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July 21, 2014

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Oregon Public Utilities Commission
Attention: Filing Center
3930 Fairview Industrial Drive SE
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RE: **UE 286 PGE Net Variable Power Cost**

Attention: Filing Center

Enclosed for filing in the captioned docket are an original and five copies of:

Surrebuttal Testimony of Portland General Electric Company:

- **PGE/300**

Also enclosed are an original and three copies of:

- **Work Papers on CD (non-confidential portions)**
- **Work Papers on CD (confidential portions)**

These documents are being served upon the UE 286 service list.

This document is being filed by electronic mail with the Filing Center. An extra copy of the cover letter is enclosed. Please date stamp the extra copy and return to me in the envelope provided.

Thank you in advance for your assistance. If you have any questions or require further information, please call Rob Macfarlane at (503) 464-8954. Please direct all formal correspondence and requests to the following email address: pge.opuc.filings@pgn.com.

Sincerely,

Patrick G. Hager
Manager, Regulatory Affairs

y:\ratecase\opuc\dockets\ue-286 (2015 nvpc)\testimony\pge\surrebuttal\cvrltr_7.21.14.docx

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused **UE 286 PORTLAND GENERAL ELECTRIC SURREBUTTAL TESTIMONY,** by electronic mail to those parties whose email addresses appear on the attached service list for OPUC Docket No. UE 286.

DATED at Portland, Oregon, this 21st day of July 2014.

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UE 286 / PGE / 300
Niman – Peschka – Hager

BEFORE THE PUBLIC UTILITY COMMISSION

OF THE STATE OF OREGON

UE 286

Net Variable Power Cost

PORTLAND GENERAL ELECTRIC COMPANY

Surrebuttal Testimony and Exhibits of

Mike Niman
Terri Peschka
Patrick G. Hager

July 21, 2014

Net Variable Power Costs

Table of Contents

I. Introduction

Q. Please state your names and positions with Portland General Electric (PGE).

A. My name is Mike Niman. My position at PGE is Manager, Financial Analysis.

My name is Terri Peschka. My position at PGE is General Manager, Power Operations.

My name is Patrick G. Hager. I am the Manager of Regulatory Affairs at PGE.

Our qualifications were provided in PGE Exhibit 500 in Docket No. UE 283.

Q. What is the purpose of your testimony?

A. The purpose of our testimony is to respond to the rebuttal testimony of the Industrial Customers of Northwest Utilities (ICNU) filed in this docket.

Q. What specific issues will you address in your testimony?

A. We address the following issues in our testimony:

- ICNU's apparent misunderstanding and misrepresentation of Port Westward 2 (PW2) and full self-integration of PGE's wind resources in the 2015 test year.[1]
- The material flaws with ICNU's new proposal regarding transmission for PGE's west side generation resources and the Beaver Point-to-Point (PTP) contract with the Bonneville Power Administration (BPA).[2]

Q. What is your recommendation to the Commission?

A. Consistent with the Public Utility Commission of Oregon (OPUC) Staff's rebuttal testimony, we recommend that the Commission reject ICNU's proposed adjustments to both the wind integration costs and the Beaver PTP contract for the 2015 test year.[3]

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[1] Full self-integration is defined as PGE being solely responsible for handling all aspects (regulation, following, imbalance, forecast error, etc.) of its wind resources. PGE/200, page 8, lines 1-16.
[2] PGE's physical west side generation resources consist of Beaver, Port Westward 1, and Port Westward 2.
[3] Staff/200, Crider-Ordonez/2 at lines 6-15.

II. Wind Integration

Q. What is PGE's position regarding wind integration in the 2015 test year?

A. PGE's decision to elect BPA Variable Energy Resource Balancing Service (VERBS) 30/60 committed scheduling for October 2014 through September 2015, our management of wind integration costs, and our management of the acquisition of PW2 are prudent. The next election for BPA VERBS is April 2015 for service beginning in October 2015. We included a reduction to integration costs for October 2015 through December 2015 in our net variable power cost (NVPC) forecast because this is the next opportunity "for which PGE could elect [full] self-integration or some other combination of services for wind resources, if PGE has the necessary infrastructure and system in place."[4] Given the uncertainty regarding future BPA rates, future mid-rate-period election opportunities, business practices, and available integration options, the fourth quarter integration net benefit represents a fair and reasonable estimate of potential benefits that could occur as a result of PGE's next wind integration election.

Q. Please summarize ICNU's position in its rebuttal testimony.

A. ICNU claims that by not implementing full self-integration effective upon PW2's online date, PGE has not selected the most cost-effective method of integrating the Biglow Canyon (Biglow) and Tucannon River (Tucannon) wind facilities. ICNU states that its position is supported by demonstrations made in its opening testimony.[5] ICNU proposes that PGE's 2015 NVPC forecast should be reduced by an estimated $5.1 million savings that it claims would result if PGE were to fully self-integrate both Biglow and Tucannon for the entire 2015 test year.

[4] PGE's Response to OPUC Data Request No. 001 provided in PGE Exhibit 301.
[5] ICNU/200, Mullins/2, at lines 16-19, and Mullins/3, at lines 1-2.

Q. What is the basis of ICNU's position?

A. ICNU's conclusion is based on the following:

1) Claims that the selection of PW2 was based on full self-integration and that PGE committed to full self-integration when PW2 comes into service;
2) Claims that ICNU has already demonstrated that PGE did not select the most cost-effective method for wind integration and the decision to elect 30/60 was imprudent;
3) Claims that PGE's argument regarding the timing of full self-integration is unconvincing and incorrect; and,
4) An oversimplification of the complexity of full self-integration and PGE's current capabilities.

1. PW2 was Selected Based on its Ability to Meet the Need Identified in the IRP.

Q. Was PW2 selected largely on the basis that it would be used for full self-integration?

A. No. PGE selected PW2 based on its ability to provide peak reliability and flexibility, as identified in the 2009 IRP, at the least cost. PGE did not select PW2 based largely on full self-integration and PGE made no such commitment regarding full self-integration of both Biglow and Tucannon. In our 2009 Integrated Resource Plan (IRP), we requested:

> "acknowledgement of up to 200 MW of flexible capacity resources by year-end 2013 to fill a dual function of providing capacity to maintain supply reliability during peak demand periods and providing needed flexibility to address variable load requirements and increasing levels of intermittent energy resources."[6]

The Commission later acknowledged PGE's 2009 IRP in Order No. 10-457. As noted in the 2009 IRP, the identified need was for year-round peaking capacity and flexible capacity for variable load requirements as well as increasing levels of intermittent energy resources. To

[6] Page 325 of PGE's 2009 IRP (Docket No. LC 48).

fill the need identified in the 2009 IRP, PGE initiated a Request for Proposals (RFP) process to solicit resources or agreements that could provide both the year-round peaking and flexibility needs for both load and increasing intermittent energy resources.[7] In order to fairly and equally assess each flexible capacity bid on the same variable cost basis for energy and ancillary services, PGE evaluated all bids using a "forced dispatch" profile to gauge flexibility for providing ancillary services. As stated in Appendix Q of the 2012 RFP,

> "PGE is seeking a unit that can provide the dual capabilities of providing both firm hourly energy as well as intra-hour ancillary services, such as Load Following, Regulating Margin, Spinning and Non-Spinning Reserves...*The forced dispatch profile is an illustrative forecast developed only for the purpose of scoring RFP bids and shall not be considered a firm commitment from PGE. Actual operation from year-to-year will differ from the RFP forced dispatch profile*." [emphasis added][8]

On January 31, 2013, PW2 was selected as the highest scoring flexible capacity bid in the RFP. The selection of PW2 was made based the plant's ability to meet the 2009 IRP identified needs at the least-cost and with the least-risk, not based on full self-integration of PGE's wind resources. Rather, PGE fairly assessed all bids based on their economics and ability to meet the needs identified in the 2009 IRP.

PGE did not commit to full self-integration in the 2009 IRP, the 2012 RFP, or when PW2 was announced as the winning bid. ICNU's claim that PW2's intended purpose is wind integration and that PGE largely justified the selection of PW2 based on full self-integration is incorrect and PGE's 2009 IRP, 2012 RFP, and testimonies in this docket and Docket No. UE 283 demonstrates that ICNU's claim is incorrect.[9]

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[7] The RFP was conducted with oversight by the Independent Evaluator who was appointed by the Commission pursuant to the Competitive Bidding Guidelines. The Independent Evaluator's report concluded that the RFP was conducted in a fair and transparent manner consistent with the Competitive Bidding Guidelines.
[8] Page 80 of PGE's 2012 RFP for Power Supply Resources (Docket No. UM 1535).
[9] ICNU/200, Mullins/5, at lines 3-8.

Q. Has ICNU misinterpreted the use of PW2 in PGE's 2013 IRP?

A. Yes. In its rebuttal testimony, ICNU refers to PGE's 2013 IRP, specifically the flexible capacity study, and states that "this is yet another example of how the Company has been planning to use Port Westward II, at the portfolio level, to self-integrate wind for the entire test period, despite not having developed the proper systems in time to do so."[10] ICNU's understanding of the flexible capacity study in the 2013 IRP is incorrect and its assertion that PGE justified its decision to acquire PW2 in our 2013 IRP based on using PW2 for full self-integration of our wind resources is also incorrect.[11] As discussed in our 2013 IRP, "Oregon Public Utility Commission (OPUC) Order No. 12-013 requires utilities to include in their IRPs a forecast of flexible capacity demand requirements and supply capability."[12] The flexible capacity study was included in the 2013 IRP to meet the requirement established in Commission Order No. 12-013 and the analyses focus on 2015 and 2020, years in which the Renewable Portfolio Standard (RPS) requirement increases.[13] Part of the study examined whether PGE could meet its 2015 flexibility requirements with its 2015 resources. The study does not indicate that PGE would fully self-integrate both Biglow and Tucannon in the 2015 test year and it does not indicate that PGE has been planning to use PW2 to do so all along, as ICNU claims. PGE explicitly stated in the flexible capacity study,

> "Currently wholesale power markets in the Pacific Northwest (PNW) do not function at a granularity of less than one hour. Therefore, *if PGE does not purchase wind integration services from another entity*, [emphasis added] within

[10] ICNU/200, Mullins/9, at lines 4-7.
[11] ICNU/200, Mullins/9, at lines 10-11.
[12] Page 70 of PGE's 2013 IRP (Docket No. LC 56).
[13] Pages 69-70 of PGE's 2013 IRP (Docket No. LC 56).

> any one-hour period it must be able to offset variances between forecast and actual VER production with its own flexible resources."[14]

ICNU is incorrectly interpreting the flexible capacity study as PGE's operational plan to use PW2 and our portfolio to fully self-integrate our wind resources, when in fact the study is a "what-if" analysis that would have been performed regardless of integration decisions because it is required by Order No. 12-013. The study does not take regulation requirements into account and does not include forced outages at generation plants.[15] Additionally, the study assumes that all necessary systems, upgrades, and equipment that PGE is currently developing under our Dynamic Dispatch Program (DDP) are in service.

2. PGE's Election of VERBS 30/60 was Cost-Effective and Prudent

Q. What is your response to the second item regarding cost-effectiveness of PGE's mid-rate-period VERBS election?

A. In its rebuttal testimony, ICNU claims that its opening testimony "demonstrated that, by not electing to self-integrate, the Company has not selected the most cost-effective method of integrating the Biglow Canyon and Tucannon River wind resources" and that it "also presented information to support a conclusion that the Company's failure to do so is imprudent."[16] ICNU has not demonstrated that PGE acted imprudently or that PGE's election was not the most cost-effective for the following reasons:

- ICNU's estimated full self-integration benefit has flawed assumptions.
- ICNU's estimate does not consider other costs that PGE would incur under full self-integration.

[14] Page 70 of PGE's 2013 IRP (Docket No. LC 56).
[15] Page 75 of PGE's 2013 IRP (Docket No. LC 56).
[16] ICNU/200, Mullins/2, at lines 16-19, and Mullins/3, at lines 1-2.

We discuss each reason in more detail below.

Q. Have any of the other parties in this docket commented on ICNU's evidence of cost-effectiveness?

A. Yes. In its rebuttal testimony, OPUC Staff stated "ICNU has not presented evidence to show that electing to self-integrate its resources during all four quarters of the test year would have been a cost-effective option for PGE."[17]

Q. Is ICNU's 2015 full self-integration benefit estimate flawed?

A. Yes. ICNU's calculation of the cost-effectiveness of full self-integration relies on a modified estimate of PGE's 2018 estimated full self-integration costs from the Phase 4 Wind Integration Study (WIS) in our 2013 IRP. In its opening testimony, ICNU explains that it calculated its modified estimate by determining the percentage change in average annual gas prices between 2018 and 2015 (approximately a 22 percent decrease) and applying the difference to PGE's reference case 2018 full self-integration cost of $3.99/MWh to arrive at its $3.13/MWh 2015 full self-integration cost.[18] ICNU argues this approach because "wind integration rates typically possess a relationship to gas prices."[19] However, ICNU assumes a directly proportional relationship (i.e., a one-to-one relationship in the percentage change) between gas prices and wind integration costs, which ICNU did not support and is also unsupported by the Phase 4 WIS. Table 1 below provides the gas price scenario information, the estimated full self-integration costs from the Phase 4 WIS, and the percent change between the scenarios.

[17] Staff/200, Crider-Ordonez/7, at lines 19-21.
[18] ICNU/100, Mullins/11, at lines 2-4.
[19] ICNU/100, Mullins/10, at line 24

Table 1
Phase 4 Wind Integration Study Gas Prices and Full Self-Integration Estimates

	(1) Reference Case	(2) Low Case	(3) Percent Change	(4) High Case	(5) Percent Change
Sumas Gas Hub ($/MMBTU)	$ 5.28	$ 4.24	-20%	$ 6.05	15%
Aeco Gas Hub ($/MMBTU)	$ 4.89	$ 3.89	-20%	$ 5.62	15%
Self-Integration ($/MWh)	$ 3.99	$ 3.57	-11%	$ 4.24	6%

Columns 3 and 5 of Table 1 show that the relationship is not directly proportional. Based on ICNU's methodology and the information available, a reasonable estimate of 2015 full self-integration costs is the Phase 4 WIS low gas price scenario estimated cost of $3.57/MWh.

ICNU's estimated full self-integration benefit also assumes that both Biglow and Tucannon can be fully self-integrated. This assumption is incorrect. Under BPA's Dynamic Transfer Operating and Scheduling Requirements business practice, PGE cannot dynamically transfer the output from Tucannon to PGE's control area, which is required for full self-integration of Tucannon, until the completion of BPA's Central Ferry-Lower Monumental transmission line.[20] Additionally, as discussed in our reply testimony, PGE will require the upgrades, equipment, and tools being developed in the DDP before we can reliably and cost-effectively integrate (on either a fully self-integration or partial self-integration basis) Biglow Canyon.

[20]Tucannon will use conditional firm transmission until BPA completes the Central Ferry-Lower Monumental project. The use of conditional firm transmission for Tucannon is discussed in PGE/400, Pope-Lobdell/14 in Docket No. UE 283. Per BPA's website, the current estimate for earliest completion of the Central Ferry-Lower Monumental project is December 2015. Currently, under BPA's business practices, firm transmission is required for dynamic transfer. Dynamic Transfer is defined by BPA as "methods by which the control response to load or generation is assigned, on a real-time basis from the Balancing Authority to which such load or generation is electrically interconnected (native Balancing Authority) to another Balancing Authority (attaining Balancing Authority) or other controlling entity on a real-time basis. This includes Pseudo-Ties, Dynamic Schedules, and dynamic arrangements within the BPA Balancing Authority Area.
http://transmission.bpa.gov/ts_business_practices/Content/7_Scheduling/Dynamic_Transfer_Op_Sched.htm

Q. Does ICNU's proposal account for all of the costs relating to full self-integration?

A. No. The Phase 4 WIS uses a 2018 test year and it assumes all of the necessary software, equipment, systems, and infrastructure are in place by the start of the year. ICNU's proposal does not account for the incremental costs associated with implementing and maintaining all of the necessary systems, upgrades, and infrastructure.[21] ICNU's proposal also does not account for potential cost impacts associated with increased plant movement. As detailed in our reply testimony, we are currently in the process of completing cycling cost studies to better determine the cycling capabilities of our thermal resources and plant-specific costs associated with increased plant movement.

Q. How does correcting these errors impact ICNU's proposal?

A. Correcting the errors results in no adjustment to PGE's 2015 NVPC forecast. If, however, the timing and costs regarding the DDP as well as the cycling costs were ignored, ICNU's proposed reduction to PGE's 2015 NVPC forecast would decrease from approximately $5.1 million to approximately $2.6 million after updating to the $3.57/MWh cost estimate and removing Tucannon.[22]

Q. Are you proposing a $2.6 million reduction to the 2015 NVPC forecast?

A. No. As stated above, we recommend no adjustment to PGE's 2015 NVPC forecast of wind integration costs.

Q. Were PGE's actions regarding wind integration costs prudent and in the best interest of customers?

A. Yes. Based on the available information, PGE's decision to elect VERBS 30/60 committed scheduling for October 2014 through September 2015 and our management of wind

[21] The Phase 4 WIS includes Carty, which is estimated to be online in 2016.
[22] The estimated $2.6 million is calculated by removing Tucannon and updating the estimated full self-integration cost to $3.57/MWh in the work papers provided with ICNU's opening testimony.

integration costs have been prudent and in the best interest of customers. We have acted to achieve and implement the least-cost and least-risk outcome for our customers.

Q. Was PGE's election of BPA VERBS 30/60 committed scheduling for the mid-rate-period the most cost-effective option?

A. Yes. Given the timing of new resources, the capabilities of our system, our experience with wind integration, and the current projects in development, BPA VERBS 30/60 was the least-cost and least-risk option for wind integration services from October 2014 through September 2015. PGE will continue to evaluate and analyze the available options for the next BPA VERBS election period and act accordingly to continue to provide reliable service to our customers.

3. ICNU's Proposal Ignores Timing Constraints and Key Factors

Q. What are ICNU's claims regarding the third item, the timing of self-integration?

A. In its rebuttal testimony, ICNU claims that PGE should already be prepared for full self-integration because Iberdrola and PacifiCorp are self-integrating wind resources, PGE has been aware of the full self-integration option and evaluating the necessary systems since 2007, and PGE has mismanaged the completion date for PW2.

Q. Is ICNU's claim regarding Iberdrola and PacifiCorp correct?

A. No. ICNU ignores key factors and differences. For example, unlike PGE, Iberdrola is not a jurisdictional balancing authority and is not subject to strict reliability requirements and responsibilities. Counter to ICNU's claim, Iberdrola does not fully self-integrate its wind resources. Iberdrola self-supplies imbalance reserves and generation imbalance under

BPA's Customer Supplied Generation Imbalance (CSGI) business practice and purchases regulation and following services from BPA.[23]

Regarding PacifiCorp, ICNU is correct that PacifiCorp recently dynamically transferred its Goodnoe Hills and Leaning Juniper wind resources into its western balancing area (PACW); however, ICNU ignores the fact that the combined name plate capacity of these two resources is 195 MW, which is less than one-third of the combined name plate capacity of Biglow and Tucannon.[24] Additionally, PGE's and PacifiCorp's portfolios, transmission systems, experience, and system controls are different and it is inaccurate to conclude that PGE should be capable of integrating the high variability of wind simply because PacifiCorp does.

Q. Does the 2007 IRP support ICNU's claim regarding the time to implement the necessary systems?

A. No. Based on PGE's 2007 IRP, ICNU claims that PGE has been evaluating the necessary systems and infrastructure since 2007. ICNU does not provide support that the consideration of full self-integration of the first phase of Biglow Canyon (125 MW name plate capacity) in the 2007 IRP demonstrates that PGE has had sufficient time to develop the necessary systems to fully self-integrate all of our wind resources. An IRP represents a forward look performed at a particular point in time. PGE's 2007 IRP did consider full self-integration of the first phase of Biglow Canyon:

[23] 142 FERC ¶ 61,243, United States of America, Federal Energy Regulatory Commission
[24] The combined name plate capacity of Biglow (450 MW) and Tucannon (267 MW) is approximately 717 MW.

> "While we believe that our existing system capability is sufficient to integrate the first phase of the Biglow Canyon project, we expect costs to rise as we add increasing levels of wind to our resource portfolio. We further expect that as we add more wind to our portfolio over time, our system capability to integrate will deteriorate."[25]

Additionally, the 2007 IRP also addressed the fact that there were many unknowns about wind integration at that time:

> "In addition, integration costs and system impacts at high penetration levels are still not known...We are conducting our own study to assess the cost of wind integration in our system at increasing penetration levels of wind..."[26]

It is misleading for ICNU to claim that the 2007 IRP indicates that PGE has had sufficient time to develop and implement all of the necessary systems, equipment, and infrastructure needed for full self-integration.

Q. What has changed since the 2007 IRP?

A. At the time of the 2007 IRP, PGE had no other owned and operated wind resources. In addition, the first phase of Biglow Canyon was not yet online, we had no experience with within hour self-integration, our resource portfolio had a larger amount of hydro resources than today, we had not completed our first wind integration study, and BPA did not offer VERBS or a similar wind integration service. Since 2007, we have continued to develop a better understanding of the complexities of wind and integration. We have pursued the best option for both PGE and our customers, which was within-hour integration service from BPA. This has included detailed wind integration studies and discussions to address questions regarding integration options, capabilities, and decisions. Additionally, as we discussed in our reply testimony in this docket, our participation in BPA's 30/30 Committed Intra Hour (CIH) Pilot Program during October 1, 2011 through September 30, 2013 helped

[25] Page 106 of PGE's 2007 IRP (Docket No. LC 43).
[26] Pages 105-106 of PGE's 2007 IRP (Docket No. LC 43).

us identify areas within our traditional systems operations model, beyond simply installing automatic generation controls (AGC), that we must develop and expand.[27] As a result of this experience and knowledge, we instituted the DDP in order to continue working toward the least-cost, least-risk option for wind integration.

Q. ICNU claims that the CIH Pilot Program is not relevant and has little bearing on self-integration.[28] Is this claim correct?

A. No. As we stated in our reply testimony, during the CIH Pilot Program, we were required to schedule our wind generation with BPA on a 30-minute basis rather than the standard hourly basis. We further explained the relevance and importance of a sub-hourly market:

> "Currently, the Northwest market is an hourly market with a bi-lateral structure…By definition, the hourly market is unavailable within the hour and requires participants to use their own resources, regardless of economics, to integrate the within hour variability of wind generation. *A sub-hourly market facilitates transactions within the hour that can be used to manage the system impact of wind variability during other periods of the hour and allows participants to make the most economic choice for integrating wind within the hour*" [emphasis added].[29]

ICNU has failed to recognize that without a functioning and liquid sub-hourly market, PGE will have to rely significantly on its own resources for all aspects of full self-integration, which requires extensive and complex systems, upgrades, and infrastructure that we are currently working to put in place. Additionally, ICNU's statement regarding the timing of our participation in the CIH Pilot program and PW2 is incorrect.[30] As we stated in our reply testimony, "PGE participated in BPA's 30/30 Committed Intra-Hour (CIH) Pilot

[27] PGE/200, Niman-Peschka-Hager/9.
[28] ICNU/200, Mullins/7, at lines 6-7.
[29] PGE/200, Niman-Peschka-Hager/12 at lines 11-12, and /13 at lines 2-7.
[30] ICNU/200, Mullins/7, at lines 9-11.

Program during October 1, 2011 through September 30, 2013."[31] The RFP and selection of resources began in 2011, with PW2 selected as the winning bid on January 31, 2013.

Q. Has PGE prudently managed the expected online date of PW2?

A. Yes. In its rebuttal testimony, ICNU claims that:

> "In the 2012 RFP, the Company required that '[c]apacity resources…must be available no later than 2015.' Thus, the Company set a deadline for the completion of a resource that predates the time the same resources will be used for its intended purpose. This is imprudent management."[32]

ICNU has not acknowledged the fact that the 2012 RFP stated that "[c]apacity resources would be accepted no earlier than 2013 and must be available no later than 2015."[33] PGE allowed a three year range for the completion of the flexible capacity winning bid and did not specifically require that the winning bid be available in time for a BPA VERBS election period. The 2012 RFP did not identify any specific target date within 2015 and the intended purpose of the winning bid was not solely full self-integration. Additionally, ICNU is ignoring the timing difference between PW2's anticipated online date and the BPA VERBS period. OPUC Staff acknowledges this timing difference in its rebuttal testimony,

> "the Commission must take into account that BPA did not offer PGE an option to use BPA integration services from October 1, 2014 until the date in 2015 when full self-integration became possible for PGE. At the time that PGE entered into the BPA contract in April 2014, PGE did not have the option to use BPA to integrate its wind resources from October 2014 until the time PW2 came on-line and self-integrate its resources thereafter. PGE reasonably entered into the BPA contract for twelve months of integration services, notwithstanding that PW2 was schedule to come on line during that period."[34]

As demonstrated above, ICNU's argument drastically oversimplifies the complex timing and coordination of multiple processes and projects that do not seamlessly overlap.

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[31] PGE/200, Niman-Peschka-Hager/9, at lines 5-6.
[32] ICNU/200, Mullins/5, at lines 5-8.
[33] Page 1 of PGE's 2012 Power Supply Resource RFP (Docket No. UM 1535).
[34] Staff/200, Crider-Ordonez/9, at lines 8-16.

4. Full Self-Integration is a Complex Undertaking

Q. What is your response to the fourth item regarding the complexity of full self-integration and PGE's current capabilities?

A. As we explained in our reply testimony, full self-integration is a complex undertaking that requires the coordination of PGE's generation resources, plant personnel, power operations personnel, Control Area personnel, communication and data systems, dispatch and monitoring systems, and various other tools and equipment. This coordination cannot be accomplished without the systems, software, upgrades, equipment, testing, and training that we are currently implementing under the DDP. In its testimonies, ICNU has continually presented an oversimplified view of the requirements to successfully and reliably implement its proposal. ICNU also relies on PGE's wind integration studies, which, for study purposes, assume that the systems are already in place and working, to develop and justify its proposal. For reliability purposes, we have committed to taking a systematic and methodical approach to prepare for wind integration. If PGE were to rush its decision regarding wind integration, PGE and our customers could be exposed to material cost impacts as a result of non-compliance with industry and regional reliability standards as well as substantial wear and tear damages to generation assets.

III. Beaver Point-to-Point Transmission Contract

Q. What is PGE's position regarding the Beaver PTP contract?

A. Our position is that we have prudently managed our transmission portfolio to meet system needs. The Beaver PTP contract is used and useful for managing our system and providing reliable service to our customers. PGE's actions regarding transmission for our west side generation resources have been prudent, and the corresponding transmission expenses in our 2015 NVPC forecast are fair and reasonable.

Q. Has ICNU changed its proposal regarding the Beaver PTP contract?

A. Yes. In its opening testimony, ICNU proposed that the expense associated with a portion of the Beaver PTP contract be excluded because it was not used and useful based on ICNU's incorrect assumptions regarding PGE's transmission rights and usage.[35] That proposal differs from the proposal presented by ICNU in its rebuttal testimony in this docket.

Q. Please summarize ICNU's new proposal presented in its rebuttal testimony.

A. ICNU is now proposing a $1.6 million reduction to PGE's 2015 NVPC forecast based on the claim that PGE has imprudently managed transmission for Beaver, Port Westward 1, and PW2 by not pursuing an upgrade to PGE's 230 kV transmission that is a part of the jointly owned South of Allston (SoA) transmission path and instead renewing the Beaver PTP contract with BPA.[36]

Q. Is it appropriate for ICNU to make this new proposal at this time?

A. No. ICNU claims that it is modifying its original proposal based on new information provided by PGE.[37] This claim is not correct. PGE provided information regarding our

[35] ICNU/100, Mullins/11-15.
[36] ICNU/200, Mullins/16, at lines 11-18.
[37] ICNU/200, Mullins/2, at lines 1-3.

transmission rights on the SoA transmission path, which includes the Beaver PTP contract, in response to ICNU Data Request No. 070 on May 6, 2014, prior to ICNU filing opening testimony in this docket.[38] ICNU is presenting an entirely new proposal rather than addressing any specific point raised by PGE in our reply testimony. Additionally, a new proposal this late in the proceeding limits the ability of the other parties to respond.

Q. Has PGE identified flaws in ICNU's new proposal?

A. Yes. There are several material flaws and incorrect assumptions in ICNU's new proposal:

1) ICNU's proposal ignores the 100 MW long-term power purchase agreement (PPA) discussed in PGE's reply testimony in this docket;[39]
2) ICNU is relying on an oversimplified depiction of the transmission system;
3) ICNU's understanding of PGE's access to, and use of, transmission is incorrect;
4) ICNU's new argument hinges on the incorrect assumption that upgrading a single circuit of PGE's portion of the SoA transmission path will yield approximately 500 MW of additional transmission capacity on the SoA transmission path and that PGE will be the sole recipient of this assumed incremental capacity;[40]
5) ICNU's estimated upgrade costs are incomplete and speculative; and,
6) ICNU's new proposal ignores the feasibility of its proposed upgrade.

Q. Please discuss the first flaw regarding the 100 MW long-term PPA.

A. In its rebuttal testimony, ICNU proposes to reduce PGE's 2015 NVPC forecast by what it characterizes as the first year savings from implementing its proposed upgrade to PGE's 230 kV transmission from the Trojan substation to Portland. This $1.6 million reduction is calculated as the total cost of the Beaver PTP contract less the estimated first year revenue

[38] PGE's response to ICNU Data Request No. 070 provided in PGE Exhibit 302.
[39] PGE/200, Niman-Peschka-Hager/4, at lines 6-9.
[40] The capacity of the Beaver PTP contract is 531 MW.

requirement of ICNU's proposed upgrade.[41] ICNU's new proposal does not consider the 100 MW of BPA PTP transmission needed to wheel the output from a long-term PPA because PGE network transmission cannot be used to wheel the power. In our reply testimony in this docket, we explained that the Beaver PTP contract is used to support this long-term PPA.

Q. What is the cost of this 100 MW of BPA PTP transmission?

A. Based on current BPA PTP transmission rates, the cost of the 100 MW of transmission needed to support the PPA is approximately $2.1 million, which more than offsets ICNU's proposed $1.6 million reduction.[42]

Q. Please discuss the second flaw – ICNU's oversimplified depiction of the transmission system.

A. In its rebuttal testimony, ICNU incorrectly assumes (a) there is no difference between the generation lead for PGE's west side generation resources and PGE's 230 kV transmission that is a part of the SoA path, and (b) that PGE's 230 kV transmission from the Trojan substation functions separately from the other transmission on the SoA path.

Q. Please provide a brief description of the structure of the generation lead and PGE's 230 kV transmission from the Trojan substation.

A. Beaver, Port Westward, and PW2 are directly connected to the Trojan substation by a double circuit 230 kV radial generation lead. From the Trojan substation, PGE's double circuit 230 kV transmission wheels power south where one circuit connects to the Rivergate substation and the other circuit to the St. Mary's substation. PGE's double circuit 230 kV transmission from the Trojan substation to Portland is interconnected and operated in

[41] ICNU/200, Mullins/14, at lines 14-16.
[42] Calculated using a $1.479/kW-mo PTP rate and $0.257/kW-mo ancillary service rate.

parallel with the other transmission that comprises the SoA path, which is operated in accordance with the SoA Path Agreement. PGE, BPA, and PacifiCorp executed the SoA Path Agreement in 2007 and determine the path capacity per the terms of the Agreement. The capacity of PGE's 230 kV transmission from the Trojan substation to Portland is not evaluated in isolation from the other transmission on the path, as ICNU is doing when comparing it to the generation lead, but instead it is evaluated at the path level as to how much power will flow safely on the path, and then allocated to the parties according to the terms of the SoA Path Agreement.

Q. How are the generation lead and PGE's 230 kV transmission from the Trojan substation different?

A. The generation lead from our west side resources is radial. This means the generation lead is the only connection between our west side resources and the Trojan substation, which is where the generated power enters the transmission network. Generally, the rated capacity of the generation lead is not affected by anything on the transmission network. PGE's 230 kV transmission from the Trojan substation to Portland is part of a network system. This means our 230 kV transmission from the Trojan substation is part of a larger, more complicated, interconnected system. Generally, under Western Electricity Coordinating Council (WECC) rules, the rated capacity is determined at the path level, which may consist of multiple transmission lines, by how much power can reliably flow over the path's lines when taking into account the most severe of multiple contingencies, and is a function of all of the transmission that comprises the path, the surrounding system, as well as load and generation patterns. As a result of these differences, it is not accurate to directly compare individual

circuit ratings and contractually allocated pathway rights and expect their capabilities to be similar.

Q. Please discuss the third flaw – ICNU's misunderstanding of PGE's access to and use of transmission.

A. ICNU's new proposal assumes that the transmission rights held by PGE's Power Operations (Power Ops) group on the Beaver PTP contract and on PGE's transmission (PGE-T) group's allocated share of the SoA path are interchangeable. This assumption is incorrect. The transmission rights held by the Power Ops group on PGE-T's allocated share of the SoA path are for network transmission service, which limits the delivery of the power from the generation resource to PGE load only.[43] The rights on the Beaver PTP contract with BPA are for the delivery path from the Trojan substation to PGE's system; however, Power Ops has the ability to request that BPA temporarily redirect the PTP transmission rights to a different delivery path.[44] As discussed in our reply testimony, this allows Power Ops to use the transmission rights from the Beaver PTP contract to support our portfolio, manage curtailments on the SoA path, and access the Northwest market.[45]

In addition to the flexibility of the Beaver PTP contract, PGE uses the rights from the Beaver PTP contract to deliver 100 MW of power from a long-term PPA and for SoA path management. As explained above, ICNU's new proposal does not consider the 100 MW of PTP transmission needed to wheel the output of the PPA. The cost for this 100 MW at current BPA PTP rates more than offsets ICNU's proposed adjustment.

[43] Under network transmission service, Power Ops designates which generation resources are network resources that will use network transmission rights.
[44] For example, Power Ops could request that the entire Beaver PTP contract be redirected from the Trojan-PGE delivery path to a Mid C-PGE delivery path.
[45] PGE/200, Niman-Peschka-Hager/5, at lines 15-18.

Q. Please discuss the fourth flaw – ICNU's assumption regarding the increased transmission capacity from ICNU's proposed upgrade to PGE's portion of the SoA path.

A. ICNU's new proposal assumes that if PGE would have upgraded a single circuit (i.e., reconductor the single circuit), then we would receive enough additional capacity that the Beaver PTP contract would no longer be needed to deliver power from our west side resources to load. This assumption is materially flawed because it assumes that the upgrade ICNU has suggested would yield approximately 500 MW of increased transmission pathway capacity, if the upgrade were feasible, and PGE would receive the entire amount of this increased transmission capacity. We address the feasibility of ICNU's proposed upgrade later in our testimony.

PGE's 230 kV transmission from the Trojan substation to Portland is a part of the SoA Path Agreement, which consists of multiple transmission lines owned by several parties. PGE receives an allocated portion of the total path rating, depending on the season and the path capability, and the allocated amount is not necessarily equal to the capacity of PGE's 230 kV transmission. Per the SoA Path Agreement, any commercial or economic additions or modifications to the transmission system on the SoA path made by any party to the Agreement will result in the parties renegotiating the allocations. Under the SoA Path Agreement, there is no guarantee that PGE would receive an equivalent increase in transmission pathway capacity due to ICNU's proposed upgrade. In summary, ICNU is overstating the simplicity of the SoA transmission path and its new proposal relies on flawed assumptions about the results of its proposed upgrade.

Q. Please discuss the fifth point regarding the problems with ICNU's estimated upgrade costs.

A. ICNU uses a report commissioned by WECC to develop a rough estimate of the cost of its proposed upgrade to PGE's 230 kV transmission from the Trojan substation to Portland.[46] To develop this estimate, ICNU makes the following assumptions:

- The upgrade would consist of reconductoring a single circuit and some illustrative substation upgrades;[47]
- Reconductoring one circuit will add approximately 500 MW to PGE's existing 855 MW of rights on the SoA path;
- The existing support structures (poles, insulators, etc.) would require no upgrades to support the new conductor;
- There are no expenses associated with the terrain on which the 230 kV transmission is located; and,
- There are no expenses associated with allowance for funds used during construction (AFUDC) and overhead.

Under these assumptions, ICNU estimates a medium cost case of $32.5 million. Including the adders identified in the WECC report for forested terrain, AFUDC, and overhead results in an estimated medium cost case of $63.9 million, which is approximately twice as larger as ICNU's estimate. The WECC report "assumes that the new conductor would be of similar size and weight, hence no upgrading of poles of insulators is necessary" and does not estimate the associated costs.[48] Additionally, as we discuss below, it unlikely

[46] ICNU/200, Mullins/12, at lines 5-8.
[47] ICNU/200, Mullins/12, Table 2.
[48] ICNU/201, Mullins/11.

that reconductoring a single circuit would be sufficient. Based on the WECC report, the estimated cost for reconductoring both circuits is approximately $113.0 million, which is significantly larger than ICNU's estimated high cost case of $65.0 million.

Q. Is PGE stating that $113 million is its estimate of costs to upgrade?

A. No. We are simply demonstrating that ICNU has ignored key cost adders from the WECC report and that ICNU's cost estimate for its proposed upgrade is based substantially on erroneous assumptions that lead to drastic cost increases if refined.

Q. Please discuss the sixth point that ICNU's new proposal ignores feasibility.

A. ICNU's testimony does not address the feasibility regarding its new proposal to re-conductor a single circuit of PGE's 230 kV transmission from the Trojan substation to Portland. Due to planning standards and power loadings on our 230 kV transmission, it is unlikely that reconductoring a single circuit would materially change the capacity of the SoA path because the remaining lower capacity circuit would continue to be a limiting element. This suggests that reconductoring both circuits would likely be required; however, the SoA path's capacity would not likely increase materially because PGE's 230 kV transmission shares a common structure and there are multiple other limiting elements, such as the overload of lower voltage lines that are a part of the SoA path, which impact the overall path rating.[49]

Q. Please summarize your testimony and recommendation to the Commission

A. ICNU's proposals rely on oversimplified assumptions, which result in the material flaws we have identified in our testimony, and ICNU has failed to present evidence to support its claims. In this testimony and our reply testimony, we have presented substantial detail and

[49] Sharing a common structure represents a high likelihood that damage to the structure would impact both circuits.

evidence that supports the use and usefulness of the Beaver PTP contract, the prudence of the Beaver PTP contract and management of our transmission rights, and our prudent management of wind integration costs in the 2015 test period. We continue to recommend that the Commission reject ICNU's proposals regarding the Beaver PTP contract and wind integration for the entire 2015 test period.

Q. Does this conclude your testimony?

A. Yes.

List of Exhibits

PGE Exhibit	Description
301	PGE's Response to OPUC Data Request No. 001
302	PGE's Response to ICNU Data Request No. 070

April 15, 2014

TO: Kay Barnes
Oregon Public Utility Commission

FROM: Patrick Hager
Manager, Regulatory Affairs

PORTLAND GENERAL ELECTRIC
UE 286
PGE Response to OPUC Data Request No. 001
Dated April 1, 2014

Request:

Regarding Exhibit UE283/PGE/500, Niman-Peschka-Hager/12, lines 12-16, where the Company represented:

> ***"...PGE plans to update the modeling of PW2 in order to capture the integration benefits associated with PW2 during Q4 of 2015. Due to the detailed modeling and time needed for analysis and verification of the results, we were unable to quantify the benefits in time for inclusion in this initial filing"***

Please:

a. **Describe the integration benefits associated with PW2 during Q4 of 2015;**
b. **Explain why the integration benefits associated with PW2 are focused only for the fourth quarter of 2015 (4Q-2015); and**
c. **Are there any integration benefits associated with PW2 for periods other than 4Q-2015 (e.g., 1Q-2015, 2Q-2015, 3Q-2015)? If "there are benefits," please explain and describe such benefits. If "there are not benefits," please explain why there are not such benefits given that the Port Westward 2 Power Plant will place into service in the first quarter of 2015.[1]**

[1] In Exhibit UE283/PGE400, Pope-Lobdell/24, lines 4-5, the Company represented that the Port Westward Power Plant will be in service in the first quarter of 2015.

Please include, if applicable, the work-papers, in electronic spreadsheet format with cell references and formulae intact, used to respond the above questions. If the Company relied on information sources to respond the requested questions, please identify each such specific source and provide a copy of each such specific source document in portable document format (PDF) file(s), MS Word file(s), Excel workbook (with cell references and formulae intact) file(s), or any other common document format indicating the specific page, section, etc. of the relevant source document.

Response:

a. The Q4 integration benefits associated with Port Westward 2 included in the April 1 power cost update filing are an estimate of the net benefit of self-integration of Biglow Canyon.

   For more details, please refer to the Minimum Filing Requirements (MFR) documentation submitted on April 15, 2014, specifically the step documentation for "Step 56 – Update Port Westward 2: Q4 Integration Benefit."

   PGE is continuing to work toward the least cost, least risk option for integrating wind. The fourth quarter of 2015 is the next available date for which PGE could elect self-integration or some other combination of services for wind resources, if PGE has the necessary infrastructure and systems in place.

b. The election period for BPA Variable Energy Resources Balancing Service (VERBS) is the April prior to the start of BPA's two year rate period. BPA's current rate period is the two year period beginning October 1, 2013 and ending September 30, 2015. For the current rate period, BPA offered a mid-rate-period election option for VERBS. The mid-rate-period election was April 4, 2014, prior to completion and operating experience with Port Westward 2, for service beginning October 1, 2014. PGE elected to continue 30/60 VERBS service through September 30, 2015.

   At the next VERBS election (April 2015, for service effective October 1, 2015), PGE will have the opportunity to choose one of the offered scheduling options or elect to self-integrate wind resources currently on VERBS.

c. Port Westward 2 provides PGE with highly flexible capacity that improves system integration and reliability year round. In MONET, Port Westward 2 provides load following reserves for load, contingency reserves, and day-ahead forecast error benefits in all four quarters of 2015. Load following reserves are capacity that can respond to the 5-10 minute trends in PGE's system load requirements. Contingency reserves are required for reliability by WECC Standard BAL-002-WECC-2 and are based on three percent of both load and generation. Half of the contingency reserves are required to be spinning reserves, and the other half can be non-spinning reserves. The day-ahead forecast error is the cost to re-optimize PGE's portfolio in order to

account for the difference between the day-ahead and hour-ahead forecast for wind generation.

In the April 1 power cost update filing, Port Westward 2 reduced the 2015 net variable power cost forecast by approximately $2.0 million. This reduction includes the economic dispatch benefits, system integration benefits, and day-ahead forecast error benefits for all of 2015. It also includes the Q4 estimated integration benefit included in Step 56 of the April 1 update filing.

May 6, 2014

TO: Bradley Van Cleve
Tyler C. Pepple
Bradley Mullins

FROM: Patrick Hager
Manager, Regulatory Affairs

PORTLAND GENERAL ELECTRIC
UE 286
PGE Response to ICNU Data Request No. 070
Dated April 22, 2014

Request:

Please provide detail of all of the transmission rights, transmission capacity and transmission services that are being, or will be, used to serve loads from Port Westward, Port Westward 2, and Beaver.

Response:

PGE objects to this request to the extent it is overly broad and unduly burdensome. Subject to and without waiving its objection, PGE responds as follows:

Port Westward, Port Westward 2, and Beaver are interconnected to the Trojan Substation via 230 kV generation leads. From the Trojan Substation, PGE has two 230 kV circuits that connect to PGE substations in the Portland area and Bonneville Power Administration (BPA) has one 230 kV circuit that connects to the BPA Allston substation and lines to the Portland area. PGE can use either the BPA or PGE transmission system to wheel power from the plants to serve loads.

Please refer Attachment 070-A for a list of details regarding Port Westward, Port Westward 2, and Beaver transmission from the Trojan Substation to PGE's load.

UE 286

Attachment 070-A

Provided in Electronic Format only

Beaver, Port Westward, and Port Westward 2 Transmission Details

Beaver, Port Westward 1, and Port Westward 2 Transmission

Purchaser	Provider	Capacity	Service Type
PGE-M	BPA-T	531 MW	Point-to-Point(1)
PGE-M	PGE-T	855 MW	Network Integration

(1) As part of this service, PGE must also use BPA's Scheduling, Control, and Dispatch (SCD) and Generation Supplied Reactive (GSR) services. The charges for these services are detail in the PC Inputs worksheet of MONET.