Bonneville Transmission

Joint Legislative Committee on Energy Supply and Conservation

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VP, Planning and Asset Management
Bonneville Power Administration

- BPA is an agency in the US Dept of Energy
- 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.
- 15,190 miles of transmission line, 259 substations.
- Peak load of about 30,000 megawatts.
- $800 million a year in revenues.
- BPA voluntarily operates under FERC’s Open Access Transmission Tariff.
Why Transmission?

- Deliver power from remote generators to customer
- Enhance reliability of electric supply
- Allow generation reserve sharing
- Allow economic energy exchange
- Reduce environmental impacts of production
- Transmit power for those that do not own transmission
Residential Energy - Cost Components

- Power: $28/MWh
- Distribution: $19/MWh
- Transmission: $3/MWh
Combined Transmission Grid

- AVISTA: 500kV
- BPA: 230kV
- IPC: 230kV
- MPC: 230kV
- PCORP: 230kV
- PSE: 230kV

* 230kV and below
Northwest Transmission Constraints
NW Wind Interconnection Requests
# Network Open Season Cluster Study Results

<table>
<thead>
<tr>
<th>Grouping</th>
<th>PTSA's</th>
<th>Demand (MW)</th>
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</thead>
<tbody>
<tr>
<td>Authorize -- Pre NOS</td>
<td>4</td>
<td>55</td>
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<tr>
<td>Authorize</td>
<td>42</td>
<td>1,727</td>
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<tr>
<td>WOMGIP</td>
<td>45</td>
<td>2,034</td>
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<td>I-5</td>
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<td>150</td>
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<tr>
<td>Little Goose</td>
<td>5</td>
<td>200</td>
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<td>WOMGIP &amp; West of Garrison RAS</td>
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<td>80</td>
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<td>Harney</td>
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<td>Northern Intertie</td>
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<td>Total</td>
<td>153</td>
<td>6,410</td>
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Proposed BPA Transmission Line Projects

- Proposed Substation Project
- Proposed Project
- Other Utility Project
- BPA Transmission Lines
- Existing BPA Substation
- Proposed Wind Project
- Existing Wind Project
- Wind Project Under Construction
- Indian Reservation

Created by Jake Brown TERS Online Location: http://bpanet.bpa.gov/epnet/gis筱/Maps/5021/how/Wind_Projects_5111.jpg
Proposed Projects by BPA and Others

- Juan de Fuca
- NW->BC
- BPA
- MATL
- Idaho
- Hemingway
- NWE
- PAC/Idaho
- Northern Lights
- PG&E
- PAC
- PAC/Idaho
- BPA
- NWE
- Idaho
- Hemingway
- Northern Lights
- PG&E
- PAC
- PAC/Idaho
- BPA
- NWE
- Idaho
- Hemingway
- Northern Lights
- PG&E
- PAC
- PAC/Idaho
Explosive Wind Growth

Total Wind Generation on the BPA System

- **Megawatts**

Wind is Hard to Predict

BPA Balancing Authority Total Wind Generation and Wind Basepoint, Last 7 days
26Nov2008 - 03Dec2008 (last updated 2Dec2008 17:56:34)

Based on 5-min readings from the BPA SCADA system for points 79687, 103349
Balancing Authority Wind Generation in Blue, Wind Basepoint in Red; Installed Wind Capacity = 1489 MW
BPA Technical Operations: Roy Ellis (rcellis@bpa.gov)
Potential Solutions

- Seeking third party services
- Limiting wind output to schedule for reliability
- Improving wind generation schedule accuracy
- Improving wind forecast accuracy
- Refining reserve requirements
- Improving Automatic Generation Control
- Dynamically scheduling wind
- Inventing new transmission scheduling practices
- Shifting the pattern of wind development
- Assigning receiving entity responsibility
- Working with other utilities
- Storage and Demand Response
Smart Grid

- **Smart Grid** Objectives
  - Enabling Customers
  - Advancing Grid Capabilities
  - Greening the Generation Mix

- Demonstration Goals
  - Demonstrate **Smart Grid** on a scale that allows confidence in the results
  - Help BPA and others move from current grid configuration to the **Smart Grid**

- BPA is developing a smart grid R&D pilot project. We have dedicated $10 million over the next five years

- We are currently reaching out to potential technology and or funding partners for this project.