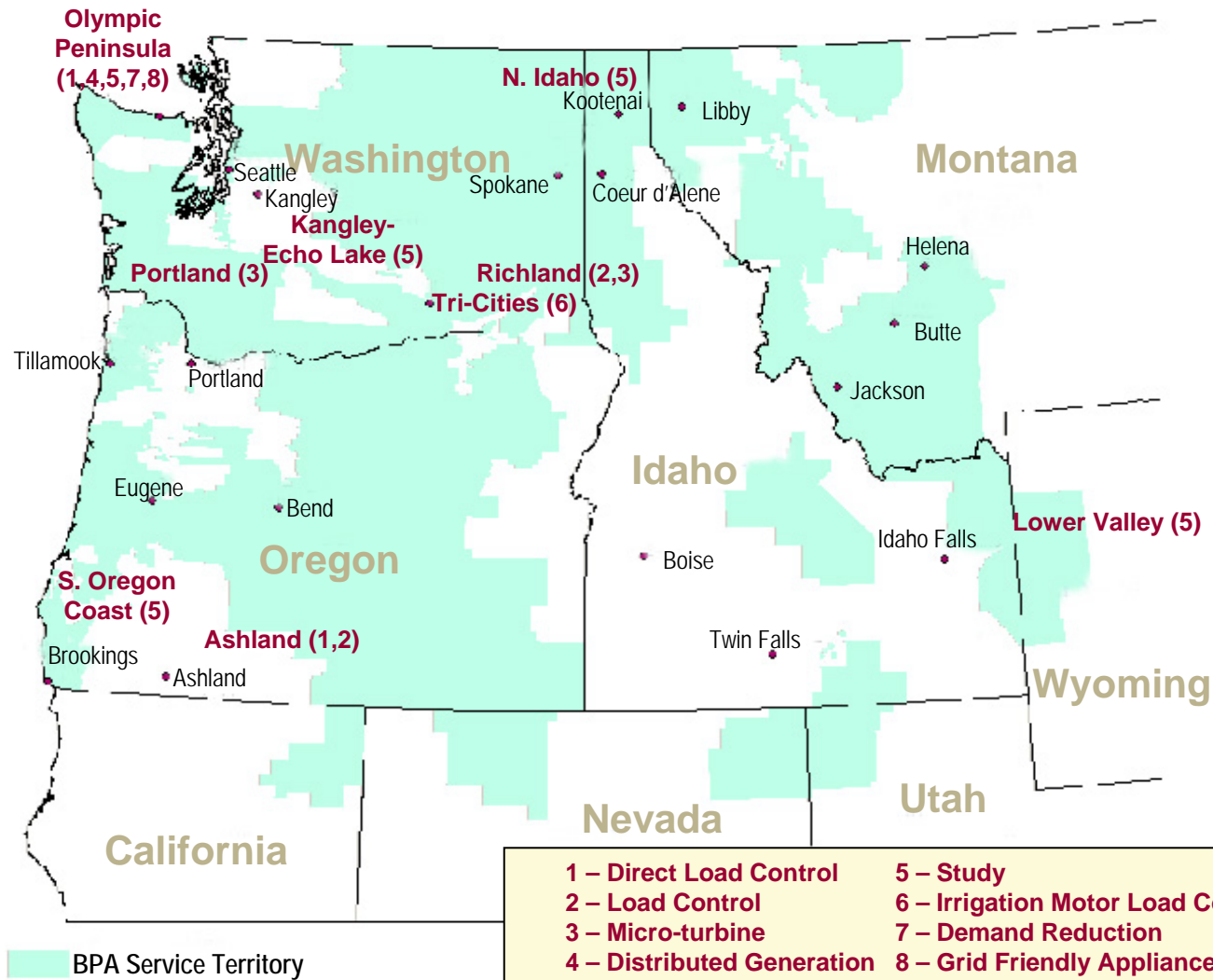
Goals

- **Near-Term**
 - **Demonstrate Gridwise/EnergyWeb concepts in the field**

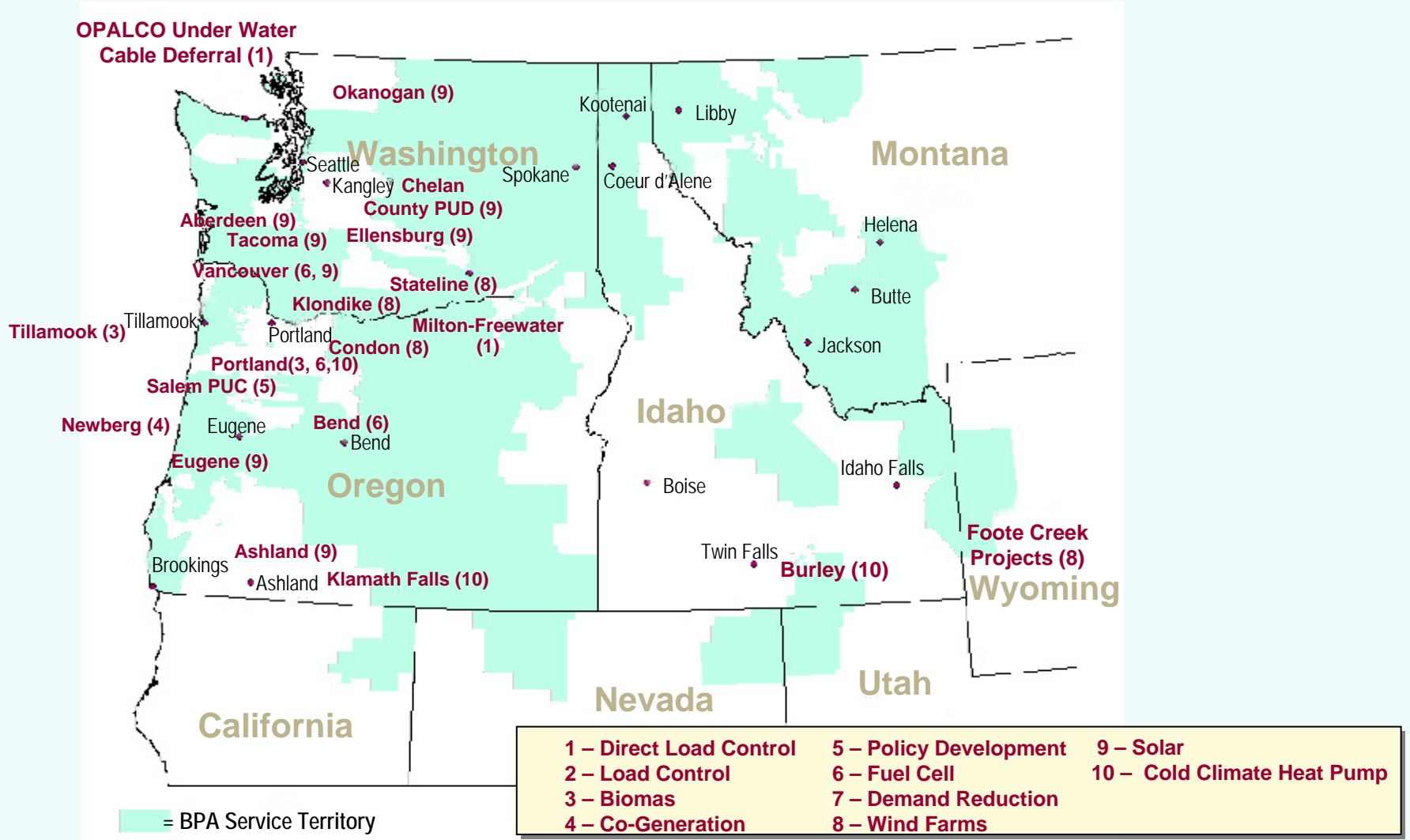
- **Long-Term**
 - **Use Gridwise/EnergyWeb concepts to:**
 - **Defer needed system improvement projects**
 - **Enhance Pacific Northwest system efficiencies**



BPA NWS Projects



Other EnergyWeb Projects



Synergies

- **The Pacific Northwest is a leader due to active federal, state, public, and private groups with a strong commitment to NWS**
 - **NW Energy Technology Collaborative: PNW labs, Avista, Puget Sound Energy, Washington State, BC Hydro, Tacoma Power and Light, Snohomish PUD**
 - **Pacific Northwest Gridwise Test Bed: Portland General Electric, PacifiCorp, City of Post Angeles, Mason County PUD #1, Mason County PUD #3 BPA, Whirlpool, PNW labs, Montana Tech Grid Testing Facility**
 - **Gridwise Alliance BPA chairs Demonstration Committee**
 - **Intelligrid Initiative: Participant**
 - **Gridwise Architecture Committee: Member**



Synergies (Continued)

- **Olympic Peninsula Demonstration: PNL, BPA, AREVA, Celerity Energy, City of Port Angeles, Mason PUD #1, Mason PUD #3, Clallam PUD, Montana Tech Grid Testing Facility**
- **Intellegrid Initiative – Founding Member and Participant**
- **Gridwise Architecture Council: BPA participant is Don Watkins**
- **Poised for Profit Study**

