



BPA's Non-Wires Solution Program

What we are working on.
How we are changing the Northwest.

Mike Weedall
September 26, 2005



Agenda

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



BPA Profile, continued . . .

- Bonneville also sells or exchanges power with utilities in Canada and other parts of the Western U.S.
- BPA's primary mission is to meet public responsibilities for citizens of the Northwest.
- BPA is a nonprofit entity and its programs are 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's grid provides about three-fourths of the region's transmission capacity.



BPA Profile

- Congress created the Bonneville Power Administration in 1937 to market and transmit the power produced at Bonneville Dam.
- Today BPA markets the power from 29 federal dams and one non-federal nuclear plant in the Pacific Northwest, and has built 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, as well as to some large industries.

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BPA Energy Efficiency Mission

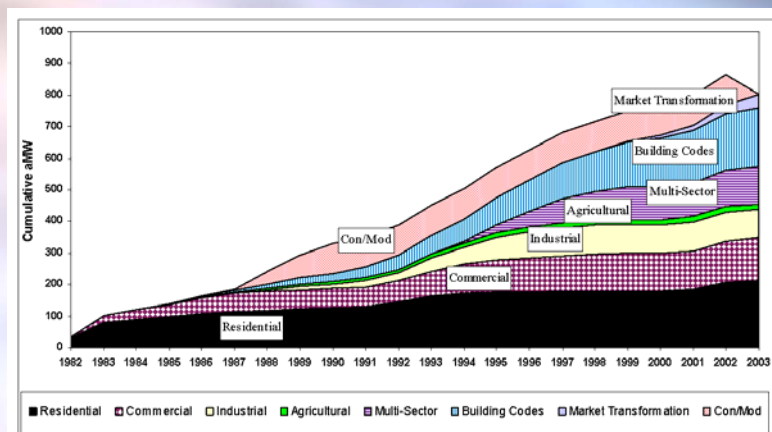
- Northwest Public Power Planning Act of 1980 mandated BPA responsible for meeting load growth in Northwest
- Conservation identified as “Resource of Choice,” and given 10 percent adder for cost-effectiveness test
- Since 1980, BPA has pursued energy efficiency through a variety of initiatives and funding levels
- High point in early 1990’s where 72 average MW delivered in one year.



BPA’s Historical Conservation Savings

Adjusted Cumulative Savings (aMW)

FY 1982 – 2003



As a resource, only Grande Coulee and John Day 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>FY 01</u>	<u>FY 02</u>	<u>FY 03</u>	<u>FY 04</u>	<u>FY 05</u>	<u>FY 06</u>	<u>Total</u>
	-----delivered-----			///	-----planned-----		
C&RD	4.6*+	18.5+	17.8+	13.4+	10.7	?	65.0
ConAug	3.7*	21.8	20.8	14.5	16.6	13.3	90.7
Market Transformation	--	12.0	16.0	14.0	12.0	8.0	62.0
Low Income Wx	--	0.2	0.3	0.2	0.3	0.3	1.3
Fed. Reimbursable (non-ConAug)	--	--	0.1	0.1	0.4	0.4	1.0
Totals	8.3*	52.5	55.0	42.2	40.0	22.0	220.0#

<i>Rate Period Target (Steady Production)</i>	<i>44.0</i>	<i>44.0</i>	<i>44.0</i>	<i>44.0</i>	<i>44.0</i>	<i>44.0</i>	<i>220.0</i>

Note: BPA's target from all conservation programs is **220 aMW** minus the **158 aMW** we achieved in FYs 01, 02, 03 and 04 = **62 aMW left to capture**. This means we have to average about 31 aMW/year for FYs 05 and 06 to meet the 220 aMW target.

+ - 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 only 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.

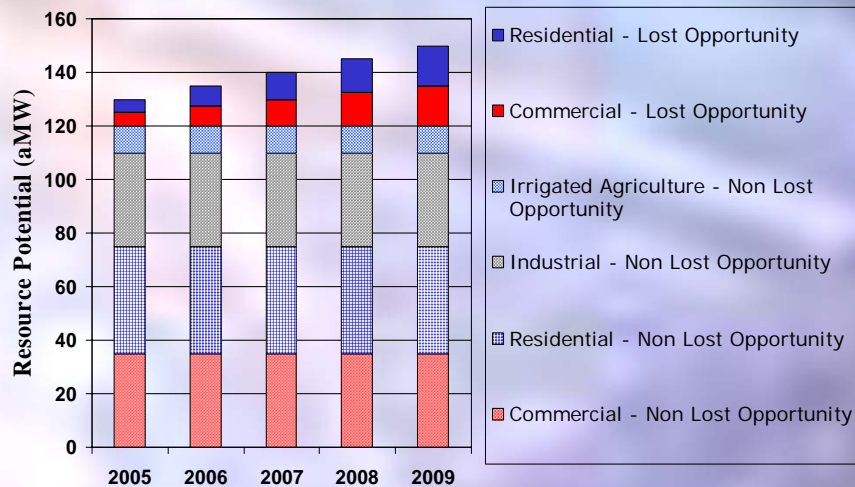
BPA is on schedule to meet 220 aMW target.

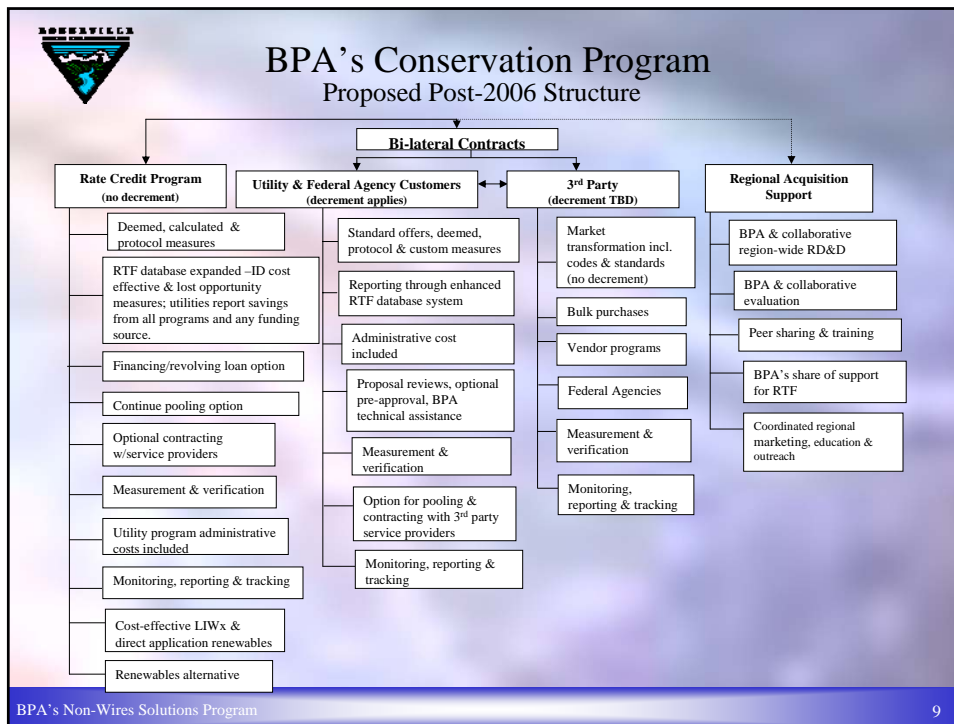


Regional Conservation Resource Acquisition Targets

2005 - 2009 = 700 aMW

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





Gridwise EnergyWeb/Non Wires History

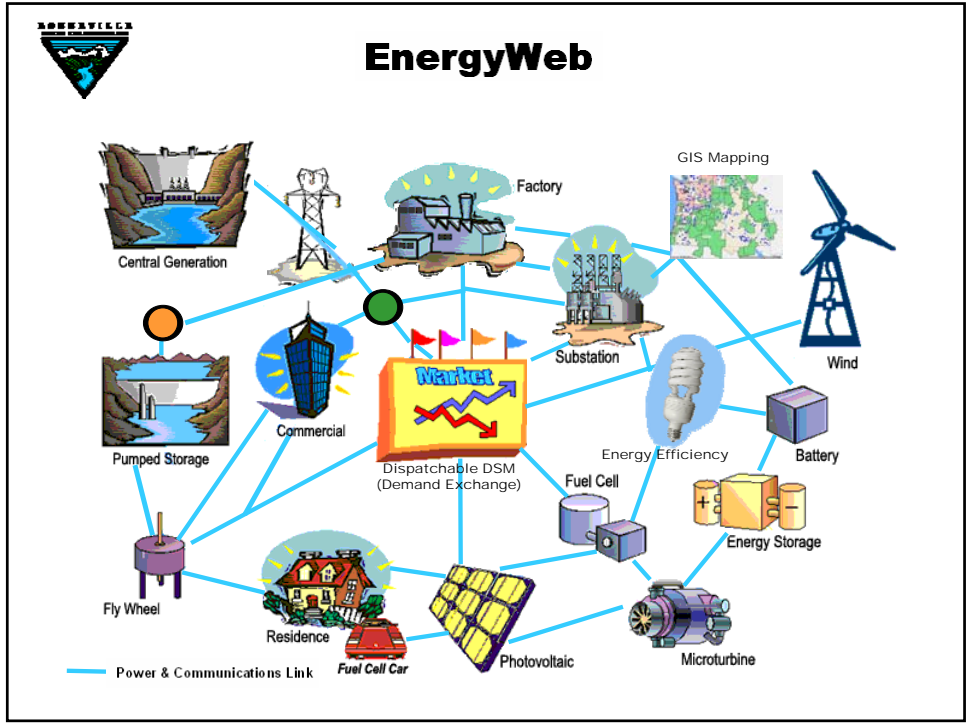
Early 1999 – EnergyWeb concept evolves out of BPA Strategic planning on Conservation\Renewables

July 2001 – EnergyWeb is cover article for 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

2002 Non Wires Round Table formed:
http://www.transmission.bpa.gov/PlanProj/Non-Wires_Round_Table/default.cfm?page=arc

BPA's Non-Wires Solutions Program 10



The Energy Future

Stage of development	CURRENT	TRANSITIONAL PROGRAMS		FUTURE
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	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



Gridwise/EnergyWeb/Non-Wires Solutions

- BPA active in Gridwise, EnergyWeb and Non-Wires Solutions
 - BPA Founding Member of Gridwise Alliance
 - BPA Participant in EPRI's Intelligrid Initiative
 - BPA also Pursuing Pacific Northwest Initiatives e.g. Northwest Energy Technology Collaborative
- Synergies for all three efforts is significant
- For ease of presentation and focus, BPA has placed all these efforts primarily under the umbrella of Non-Wires Solutions.



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 to date

- Established an external NWS Roundtable
 - Meets quarterly since January 2003
 - Roundtable comprised of regional and national stakeholders & industry leaders
- Begun to address institutional barriers to the implementation of NWS

(Started with higher priority 6 out of 16 institutional barriers identified)

 - Lost revenues for BPA and distribution utilities
 - Incentives for distribution utilities to do accurate forecasting
 - Lack of coordination and transparency in transmission planning process
 - Better price signals
 - Reliability of NWS vs. transmission upgrades
 - Who funds? Who implements?



NWS – Accomplishments to Date (cont.)

- Completed a number of NWS high level analysis
(Developing BPA's expertise)
 - In 2003
 - Olympic Peninsula
 - Kangley-Echo Lake
 - Lower Valley
 - In 2004
 - N. Idaho
 - Southern Oregon Coast



NWS – Accomplishments to Date (cont.)

- Other Major 2004 Accomplishments
 - Olympic Peninsula Detailed Study
 - EE Measures Reliability Study
 - RFP for Pilot Demonstrations
- 2005 Goals
 - Screen all transmission projects & rank for NWS opportunities
 - Pursue implementation of NWS for Olympic Peninsula Deferral
 - Detailed Study of Southern Oregon Coast Resource availability



One 2005 Target

Develop package of Non Wires Measures for the Olympic Peninsula Transmission Project Deferral

Program	Expected MW
Demand Response	16
Direct Load Control (DLC)	20 (5 pilot)
Distributed Generation (DG)	4
Energy Efficiency (EE)	15
Total	55



Olympic Peninsula Transmission Project Deferral

- 5 year transmission deferral need: ~50MW
Proposed NWS measures capable of at least 5 year deferral
(Total ~55MW)
- Portfolio passes Total Resource Cost Test
- Puget Sound Energy could potentially contribute additional through DG & EE: ~ 30-40MW
- BPA's Transmission Business Line NWS portfolio costs less than avoided cost of transmission



NWS – What We Are Doing

- Design and implement pilot programs (FY04-06) to test NWS measures in addressing transmission needs
- Pilots implemented and in test phase
 - Demand Reduction (DEMX)
 - DG Aggregation (Celerity)
 - Ashland Direct Load Control
 - Richland Commercial Bldg Control
 - Richland Micro Turbine
- New Pilots This Year
 - Olympic Peninsula Direct Load Control
 - Irrigation Motor Load Control
 - Integration of Pacific Northwest Lab & Montana Tech Smart Energy Initiatives
- Southern Oregon Coast Detailed Study



Near Term Goal:

Demonstrate Gridwise/EnergyWeb concepts in the field

Long Term Goal:

Use Gridwise/EnergyWeb concepts to successfully defer needed system improvement projects through NWS & to enhance PNW system efficiencies



New Pacific Northwest NWS Efforts

