TRANSMISSION PLANNING

WECC 2015 Progress Report

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Report Prepared By:
Eric Heredia - TPP/OPP-3
(360) 619-6846
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1 Introduction
This Progress Report is prepared in satisfaction of the Western Electricity Coordinating Council's (WECC) Progress Report Policies and Guidelines. This Progress Report (also called the Supplemental Progress Report) includes projects from the 2014 Progress Report where there has been no significant changes in Plans of service, capacity, or in-service. This report also identifies any projects completed since the 2014 Progress Report and any new Projects identified since the 2014 Progress Report.

This progress Report will include:
- All generation projects over 200 MW connected to the transmission system
- All new and upgraded transmission system facilities over 200 KV that may significantly alter the operation of the transmission system. Projects 200 KV and above that do not alter operation of the transmission system (e.g. bus tie breakers, bus sectionalizing breakers, shunt reactive additions, etc.) will not be included in this report.
- Any facilities below 200 KV that may have a significant impact on the reliability of the Western Interconnection.

Each Project reported will include:
1. A brief physical description of the Project,
2. The planned Project in-service date,
3. The Project status (the planning, design, or construction status), and
4. The Facility owner(s) name and a BPA point of contact.

2 Planned Transmission Projects

2.1 West of McNary Reinforcement Project Phase 2 (Big Eddy-Knight 500 KV Line)

2.1.1 Project Description
The purpose of West of McNary Reinforcement (WOMR) Project is to increase the transfer capability across the West of McNary (WOM), West of Slatt (WOS) and West of John Day (WOJ) paths that will enable BPA to provide transmission service for proposed renewable energy from the McNary area to Northwest load centers west of the Cascade Mountains, to the California-Oregon (COI) AC Intertie, and to the Pacific DC Intertie (PDCI). WOMR is one of multiple BPA projects being developed as a result of BPA’s 2010 Network Open Season (NOS).

The WOMR Project was divided into two phases.

Phase 1 included:
1. A new 79 mile McNary-John Day 500-kV line with additions to the 500 KV yards at BPA's McNary and John Day Substations,
2. A McNary-Ross 345-kV line re-sag,
3. A Big Eddy-Ostrander 500-kV line re-sag,
4. A John Day-Big Eddy 500 kV #2 line re-conductor (approximately 3 miles),
5. Two 28.8 MVAR (rated at 242 kV) 230-kV shunt capacitors addition at Jones Canyon, and
6. West of McNary Reinforcement RAS additions.

Phase 2 included:
1. A new 500 KV switching station called Knight Substation, located near Goldendale, Washington at tower 73/1 on the BPA Wautoma-Ostrander 500 kV line,
2. A new 28 mile, 500 kV transmission line connecting BPA’s Big Eddy Substation near The Dalles, Oregon to Knight Substation,
3. Additions at BPA's Big Eddy 500 KV Substation
4. A Wautoma - Ostrander 500-kV line re-sag, and
5. A Wautoma 500 kV 300 MVAR shunt reactor (in service)

Phase 1 was commissioned in February, 2012.

2.1.2 Project Planned Operating Date
Phase 2 – November 2015

2.1.3 Project Status
The environmental review for this project was completed September 2011.

2.1.4 Project Owner and Point of Contact
BPA would own and operate all the facilities. The points of contact are:
   Abebe Masho, TPP/OPP-340  Kyle Kohne, TPP/OPP-340
   Bonneville Power Administration  Bonneville Power Administration
   Vancouver, Washington  Vancouver, Washington
   Phone: (360) 619-6834  Phone: (360) 619-6839
   E-mail: atmasho@bpa.gov  E-mail: krkohne@bpa.gov

2.2 I-5 Corridor Reinforcement Project

2.2.1 Project Description
This purpose of this project is to increase the transfer capability of the I-5 Corridor in the vicinity of Southwest Washington and Northwest Oregon. This load service area includes the cities of Portland, Oregon and Vancouver, Washington, which include high concentrations of industrial, commercial, and residential load. The generating resources serving this area are a mix of hydro and thermal plants.

This proposed project includes a new 500 kV transmission line (approximately 70 miles) between Castle Rock, Washington and Troutdale, Oregon. This would require the construction of a new 500 KV switching station in the vicinity of Castle Rock Washington and the expansion of BPA's Troutdale Substation near Troutdale, Oregon.

The project is projected to increase capacity by approximately 1100 to 1400 MW on the South of Allston path.
2.2.2 Project Planned Operating Date
Upon completion of the environmental review, if BPA decides to build this project after the environmental review is completed, the projected energization date is 2018.

2.2.3 Project Status
This project is currently going through the environmental review and is scheduled to be completed in 2021.

2.2.4 Project Owner and Point of Contact
BPA would own and operate all the facilities. The points of contact are:
- Tony Radcliff, TPP/OPP-340
- Kendall Rydell, TPP/OPP-340
- Bonneville Power Administration
- Bonneville Power Administration
- Vancouver, Washington
- Vancouver, Washington
- Phone: (360) 619-6832
- Phone: (360) 619-6825
- E-mail: apradcliff@bpa.gov
- E-mail: karydell@bpa.gov

2.3 Little Goose Area Reinforcement Project

2.3.1 Project Description
The purpose of the Little Goose Area Reinforcement Project is to increase the transfer capability West of Lower Granite that will enable BPA to provide transmission service for proposed renewable energy from the Little Goose area to Northwest load centers west of the Cascade Mountains, to the California-Oregon (COI) AC Intertie, and to the Pacific DC Intertie (PDCI). This project is one of several BPA projects being developed as a result of BPA’s 2010 Network Open Season (NOS).

The Little Goose Area Reinforcement Project includes a new 38 mile 500kV Transmission line from Central Ferry substation to Lower Monumental substation. The project also includes a shunt 300 MVAR reactor at Central Ferry Substation and reconfiguration of Lower Monumental substation to breaker and half configuration.

2.3.2 Project Planned Operating Date
The projected energization date is December 2015.

2.3.3 Project Status
The environmental review for this project was completed March 2011.

2.3.4 Project Owner and Point of Contact
BPA would own and operate all the facilities. The points of contact are:
- Matt Ingold, TPP/OPP-3
- Chuck Matthews, TPP/OPP-340
- Bonneville Power Administration
- Bonneville Power Administration
- Vancouver, Washington
- Vancouver, Washington
- Phone: (360) 619-6843
- Phone: (360) 619-6833
- E-mail: mlingold@bpa.gov
- E-mail: cematthews@bpa.gov
2.4 Lower Valley Area Reinforcement Project

2.4.1 Project Description
A 345/161-kV transformer at PacifiCorp’s (PAC) Goshen Substation currently serves the Lower Valley area. Three transmission lines serve load out of Goshen. The Goshen-Drummond 161-kV line serves mostly Fall River loads and provides back-up service to Lower Valley. The Goshen-Swan Valley 161-kV line serves most of the Lower Valley load. The Goshen-Palisades 115-kV line serves the Palisades Generating Plant and some Lower Valley load.

BPA constructed a second Swan Valley-Teton line in 2000 and upgraded the Goshen-Drummond line to 161-kV in 2002. These upgrades increased the reliability of the Fall River system and helped support load growth in the Jackson Hole area, but did not increase the transmission capacity to the southern part of Lower Valley’s system. Capacitor banks have been installed at Targhee, Tincup, Teton, and Madison Way.

PAC has constructed a new 345/138-kV Three Mile Knoll Substation a couple of miles north of their existing Caribou switching station. This new substation includes a new 345-kV interconnection with Idaho Power. Idaho Power’s Bridger-Goshen 345-kV line is looped into the new Three Mile Knoll 345/138-kV Substation which includes two new 345/138-kV, 650 MVA transformers. For the Lower Valley Area reinforcement Project, BPA will construct Hooper Springs 200 MVA 138/115-kV Substation adjacent to PAC’s Three Mile Knoll Substation.

2.4.2 Project Planned Operating Date
Planned energization is September 30th, 2017.

2.4.3 Project Status
Lower Valley Energy has implemented an under voltage load shedding plan that will preserve system reliability for outage conditions through the 2016-2018 time frame. The project is in the design stage.

2.4.4 Project Owner and Point of Contact
BPA would own and operate all the facilities. The points of contact are:

Debby Hammack, TPP/OPP-340
Bonneville Power Administration
Vancouver, Washington
Phone: (360) 619-6848
E-mail: dlhammack@bpa.gov

Pat Rochelle, TPP/OPP-340
Bonneville Power Administration
Vancouver, Washington
Phone: (360) 619-6826
E-mail: prrochelle@bpa.gov

2.5 Raver 500/230 kV Transformer Addition Project

2.5.1 Project Description
This purpose of this project is to improve load service reliability to the Puget Sound area and Northern Intertie. The Puget Sound and Northern Intertie (PSANI) area transmission system is a winter peaking system that primarily consists of the interconnected systems of BPA, Puget Sound Energy (PSE), Seattle City Light (SCL), Snohomish PUD (SPUD), Tacoma Power
Utilities (TPU), and British Columbia Transmission Company (BCTC), which serve Seattle, Tacoma, Olympia, and surrounding areas.

The Puget Sound Area is a highly congested network due to large concentrations of load and varying local generation patterns, which are further stressed by transfer levels between the US and Canada on the Northern Intertie. Winter peak loads are typically the worst, combined with lower local generation patterns and high exports to Canada. Through a joint Columbia Grid study effort, several system fixes have been agreed to by BPA, SCL, and PSE. They include several 115kV and 230kV PSE and SCL line upgrades, a BPA RAS upgrade and a new BPA 500/230kV transformer. The PSANI Reinforcements projects are scheduled to be completed in full by fall 2018. The Raver 500/230kV transformer addition is scheduled for completion in fall 2016.

The most limiting outage for the South Puget Sound area is a common corridor N-2 Tacoma-Raver #2 and Raver-Covington #1, which results in loss of two 500/230kV banks in the area. Other N-2 common corridor outages result in a loss of two 500/230kV banks either at Tacoma, Covington, or Maple Valley substations and cause severe loading on the remaining transformer banks. Once the Raver 500/230kV transformer addition is completed, the severity of these N-2 outages will be greatly reduced, mitigating overloads, and resulting in greater reliability to load service and operational flexibility for the Southern Puget Sound Area. The project also helps to reduce the risk of curtailment or redispach events in the Puget Sound Area for certain outage conditions.

The plan of service is to install a 1300 MVA transformer at Raver substation. A new 230kV substation will be developed adjacent to the existing 500kV substation. The high side of the new transformer will terminate at Raver 500 KV. The Tacoma-Raver #1 and #2 500 KV lines are currently jumpered together and operated as double circuit 500kV for about 10 miles from Raver until it reaches Covington substation. The corridor for both circuits runs adjacent to Covington 230kV station and in the same corridor as the Raver-Covington #1 and #2 500 KV circuits. The project will reconfigure the Tacoma-Raver 500 KV lines by removing jumpers and re-terminating the Tacoma-Raver #2 circuit into Covington 230 KV and Raver 230 KV Substations. The Tacoma-Raver #2 line will be renamed and operated as the Raver-Covington #3 230 KV line. The plan of service also requires reconfiguring the Covington 230 KV bus, adding a new sectionalizing breaker and 2 bus tie breakers.

2.5.2 Project Planned Operating Date
The project is expected to be completed in 2016.

2.5.3 Project Status
The studies have been completed and project funding has been approved.

2.5.4 Project Owner and Point of Contact
BPA would own and operate all the facilities. The points of contact are:
- David Cathcart, TPP/OPP-340
- Bonneville Power Administration
- Vancouver, Washington
- Phone: (360) 619-6854
- Berhanu Tesema, TPP/OPP-340
- Bonneville Power Administration
- Vancouver, Washington
- Phone: (360) 619-6819
2.6 Schultz-Raver #3 & #4 500 Series Capacitors Project

2.6.1 Project Description
The purpose of this project is to increase transfer capability across the West of Cascades North Path and provide increased load service to the Puget Sound area.

This project adds 500 kV series capacitors at Schultz Substation on the Schultz-Raver 500 kV #3 and the Schultz-Raver 500 kV #4 lines.

2.6.2 Project Planned Operating Date
The project is planned for 2021.

2.6.3 Project Status
The studies have been completed. Funding for the project has not been requested.

2.6.4 Project Owner and Point of Contact
BPA would own and operate all the facilities. The points of contact are:

David Cathcart, TPP/OPP-340  Berhanu Tesema, TPP/OPP-340
Bonneville Power Administration  Bonneville Power Administration
Vancouver, Washington  Vancouver, Washington
Phone: (360) 619-6854  Phone: (360) 619-6819
E-mail: dacathcart@bpa.gov  E-mail: bktesema@bpa.gov

2.7 PDCI Uprate Project

2.7.1 Project Description
The Pacific DC Intertie (PDCI) provides a direct current (DC) intertie between The Dalles Oregon, and Los Angeles, CA. The current PDCI is rated at 3100 MW.

BPA is working to complete the WECC Path Rating Processes to increase the rating of the Pacific Direct Current Intertie (PDCI), Path 65, from its present rating of 3100 MW to 3220 MW for north to south power flow. The south to north rating will remain unchanged at 3100 MW. This increase will be realized by increasing the operating voltage at the northern terminal, the Celilo Converter Station, from +500 kV to +520 kV while maintaining the present current rating of 3100 A. The voltage at the southern terminal, the Sylmar Converter Station, will increase by approximately 20 kV, which is within the capability of existing terminal equipment.

The Celilo Converter Station is over 40 years old and aging systems and equipment failures are contributing to deteriorating reliability of the PDCI. A comprehensive BPA study of in-kind equipment replacements required to sustain acceptable performance over the next 30 years revealed that the present value of the investment would exceed the cost of replacing the entire converter station with a modern two converter terminal. Therefore, complete replacement of the existing converters with two modern converters is underway.
Installing all new converter equipment at Celilo would also provide an opportunity to upgrade the terminal power rating for a relatively low incremental cost which could support additional PDCI capacity. To explore this possibility, BPA and Los Angeles Department of Water and Power (LADWP) undertook a study of PDCI upgrade alternatives. The study found that the Sylmar converters have the inherent capacity to support up to 3800 MW (input at Celilo) for north to south power flows. The study also examined the capability of the Celilo-Sylmar DC transmission line and found that extensive upgrades would be required for the portion of line from the Nevada-Oregon Border (NOB) to Sylmar which is owned by LADWP and the other Southern Owners (Southern California Edison CE and the cities of Burbank, Glendale and Pasadena). The Celilo-NOB portion of the line owned by BPA was designed with higher ground clearance and would require less costly upgrades including insulator replacement and shunting of compression fittings to support up to 3800 MW.

In December 2011, BPA Executive Management approved proceeding with the Celilo complete replacement option with the new terminal designed to support a full 3800 MW level capable of operating at 560 kV and 3410 A. Celilo’s converter rating and Celilo-NOB line capability beyond 3220 MW to 3800 MW would preserve the opportunity for future upgrade of the PDCI to more fully utilize the inherent capacity of the existing Sylmar converters. However, because of the high costs and uncertain benefits for the Southern Owners, they are unable to support a PDCI uprating beyond the 3220 kV level at this time.

### 2.7.2 Project Planned Operating Date

The new Celilo Converters and DC line upgrade from Celilo to the Nevada-Oregon Border are scheduled for completion in 2016. The Celilo Converters will be completed in January of 2016 and the line upgrade work is estimated to be completed in the same year.

### 2.7.3 Project Status

The project is funded and the WECC Path Rating Process is underway for the PDCI rating increase from 3100 MW to 3220 MW in the north to south direction.

### 2.7.4 Project Owner and Point of Contact

BPA would own and operate only the facilities at Celilo Converter Station and the northern portion of the DC line. The points of contact are:

- Eric Heredia, TPP/OPP-340
- Kyle Kohne, TPP/OPP-340
- Bonneville Power Administration
- Bonneville Power Administration
- Vancouver, Washington
- Vancouver, Washington
- Phone: (360) 619-6846
- Phone: (360) 619-6839
- E-mail: emheredia@bpa.gov
- E-mail: krkohne@bpa.gov

### 2.8 Morrow Flats Project

### 2.8.1 Project Description

This is a new 230/115 kV substation approximately 3 miles east of BPA’s Boardman Substation. This substation is needed to provide load service in the Boardman-Umatilla area.
2.8.2 Project Planned Operating Date
2015.

2.8.3 Project Status
The project is funded and underway. The project will be completed in 2015.

2.8.4 Project Owner and Point of Contact
BPA would own and operate the new 230/115 kV stubstation. The points of contact are:

- Abebe Masho, TPP/OPP-340
- Chuck Matthews, TPP/OPP-340
- Bonneville Power Administration
- Bonneville Power Administration
- Vancouver, Washington
- Vancouver, Washington
- Phone: (360) 619-6834
- Phone: (360) 619-6833
- E-mail: atmasho@bpa.gov
- E-mail: cematthews@bpa.gov

2.9 Montana to Washington

2.9.1 Project Description
In 2010, Bonneville Power Administration (BPA) conducted a Network Open Season (NOS) process to help manage its queue of requests for long-term transmission service. During the NOS process, utilities and power generators (including wind generators and power marketers) requested the use of BPA's transmission system to transmit their power.

The studies found that there was not enough available transmission capacity to accommodate all requests for long-term service from BPA’s Garrison Substation in Western Montana to load centers west of the Cascades and to market hubs serving the entire Northwest power market. Wind generation facilities built and proposed in the region have greatly increased the amount of planned generation in Montana seeking load and markets in the Northwest. As a result, BPA is proposing several reinforcements on BPA's transmission system at the Garrison Substation, Hot Springs Substation, Bell Substation, Dworshak Substation, and on the Hatwai Substation. Additionally, reconductoring is being proposed totaling 12 miles on the Dworshak-Taft No. 1 500-kilovolt (kV) line and a new series compensation substation is being proposed along the Garrison-Taft No. 1 and No. 2 500-kV lines, both of which would allow BPA to accommodate the requests for transmission service in this area. These reinforcements would increase the firm east-to-west transfer capability of the West of Garrison and West of Hatwai paths by primarily increasing the series compensation in existing 500-kV lines in the area.

2.9.2 Project Status
The environmental review of the project is currently under way and is scheduled to be completed in the fall of 2015.

2.9.3 Project Planned Operating Date
If, after the environmental review is complete, BPA decides to build the project, the projected energization date is 2018.
2.9.4 Project Owner and Point of Contact

BPA would own and operate the facilities. The points of contact are:

- Matt Ingold, TPP/OPP-3
- Chuck Matthews, TPP/OPP-340
- Bonneville Power Administration
- Bonneville Power Administration
- Vancouver, Washington
- Vancouver, Washington
- Phone: (360) 619-6843
- Phone: (360) 619-6833
- E-mail: mlingold@bpa.gov
- E-mail: cematthews@bpa.gov

3 Planned Generation Interconnection Projects

No planned generation projects over 200 MW for 2014.

4 Generation Interconnection Projects Completed in 2014

None over 200 MW completed in 2014.

5 Waiver of “Significant Transmission Projects”

The projects listed below are needed to serve and to increase local load reliability. It is not expected to have significant impacts on the operation of the Western Interconnect System. Thus, BPA requests waiver of “Significant Transmission Project” status for the purpose of the Project Coordination Review Process.

5.1 Raver 500/230 kV Transformer Addition Project

The plan of service is to install a 1300 MVA transformer at Raver substation. A new 230kV substation will be developed adjacent to the existing 500kV substation. The high side of the new transformer will terminate at Raver 500 KV. The project will also reconfigure the Tacoma-Raver 500 KV lines by removing jumpers and re-terminating the Tacoma-Raver #2 circuit into Covington 230 KV and Raver 230 KV Substations. The Tacoma-Raver #2 line will be renamed and operated as the Raver-Covington #3 230 KV line. The plan of service also requires reconfiguring the Covington 230 KV bus, adding a new sectionalizing breaker and 2 bus tie breakers.

This project is primarily for load service to Tacoma and Covington Substations and has no significant impact to the WECC transmission system. It has been studied as part of a sub-regional Puget Sound Area Study team through Columbia Grid. The projected energization is 2016.

5.2 McNary 500/230 kV Transformer Addition Project

The plan of service is to install a second transformer 500/230 kV transformer (1428 MVA) and a 230 kV bus sectionalizing breaker at McNary Substation. This project is required to reliably integrate generation in the McNary area.

This project is primarily generation integration and has no significant impact to the WECC transmission system. It has been studied as part of the generation interconnection studies. The projected energization is 2016/7.