



Power Quality Applications Conference and Exhibition 2005

Keeping the Lights On with Non Wires Solutions

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June 29, 2005



EPRI

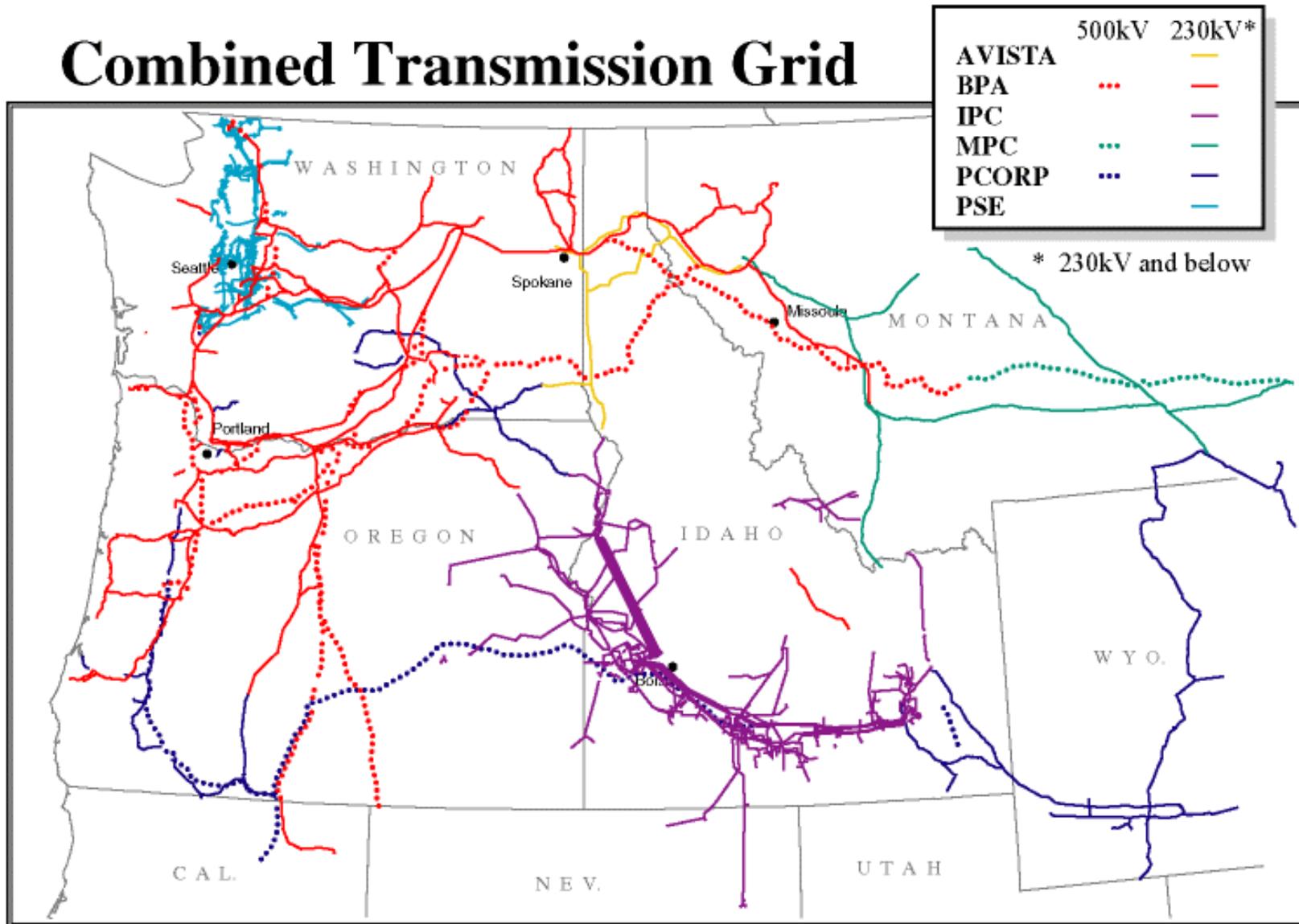


BChydro 

BPA Transmission

- BPA owns and operates 75% of the Northwest's high voltage electric grid.
- 300,000 square miles in OR, WA, ID, MT and sections of WY, NV, UT and CA.
- 15,000 miles of transmission line, 285 substations.
- Peak load of about 30,000 megawatts.
- \$650 million a year in revenues.
- BPA voluntarily operates under FERC's Open Access Transmission Tariff.

Combined Transmission Grid



How did we get here?

- No major transmission construction since 1987.
- In 2001, 20 potential infrastructure projects identified to address regional reliability and congestion problems.
- Study commissioned to review transmission planning.
 - Suggested enhancing BPA's planning process to fully consider all alternatives including non-wires solutions
 - Suggested candidate projects for further analysis

Potential Non Wires Solutions

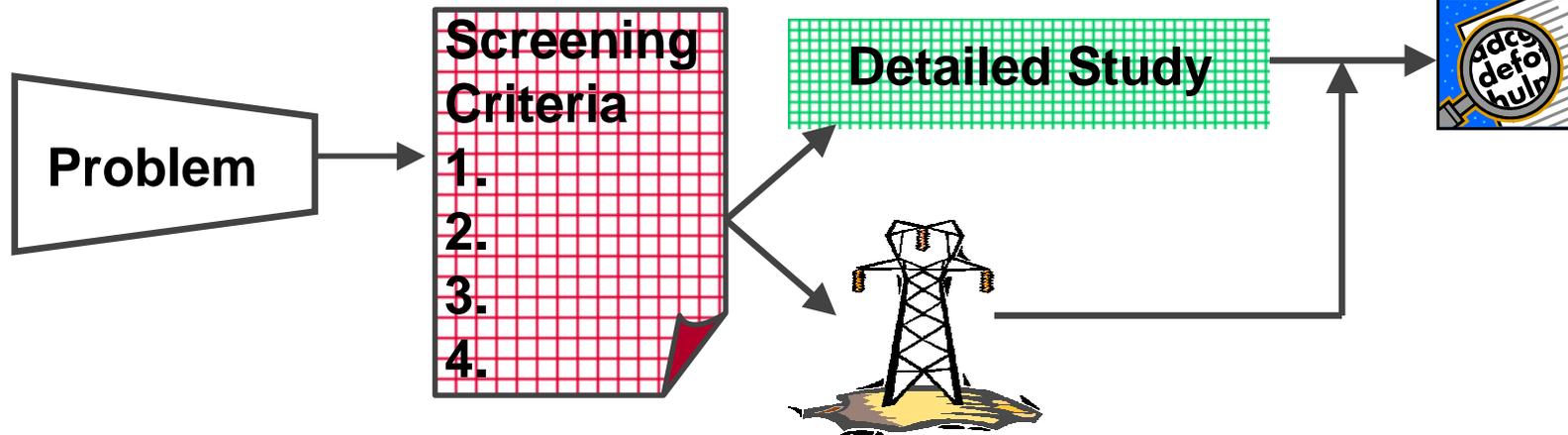
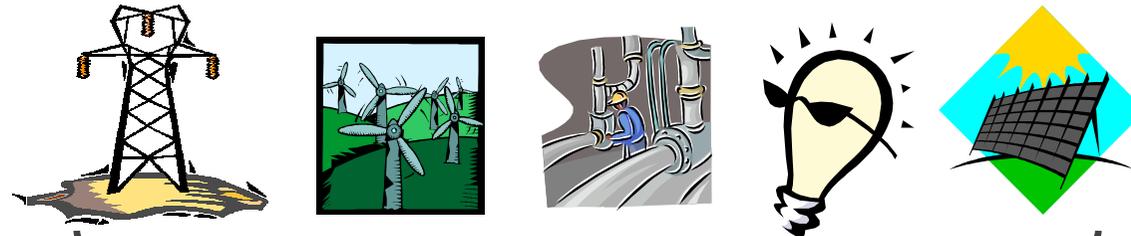
- Demand response
- Energy efficiency
- Distributed generation
- Appropriately sited large generation
- New transmission products and services

What do we want to achieve?

- Find least-cost solutions to transmission limitations
- Provide equivalent reliability to a transmission fix
 - Measure adequacy and security
 - Measure persistence
- Benefits of transmission deferral
 - Time value of money
 - Option value of delaying costly investments
- Achieve least-cost planning in a functionally separated industry

Decision Process

Alternatives



**Not a good candidate for
Non Wires Solutions
Focus on transmission fix**

NWS Roundtable

- BPA formed Non-Wires Solutions round table
 - 18 representatives from public and private utilities, PUCs, environmental, industrial customers, IPPs, tribes, state government.
- Objectives
 - Provide insights from a broad stakeholder base.
 - Provide a forum for identifying and responding to key issues.
 - Help build regional confidence and acceptance for a new approach to transmission planning and ensure that the process is balanced.
- Quarterly meetings

Why do Pilots?

- Expand the toolkit
- Institutional issues
 - Gain acceptance within the utility
 - Establish relationships through the retail utility
 - Funding
- Technical Issues
 - Contribution to peak reduction
 - Reliability of measures
 - Measure-specific issues
- Focus on known problem areas or transferable knowledge

Pilots

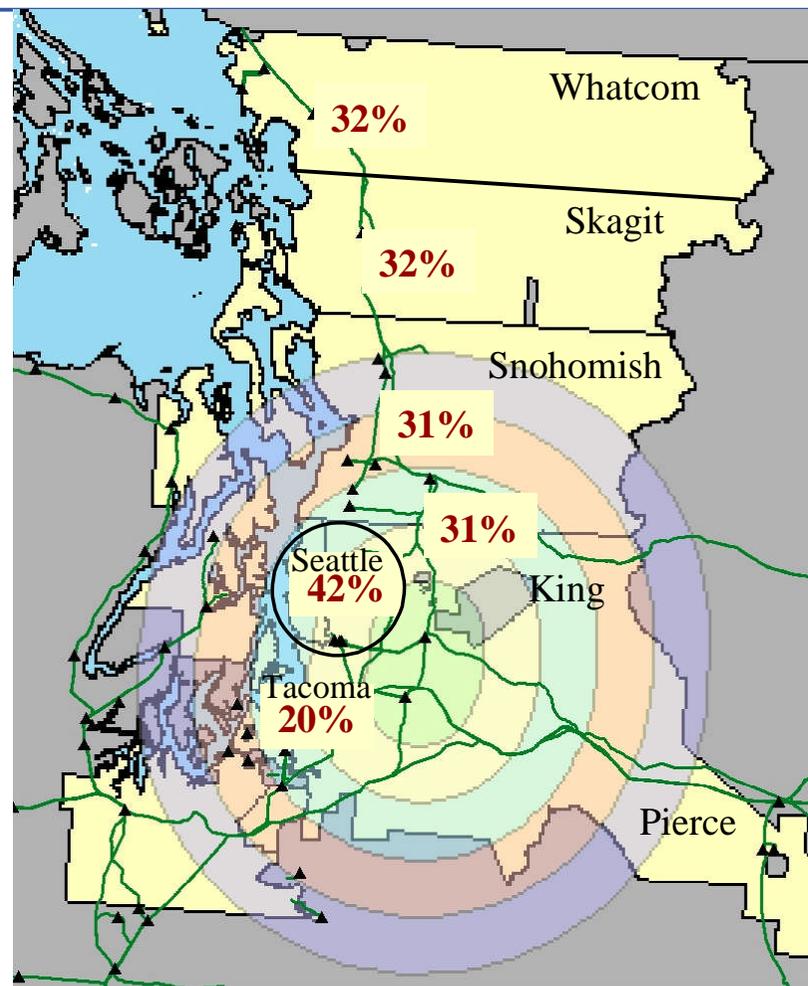
- Demand Exchange
 - Internet based trading platform
 - Four tests conducted In March, 2004
 - Average of 22 MW reduction
- Celerity
 - Aggregate about 10 back-up generation sets
 - Gain about 5 megawatts
- Remote control of irrigation pump motors
 - Up to 5 MW
 - Two PUDs
- Direct Load Control
- Others

Screening Criteria

- Used for preliminary evaluation of proposed transmission projects
 - Are they candidates for detailed study?
- Criteria
 - Project applicability
 - Project timeline
 - Avoidable unit cost
 - Transmission project cost
 - Required annual load reduction
 - Screening notes

Load Flow Distribution Factors

- Load reduction at different locations will have a different effect on transformer loadings due to network power flow interactions
 - Load weighted average distribution factor across Puget Sound Area is 32%
 - 122MW required at transformer translates to 381MW within the Puget Sound Area



Institutional Barriers

Top six technical, economic and institutional issues preventing the use of non-wires solutions.

- Lost revenues for BPA and distribution utilities
- Lack of incentives for utilities to do accurate load forecasting
- Lack of coordination and transparency in transmission planning process
- Inaccurate peak-load price signals for energy and transmission
- Reliability of non-wires solutions versus transmission upgrades
- Funding and implementation

Next Steps

- Screening studies for all transmission capital projects over \$2 million
- Continue and expand pilot projects for the next two years
- Complete detailed analysis of measure potential and cost on the Olympic Peninsula
- Do environmental analysis
- **Make it real**

For More Information

- See our website

[http://www.transmission.bpa.gov/PlanProj/Non-Construction Round Table/](http://www.transmission.bpa.gov/PlanProj/Non-Construction_Round_Table/)

- Contact me

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