

Puget Sound Area Transmission

Presentation for Energy, Technology & Civil Rights Committee
July 21, 2010



Agenda

- Description of the Problem
- Principles
- Potential Long Term Fixes
- Diagram of Proposed Fixes and Cost
- Next Steps



Description of the Problem: Puget Sound Area Transmission

Congestion in the Puget Sound Area and on the Northern Intertie is a function of the following:

- Outages on the Interconnected Systems (forced/planned)
- Puget Sound Area (PSA) Load Growth
- PSA Generation Levels (reductions look like load growth)
- Northern Intertie Transfers



Regional Transmission Requirements

- Puget Sound Area Transmission system is congested.
 - Power that utilities have purchased needs to flow to customers
- Must meet North American Electric Reliability Corporation (NERC) and Western Electric Coordinating Council (WECC) requirements
 - N-1-X Conditions
- Impact to Puget Sound Area
 - Puget Sound Area Northern Intertie (PSANI) Events (curtailment of Power Deliveries to Utilities)
 - System reinforcement is long-term solution
- Impact to City Light
 - Downtown Seattle 115kV cables – nearing load limits
 - Seattle's Eastside 230kV lines – nearing load limits



Principles

- One Utility Planning
- Greatest Value Option (for the region)
- Equitable Cost Sharing responsibility among PSANI entities and BPA, inclusive of Federal Columbia River Transmission System (FCRTS) customers
- Consistent treatment across the FCRTS, BPA, and PSANI Transmission Owners/Operators
- Assure compliance with both reliability standards and FERC System Operating Criteria requirements



Potential Long Term Fixes (3-10 Years)

- Columbia Grid PSA Study Team Process
 - Add series inductors on Seattle's 115kV underground cables (most critical)
 - Rebuild Seattle's Bothell-SnoKing-Maple Valley 230kV double circuit line (Cable work precedes)
 - Expand BPA's Northern Intertie RAS (Added for N-1-x)
 - Add 500/230kV transformer at BPA's Covington substation (for load service 8 – 10 yrs out)
 - Add 230/115, V Portal Way transformer (For winter North-to-South power flow)



Columbia Grid — Major Projects for Puget Sound Area

Legend

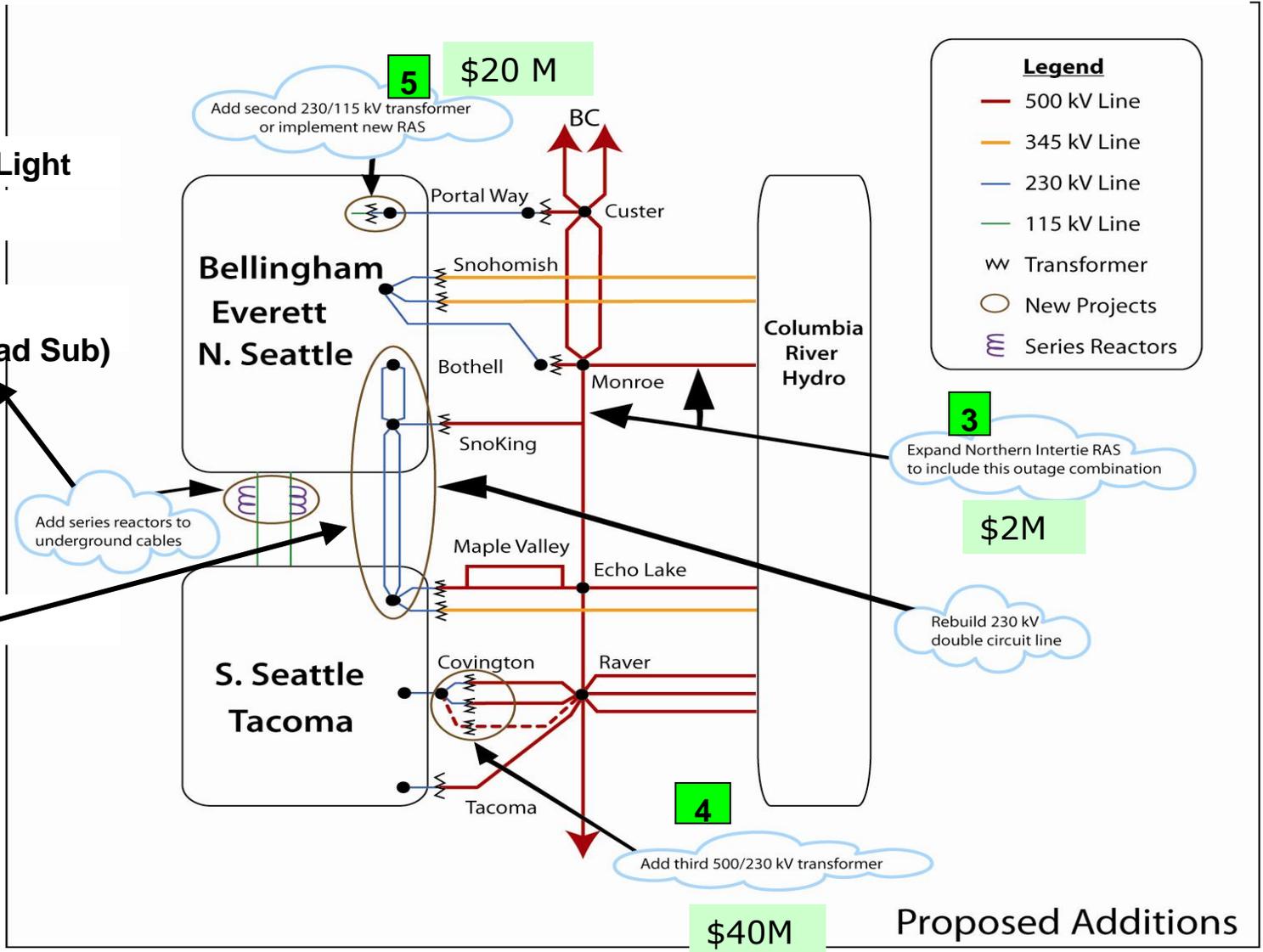
- # By Seattle City Light
- # By Others

1 Install Series Inductors (Broad Sub)
\$30 - \$48M

2 Rebuild 230kV Eastside Lines
\$60 - \$90M

Legend

- 500 kV Line
- 345 kV Line
- 230 kV Line
- 115 kV Line
- ⚡ Transformer
- New Projects
- ⚡ Series Reactors



Other Transmission Projects

- **PSE** - Various improvements North, Central and South PSA
- **SnoPud** - Improvements to 115 kV Beverly Park facilities
- **BPA** - Addition of 500/230 kV transformer at Maple Valley, Covington or Raver
- **SCL** - No planned projects



Next Steps

- City Light continues to work with ColumbiaGrid to refine alternatives and timing.
- Budget Issue Paper has been submitted for the series inductors (studies and cost estimates)
- Install series conductors between Broad Substation and Broad Annex
- Budget requests to rebuild the 230kV eastside lines may be forthcoming based on planning studies.
- Cost sharing methodologies for these improvements is being worked out within the region



END

