

Puget Sound Area Northern Intertie (PSANI) Transmission Upgrades

Proposed Long-Term Infrastructure Solution
December 7, 2011



Description of Problem

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

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



Background

- Short-term solution in place:
 - Operational Support Agreement is in place and tested.
 - Enables Bonneville Power Administration (BPA) to call on Puget Sound Energy (PSE) and Seattle City Light (SCL) generators to ease transmission congestion and avert curtailments. PSE and SCL are compensated for the incremental costs of the generation brought on line.
 - Three-year term expires December 31, 2013.
- Long-term solution:
 - ColumbiaGrid staff engaged to identify infrastructure projects.
 - BPA, SCL, PSE and Snohomish PUD team assembled to oversee ColumbiaGrid work, and recommend projects, timing and cost responsibility.
 - Six Regional Transmission Projects Proposed
 - Total Estimated Costs: \$143.3M; SCL Costs: \$10.7M



Planning Principles

- One utility solution
- 2016 target in-service date for infrastructure improvements
- Projects considered must solve PSANI (south to north) related issues for the long-term
 - Asset owner may enhance a project to meet future needs, but costs of enhancements will be borne by the asset owner
- Parties must agree on project scope
- Parties must agree on project construction responsibilities and management plans



Cost Principles

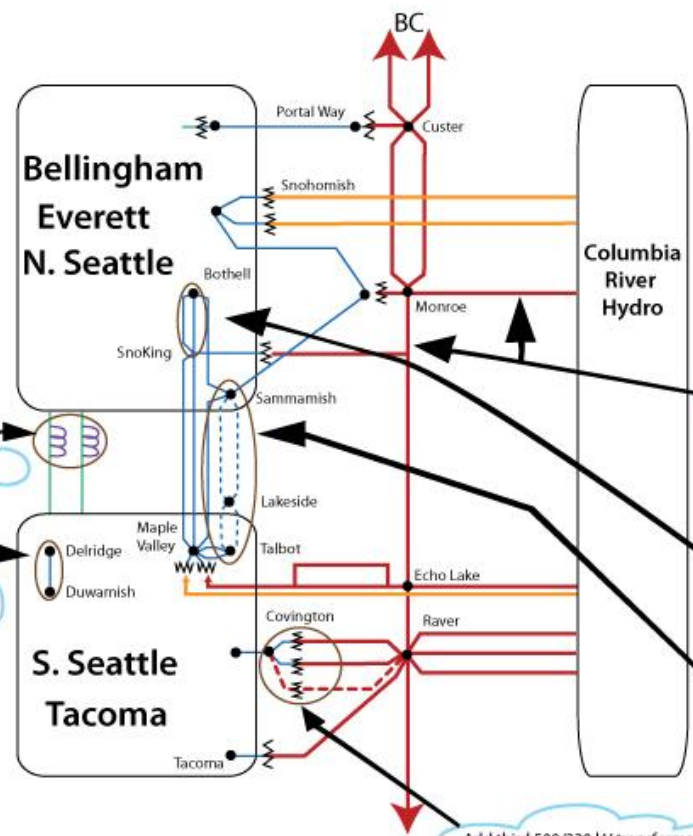
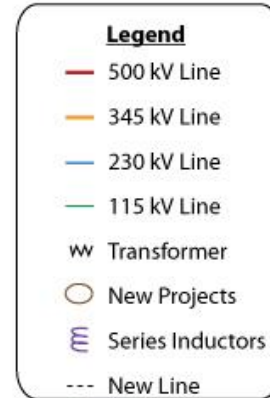
- Cost sharing rationale must be fair and easily explainable to policymakers.
- Costs allocation to reflect PSANI load service and transfer capability.
- Allocation of costs between BPA, SCL and PSE may be done through dollar contributions or other approaches.
- Cost recovery is each utility's responsibility.
- Agreement to be reached on project cost estimates, responsibility and timing.
- O&M costs are each utility's responsibility.
- Joint party support and aligned project-need communications during project development, public approval and construction processes.



Columbia Grid — Major Projects for Puget Sound Area

Legend

- # Seattle City Light
- # Others



Install Series 115kV Inductors (Two sets)

\$11.7M **4**

Add series Inductors

Reconductor 230 kV line

\$1.9M **6**

Reconductor 230kV Delridge-Duwamish Line

Expand Northern Intertie RAS to include this outage combination

1 \$4.0M

Reconductor 230 kV double circuit line

5 \$2.5M

Reconductor 230kV Bothell-SnoKing Line

Rebuild 115 kV lines to 230 kV. Operate one line at 115 kV and the other line at 230 kV

3 \$67.0M

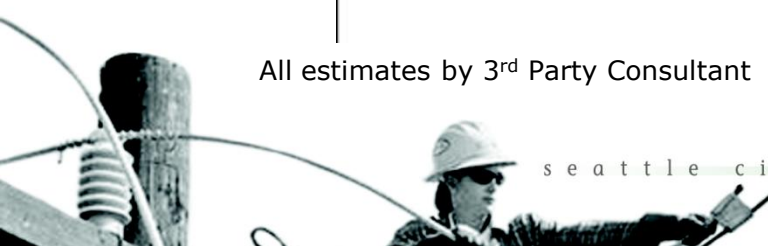
Add third 500/230 kV transformer

2 \$56.2M

Proposed Additions

All estimates by 3rd Party Consultant

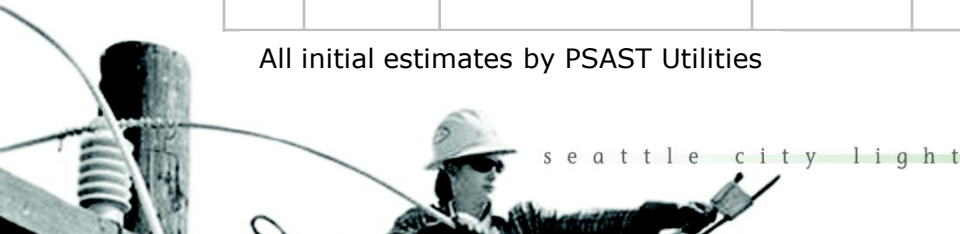
Total ~\$140M



Project Summary

No.	Utility System	Project Title	Completion Date	Cost Range (\$millions)	Proposed Cost Sharing Responsibility/Rationale
1	BPA	Chief Joe – Monroe – Echo Lake – SnoKing Remedial Action Scheme (RAS)	2014	~\$3	BPA 100% Benefits all BPA transmission customers. Expanding Remedial Action Scheme to include this outage combination is consistent with existing BPA plans.
2	BPA	500/230kV Transformer at Covington	2018	~\$60	BPA 100% Benefits all BPA transmission customers. Transformer investment is consistent with existing BPA plans.
3	PSE	Sammamish - Lakeside – Talbot ▪ 1 line ▪ 2 lines (at PSE's option)	2017	~\$40 for 1 line or ~\$70 for 2 lines	PSE 100% (less ~\$5 million from SCL and ~\$5 million from BPA) PSE project eliminates need for \$15 million SCL Maple Valley – SnoKing reconductor project that provides similar benefits.
4	SCL	6-Ohm Series Inductor Downtown Seattle in three locations	2017	~\$13	SCL 33%, BPA 33%, PSE 33% The series inductors reduce the loading on SCL's 115-kV system. This enables Puget Sound area utilities to optimize dispatch, including reductions of in-area generation, while maintaining reliable operation.
5	SCL	Bothell – SnoKing Reconductor	2017	~\$3	SCL 33%, BPA 33%, PSE 33% Benefits all BPA transmission customers and upgrades an older existing SCL facility/line.
6	SCL	Delridge – Duwamish Reconductor	2016	~\$2	SCL 33%, BPA 33%, PSE 33% Benefits all BPA transmission customers and work upgrades an older existing facility/line.

All initial estimates by PCAST Utilities



Next Steps

- Parties to sign PSANI Memorandum of Agreement.
- Parties to incorporate plans into upcoming budget processes.
- Parties to assign teams to coordinate project steps, joint communications and oversight.
- Officers will provide periodic check-ins.

