PSE 2009 IRP Transmission

I. Introduction

The Pacific Northwest's regional transmission situation is marked by an increasing frequency and duration of transmission constraints. The ability to build new transmission has been hindered by:

- Limited coordination between generation and transmission development,
- The absence of a single regional transmission planning body,
- Limited access to significant amounts of capital, and
- No central permitting and siting authority.

There are signs that some of these problems are being addressed:

- Bonneville Power Administration (BPA) has instituted a Network Open Season process to facilitate its ability to plan and construct new transmission lines.
- Other regional utilities are planning large transmission projects to interconnect generation, particularly wind, from outside the Pacific Northwest.
- The Federal Energy Regulatory Commission (FERC) Order 890 requires transmission companies to establish a coordinated, open and transparent planning process. The region is responding to this requirement by using ColumbiaGrid to perform the regional transmission planning function.

This section describes PSE's current transmission situation, and discusses the efforts to improve the Northwest's regional transmission situation.

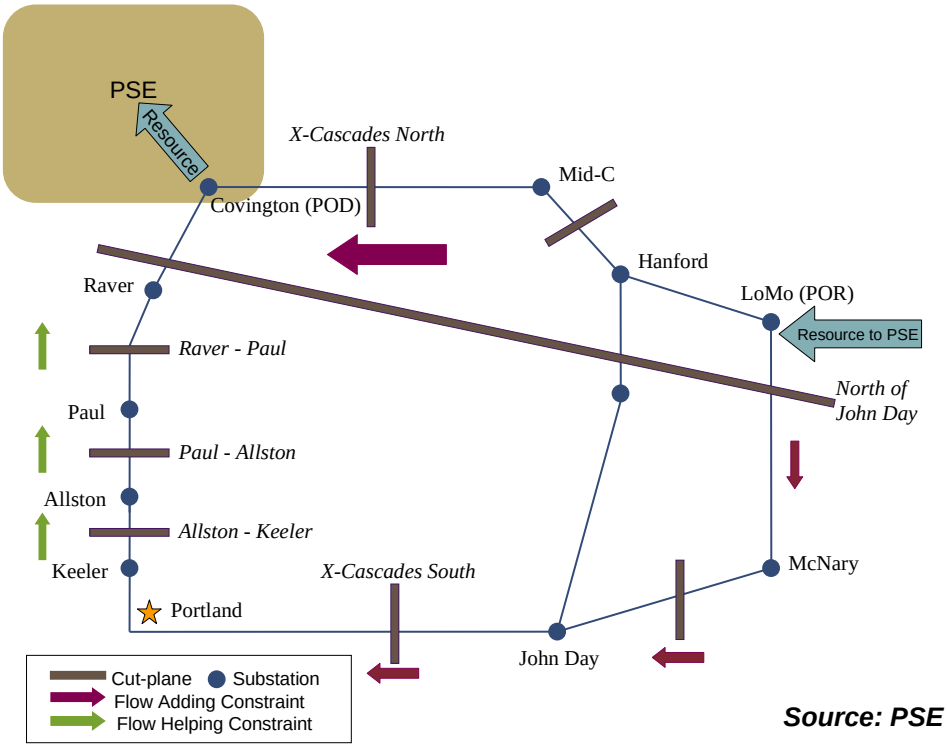
II. The State of PSE's Current Transmission System

Historically, PSE and other regional utilities have relied on BPA's transmission system to transport energy and capacity resources. However, as PSE and the region's resource portfolios have grown in conjunction with increasing loads, the Pacific Northwest's transmission system has not kept pace with these demands in recent years. As a result, the region is experiencing significant transmission constraints during various times of the

year. This situation is a growing challenge for PSE, in particular as we move energy and capacity resources to the west from eastern Washington (east of the Cascades) and to the north and south through the I-5 corridor.

Figure 1 below illustrates how power is transmitted from a resource located east of the Cascades, and then west to PSE's service area. The flow of power is indicated by the arrow symbol and typically follows on two paths: Cross-Cascades North, and Cross-Cascades South. The portion of power flowing in the southward direction is also traversing the constrained cutplanes of West of McNary, West of John Day, and the I-5 corridor. Note that the arrow sizes are proportional to the relative amount of power flowing. The red arrows illustrate flows in the same direction of the constrained path, while those in blue signify flows in the opposite direction. In order for incremental power to flow through an already congested transmission cutplane, it will require new transmission lines and/or some additional or improved reliability protection schemes.

Figure G-1
PSE Transmission Need to Deliver East-side Resources



Source: PSE

PSE is investigating the following options to relieve congestion on the paths illustrated above:

(a) Rely on BPA to build and/or improve the congested paths through its normal Open Access Same-time Information System (OASIS) requests, and if necessary through its Network Open Season process.
(b) Join other transmission project sponsors in joint development efforts.
(c) Develop transmission projects that meet the projected resource additions

PSE's need for additional transmission is driven primarily by increasing loads and the necessity for new generating resources. This requirement for additional resources results from a combination of continued load growth, loss of contracted generation, potentially the retirement of existing resources and compliance with the state's renewable portfolio standards (RPS). Our 2007 IRP identified wind and gas-fired generating resources as PSE's primary options for additional energy and capacity. These two resource types are typically located in different parts of the state; gas-fired generation is traditionally built west of the Cascades near the actual load centers, while wind resources are built east of the Cascades where the topography and wind conditions are more favorable. Each of these generating resources requires a different transmission solution.

Those on the west side are close to PSE's load center and therefore require simpler and less expensive transmission solutions. However, anything east of the Cascades typically relies on the transmission capacity from or through the Mid-Columbia area, which involves a complex solution and is more costly to build and upgrade. The required level of transmission capacity varies depending on the actual size and location of the future resources.

The BPA Option - Role of BPA in PSE's Future Resources

One option for acquiring additional transmission is to work through BPA. While this involved submitting an OASIS request to BPA in the past, just recently BPA completed its first Network Open Season (NOS), designed to obtain commitments from utilities to purchase transmission from BPA. It is expected that the NOS will assist BPA's transmission customers in acquiring incremental transmission to serve customer needs. NOS enables BPA to more efficiently augment its transmission system through better planning. Instead of responding to one request at a time, BPA plans and accelerates the process by performing a "Cluster Study" which combines all financially committed NOS

participants into a single group. The Cluster Study identifies key areas of reinforcement on the BPA network that would address all of the requests. From its initial NOS, BPA has proposed five transmission projects and announced its near-term plans to move forward with the construction of the West of McNary projects. In order to accommodate PSE's new wind projects in eastern Washington, BPA must also upgrade the Little Goose transmission line, which will increase capacity and reliability. Lastly, BPA's I-5 transmission project, also intended to increase capacity and reliability, is important to integrate any future west-side generating resources.

Wind power will play a major role in both meeting the region's future energy needs and satisfying RPS requirements. In fact, approximately 10,000 MW of renewable generation (predominantly wind power) will be necessary to fulfill the combined RPS requirements of Washington and Oregon. To meet this increase, BPA must continue to build transmission lines and substations to deliver electricity from the new wind projects in remote locations. Integrating this amount of wind energy into the region's electrical grid poses many challenges, and BPA's role will certainly require innovative and cooperative approaches to effectively manage the variability of wind power to meet consumer and legislative demands.

PSE's future resources – especially wind – will most likely face tough economic and technical challenges, along with business uncertainties. Continuing to rely on BPA to integrate our wind resources has a limit, which means we must continue to look for alternatives to integrate wind either directly into our Balancing Authority (BA), or seek other innovative lower-cost approaches (BA refers to the area operator that matches generation with load). We can pursue these approaches concurrently with BPA's NOS.

The Joint Development Option

A second transmission option is for PSE to continue to investigate partnership opportunities with other entities currently working to address their own transmission needs in the same region. PSE has performed a preliminary investigation of these projects to determine how they might address our integration needs, and identified three possibilities:

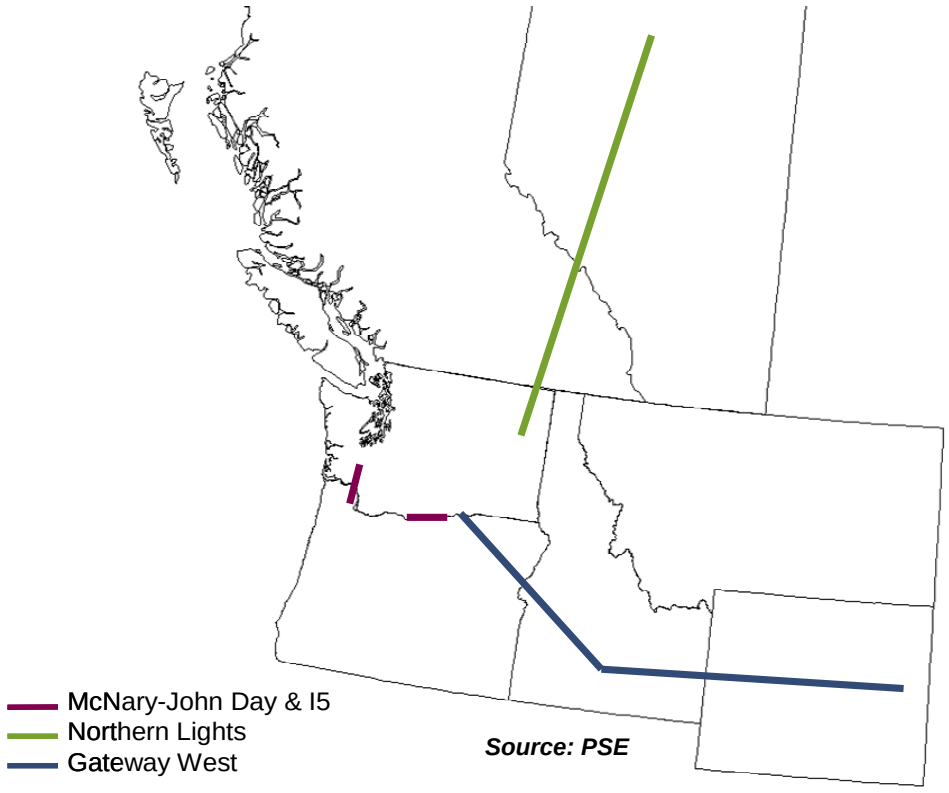
- The BPA NOS projects for West of McNary Reinforcement, which involves BPA building a new 79-mile 500 kV transmission line that runs along the Columbia River, and a new 500 kV substation;
- The BPA NOS I-5 Corridor Reinforcement, which involves the construction of a new 70-mile 500 kV line from the Troutdale substation to a new substation located approximately 12 miles north of the Allston substation, near Longview; and
- Two non-BPA options to integrate additional wind generation from outside of the Pacific Northwest:

  Northern Lights**:** This project is planned for a new DC line from the Edmonton, Washington/Oregon border. It will provide access to Alberta's renewable resources and to the Alberta market.

  Gateway West: This project is intended to connect renewable and other resources from Wyoming to southeastern Idaho and to the Mid-Columbia area.

These two projects are relevant candidates for PSE. They would provide access to renewable resources from Alberta, Wyoming, and southeastern Idaho. For additional market flexibility, the Northern Lights project also gives PSE access to the Alberta market.

Figure G-3
Top Three Transmission Project Candidates



The Self Build Option

PSE may need to design, permit and build transmission to accommodate the development or acquisition of new resources, in the event that other options do not meet the need.

III. Regionally-Based Transmission Efforts

In response to the Pacific Northwest's significant transmission constraints, various organizations have undertaken many efforts to address long-term regional transmission planning and expansion issues. The following summarizes some of these efforts:

ColumbiaGrid

ColumbiaGrid is a non-profit membership corporation formed in 2006 to improve the operational efficiency, reliability, and planned expansion of the Pacific Northwest's transmission grid. While the corporation itself does not own transmission, PSE, other members, and additional parties to ColumbiaGrid's agreements do own and operate an extensive network of transmission facilities. ColubmiaGrid's members are PSE, Avista, BPA, Chelan County PUD, Grant County PUD, Seattle City Light, and Tacoma Power.

ColumbiaGrid has substantive responsibilities for transmission planning, reliability, Open-Access Same-Time Information System (OASIS), and other development services. These tasks are defined and funded through a series of "Functional Agreements" with members and other participants. Development of these agreements is carried out in a public process with broad participation. ColumbiaGrid's transparent processes encourage broad participation and interaction with stakeholders, including customers, transmission providers, states, and tribes. It also provides a non-discriminatory forum for interested parties to receive and present pertinent information concerning the regional interconnected transmission system.

Planning and Expansion

ColumbiaGrid's Planning and Expansion Program is intended to promote single-utility planning and expansion of the regional grid. The Planning and Expansion Functional Agreement (PEFA), which has been signed by all of ColumbiaGrid's members and two non-member participant (Snohomish County PUD and Cowlitz County PUD), defines the obligations under this program.

In short, the agreement charges ColumbiaGrid with answering three key questions concerning the transmission network: what should be built, who should build it, and who should pay for it. ColumbiaGrid will provide a number of services in this planning program, including performing annual transmission adequacy assessments, producing a Biennial Transmission Plan, and identifying transmission needs. ColumbiaGrid also will facilitate a coordinated planning process for the development of multi-transmission system projects.

In February 2009, ColumbiaGrid completed its first cycle of planning and produced the final draft of the 2009 Biennial Transmission Expansion Plan. In support of the Biennial Plan, there are five Study Teams active within ColumbiaGrid addressing specific regions. These study teams include: Puget Sound Area Study Team (PSAST), Northern Mid-Columbia Area Study Team, Olympic Peninsula Study Team, West of McNary Area Reinforcement Project Study Team and the I-5 Corridor Reinforcement Study Team. PSE has actively participated in all five teams and is studying several expansion projects in the PSAST including the following:

- North King County Transformer Capacity Project (Novelty substation)
- South King County Capacity Increase Project (Covington-Berrydale 230kV line)
- Pierce County Transformer Capacity Project (Alderton substation)
- Thurston County Transformer Capacity Project (St Clair substation)
- South of Sedro Capacity Increase (Sedro Woolley – Horseranch #2 230kV line)
- North Cross Cascades Capacity Increase Project (115kV IP line upgrade to 230kV)

Columbia Grid OASIS

Beginning in 2009, ColumbiaGrid will provide program participants with a common Open-Access Same-time Information System (OASIS) portal, which is a single OASIS interface website, to facilitate transmission service requests within and across member and qualified non-member systems.

Initially, this common portal will display information common to those participants that have their own OASIS and provide links to those OASIS systems for the actual

transmission requests. Additionally, the OASIS portal will allow posting of available transmission by participating utilities that do not have their own OASIS site.

The initial efforts are focused on developing methodologies for determining common Available Transmission Capacity (ATC) and common queuing of requests for transmission service and interconnection. As a common methodology becomes accepted and implemented, the ColumbiaGrid OASIS will provide common ATCs calculated using that methodology.

ColumbiaGrid will also participate in efforts to identify and develop business practices, products, and tariff provisions common among the participants, and will post these on the ColumbiaGrid OASIS.

Joint Initiatives

In mid-2008, representatives from three West Coast sub-regional planning groups (Northern Tier Transmission Group, ColumbiaGrid and WestConnect) joined forces to pursue a number of projects that would benefit from a broader reach of expertise and geography. Each group had begun work in areas that captured the interest of its peers, and a mutual Joint Initiative program was conceived and begun.

As part of the Joint Initiative, two "Strike Teams" are addressing technical exploration of individual projects using resources from entities that see value in participation. One team works on Products & Services concerns, while the other focuses on the issues related to System Infrastructure. A broad stakeholder "Think Tank" group acts as a steering committee that provides a place for information sharing. Those parties that decide to move forward with implementation of the projects developed by the Strike Teams will do so pursuant to an Implementation Agreement among. The teams are exploring the following initiatives:

- Within-Hour Transmission Purchase and Sale Business Practices - facilitate more efficient use of the transmission system.
- Intra-hour Transaction Accelerator Platform – an automated information exchange to facilitate intra-hour transmission products such as Balancing, Redispatch, etc.

- Dynamic Scheduling System – provides mechanism to facilitate dynamically scheduled products such as regulation and load following between participating BAs.

The Big Tent Projects

In late 2007, Northwest utility sponsors of significant new high voltage transmission projects informed the Western Electricity Coordinating Council (WECC) of their plans to build about 2,200 miles of transmission lines. Pacific Gas & Electric (PG&E), Portland Gas Electric (PGE), BPA, Idaho Power, PacifiCorp and Avista made the initial announcement, and TransCanada and Sea Breeze joined later. The group's projects are referred to as the "Big Tent" transmission line projects, not just because of their significance, but also because the parties do not jointly participate in any one organization. The Big Tent projects will be critical in developing a reliable and integrated West Coast transmission grid for the 21st century.

WECC is coordinating transmission studies for the proposed Big Tent projects since the projects fall within the Council's footprint. The utility sponsors anticipate many benefits through coordination. They proposed the creation of a common base case for all technical studies, and anticipated conducting those studies using consistent assumptions and outages, in addition to sending study results through the same committee for review. By using a common platform and a consistent approach, all of the technical studies during the different phases of the WECC Rating Process (described later) can be presented and approved in a cohesive fashion. Coordination will enable each project sponsor to regionally create project plans of service and meaningful line ratings for the individual segments.

As of January 2009, the group has proposed 11 Big Tent projects. WECC encourages the associated project sponsors to follow its regional policies and procedures, especially when their projects might create additional congestion on the existing rated paths. What follows is an overview and updates for 9 of these projects that could seriously impact PSE's ability to deliver various generation resources to its generation portfolio. A description of the WECC Three Phase Rating process is provided first for the purpose of following the Big Tent project updates.

WECC Regional Planning Process

Generally, to fulfill the requirements of the WECC Three Phase Rating process, project sponsors submit comprehensive reports during the planning of a project. This is in compliance with FERC Order 890, and follows nine principles: Coordination, Openness, Transparency, Information Exchange, Comparability, Dispute Resolution, Regional Participation, Congestion Study, and Cost allocation.

The purpose of the WECC rating process is primarily threefold: 1) to foster development of a broad regional planning perspective, 2) to promote the most efficient use and development of the region's existing and future facilities, and 3) to assure that all relevant regional planning issues are considered. The process is divided into three different phases (1-3), with an additional phase 0 initially required to jumpstart the process:

- **Phase 0** -- Regional planning dialog -- a feasibility analysis is required. Coordination takes place between the regulators and stakeholders. Corridor options, proposed schedule, and a high-level cost estimate are identified.

- **Phase 1** -- Project definition -- a comprehensive progress report documenting results and describing project study details including a preliminary plan of service (i.e., proposed rating, flow scenarios, anticipated service date, etc.) is submitted and reviewed by the Technical Studies Subcommittee (TSS) members within WECC. Informal reports are presented at various TSS meetings. A letter requesting Phase 2 status is submitted at the conclusion of this phase. The acceptance of the Comprehensive Progress Report by WECC TSS and Planning Coordinating Committee (PCC) demonstrating how the project will meet the NERC/WECC Planning Standards signals the completion of Phase 1, at which time the project is granted a Planned Rating and Phase 2 can begin.

- **Phase 2** -- Facility rating -- non-simultaneous and simultaneous transfer capability for project is identified – meaning the project capacity will be studied and demonstrated independently and concurrently with other facilities. The mitigation of adverse impacts to existing facilities is addressed. This might also

include the mitigation issues involved with permitting and/or land acquisition.

- **Phase 3** -- Confirmation -- Definitive agreements are achieved for projects to be placed in service.

The whole process from start to finish could take up to three years to complete.

Major Projects in the WECC process

As mentioned before, there are 11 projects proposed for the Pacific Northwest. These projects may impact each other as well as the existing WECC paths. All project sponsors are required to proceed in an open and transparent planning process. For that reason, the Transmission Coordination Work Group (TCWG) was formed to aid the project sponsors with coordinating the planning studies and project communications.

In several meetings since early 2008, the TCWG has focused primarily on development of a common power flow data base, presentation of study results, and review of WECC Phase 1 Comprehensive Progress Reports. The results of studies detailing information such as path flowability, resource and load assumptions, and seasonal flow patterns are expected. Each project sponsor is also expected to conduct sufficient studies including any known effects and relationships with the existing paths. Most of the Big Tent projects are currently in the process of completing the WECC Phase 1 process and may enter Phase 2 in early 2009, provided that WECC accepts their Comprehensive Progress Reports and grants the Phase 2 project rating status.

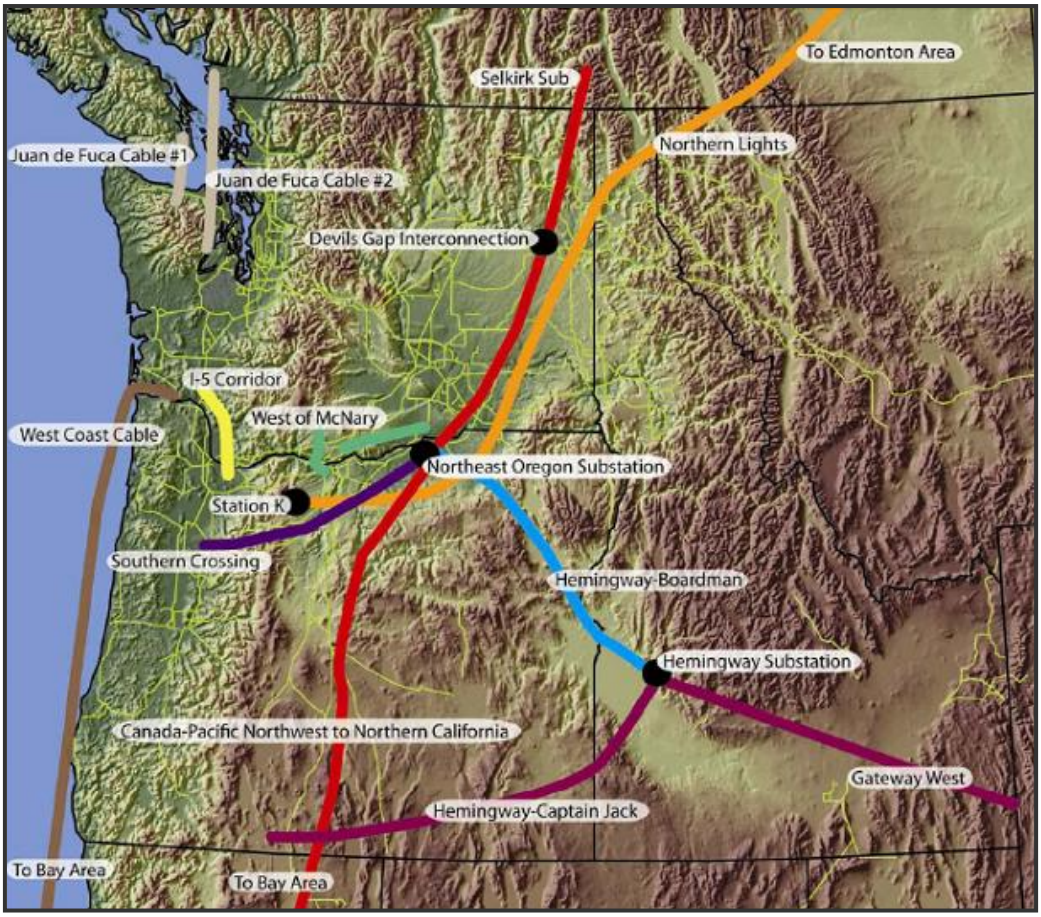
Project sponsors, during the Phase 2 process, will form and lead a Project Review Group (PRG). This PRG would usually be comprised of interested WECC member representatives and other relevant stakeholders. TCWG may be called to be the PRG for each of these projects. Since the beginning of the WECC Phase 1 process, TCGW has actively helped in determining the power flow base cases, generation resources, and load requirements.

Nine major regional projects with project sponsor, name, estimated cost, and timeframe are listed below. These projects are shown in Figure G-4.

1. *PacifiCorp's Gateway West: ~ $2.7 billion, 2014*
2. *TransCanada's Northern Lights: ~ $2 billion, 2014*

3. *Idaho Power's Boardman to Hemmingway: ~ $600 million, 2013*
4. *PG&E's Canada-Pacific Northwest to Northern California: ~ $billions, 2015*
5. *PGE's Southern Crossing: ~ $100's million, 2013*
6. *See Breeze's Cable Projects, Costs unknown, timeframes unknown*
7. *PacifiCorp's Hemmingway to Captain Jack: ~ $750 million, 2014*
8. *BPA's West of McNary: ~ $362 million, 2012*
9. *BPA's I-5 Corridor Reinforcement, ~ $342 million, 2015*

Figure G-4
Regional Proposed Big-Tent Transmission Projects



Source: "2009 Biennial Transmission Expansion Plan," Columbia Grid

The main benefits these projects bring to the region are: 1) the access to significant incremental renewable resources in Canada and in the northwestern states, 2) the improvement in regional transmission reliability, and 3) the market opportunities in dealing with participants outside of the region. For PSE in particular, the BPA projects would allow the utility to integrate wind resources east of the Cascades and the gas resources on the west side. Having access to the Alberta market also has a benefit of getting wind and other renewable resources from that area. The flexibility of buying and trading energy north of the border would also increase. As such, the Northern Lights transmission line may become a beneficial candidate for PSE to partner with. Another project that may be beneficial to PSE is the Gateway West transmission line, paired with the Idaho Power Company Hemmingway - Boardman line. In addition to accessing the rich wind resource in Wyoming, PSE would also be able to transfer energy out of and into Idaho. Additional attributes on these projects are provided in the "Joint Development Option" section below.

BPA Network Open Season

BPA Network Open Season (NOS) is a process to determine future regional transmission needs by aligning resource development plans with projected load forecasts. The NOS process utilizes cluster studies to analyze impacts and new facility requirements on an aggregated basis for the long term transmission requests. Commencing in 2008 and in accordance with FERC approval, BPA initiated a NOS process under its Open Access Transmission Tariff (OATT). A multi-step process was implemented beginning with transmission customers submitting Transmission Service Requests (TSR) for desired transmission. BPA responded with an offer of a corresponding Precedent Transmission Service Agreement (PTSA), requiring a security deposit in an amount equal to the charge for 12 months of transmission service at the tariff rate. The PTSA obligates the customer to take service for its TSR if BPA satisfies the following precedent: (1) BPA determines that it can reasonably provide service for the TSRs in the cluster at embedded cost rates, and (2) if facilities must be built to provide the service, BPA decides, after completion of a BPA-funded NEPA study, to build the facilities.

As a result of the 2008 NOS, BPA proposed that transmission service enabled by the following new facilities be provided at embedded (rolled-in) rates:

1. West of McNary Reinforcement (WOMR)
    a. McNary – John Day
    b. Big Eddy – Station Z (line and substation)
2. Little Goose Area Reinforcement
3. West of Garrison Remedial Action Scheme (no new construction)
4. I-5 Corridor Reinforcement

The total direct cost for the above projects totals $806 million, and enables 3,699 MW in addition to the 1,782 MW already authorized in the queue restack. This totals 5,481 MW enabled at a cost of $147,000 per MW. The 20-year average rate impact is projected to be 2.02% per year.

Rationale for the above projects includes an estimated $8 million to $10 million annually in thermal production variable cost savings, reduced congestion on BPA's network flowgates, supporting multi-state RPS requirements, geographic diversity of new renewable generation, and reduced curtailment events impacting the loss of service associated with non-firm service.

PSE requested transmission service for the following projects in BPA's 2008 NOS:

1. Hopkins Ridge Infill – 7 MW
2. Cross Cascades – 150 MW
3. Goldendale Duct Firing – 27 MW
4. RES Joint Development – 600 MW

BPA has awarded PSE the Hopkins Ridge Infill, Cross Cascades, and Goldendale transmission. 250 MW of the 600 MW for the RES Joint Development begins in the requested month of December 2011, and the additional 350 MW is contingent upon the completion of BPA's proposed Little Goose and West of McNary Reinforcement projects.

IV. Outlook

Recommended options

With projected load growth, I-937 RPS requirements, and expiring resource contracts, PSE continues to have significant resource needs. Our current resource strategy includes

aggressive demand side resource acquisition, as well as aggressive acquisition of renewables and natural gas generating resources. Additional transmission capacity will be required to transmit electricity from these new resources to PSE's load center.

PSE can pursue the following options:

1. Continue to participate in BPA's Annual Network Open Season for additional transmission capacity to transmit wind and other resources. We have already committed to the transmission offered in BPA 2008 NOS #1 process. We may continue to make transmission requests with BPA through the OASIS and/or take part in the future NOS processes, as the need arises.
2. Partner with other transmission developers
3. Consider self-build options of transmission lines to increase transfer capability and system reliability.

Remaining Regional Transmission Issues

1. Lack of coordinated regional planning

Requesting transmission is a cumbersome process, involving multiple steps and the possible requirement of completing one or more planning studies. This process can take anywhere from a few months to several years. If a project requires service from multiple transmission providers, the applicant utility must make requests with each provider. Since the timing of review processes may not match (e.g. one provider can offer immediate service while the other requires facility upgrades), the transmission applicant may face the decision to sign up for one section of the transmission before securing rights for the entire route.

ColumbiaGrid has established a process for its members to jointly plan the transmission systems of its members systems. The Northern Tier Transmission Group accomplishes this task for its members. Jointly the two groups cover most if not all of the Northwest utilities.

These two groups do not currently coordinate transmission requests. Per FERC rules, transmission providers must sell long-term firm transmission rights through their OASIS. Resource developers, therefore, must identify and apply to the individual transmission providers necessary to transmit electricity from the point of receipt (the generator) to the

point of delivery (load center).

2. Lack of centralized transmission siting

Transmission siting issues and development risks are commensurate with those for resource development. To construct new transmission, resource developers must be prepared to work with multiple jurisdictions observing differing processes for each jurisdiction.

Early assessment of environmental issues associated with resource development will determine the level of permitting necessary to gain regulatory approval. Common regulatory permits at the federal and state levels include SEPA/NEPA, Endangered Species (biological assessments), Army Corps of Engineers section 404 and 10 permits, Department of Fish/Wildlife HPA and the Department of Ecology (NPDES). At the city or county level, common permitting needs are conditional use permits for shorelines, clearing and grading, critical area review, and right-of-way use.

Public involvement is incorporated throughout the planning and development phases of transmission projects. This involves engaging stakeholders in many of the necessary decisions.

Routing of transmission lines can require the use of corridors other than those available via municipal, county or state rights-of-way. In these instances, easements from individual property owners are required. Because negotiation of these rights can become contentious and ultimately result in condemnation, careful consideration is critical.

APPENDIX 1 - Transmission Modeling Assumptions

The use of resources located in the Pacific Northwest assumes that PSE acquires transmission through BPA's NOS at embedded rates requiring zero dollars for transmission upgrades. Equity participation in any transmission expansion in the Pacific Northwest for a generation project is assumed to be at or near the cost of BPA's transmission tariff. The exception to this assumption is the Long Haul Wind resource.

Long Haul Wind includes potential wind outside of the Pacific Northwest including eastern Montana, Wyoming, British Columbia, and Alberta. In order to secure transmission for wind resources in these areas, PSE must participate in a regional transmission expansion project. With the current transmission system, there is limited capacity to bring energy from these remote resources home. The following costs were used in the IRP modeling assumptions:

Figure G-5
Long Haul Wind Cost Estimate

Area	Alberta	BC	Montana	Wyoming	Average
Transmission Expansion Capital Cost ($/kw)	$850.00	$1,666.67	$1,000.00	$921.67	**$1,109.58**
Fixed Transmission Tariff Charges ($/kw-yr)	$62.45	$67.25	$77.67	$65.51	**$68.22**
Variable Transmission Tariff Charges ($/MWh)	$13.96	$17.80	$13.57	$19.06	**$16.10**

Additional Long Haul Wind Assumptions:

- Montana Wind is east of the continental divide.
- Wind integration service charges are assumed to be BPZ's estimated $3 kw-mo.
- Losses assumed to be 5% on new transmission lines.
- Fixed and variable transmission tariff charges reflect rates as of 10/31/2008.
- Commercial operation date of wind projects is 2010.
- All costs are in 2008 dollars.
- No O&M charges are included for the transmission expansion projects, only fixed capital.
- Interconnection facilities assumed to be included in capital development costs.

APPENDIX 2

McNary – John Day

Status: Progressing through BPA's Network Open Season

- Facilities Study completed
- WECC regional planning done
- Finishing BPA cluster studies

Next Step:

- Building approval to proceed

Timeframe: 2009 – 2013

Review:

- ColumbiaGrid's planning process
- Big Tent planning process
- BPA planning process

Capacity: 1500 MW

Risk Assessment:

- Permitting delay and schedule uncertainty
- BPA flow-gate assessment change
- Wind projects associated with transmission requests not proceeding
- Cost of material inflation

Benefit Discussion:

- Congestion relief for east-west flows
- Connection of southeastern wind generation to Puget load
- Higher local jobs are created because this line will allow for near-by Mid-C resources to be delivered to our native loads

- Funded through BPA Open Season

Alternatives:

- Relying on Northern Lights and Gateway West projects to get to other renewable sources
- BPA Conditional Firm products
- Building more generation projects on the west side

I5 Corridor

Status: On hold

- WECC regional planning process completed
- WECC phase 1 rating process pending

Next Step:

- Call for interested parties to submit transmission and connection requests to BPA when review process is completed

Timeframe: 2009 – 2015

Review:

- ColumbiaGrid's planning process
- Big Tent planning process
- BPA planning process

Capacity: 1300 MW

Risk Assessment:

- Permitting delay and schedule uncertainty
- BPA flow-gate assessment change

- Wind projects associated with transmission requests not proceeding
- Cost of material inflation

Benefit Discussion:

- Congestion relief between Portland and Seattle on BPA system
- Access to N. Oregon and S. Washington wind
- Improved system reliability
- Funded through BPA Open Season

Alternatives:

- Relying on Northern Lights and Gateway West projects to get to other renewable sources
- BPA Conditional Firm products
- Building more generation projects on the west side

Gateway West

Status: Project scoping

- WECC regional planning process ongoing

Next Step:

- Call for interested parties to submit transmission and connection requests to BPA when review process is completed

Timeframe: 2010 – 2014

Review:

- Big Tent planning process
- WECC regional planning process
- WECC three-phase rating process

Capacity: 3000 MW

Risk Assessment:

- Permitting delay and schedule uncertainty
- Lack of participation
- Cost of material inflation

Benefit Discussion:

- Access to renewable resources outside the Pacific Northwest assuming Amendment of I-937 is in place
- Significantly expands transmission to the east
- Access to Wyoming wind
- Access to S. Idaho geothermal

Alternatives:

- Relying on Northern Lights project and BPA's NOS to get to other renewable resources
- BPA Conditional Firm products
- Building more generation projects on the west side

Northern Lights

Status: WECC Phase 1 rating process

- WECC regional planning process completed
- Phase 1 rating process in the verge of completion

Next Step:

- WECC Phase 2 rating process
- Call for interested parties to participate in the investment

Timeframe: 2010 – 2014

Review:

- Big Tent planning process
- WECC regional planning process
- WECC three-phase rating process

Capacity: 2000 MW

Risk Assessment:

- Permitting delay and schedule uncertainty
- Lack of participation
- Cost of material inflation

Benefit Discussion:

- Access to renewable resources in Alberta assuming Amendment of I-937 is in place
- Access to Alberta, Mid-C, and California trading markets
- Potential I-5 corridor relief

Alternatives:

- Relying on Gateway West project and BPA's NOS to get to other renewable resources
- BPA Conditional Firm products
- Building more generation projects on the west side