



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT PROGRAM

April 30, 2015

In reply refer to: FOIA BPA 2015-00508-F

Larry G. Johnson

(b)(6)

Mr. Johnson:

This communication is a partial response to your request to the Bonneville Power Administration (BPA) for records under the Freedom of Information Act (FOIA), (5 U.S.C. § 552). Your request was received on January 13, 2015, and was acknowledged on January 13, 2015.

You requested:

“...all documents, electronic or otherwise, draft and final, including e-mail correspondence, presentations, correspondence, draft agreements, and notes related to...the design, purpose, need, scope, studies and objections to or concerns about the project presently referred to as Energize Eastside (Project as proposed by Puget Sound Energy [(PSE)]. These requests also extend to a project that was/is an immediate precursor to the Project, proposed by PSE to the Columbia Grid consortium, and referred to by PSE as "Sammamish-Lakeside-Talbot Hill" [(SLTH)]. [SLTH is] a regional grid reinforcement project which involved/involves the [Project's] subsequently designated segments "C-E-J-M"[,] and [which] propos[ed] the same kind of upgrade in the existing 115kV lines to 230kV[,], with an upgraded or new transformer at Lakeside.

Documents requested include, but are not limited to, those documents relating to any proposed or actual cost sharing by or between utilities associated with or otherwise contacted concerning the Project and/or [SLTH], including by and between Seattle City Light [(SCL)], PSE and BPA, including draft and final agreements, e-mail correspondence, and invoices.

Documents requested also include those related to the Project and/or [SLTH] which were transmitted between or among SCL and any other agencies, energy [companies] and other companies, and/or non-profit consortia, including, but not limited to, BPA, PSE, other Seattle City departments, ColumbiaGrid, FLRC, and the Western Electricity Coordinating Council. Further, all documents, electronic or otherwise, draft and final, including e-mail correspondence, are requested concerning any and all communications between PSE and SCL with respect to any

use or sharing of SCL's rights of way and/or easements and/or power lines which are located on the Eastside.

Please include in your search and production of these documents any and all load and/or reliability forecasts for the future electricity needs of the Eastside[,] or any portion of it[,] in your possession, regardless of by whom made or for what purpose.

Please consider the relevant time period for these requests to be from 2008 to the present.”

Response:

An ongoing search of the paper and electronic records in BPA's Transmission Sales and Transmission Project Management departments is being conducted. In an effort to both accommodate the ongoing gathering and review of the volume of responsive records, and provide those records expediently, we are releasing records to you in partial increments. A first partial records release accompanies this communication.

BPA's response effort for your FOIA request is ongoing. Because of the level of complexity of the FOIA reprocessing effort and the volume of responsive records, we are extending the target date for completion of your request to June 30, 2015.

We appreciate the opportunity to assist you. If you have any questions about this letter, please contact James King, CorSource Technology Group, Inc., assigned to Bonneville Power Administration, at 503-230-7621.

Sincerely,



C. M. Frost
Freedom of Information/Privacy Act Officer

Enclosure: Responsive documents

Contract No. 11TX-15450

MEMORANUDUM OF AGREEMENT

executed by the

UNITED STATES OF AMERICA

DEPARTMENT OF ENERGY

acting by and through the

BONNEVILLE POWER ADMINISTRATION

and

THE CITY OF SEATTLE

acting by and through its

CITY LIGHT DEPARTMENT

and

PUGET SOUND ENERGY, INC.

**(Relating to the Preferred Puget Sound Area Plan of Service Projects
and Cost Allocation)**

This MEMORANDUM OF AGREEMENT (MOA) is executed by the UNITED STATES OF AMERICA, Department of Energy, acting by and through the BONNEVILLE POWER ADMINISTRATION (BPA), THE CITY OF SEATTLE, acting by and through its CITY LIGHT DEPARTMENT (Seattle City Light), and PUGET SOUND ENERGY INC. (Puget). BPA, Seattle City Light, and Puget are sometimes referred to individually as "Party" and collectively as "Parties".

WHEREAS, BPA owns and is responsible for the reliable operation of the Federal Columbia River Transmission System (FCRTS),

WHEREAS, Seattle City Light and Puget each own and operate electric systems that are interconnected with the FCRTS in the Puget Sound Area and electric power is delivered within those electric systems, and to or from them by BPA over the FCRTS,

WHEREAS, the Puget Sound Area experiences periods of transmission congestion that may require mitigation to maintain reliable operation of the Puget Sound Area Interconnection, including in some cases, curtailments of firm transmission service,

WHEREAS, as of February 2011, the Parties entered into Contract No. 11TX-15290, "Temporary Operational Support Program Agreement," that provides for voluntary changes in planned generation, including an increase in Puget Sound Area generation, as temporary and short-term measures for relieving forecasted transmission congestion conditions that are expected to adversely affect the reliable operation of the Puget Sound Area Interconnection,

WHEREAS, representatives from each of the Parties and other entities participated in regional studies to develop a long term plan, and implement a range of physical improvements to preserve the reliable operation of the Puget Sound Area interconnection, and reduce the need to curtail firm transmission service,

WHEREAS, the Parties have identified the projects described herein that, when taken as a whole, are expected to preserve the reliable operation of the Puget Sound Area Interconnection, and reduce the need to curtail firm transmission service; and it is in their individual and collective interests to continue to support the efforts needed to carry out these projects, and

WHEREAS, the transmission congestion affecting the Puget Sound Area interconnection is a shared problem, and the projects and cost sharing arrangements provided herein are appropriate.

NOW THEREFORE, in consideration of the mutual obligations and undertakings herein, the sufficiency of which is acknowledged, the Parties agree as follows:

1. DEFINITIONS

- (a) "Bothell to SnoKing Reconductor Project" means the project identified in the Preferred Plan of Service in which Seattle City Light will reconductor the existing Bothell to SnoKing No. 1 and No. 2 230 kV lines with high-temperature conductor.
- (b) "BPA Preferred Plan Projects" means, collectively, the Covington 500 kV Transformer Addition Project and the Northern Intertie Remedial Action Scheme ("RAS") Improvement Project.
- (c) "Broad Street Inductor Project" means the project identified in the Preferred Plan of Service in which Seattle City Light will add series inductors (up to 10 ohm) to the Massachusetts-Broad Street 115 kV line.
- (d) "ColumbiaGrid" means the Washington non-profit membership corporation formed to improve the operational efficiency, reliability, and planned expansion of the Pacific Northwest transmission grid, the

eight members of which, as of the Effective Date, are Avista Corporation; BPA; Public Utility District No. 1 of Chelan County, Washington; Public Utility District No. 2 of Grant County, Washington; Puget; Seattle City Light; Public Utility District No. 1 of Snohomish County, Washington; and Tacoma Power.

- (e) “Covington 500 kV Transformer Addition Project” means the project identified in the Preferred Plan of Service in which BPA will install a third 500–230 kV transformer at the BPA Covington Substation.
- (f) “Delridge to Duwamish Reconductor Project” means the project identified in the Preferred Plan of Service in which Seattle City Light will reconductor the existing Delridge to Duwamish 230 kV line with high-temperature conductor.
- (g) “Lakeside 230 kV Transformer Addition Project” means the project identified in the Preferred Plan of Service in which Puget will install a 230–115 kV transformer at the Puget Lakeside Substation.
- (h) “Maple Valley to SnoKing Reconductor Project” means the project identified in the Preferred Plan of Service in which Seattle City Light will reconductor the existing Maple Valley to SnoKing 230 kV line with high-temperature conductor.
- (i) “North Downtown Inductor Project” means the project identified in the Preferred Plan of Service in which Seattle City Light will add series inductors (up to 10 ohm) to the East Pine-Broad Street line as part of Seattle City Light’s North Downtown Substation Project.
- (j) “Northern Intertie RAS Improvement Project” means the project identified in the Preferred Plan of Service in which BPA will install new software for and re-wire electrical protection devices on the Northern Intertie RAS.
- (k) “Northern Intertie RAS” means the existing BPA pre-programmed set of automatic operating steps that are designed to protect the regional high voltage electric grid in the event of a loss of one of the two Custer-Monroe 500 kV lines.
- (l) “Preferred Plan of Service” means the “Updated Recommended Transmission Expansion Plan for the Puget Sound Area to Support Winter South-to-North Transfers” approved by ColumbiaGrid on October 28, 2011, a copy of which is attached as Exhibit A to this MOA.

- (m) “Preferred Plan Projects” means, collectively, the BPA Preferred Plan Projects, the Puget Preferred Plan Projects, and the Seattle City Light Preferred Plan Projects.
- (n) “Puget Preferred Plan Projects” means the Sammamish to Lakeside to Talbot Rebuild Project and the Lakeside 230 kV Transformer Addition Project.
- (o) “Sammamish to Lakeside to Talbot Rebuild Project” means the project identified in the Preferred Plan of Service in which Puget will upgrade Puget’s existing Sammamish to Lakeside to Talbot 115 kV lines to 230 kV operation using Puget’s existing Sammamish to Lakeside to Talbot utility corridor.
- (p) “Seattle City Light Preferred Plan Projects” means the Bothell to SnoKing Reconductor Project, the Broad Street Inductor Project, the North Downtown Inductor Project, and the Delridge to Duwamish Reconductor Project.

2. TERM

The term of this MOA shall be effective on the date of execution by all Parties (Effective Date) and shall continue until the earliest to occur of the following: (i) the date of completion of the last of the Preferred Plan Projects; (ii) a Party terminates this MOA pursuant to section 5(c) of this MOA; or (iii) December 31, 2020.

3. PREFERRED PLAN OF SERVICE PROJECTED PROJECT COMPLETION SCHEDULE AND COST

- (a) **BPA Preferred Plan Projects.** Each Party acknowledges that, as of the Effective Date, the projected project completions schedule and capital costs of the BPA Preferred Plan Projects are as follows:

BPA Preferred Plan Project	Projected Completion	Projected Capital Cost
1. Covington 500 kV Transformer Addition Project	2018	\$56.2 million
2. Northern Intertie RAS Improvement Project	2014	\$4.0 million

- (b) **Puget Preferred Plan Projects.** Each Party acknowledges that, as of the Effective Date, the projected project completions schedule and capital costs of the Puget Preferred Plan Projects are as follows:

Puget Preferred Plan Project	Projected Completion	Projected Capital Cost
1. Sammamish to Lakeside to Talbot Rebuild Project	2017	\$45.0 million (single circuit) or \$41.3 million (double circuit)
2. Lakeside 230 kV Transformer Addition Project	2017	\$22.0 million

- (c) **Seattle City Light Preferred Plan Projects.** Each Party acknowledges that, as of the Effective Date, the projected project completions schedule and capital costs of the Seattle City Light Preferred Plan Projects are as follows:

Seattle City Light Preferred Plan Project	Projected Completion	Projected Capital Cost
1. Bothell to SnoKing Reconductor Project	2017	\$2.5 million
2. Broad Street Inductor Project	2017	\$7.3 million*
3. North Downtown Inductor Project	2017	\$4.4 million*
4. Delridge to Duwamish Reconductor Project	2016	\$1.9 million

- (d) **Preferred Plan Project Not Planned for Construction Based On the Construction of the Puget Preferred Plan Projects.** Each Party acknowledges that, the construction of the Puget Preferred Plan Projects negates the need for the construction of the Maple Valley to

* The projected capital costs of the Broad Street Inductor Project and the North Downtown Inductor Project do not reflect any projected costs for land acquisition. As of the Effective Date, the Parties acknowledge that Seattle City Light may have to acquire land to accomplish the Broad Street Inductor Project, and the actual capital costs of the Broad Street Inductor Project will, if necessary, reflect the actual costs of land acquisition for such project. As of the Effective Date, the Parties do not anticipate that the North Downtown Inductor Project will require Seattle City Light to acquire any land.

SnoKing Reconductor Project. Each Party acknowledges that, as of the Effective Date, the projected project completions schedule and capital costs of the Maple Valley to SnoKing Reconductor Project are as follows:

Preferred Plan Project	Projected Completion	Projected Capital Cost
Maple Valley to SnoKing Reconductor Project	N/A	\$16.1 million

4. PRELIMINARY CAPITAL COST ALLOCATION

As of the Effective Date of this MOA, the Parties agree to share in the capital costs of Preferred Plan Projects as follows:

- (a) **BPA Preferred Plan Projects.** BPA shall pay the entire actual capital cost of each of (i) the Covington 500 kV Transformer Addition Project and (ii) the Northern Intertie RAS Improvement Project
- (b) **Seattle City Light Preferred Plan Projects.** BPA, Puget, and Seattle City Light shall each pay one-third of the total actual capital cost of each of (i) the Bothell to SnoKing Reconductor Project; (ii) the Delridge to Duwamish Reconductor Project; (iii) the Broad Street Inductor Project; and (iv) the North Downtown Inductor Project.
- (c) **Puget Preferred Plan Projects.** BPA and Seattle City Light shall each pay to Puget an amount equal to one-third of the adjusted projected capital cost of the Maple Valley to SnoKing Reconductor Project, which adjusted projected capital cost shall be determined as provided in the following table:

Projected Capital Cost of the Maple Valley to SnoKing Reconductor Project	=	\$16.1 million * Cost Differences in Reconductor Projects
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where:

Cost Differences in Reconductor Projects	=	the quotient of
		(i) the sum of the actual capital costs of the Delridge to Duwamish Reconductor Project and Bothell to SnoKing Reconductor Project and

- (ii) the sum of the projected capital costs of the Delridge to Duwamish Reconductor Project and Bothell to SnoKing Reconductor Project identified in section 3(c) above (i.e., \$4.4 million)

5. FINAL CAPITAL COST ALLOCATION AND OPTION OF ELECTION TO CANCEL

- (a) The allocations identified in section 4 are based on preliminary planning capital cost projections. The final capital cost allocation for the Seattle City Light Preferred Plan Projects shall be based on actual design and construction capital costs for each of the Seattle City Light Preferred Plan Projects, and the final capital cost allocation for the Puget Preferred Plan Projects shall be in accordance with the formula proscribed in section 4(a) above. The Parties shall review such actual design and construction capital costs and schedules and shall agree in writing to the final capital cost allocation.
- (b) Each Party reserves the right to cancel any Preferred Plan Project for which such Party is the sponsor if such Party determines that
 - (i) the actual capital cost of such Preferred Plan Project is likely to exceed the projected capital cost of such Preferred Plan Project by a factor that is equal to or in excess of thirty percent (30%), or
 - (ii) the projected in-service date of the Preferred Plan Project will be more than twenty-four (24) months later than the projected completion date identified in section 3 above for such Preferred Plan Project.

If a Party elects to cancel a Preferred Plan Project for which such Party is a sponsor under this section 5(b), such Party shall provide written notice to such other Parties within five (5) days of such election. Within a reasonable period of time after receipt of such written notice, representatives of the Parties shall convene and identify alternative projects that the Parties expect will preserve the reliable operation of the Puget Sound Area Interconnection and reduce the need to curtail firm transmission service in a manner similar to the project cancelled pursuant to section 5(b). If the Parties cannot agree in good faith upon an alternative project to replace a project cancelled pursuant to section 5(b) within a reasonable period following receipt of written notice of

such termination, then any Party may terminate this MOA upon 90 days' written notice to the other Parties.

6. RESPONSIBILITY FOR ALL OTHER COSTS

- (a) Each Party shall be solely responsible for the Preferred Plan Project for which such Party is the sponsor, less the contributions from the other Parties as provided in section 4. This MOA only affects the cost sharing for the Preferred Plan Projects.
- (b) Each Party shall own the assets for the Preferred Plan Project for which such Party is the sponsor and shall be solely responsible for the operation and maintenance costs of such assets. Each Party shall be entitled to any capacity increases to its transmission system that results from any assets installed pursuant to this MOA.
- (c) If any Party enhances a Preferred Plan Project after completion of such Preferred Plan Project to meet such Party's needs, the cost of such future enhancements shall be borne solely by such Party. Each Party shall attempt in good faith to coordinate with the other Parties with respect to any future enhancements to a Preferred Plan Project to minimize or eliminate any impact to the interconnected electric systems of such other Parties.

7. PAYMENT SCHEDULE

Payments will be made at the completion of individual projects. The Parties shall agree in writing to the method and schedule for the cost share contributions to be made under this MOA.

8. NATIONAL ENVIRONMENTAL POLICY ACT ASSESSMENT

To the extent that BPA's financial contributions under this MOA are determined to trigger the need for analysis of projects under the National Environmental Policy Act, the Parties shall coordinate such assessment.

9. JOINT COMMUNICATIONS

The Parties shall coordinate joint communications regarding presentations of the preferred plan of service to the public.

10. GENERAL PROVISIONS

- (a) This MOA, including documents expressly incorporated by reference, constitutes the entire agreement between the Parties. It supersedes all previous communications, representations, or contracts, either written or oral, which purport to describe or embody the subject matter of this MOA.
- (b) No amendment of this MOA shall be of any force or effect unless set forth in a written instrument signed by authorized representatives of each Party.
- (c) This MOA is made and entered into for the sole benefit of the Parties, and the Parties intend that no other person or entity shall be a direct or indirect beneficiary of this MOA.
- (d) This MOA shall be interpreted consistent with and governed by federal law.
- (e) In the event that any provision of this MOA is determined to be invalid or unenforceable for any reason, in whole or part, the remaining provisions of this MOA shall be unaffected thereby and shall remain in full force and effect to the fullest extent permitted by law, and such invalid or unenforceable provision shall be replaced by the Parties with a provision that is valid and enforceable and that comes closest to expressing the Parties' intention with respect to such invalid or unenforceable provision.
- (f) Each Party shall be solely responsible for and shall pay its own costs and expenses incurred by it in connection with the negotiation of this MOA.
- (g) Whenever this MOA requires or provides that (i) a notice be given by a Party to any other Party or (ii) a Party's action requires the approval or consent of any other Party, such notice, consent or approval shall be given in writing and shall be given in accordance with the provisions of Exhibit B to this MOA.
- (h) This MOA is binding on any successors and assigns of the Parties. No Party may otherwise transfer or assign this MOA, in whole or in part, without the other Parties' written consent. Such consent shall not be unreasonably withheld.
- (i) Nothing contained in this MOA shall be construed as creating a corporation, company, partnership, association, joint venture or other entity, nor shall anything contained in this MOA be construed as

creating or requiring any fiduciary relationship between the Parties. No Party shall be responsible hereunder for the acts or omissions of any other Party. Nothing herein shall preclude (i) a Party from taking any action (or having its affiliates take any action) with respect to any other transmission project, including any such project that may compete with the projects provided herein, or (ii) the Parties jointly from entering into MOAs with third parties for the joint development, construction, ownership or operation of any project or for the provision of transmission capacity from such project.

- (j) Other than the obligation to pay amounts due under Section 4, in no event shall any Party be liable to any other Party under any provision of this MOA for any losses, damages, costs or expenses for any direct, special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, whether based in whole or in part in contract or in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to any other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

- (k) The Parties shall not be in breach of their respective obligations to the extent the failure to fulfill any obligation is due to an Uncontrollable Force. "Uncontrollable Force" means an event beyond the reasonable control of, and without the fault or negligence of, the Party claiming the Uncontrollable Force, that prevents that Party from performing its contractual obligations under this MOA and which, by exercise of that party's reasonable care, diligence and foresight, such Party was unable to avoid. Uncontrollable Forces include, but are not limited to:
 - (1) strikes or work stoppage;
 - (2) floods, earthquakes, or other natural disasters; terrorist acts; and
 - (3) final orders or injunctions issued by a court or regulatory body having competent subject matter jurisdiction which the Party claiming the Uncontrollable Force, after diligent efforts, was unable to have stayed, suspended, or set aside pending review by a court of competent subject matter jurisdiction.

Neither the unavailability of funds or financing, nor conditions of national or local economies or markets shall be considered an Uncontrollable Force. The economic hardship of a Party shall not

constitute an Uncontrollable Force. Nothing contained in this provision shall be construed to require any Party to settle any strike or labor dispute in which it may be involved.

If an Uncontrollable Force prevents a Party from performing any of its obligations under this MOA, such party shall: (1) immediately notify the other Parties of such Uncontrollable Force by any means practicable and confirm such notice in writing as soon as reasonably practicable; (2) use its best efforts to mitigate the effects of such Uncontrollable Force, remedy its inability to perform, and resume full performance of its obligation hereunder as soon as reasonably practicable; (3) keep the other Parties apprised of such efforts on an ongoing basis; and (4) provide written notice of the resumption of performance. Written notices sent under this section 10(k) must comply with Exhibit B, Notices and Contact Information.

11. WAIVER

No waiver of any provision or breach of this MOA shall be effective unless such waiver is in writing and signed by the waiving Party, and any such waiver shall not be deemed a waiver of any other provision of this MOA or any other breach of this MOA.

12. SIGNATURE

The Parties have caused this MOA to be executed as of the latest date all Parties have signed this MOA.

CITY OF SEATTLE
CITY LIGHT DEPARTMENT

UNITED STATES OF AMERICA
Department of Energy
Bonneville Power Administration

By: *Jorge Carrasco*
Name: *Jorge Carrasco*
(Print/Type)
Title: *Superintendent*
Date: *1/31/12*

By: *Hardev Juj*
Name: *Hardev Juj*
(Print/Type)
Title: *VP, Planning + Asset Mgmt.*
Date: *1/31/12*

PUGET SOUND ENERGY, INC.

By: Susan McLain
Name: Susan McLain
(Print/
Type) Senior Vice President
Title: Delivery Operations
Date: 1/31/12

EXHIBIT A
PREFERRED PLAN OF SERVICE

**EXHIBIT B
NOTICES**

Any notice required under this MOA shall be in writing and shall be delivered in person; or with proof of receipt by a nationally recognized delivery service or by United States Certified Mail. Notices are effective when received. Either Party may change the name or address for receipt of notice by providing notice of such change. The Parties shall deliver notices to the following person and address:

If to Seattle City Light:

Attention:
Phone:
Fax:
Email:

If by First Class Mail:

City of Seattle, City Light Department
(Customer Address)
(Customer City, State, Zip)

If by Overnight Delivery Service:

City of Seattle, City Light Department
(Customer Address)
(Customer City, State, Zip)

If to BPA:

Attention:
Phone:
Fax:
Email:

If by First Class Mail:

Bonneville Power Administration
P.O. Box 61409
Vancouver, WA 98666-1409

If by Overnight Delivery Service:

Bonneville Power Administration –
TSE/TPP-2
7500 NE 41st Street – Suite 130
Vancouver, WA 98662

If to the Puget:

Attention:
Phone:
Fax:
Email:

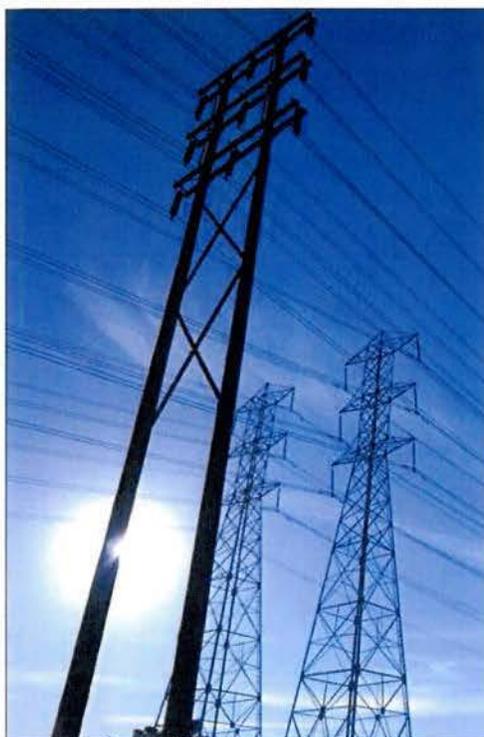
If by First Class Mail:

Puget Sound Energy, Inc.
P.O. Box 97034
Bellevue, WA 98009-9734

If by Overnight Delivery Service:

Puget Sound Energy, Inc.
10885 N.E. 4th Street, Suite 1100
Bellevue, WA 98004-5591

EXHIBIT A
PREFERRED PLAN OF SERVICE



Updated Recommended Transmission Expansion Plan
for the Puget Sound Area
to Support Winter South-to-North Transfers



Puget Sound Area Study Team

Bonneville Power Administration, Puget Sound Energy, Seattle City Light,
Snohomish County PUD, Tacoma Power, Powerex

Provisional Approval by the Study Team on April 25, 2011

Final Approval by the Study Team on October 28, 2011

Introduction and Conclusions

In October of 2010, the Puget Sound Area Study Team issued a report entitled “Transmission Expansion Plan for the Puget Sound Area.” The report is available via the ColumbiaGrid website. The report details a transmission plan for the Puget Sound region that would, as a basic requirement, provides for reliable system performance while significantly improving the ability of the transmission grid to support power transfers between the Northwest and British Columbia. Since the release of the original report, the following changes have occurred that have led to the need for the Puget Sound Area Study Team to revise their transmission plan:

- 1) ***Additional scenarios*** – The Puget Sound area utilities have been meeting regularly since the publication of the original report in October 2010 and have developed several additional scenarios to be studied (e.g., the addition of a new Broad Street-Massachusetts 115 kV underground cable). In response, the study team repeated their prior analysis for the critical winter south-to-north condition for the new scenarios. The results of this analysis are shown in the table provided in Appendix A.
- 2) ***Increased likelihood that Puget Sound Energy will move forward with Sammamish-Lakeside-Talbot project*** – Since the development of the original plan, Puget Sound Energy has further developed their plan to rebuild two 115 kV lines to 230 kV (Sammamish-Lakeside-Talbot #1 and #2) and provide new 230/115 kV transformation at their Lakeside Substation. Although both lines will be rebuilt, only one of the lines may be initially energized at 230 kV. As stated in the prior report, this facility addition can delay the need to reconductor the Maple Valley-SnoKing 230 kV lines beyond the ten-year transmission planning horizon.

The study team decided that since Puget Sound Energy is moving forward with this plan, the Sammamish-Lakeside-Talbot project should be listed as the proposed project in the plan instead of the Maple Valley-SnoKing reconductor. This project will give Puget Sound Energy the ability to provide necessary load support at Lakeside which cannot be achieved with the Maple Valley-SnoKing reconductor project, while providing similar Transmission Curtailment Risk Measure (TCRM) benefits as the Maple Valley-SnoKing reconductor project. A downside of the Sammamish-Lakeside-Talbot project is that its south-to-north Total Transfer Capability (TTC) is lower as compared to the Maple Valley-SnoKing reconductor. However, the Sammamish-Lakeside-Talbot project has additional benefits over the Maple Valley-SnoKing reconductor project in that it provides an additional 230 kV transmission path through the Puget Sound area and makes it feasible to reconductor rather than rebuild the Bothell-SnoKing 230 kV lines.

- 3) ***Increased likelihood that Seattle City Light will move forward with their North Downtown Substation Project*** – Since the development of the plan, Seattle City Light has indicated that plans to add a new North Downtown Substation have become more likely. The final plan is still being developed by SCL. The option studied includes a new underground cable (North Downtown-Massachusetts 230 kV), a new 115 kV line between North Downtown and Canal, and two 230/115 kV transformers at the proposed substation (see the following Figure One). This project was studied in the prior plan and, as identified previously, a third set of series inductors will be required on the new Canal-North Downtown 115 kV line with the addition of the North Downtown Substation. The plan for the system without, or prior to, the addition of the North Downtown Substation remains the same (adding series inductors on the two 115 kV underground cables). There is not a significant impact on the plan with or without the North Downtown Substation project as long as the project includes a third set of series inductors on the new North Downtown-Canal 115 kV line.

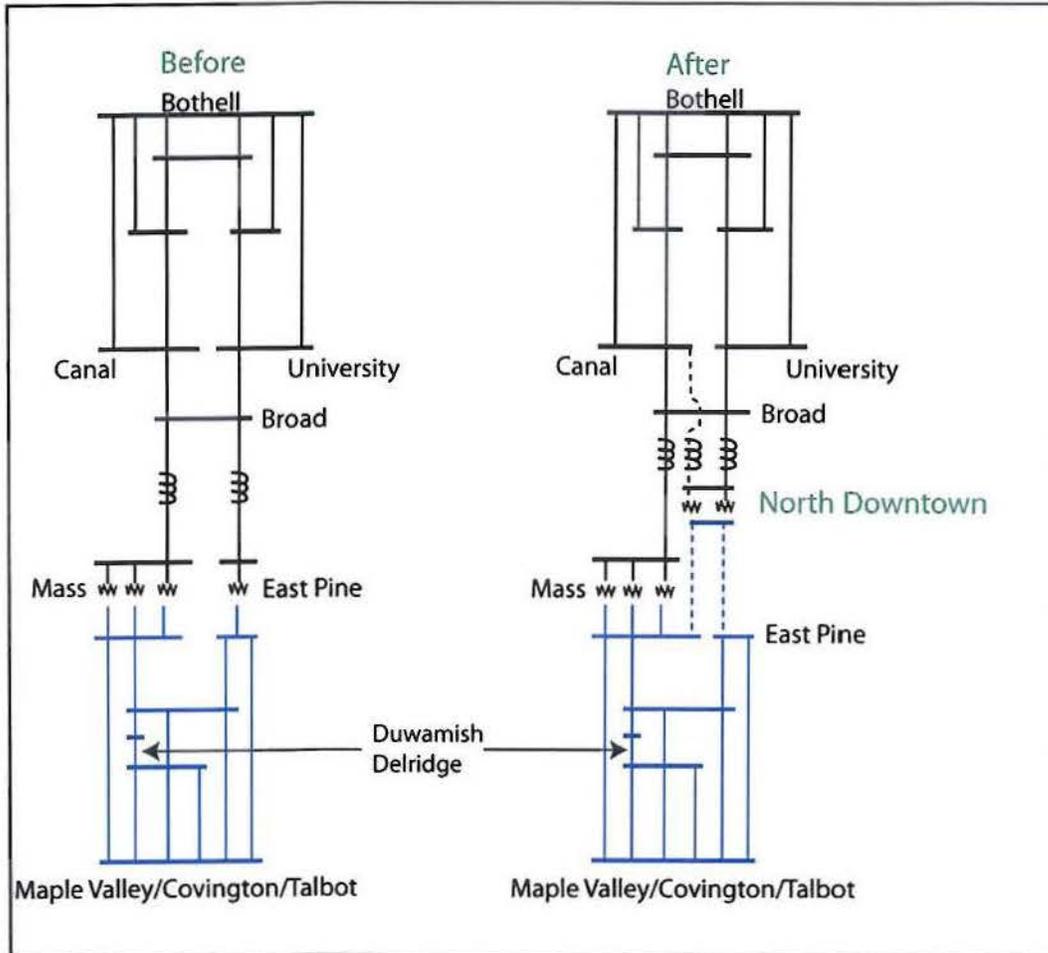


Figure One: One-Line Diagram with the proposed locations of the series inductor additions, before and after the Seattle City Light North Downtown Substation Project.

- 4) **Seattle area line rating increases** – Several key transmission lines in the region have been rerated to a higher capability. In some cases the new ratings provide a 77% increase over the ratings that were utilized in the original study. This has enabled the study team to reduce the size of the series inductors (from 26 ohms to 6 ohms) that were proposed for the Seattle City Light 115 kV transmission lines and cables. The smaller inductors lead to more power flowing through the Seattle City Light system resulting in the need to include an additional facility reconductor in the plan; the Duwamish-Delridge 230 kV line. The cost of this additional reconductor is estimated to be relatively low (\$1.6 million). This additional cost is projected to be partially offset by the savings achieved by the installation of smaller inductors. The smaller inductors also reduce the need to add shunt capacitors to offset the reactive losses from the larger sized inductors.

- 5) ***Seattle City Light Update to TPS Settings*** - Seattle City Light has recently updated the TPS settings which have resulted in operational changes that preclude it from being used as a project in this study to reduce TCRM and increase TTC levels on the northern intertie. All results that use the previous scheme have not been included in this report.

As a result of the above changes, the plan to support south-to-north transfers has been revised as specified in this report. Additional transmission facilities, such as a second Portal Way 230/115 kV transformer, will likely be necessary to support north-to-south transfers. These additional facilities will be further analyzed in subsequent studies.

Overview of Revised Plan

As a result of the above changes, the Transmission Expansion Plan for the Puget Sound Area was revised and the new plan is shown in the following Figure Two:

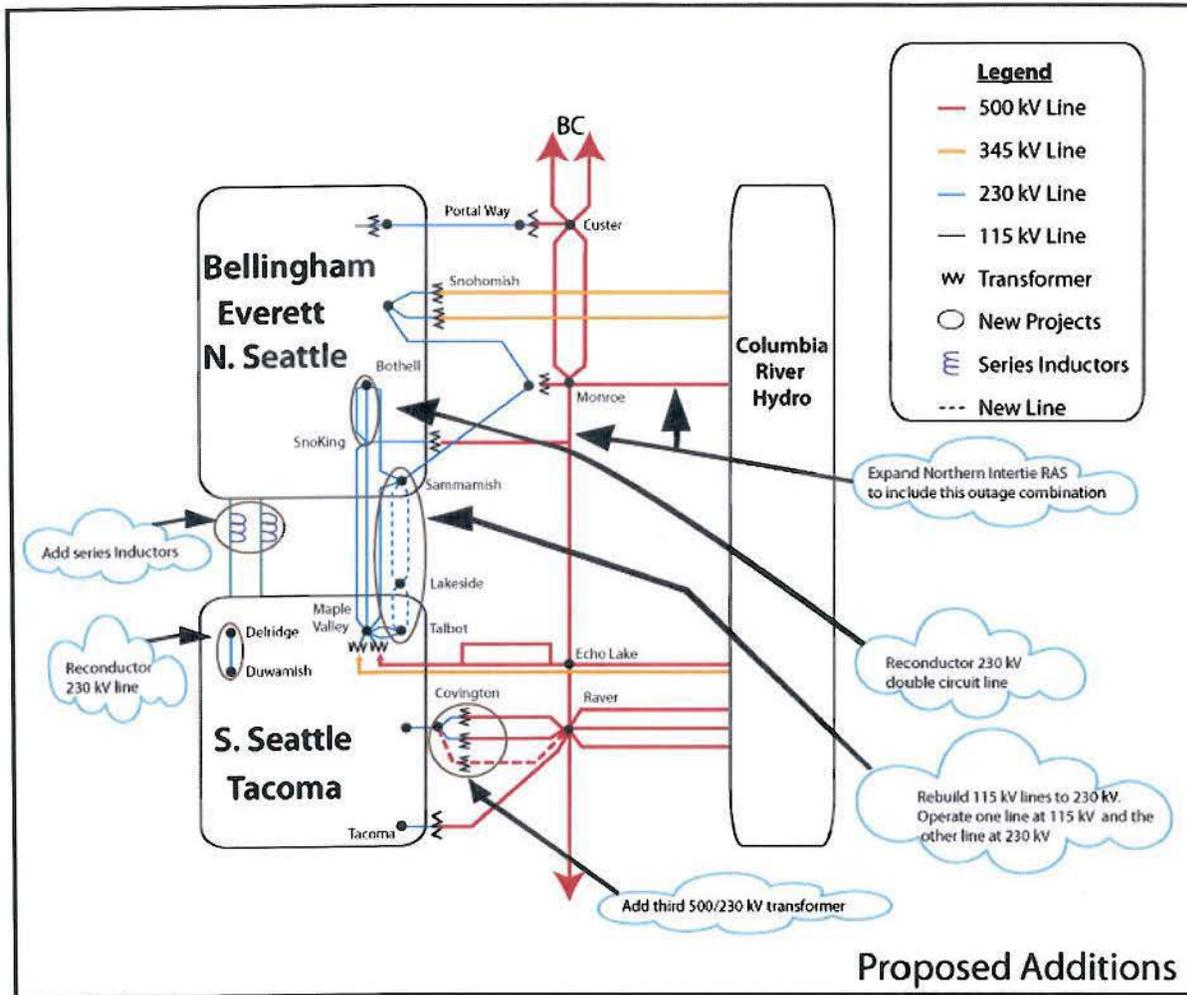


Figure Two: Revised Puget Sound Area Transmission Expansion Plan for Supporting South-to-North Transfers

Projects included in the Puget Sound Area Transmission Expansion Plan to support south-to-north transfers are:

- Reconductor the double circuit Bothell-SnoKing 230 kV lines with high temperature conductor
- Expand the Northern Intertie RAS
- Add a third Covington 500/230 kV transformer
- Reconductor the Delridge-Duwamish 230 kV line
- Add series inductors to the Massachusetts-Union-Broad and East Pine-Broad 115 kV lines in the downtown Seattle system. The final inductor size is under study and may vary from the 6 ohms specified in this report. Each line may have a different inductor size to optimize the system.
- Rebuild both the Sammamish-Lakeside-Talbot 115 kV lines to 230 kV. Energize one line at 230 kV and the other at 115 kV.

The cost estimates for the project in the preferred plan are shown in the following table. It should be noted that portions of the projects may be planned for local utility service and may not be necessary to accomplish the transfer capability goals of this study.

<i>PSAST Preferred South-to-North Plan Cost Estimate</i>	
	<u>Cost Estimate (M)</u>
Reconductor Bothell-SnoKing 230kV #1 & #2 with high temperature conductor	\$3
Extend the Northern Intertie RAS to trip for the combined outage of the Chief Joseph-Monroe and Monroe-SnoKing-Echo Lake 500 kV lines	\$3
Add a third Covington 500/230 kV transformer, a 500 kV terminal at Raver for the third Raver-Covington 500 kV line, and a 500 kV Bus at Covington	\$60
Reconductor Delridge - Duwamish 230 kV Line with high temperature conductor	\$2
6 ohm inductors on the two 115 kV cables out of SCL's Broad Street Substation	\$13
Lakeside 230/115 kV transformer, rebuild both 115 kV Sammamish – Talbot lines to 230 kV energizing one line at 230 kV	\$65
Total Preferred Projects	\$146

* The majority of these estimates are preliminary estimates. More detailed estimates will be developed by the Puget Sound Area utilities.

Next Steps

Now that the overall south-to-north plan is complete, the individual transmission owners need to identify the parties responsible for each of the projects and agree on the cost allocation for the projects. After this has been completed, detailed feasibility studies, cost estimates, project timing, and schedules will be completed. In addition, the following project specific studies will be completed by the Puget Sound Area Study Team:

- North-to-South transfer conditions will be studied to determine the effect that the new preferred plan has on transfer capability and to determine if any additional projects are needed.
- Series Inductor Project: Studies need to be completed to determine the proper size for the series inductors, the impact on north-to-south transfers, and the preferred switching arrangement.
- Determine how long the proposed plan will last. The PSAST will grow the Northwest loads in the current 2020 base case to 2025 and 2030 load levels. The additional load will be served by eastern resources. TCRM and TTC values will be calculated to determine whether they may degrade over time.
- Northern Intertie RAS Expansion Project: The Puget Sound Area Study Team will be available to assist BPA and BC Hydro with any additional studies necessary to implement this RAS expansion.
- Covington Transformer Project: Additional studies will be completed by BPA, to further analyze alternative locations for this transformer addition, the need for a 500 kV switchyard at Covington, potential operational solutions, potential remedial action schemes, the size of the transformer, the impedance of the transformer, and the preferred connection to the 230 kV bus. The BPA studies will be coordinated with area utilities through the Puget Sound Area Study Team.

While the projects identified in this report improve the transfer capability through the Puget Sound Area, there remain curtailment risks for firm transfers during outage conditions (N-1-X). Consequently, the Puget Sound Area Study Team will continue to investigate cost effective ways to reduce the risk of firm curtailments.

Study Results

New winter south-to-north studies were completed for a variety of scenarios and the detailed study results are provided in Appendix A. The system performance for each scenario was compared using the following two measures in addition to cost and permitting feasibility:

- 1) **Transmission Curtailment Risk Measure (TCRM):** TCRM is a measure of the likelihood of experiencing curtailments of transfers between the Northwest and British Columbia. The higher the TCRM value the greater the exposure to curtailments. The TCRM analysis

includes the cases with all facilities in service as well as with any single facility out of service. A detailed description of the TCRM methodology is provided in the original report. In the original report, winter and summer conditions for both north-to-south and south-to-north transfers were studied. For this update, only winter conditions with south-to-north transfers were studied as that is the critical system state for the alternatives presented in this report.

- 2) **Total Transfer Capability (TTC):** The TTC (thermal only) of the Westside Northern Intertie (WSNI) was calculated for each of the options in the traditional way, with all lines in service. Only the winter south-to-north condition was studied, with 680 MW of generation operating in the Puget Sound Area. The specific generation unit assumptions are as described in Appendix J of the original report. Puget Sound Area generation during winter peak is between 950 MW and 1550 MW 80% of the time (when load has been greater than 6000MW along with temperature below 32 degrees F). With higher levels of Puget Sound Area generation, the TTC numbers shown in the tables would likely increase.

The major issues addressed in this study are the impacts of the various alternatives on the 115 kV system in the Seattle area, and the impacts of the various alternatives on the 230 kV system between the Maple Valley and SnoKing areas. In all cases, the other major projects as described in the original report are modeled, which include the Northern Intertie RAS expansion, third Covington transformer, and second Portal Way transformer. In addition, the Bothell-SnoKing rebuild project was included in most scenarios although sensitivity studies were conducted for the reconductor option which ended up being the preferred option. Provided below is a discussion of each of the major issues addressed by the study team and their conclusions.

1) 26 ohm versus 6 ohm series inductors

Table 1: Selected TCRM and TTC Results, 26 ohm inductors vs. 6 ohm inductors

Study #	Series Inductors on SCL's 115 kV Cables- 26 ohms	Series Inductors on SCL's 115 kV Cables- 6 ohms	Maple Valley-SnoKing High Temp	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (Two Lines Operated at 230 kV)	Total TCRM - Without TCRM Lines Outside of the Puget Sound Area	Winter South North WSNI Thermal TTC at 680 MW Puget Sound Generation
3	X		X		10,304	2,270
4		X	X		8,433	2,297
17	X			X	10,460	1,773
18		X		X	8,666	2,038

With the changes in 115 kV line ratings, the Seattle 115 kV system is capable of accommodating greater flows. As a result, using a series inductor impedance greater than 6 ohms is no longer necessary to reduce the loadings on the Seattle 115 kV system. In fact, the TCRM is slightly better (lower) with the smaller 6 ohm inductors. Prior studies have also indicated that the smaller inductor size provided better results for summer north-to-south conditions. Higher impedance inductors also would have the undesirable effect of pushing more power over to the Maple Valley-SnoKing lines and reducing the TTC. In addition the smaller inductors require the addition of fewer shunt capacitors to offset the reactive losses from the inductors. The 6 ohm inductors have the effect of adding a circuit reactance that is equivalent to 8 miles of overhead 115 kV line. The 6 ohm inductors are now the preferred 115 kV project due to better performance and lower cost.

2) 6 ohm series inductors versus phase shifting transformers

Table 2: 6 ohm series inductors versus phase shifting transformers

Study #	SCL Phase Shifting Transformer	Series Inductors on SCL's 115 kV Cables- 6 ohms	Maple Valley-SnoKing High Temp	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (Two Lines Operated at 230 kV)	Total TCRM - Without TCRM Lines Outside of the Puget Sound Area	Winter South North WSNI Thermal TTC at 680 MW Puget Sound Generation
1	X		X		13,122	2,455
4		X	X		8,433	2,297
15	X			X	11,500	2,136
18		X		X	8,666	2,038

The TCRM studies for the phase shifting transformer project may not reflect the true performance of this project due to the difficulty of accurately modeling the phase shifting transformer operating strategy. As a result, while the TCRM studies show poorer performance for the phase shifting transformers than for the series inductor project, the study team believes that this result is a shortcoming of the phase shifter modeling and, in fact, the phase shifters should perform as well or better than the series inductors. This was the conclusion of the TTC studies, where a benefit was observed when using the phase shifting transformers instead of fixed series inductors. However, as the incremental benefits are not believed to be sufficient to justify the higher capital and maintenance costs of the phase shifter option, the 6 ohm series inductors remain the recommended project.

3) 6 ohm series inductors versus adding a third 115 kV cable

Table 3: 6 ohm inductor versus adding a third 115 kV cable

Study #	Series Inductors on SCL's 115 kV Cables- 6 ohms	3rd 115 kV Underground Cable from Mass to Broad Street & Mass Bank 1 Energized	Maple Valley-SnoKing High Temp	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (Two Lines Operated at 230 kV)	Total TCRM - Without TCRM Lines Outside of the Puget Sound Area	Winter South North WSNI Thermal TTC at 680 MW Puget Sound Generation
4	X		X		8,433	2,297
5		X	X		19,027	1,513
18	X			X	8,666	2,038
19		X		X	11,213	2,297

This option examines adding a third Seattle City Light 115 kV underground cable (a second cable from Broad Street to Massachusetts) in place of the 6 ohm inductors. The results for this alternative vary depending on whether the Sammamish-Lakeside-Talbot lines are upgraded to 230 kV or the Maple Valley-SnoKing lines are reconducted. With the preferred plan (upgrading the Sammamish-Lakeside-Talbot lines to 230 kV), there is a benefit to the alternative of adding a third cable from a TTC perspective and a slight benefit to the series inductor option from the TCRM perspective. Conversely, if the Maple Valley-SnoKing reconductor project moves forward, the series inductor option performs better from both a TCRM and TTC perspective. This is because if a third cable is added, there is still a need for the series inductors to eliminate overloading on the Broad Street-East Pine 115 kV cable, the East Pine-Maple Valley 230 kV line, and the Massachusetts 230/115 kV transformers. The third cable option is deemed to be less preferable to the recommended option primarily because the cost of the third cable is expected to far exceed the cost of the series inductors. In addition, the construction of an additional Broad-Massachusetts 115 kV cable is incompatible with Seattle City Light's future plan to add a new 230 kV cable as part of their North Downtown Substation

Project (North Downtown-Massachusetts 230 kV). The 6 ohm series inductors remain the preferred project due to better performance and lower cost.

4) *6 Ohm Series inductors versus replacing cables*

Table 4: 6 ohm inductors versus replacing cables

Study #	Series Inductors on SCL's 115 kV Cables- 6 ohms	Replace SCL's Existing 115 kV Cables (no inductors)	Maple Valley-SnoKing High Temp	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (Two Lines Operated at 230 kV)	Total TCRM - Without TCRM Lines Outside of the Puget Sound Area	Winter South North WSNI Thermal TTC at 680 MW Puget Sound Generation
4	X		X		8,433	2,297
6		X	X		19,398	1,602
18	X			X	8,666	2,038
20		X		X	11,746	2,210

If the 6 ohm inductors are in place, potential overloading on the cables is no longer an issue so rebuilding the cables would have no benefit. This option examines rebuilding the cables in lieu of the 6 ohm inductors. The results for this alternative vary depending on whether the Sammamish-Lakeside-Talbot lines are upgraded to 230 kV or the Maple Valley-SnoKing lines are reconducted. With the preferred plan (upgrading the Sammamish-Lakeside-Talbot lines to 230 kV), the series inductors perform better from a TCRM perspective and slightly worse from a TTC perspective. If the Maple Valley-SnoKing reconductor project moves forward then the series inductor option performs better from both a TCRM and TTC perspective. The TCRM performance is better for the series inductor options because if the cables are replaced, there would be other limits reached on the downtown Seattle system. The additional limits reached that account for most of the TCRM increase include the East Pine 230/115 kV transformer and the Massachusetts 230/115 kV transformers. The series inductors remain the preferred project due to better performance and lower cost.

5) **6 ohm series inductors versus the Seattle City Light North Downtown Substation project with and without series inductors**

Table 5: 6 ohm inductors versus the Seattle City Light North Downtown Substation project with and without series inductors

Study #	Series Inductors on SCL's 115 kV Cables- 6 ohms	SCL's North Downtown Substation	SCL's North Downtown Substation (6 ohm inductors)	Maple Valley-SnoKing High Temp	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (Two Lines Operated at 230 kV)	Total TCRM - Without TCRM Lines Outside of the Puget Sound Area	Winter South North WSNI Thermal TTC at 680 MW Puget Sound Generation
4	X			X		8,433	2,297
32		X		X		117,049	-1,380
36			X	X		8,778	2,672
18	X				X	8,666	2,038
34		X			X	38,594	-832
38			X		X	9,101	2,207

The study results indicate that the TCRM would increase dramatically and the TTC would be negative (not capable of south-to-north transfers) unless the series inductors are included in the plans for the new North Downtown Substation. The majority of this increase is due to overloading on the Broad-North Downtown 115 kV cable. As a result, the series inductors are needed before and after the addition of the North Downtown Substation Project.

6) 6 ohm series inductors: Reinforcing Maple Valley–SnoKing 230 kV lines versus options to upgrade Sammamish-Lakeside-Talbot 115 kV lines versus Monroe-Echo Lake #2

Table 6: 6 ohm inductors – Reinforcing Maple Valley–SnoKing 230 kV lines versus options to upgrade Sammamish-Lakeside-Talbot 115 kV lines versus Monroe-Echo Lake #2

Study #	Series Inductors on SCL's 115 kV Cables- 6 ohms	Maple Valley-SnoKing High Temp	Maple Valley-SnoKing Rebuild	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (Two Lines Operated at 230 kV)	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (One Line Operated at 230 kV)	Monroe-Echo Lake #2 500kV	Total TCRM - Without TCRM Lines Outside of the Puget Sound Area	Winter South North WSNI Thermal TTC at 680 MW Puget Sound Generation
4	X	X					8,433	2,297
11	X		X				7,623	2,632
18	X			X			8,666	2,038
28	X	X		X			9,003	2,700
81	X				X		13,422	1,643
80	X					X	5,047	2,875

The lowest TCRM and the highest TTC for line improvements east of Lake Washington can be achieved by building the Monroe-Echo Lake #2 500 kV line in addition to the 6 ohm series inductors. Unfortunately, this is also the highest cost transmission option.

From a TCRM perspective there is little difference between the Maple Valley – SnoKing reinforcement options and the Sammamish – Lakeside – Talbot upgrade project with two lines operated at 230 kV although the Maple Valley-SnoKing rebuild option performs slightly better than the others. From a TTC perspective, there is an advantage for the Maple Valley-SnoKing options; particularly the rebuild option. However, this was not deemed to be a sufficient advantage over the preferred Sammamish-Lakeside-Talbot 230 kV upgrade project with two lines operated at 230 kV. A major benefit of the Sammamish-Lakeside-Talbot options is that

they would provide necessary load service to Lakeside Substation which the Maple Valley-SnoKing options would not. Pursuing the Sammamish-Lakeside-Talbot options at this time does not preclude reconductoring the Maple Valley-SnoKing lines at a later time.

The Sammamish – Lakeside – Talbot upgrade project can defer some of its substation construction costs by initially upgrading the 115 kV lines to 230 kV and operating one line at 115 kV and one line at 230 kV. This option did not perform as well as operating both lines at 230 kV for both TCRM and TTC. The reduction in performance has been deemed acceptable for the cost savings. The second line planned to be cut-over to 230 kV operation at a later date.

7) 6 ohm series inductors and Sammamish-Lakeside-Talbot upgrade: *Bothell-SnoKing rebuild versus reconductor*

Table 7: 6 ohm series inductors and Sammamish-Lakeside-Talbot upgrade: *Bothell-SnoKing rebuild versus reconductor*

	Series Inductors on SCL's 115 kV Cables- 6 ohms	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (Two Lines Operated at 230 kV)	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (One Line Operated at 230 kV)	Bothell - SnoKing Rebuild	Bothell - SnoKing High Temp Instead of Rebuild	Total TCRM - Without TCRM Lines Outside of the Puget Sound Area	Winter South North WSNI Thermal TTC at 680 MW Puget Sound Generation
Study #							
18	X	X		X		8,666	2,038
47	X	X			X	9,512	2,086
81	X		X	X		13,422	1,643
82	X		X		X	13,663	1,677

For either Sammamish – Lakeside – Talbot upgrade option the TCRM and TTC results are similar for the Bothell-SnoKing rebuild and reconductoring options. The reconductor of the Bothell-SnoKing lines would provide acceptable performance at a lower cost with minimal permitting and mitigation requirements.

Appendix A

Table of TCRM and TTC Results

ColumbiaGrid PSAST Options for N-1-X TCRM Determination

Study #	115 kV Reinforcement Options							230 kV & 500 kV Reinforcement Options				TCRM & TTC Values		Notes					
	SCL Phase Shifting Transformer	Series Inductors on SCL's 115 kV Cables- 26 ohms	Series Inductors on SCL's 115 kV Cables- 6 ohms	3rd 115 kV Underground Cable from Mass to Broad Street & Mass Bank 1 Energized	Replace SCL's Existing 115 kV Cables (no inductors)	Replace SCL's Existing 115 kV Cables (6 ohm inductors)	SCL's North Downtown Substation	SCL's North Downtown Substation (6 ohm inductors)	Maple Valley-SnoKing High Temp	Maple Valley-SnoKing Rebuild	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (Two Lines Operated at 230 kV)	PSE's Sammamish - Lakeside - Talbot 115kV to 230kV Upgrade Project (One Line Operated at 230 kV)	Monroe-Echo Lake #2 500kV		Bothell - SnoKing High Temp Instead of Rebuild	With Covington, Portahway, Extended RAS, Bothell - SnoKing Upgrade	Total TCRM - Without TCRM Lines Outside of the Puget Sound Area	TTC (Thermal Only)	
54																308,343	-	PSAST 2020 Winter South-to-North Expansion Plan Base Case	
24																73,898	920		
1	X															13,122	2455		
3		X														10,304	2270		
4			X													8,433	2297		
5				X												19,027	1513		
6					X											19,398	1602		
7						X										8,258	2448		
32							X									117,049	-1380		
36								X								8,778	2672		
8	X								X							14,039	2692		
10		X							X							12,659	2652		
11			X						X							7,623	2632		
12				X					X							13,172	1820		
13					X				X							13,012	2120		
14						X			X							7,423	2664		
33							X		X							82,697	-1350		
37								X								7,111	2708		
15		X							X							11,500	2136		
17			X						X							10,460	1773		
18						X			X							8,666	2038		
81						X			X							13,412	1643		
47						X			X							9,512	2086		
82			X						X							13,663	1677		Preferred Plan
19				X					X							11,213	2297		
20					X				X							11,746	2210		
21						X			X							8,666	2044		
34							X		X							38,594	-832		
38								X	X							9,101	2207		
49								X	X							10,286	2233		
25		X							X							9,664	2745		
27			X						X							9,288	2497		
28				X					X							9,003	2700		
30					X				X							11,460	2305		
31						X			X							12,395	2377		
35							X		X							9,003	2700		
39							X		X							38,463	-804		
56							X		X							9,296	2732		
22							X		X							10,285	2753		
40								X	X							13,501	2104		
41								X	X							46,466	-292		
80		X							X							4,143	2916		
																5,047	2875		

**EXHIBIT B
NOTICES**

Any notice required under this MOA shall be in writing and shall be delivered in person; or with proof of receipt by a nationally recognized delivery service or by United States Certified Mail. Notices are effective when received. Either Party may change the name or address for receipt of notice by providing notice of such change. The Parties shall deliver notices to the following person and address:

If to Seattle City Light:

Attention:
Phone:
Fax:
Email:

If by First Class Mail:

City of Seattle, City Light Department
(Customer Address)
(Customer City, State, Zip)

If by Overnight Delivery Service:
City of Seattle, City Light Department
(Customer Address)
(Customer City, State, Zip)

If to BPA:

Attention:
Phone:
Fax:
Email:

If by First Class Mail:

Bonneville Power Administration
P.O. Box 61409
Vancouver, WA 98666-1409

If by Overnight Delivery Service:
Bonneville Power Administration –
TSE/TPP-2
7500 NE 41st Street – Suite 130
Vancouver, WA 98662

If to the Puget:

Attention:
Phone:
Fax:
Email:

If by First Class Mail:

Puget Sound Energy, Inc.
P.O. Box 97034
Bellevue, WA 98009-9734

If by Overnight Delivery Service:
Puget Sound Energy, Inc.
10885 N.E. 4th Street, Suite 1100
Bellevue, WA 98004-5591