**EXHIBIT NO. ___(PKW-1CT)**
**DOCKET NO. UE-13____**
**2013 PSE PCORC**
**WITNESS: PAUL K. WETHERBEE**

**BEFORE THE**
**WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

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| **WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,**<br><br>**Complainant,**<br><br>**v.**<br><br>**PUGET SOUND ENERGY, INC.,**<br><br>**Respondent.** | **Docket No. UE-13____** |

# PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF PAUL K. WETHERBEE ON BEHALF OF PUGET SOUND ENERGY, INC.

**REDACTED VERSION**

**APRIL 25, 2013**

**PUGET SOUND ENERGY, INC.**

**PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF PAUL K. WETHERBEE**

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**REDACTED**

**PUGET SOUND ENERGY, INC.**

**PREFILED DIRECT TESTIMONY (CONFIDENTIAL) OF PAUL K. WETHERBEE**

## I. INTRODUCTION

**Q. Please state your name and business address.**

A. My name is Paul K. Wetherbee, and my business address is 10885 N.E. Fourth Street, Bellevue, Washington 98004. I am employed by Puget Sound Energy, Inc. ("PSE") as a Director, Hydroelectric and Wind Resources & Asset Management.

**Q. Have you prepared an exhibit describing your education, relevant employment experience, and other professional qualifications?**

A. Yes, I have. It is Exhibit No. ___(PKW-2).

**Q. Please summarize your prefiled direct testimony.**

A. This prefiled direct testimony addresses the following issues that affect the rate year in this proceeding, November 1, 2013 through October 31, 2014 (the "rate year"):

(i) Implementation of the Federal Energy Regulatory Commission ("FERC") license requirements for the Baker River Hydroelectric Project (the "Baker River Project"), including the construction of a downstream fish collection facility and a new powerhouse and generating unit at Lower Baker;

(ii) Implementation of the FERC license requirements for the Snoqualmie Falls Hydroelectric Project (the "Snoqualmie Falls Project");

(iii) Incremental electricity produced as a result of the efficiency improvements at the Baker River Project and the Snoqualmie Falls Project that constitute eligible renewable resources under the Energy Independence Act, Chapter 19.285, RCW ("EIA");

(iv) [redacted]; and

(v) PSE's rate year production operations and maintenance expense adjustments and projections for the hydroelectric and wind generation facilities, including operations and maintenance ("O&M") expenses required to meet FERC relicensing requirements during the rate year.

## II. BAKER RIVER PROJECT LICENSE IMPLEMENTATION

### A. History and Description of the Baker River Project

**Q. Please describe PSE's Baker River Project**

A. The Baker River Project, FERC Project No. 2150, is owned and operated by PSE and is located on the Baker River in Skagit and Whatcom Counties, north of, and partially within, the Town of Concrete. The Baker River Project consists of two developments: the Lower Baker Development and the Upper Baker Development. The present installed capacity of the Baker River Project is 170 MW.

**Q. Please describe the Lower Baker Development.**

A. The Lower Baker Development began commercial operations in 1925 and currently consists of (i) a concrete arch dam 1.2 river miles upstream of the Baker River's confluence with the Skagit River, (ii) a 7-mile-long reservoir, (iii) a power tunnel, (iv) a single-unit powerhouse at river mile 0.9, (v) a fish barrier dam and

trap at river mile 0.6, (vi) a primary transmission line, and (vii) associated facilities. The current installed plant capacity is 79.3 MW. The 2008 FERC license order authorized installation of an additional 30 MW at Lower Baker, and construction of a new powerhouse containing a 30 MW generating unit is currently underway.

**Q. Please describe the Upper Baker Development.**

A. The Upper Baker Development commenced commercial operations in 1959. It consists of (i) a concrete gravity dam at river mile 9.35, (ii) an earthen dike, (iii) a 9-mile-long reservoir, (iv) a two-unit powerhouse, and (v) associated facilities. The authorized capacity of the Upper Baker Development is 90.7 MW.

## B. FERC License No. 2150 and the Requirements of the License

**Q. What is the status of the Baker River Project FERC license?**

A. PSE began the formal relicensing process required by FERC in early 2000, several years before the existing license expired in April 2006. PSE used FERC's Alternate Licensing Process for the relicensing of the Baker River Project, and this process ultimately led to a comprehensive settlement agreement setting forth proposed terms of a new license for Baker River Project that PSE filed as an offer of settlement with FERC on November 30, 2004. PSE received the new license for the Baker River Project from FERC for a term of 50 years with an effective date of October 1, 2008. FERC approved the comprehensive settlement agreement and incorporated it in the license order. Since issuance of the new license in 2008, PSE has been working to implement the requirements of the new

license including completion of large capital projects aimed primarily at improving migratory fish facilities.

**Q. Have the terms of the comprehensive settlement agreement and new FERC license previously been reviewed by the Commission?**

A. Yes. In PSE's 2006 general rate case, the Prefiled Direct Testimony of Mr. Kris Olin, Exhibit No. 351HC, provided a detailed summary of the relicensing process, the terms of the settlement agreement, and PSE's analysis of alternatives to relicensing the Baker River Project.

**Q. Did the Commission make any determination in that case regarding PSE's decision to relicense the Baker River Project?**

A. Yes. In the final order, the Commission reviewed the terms of the settlement agreement entered into by PSE as part of the FERC relicensing process, determined that PSE's decision to relicense the Baker River Project was prudent and found the associated costs to obtain the new license reasonable for recovery in rates.[1]

**Q. What is PSE requesting with respect to implementation of the Baker River FERC license?**

A. PSE requests a determination by the Commission that its implementation of the FERC license for the Baker River Project was prudent and that all costs associated with the project —including capital costs, operating costs, transmission

[1] *WUTC v. Puget Sound Energy, Inc.*, Dockets UE-060266 and UG-060267, Order 08 (January 5, 2007) ¶165.

costs and other costs—are reasonable for recovery in rates. This includes all costs associated with the construction of the Lower Baker Floating Surface Collector and the Lower Baker Powerhouse as explained in more detail later in my testimony.

Additionally, PSE requests a determination that the incremental generation produced as a result of the Baker River Project license implementation qualifies as a renewable resource under the EIA and may be used to meet PSE's renewable energy targets under the EIA. The incremental electricity produced as a result of the Baker River Project FERC license implementation is 109,575 MWh on an annual basis.

## C. Status of Work Undertaken at the Baker River Project

**Q. Please describe the capital improvements undertaken at the Baker River Project pursuant to the FERC license.**

A. The Baker River Project's FERC license requires several capital projects aimed primarily at improving migratory fish facilities. The large capital improvements consist of construction of upstream and downstream fish passage facilities and a new fish hatchery. A new powerhouse and generating unit will increase Baker River in-stream flow for fish passage.

More specifically, PSE completed construction of a downstream fish collection facility at Upper Baker (the Upper Baker Floating Surface Collector) in March 2009. A new fish hatchery and an upstream migratory fish trap both began

operations in summer 2010. PSE's 2011 general rate case[2] included the three additions to the Baker River Project.

Completion of two additional capital improvements will occur in 2013:

- The Lower Baker downstream fish collection facility (the "Lower Baker Floating Surface Collector") was placed in service on February 14, 2013. PSE and the construction contractor are continuing to work through the final project punch list items.

- A new powerhouse and generating unit at Lower Baker (the "Lower Baker Powerhouse") is nearing completion. PSE and contractor have started testing the new unit and the facility is scheduled to begin commercial operations in June 2013.

**1. Lower Baker Floating Surface Collector**

**Q. Please describe the Lower Baker Floating Surface Collector.**

A. The Lower Baker Floating Surface Collector is a 130-foot-by-60-foot barge designed to attract, sort, and safely transfer juvenile salmon for transport downstream around Lower Baker Dam. The facility features a series of submerged screens, water pumps, fish-holding chambers, a fish-evaluation station, equipment-control rooms and a fish-loading facility. Fine-mesh guide nets extend from shore to shore and from the lake's surface to its bottom, forming an impassible funnel of netting that leads small migrating fish to the collector.

[2] *See* Dockets UE-111048 and UG-111049 (consolidated).

**Q. Does the Baker River Project FERC license require PSE to construct the Lower Baker Floating Surface Collector?**

A. Yes. The FERC license for the Baker River Project specifically requires construction of the Lower Baker Floating Surface Collector. Please see the Prefiled Direct Testimony of Mr. Doug S. Loreen, Exhibit No. ___(DSL-1T), for a discussion of the construction contractor selection process, PSE's approach to major generation project construction, and other information specific to construction of the Lower Baker Floating Surface Collector.

**Q. Is PSE requesting that the costs associated with the Lower Baker Floating Surface Collector be included in rates?**

A. Yes, as previously discussed, PSE requests to include in rates all costs incurred for construction of the Lower Baker Floating Surface Collector. The estimated total cost upon completion is $58.3 million (including AFUDC charges). As of March 1, 2013, approximately 95% of the estimated total, or $55.9 million, had been spent. Please see the Prefiled Direct Testimony of Ms. Katherine J. Barnard, Exhibit No. ___(KJB-1T), for a further discussion of the inclusion of these costs in the revenue requirement in this case.

**Q. Why is the cost of the Lower Baker Floating Surface Collector appropriate for recovery in rates?**

A. As a requirement of the Baker River Project FERC license, the Lower Baker Floating Surface Collector is necessary for continued operation of the Baker River Project. The Baker River Project contributes over 700 GWh per year of reliable,

emissions-free energy to PSE's electric portfolio. The FERC license authorizes the Baker River Project to continue operating over the next forty-four years for the benefit of PSE's electric customers and other stakeholders in the region. PSE followed sound design, engineering, and construction management principles to bring the Lower Baker Floating Surface Collector into operation according to timelines set forth in the FERC license and at the lowest reasonable cost. PSE therefore requests that the Commission allow inclusion of all costs associated with construction of the Lower Baker Floating Surface Collector in rates.

**2. Lower Baker Powerhouse**

**Q. Please describe the Lower Baker Powerhouse that is currently under construction.**

A. The new Lower Baker Powerhouse is a concrete structure containing a new 30 MW turbine-generator unit and associated equipment. The structure is located downstream of Lower Baker dam adjacent to the existing powerhouse for Baker Unit 3 and connected to the existing penstock via a new 1,000 feet, steel-lined tunnel. The new unit will operate in conjunction with the existing Unit 3 to generate electricity while maintaining flows in the Baker River for the benefit of migrating fish. The incremental electricity produced on an annual basis at the Baker River Project as a result of the new Lower Baker Powerhouse is 109,575 MWh.

**Q. Is the new Lower Baker Powerhouse being constructed as part of PSE's implementation of the Baker River Project FERC license?**

A. Yes. The Baker River Project's FERC license requires minimum flows in the Baker River downstream of Lower Baker dam at all times. These required flows cannot be maintained using the existing powerhouse and flow passages. The FERC license stipulates construction of the new Powerhouse in order to comply with the minimum flow requirements.

**Q. Are there other benefits that result from PSE's decision to build the new Lower Baker Powerhouse?**

A. Yes. The Lower Baker Powerhouse represents a qualifying renewable energy investment as defined by Internal Revenue Service Code Section 45 and is therefore eligible to receive a cash grant from the Department of Treasury for up to 30 percent of the cost to construct the facility. Please see the Prefiled Direct Testimony of Mr. Doug S. Loreen, Exhibit No. ___(DSL-1T), for a more detailed discussion of the Treasury Grant.

In addition, the incremental electricity produced as a result of the new powerhouse qualifies as a renewable resource under the EIA and will count toward PSE's renewable energy targets set forth in the act, as discussed in more detail later in my testimony.

**Q. Is PSE requesting that the costs associated with the Lower Baker Powerhouse be included in rates?**

A. Yes, as previously discussed, PSE requests to include in rates all costs incurred for construction of the Lower Baker Powerhouse. The estimated total cost upon completion is $102.2 million (including AFUDC charges). As of March 1, 2013, approximately 88% of the estimated total, or $89.7 million, had been spent. Please see the Prefiled Direct Testimony of Ms. Katherine J. Barnard, Exhibit No. ___(KJB-1T), for a further discussion of the inclusion of these costs in the revenue requirement in this case.

**Q. Why is the cost of the new Lower Baker Powerhouse appropriate for recovery in rates?**

A. The FERC license requires PSE to maintain minimum flows in the Baker River downstream of the Lower Baker dam at all times. Construction of the Lower Baker Powerhouse allows PSE to comply with these license requirements while generating electricity at the Baker River Project. PSE has followed sound design, engineering, and construction management principles to construct the Lower Baker Powerhouse according to timelines set forth in the FERC license at the lowest reasonable cost. PSE therefore requests that the Commission allow inclusion of all costs associated with construction of the Lower Baker Powerhouse in rates.

## III. SNOQUALMIE FALLS PROJECT LICENSE IMPLEMENTATION

**Q. Describe the Snoqualmie Falls Project.**

A. The Snoqualmie Falls Project is a run-of-the-river project consisting of a dam and two powerhouses located on the Snoqualmie River in the City of Snoqualmie and King County, Washington. The 268-foot-high falls is the highest plunge falls in the State of Washington and one of the highest falls in the nation. Powerhouse 1 was originally constructed in 1898 with four Pelton turbines (Units 1–4). A horizontal Francis turbine (Unit 5) was installed in 1905. Powerhouse 2 began operation in 1910 with a horizontal Francis turbine (Unit 6), and an additional vertical Francis machine was brought online in 1957. The Snoqualmie Falls Project is a FERC licensed project, FERC Project No. 2493. Under the new amended license, PSE is authorized to increase the original installed capacity of 44.4 MW to 54.4 MW.

The Snoqualmie Falls Project has been a cost-effective, stable producer of firm power. It is PSE's oldest power-generating project and its park and trails are one of the most popular scenic destinations in the Pacific Northwest. The area attracts approximately two million visitors annually. The predominant activities for these visitors are viewing the falls, hiking, and picnicking. Existing recreation facilities consist of viewing decks, picnic areas, trails, restrooms, and an outdoor education center.

**Q. Describe the Snoqualmie Falls Project's FERC license history.**

A. The original license for the Snoqualmie Falls Project was issued May 13, 1975 with an effective date of March 1, 1956, and expired December 31, 1993. Thereafter, FERC granted annual extensions of the license pending resolution of the re-license application. In 1992, PSE increased the capacity of the facility to 44.4 MW, which was approved by the FERC in 2002. On June 29, 2004 FERC issued the existing license authorizing an installed capacity of 54.4 MW for a period of 40 years. FERC amended the license in March 2005 to incorporate additional aesthetic flows over Snoqualmie Falls in response to an appeal of the license filed by the Snoqualmie Indian Tribe.

**Q. Please briefly describe the terms of the Snoqualmie Falls Project FERC license issued in June 2004 and amended by FERC in 2005.**

A. The FERC license seeks to balance multiple, diverse and often competing interests in a way that serves the public interest and is commercially viable for PSE. The Snoqualmie Falls Project serves those interests by generating environmentally sound electrical power more efficiently using the existing flow of water. At the same time, other requirements of the license will enhance the existing wildlife habitat; provide increased recreational, interpretive and educational opportunities; and manage the flow of water over the falls to improve aesthetic views. In order to realize the power production and other public interest benefits associated with the Snoqualmie Falls Project, the FERC license calls for significant redevelopment and modernization of the project infrastructure. Capital

improvements required by the FERC license include replacement of the diversion dam; modifications to Powerhouse 1 including a new intake structure, new penstocks, replacement of generating units, and re-routing of transmission lines; and modifications to Powerhouse 2 including a new intake structure, penstock replacement, installation of penstock by-pass valves, replacement of a generating unit, and improvements to trails, walkways, and educational resources. The Snoqualmie Falls Project redevelopment also creates an opportunity to preserve certain components of the original installation as a public record of outstanding historic engineering achievement.

**Q. Have the terms of the Snoqualmie Falls Project's FERC license previously been reviewed by the Commission?**

A. Yes. In PSE's 2005 power cost only rate case, the prefiled direct testimony of Eric M. Markell, Exhibit No. ___(EMM-1HCT), provided a detailed summary of the relicensing process that resulted in the issuance of the FERC license for the Snoqualmie Falls Project, including the terms of the settlement agreement, and PSE's analysis of alternatives to relicensing the Snoqualmie Falls Project.

**Q. Did the Commission make any determination in that case regarding PSE's decision to relicense the Snoqualmie Falls Project?**

A. Yes. In the final order accepting the 2005 power cost only rate case settlement agreement the Commission determined that the relicensing of the Snoqualmie

Falls Project including the expenditure of costs related to obtaining the new license was prudent.[3]

**Q. Have the terms of the Snoqualmie Falls Project license been altered since the Commission reviewed the prudence of the FERC license?**

A. Yes. One additional amendment to the license resulted in lower redevelopment costs for the Snoqualmie Falls Project. In December 2007, PSE filed an Application for Non-Capacity License Amendment with FERC. The amendment application addressed changed circumstances resulting from a flood control project undertaken by the U.S. Army Corps of Engineers (the "Corps") in the river channel upstream of PSE's facilities and proposed other changes to the construction plan required to implement license obligations and reduce the cost of redeveloping the Snoqualmie Falls Project.

**Q. Please describe the 2007 FERC license amendment.**

A. PSE began implementing the license in July 2004 when it initiated upgrades to Plant 2. Concurrent with PSE's efforts to fulfill its responsibilities under the FERC license, the Corps implemented a flood reduction project ("Corps 205 project") that removed natural obstructions to the river channel upstream of the PSE facilities. PSE prepared new construction cost estimates based on these changed circumstances, evaluated the economics and ultimately developed an

[3] *See WUTC v. Puget Sound Energy, Inc.*, Docket UE-050870, Order 04 (October 20, 2005) ¶ 30 (referring to section IV.E of PCORC Settlement Agreement).

amendment proposal to address the diversion dam and to refurbish the Plant 1 water intake that took into consideration these changed circumstances.

PSE's amendment application proposed revisions to the diversion dam and the plan for modifications to Plant 1. PSE also proposed further modifications to the Plant 2 powerhouse and gatehouse that were necessary to implement improvements to these facilities that are required by the license.

Changes and additions to the scope of redevelopment of the Snoqualmie Falls Project include:

- Left bank realignment, including reconstruction of the Plant 1 crib wall, modified diversion dam and Plant 1 intake to better achieve upstream flood reduction benefits required by the license and to protect Plant 1 infrastructure from future flood damage.
- Reconstruction of the Plant 2 powerhouse to address structural inadequacies.
- Relocation and installation of additional bypass chambers at Plant 2 to ensure in-stream flow compliance.
- Relining of the power tunnel to improve hydraulic efficiencies.
- Additional site security measures, both during and post-construction, aligned with regulatory requirements and supported by industry best practices.
- Installation of emergency shutoff valves in the Plant 2 gatehouse.

On June 1, 2009, the FERC issued its order amending PSE's license for the Snoqualmie Falls Project (the "Amendment Order"). The Amendment Order

incorporated the changes proposed in PSE's December 2007 application. Please see Exhibit No. ___(PKW-3) for a copy of the Amendment Order.

**Q. What is PSE requesting in this case with respect to implementation of the Snoqualmie Falls Project FERC license?**

A. PSE requests a determination by the Commission that its implementation of the FERC license for the Snoqualmie Falls Project was prudent and that all costs associated with the project —including capital costs, operating costs, transmission costs and other costs—are reasonable for recovery in rates. The estimated total cost upon completion is $301.1 million (including AFUDC charges). As of March 1, 2013 approximately 90% of the estimated total, or $270.7 million, had been spent.

Additionally, PSE requests a determination that the incremental generation produced as a result of the Snoqualmie Falls Project license implementation qualifies as a renewable resource under the EIA and may be used to meet PSE's renewable energy targets under the EIA. The incremental electricity produced as a result of the Snoqualmie Falls Project FERC license implementation is 22,030,000 kWh on an annual basis.

**Q. Did PSE compare the costs of Snoqualmie Falls Project redevelopment under the amended license to the cost of redevelopment under the license as it was issued in 2004?**

A. Yes. Prior to acceptance of the license amendment PSE developed updated cost estimates for Snoqualmie redevelopment under both the license as issued in 2004

and the license with proposed amendments. To implement the license as issued, PSE estimated capital expenditure of $264.3 million (in 2009 dollars, not including AFUDC). To implement the amended license, PSE estimated capital expenditure of $240.0 million (in 2009 dollars, not including AFUDC), a savings of over $24 million relative to the as-issued license.

**Q. What is the current status of capital improvements required to support the amended license?**

A. PSE completed construction of the diversion dam in October 2012. Plants 1 is scheduled to begin commercial operation on July 1, 2013, and Plant 2 began commercial operations on April 17, 2013. Please see the Prefiled Direct Testimony of Doug S. Loreen, Exhibit No. ___(DSL-1T), for the status of construction at the Snoqualmie Falls Project.

**Q. Are there any other benefits that result from PSE's decision to redevelop the Snoqualmie Falls Project in accordance with the FERC license as amended?**

A. Yes. The Snoqualmie Falls Project redevelopment represents a qualifying renewable energy investment as defined by Internal Revenue Service Code Section 45 and is therefore eligible to receive a cash grant from the Department of Treasury for up to 30 percent of the cost to construct the facility. Please see the Prefiled Direct Testimony of Doug S. Loreen, Exhibit No. ___(DSL-1T), for a more detailed discussion of the Treasury Grant.

In addition, the incremental electricity produced as a result of the redevelopment qualifies as a renewable resource under the EIA and will count toward PSE's

renewable energy targets set forth in the act, as discussed in more detail later in my testimony.

**Q. Why is the cost of the Snoqualmie Falls Project redevelopment appropriate for recovery in rates?**

A. The Snoqualmie Falls Project FERC license as amended will allow PSE to maintain this reliable, emissions-free resource in a cost-effective manner for the remaining 31 years of the license term. The Snoqualmie Falls Project will contribute up to 54.4 MW of capacity and estimated 270 GWh per year to PSE's resource portfolio. The FERC license amendment proposed by PSE in 2007 allows the benefits of the Snoqualmie Falls Project to be delivered at a cost significantly lower than under the license as originally issued. PSE has followed sound design, engineering, and construction management principles to redevelop the Snoqualmie Falls Project according to FERC license requirements at the lowest reasonable cost. Therefore, PSE requests that the Commission approve the recovery of all costs associated with the redevelopment of the Snoqualmie Falls Project.

## IV. HYDROELECTRIC EFFICIENCY IMPROVEMENTS AS RENEWABLE RESOURCES UNDER THE ENERGY INDEPENDENCE ACT

**Q. Please generally describe how the additional electricity produced as a result of the upgrades to the Baker River Project and Snoqualmie Falls Project is treated under the Energy Independence Act.**

A. The Energy Independence Act allows incremental electricity produced as a result of efficiency improvements to be counted as an eligible renewable resource under certain conditions. Specifically, RCW 19.285.030 defines eligible renewable resource to include the following:

> (11) "Eligible renewable resource" means:
>
> . . . .
>
> (b) Incremental electricity produced as a result of efficiency improvements completed after March 31, 1999, to hydroelectric generation projects owned by a qualifying utility and located in the Pacific Northwest or to hydroelectric generation in irrigation pipes and canals located in the Pacific Northwest, where the additional generation in either case does not result in new water diversions or impoundments . . . .

The incremental electricity produced as a result of the upgrades to the Baker River Project and the Snoqualmie Falls Project, undertaken as part of the FERC license implementation for these projects, falls within the EIA's definition of "eligible renewable resources," and PSE may use this incremental electricity to meet its annual renewable energy targets.

**Q. As part of the FERC license implementation of the Snoqualmie Falls Project did PSE complete energy efficiency improvements that produced incremental electricity?**

A. Yes. As previously discussed, the 2004 FERC license, as amended, authorized PSE to undertake efficiencies that increased the capacity of the Snoqualmie Falls Project from the previously authorized 44.4 MW, to an installed capacity of 54.4 MW for a period of 40 years.

**Q. Has PSE calculated the incremental electricity to be produced on an annual basis as a result of the upgrades undertaken to implement the Snoqualmie Falls Project FERC license?**

A. Yes, the incremental electricity produced as a result of the Snoqualmie Falls Project FERC license implementation is 22,030,000 kWh on an annual basis. Please see Exhibit No. ___(PKW-4) for a description of PSE's calculation of the incremental electricity generated as a result of the upgrades. Please see Exhibit No. ___(PKW-5) for the FERC Order certifying the amount of incremental electricity produced as a result of the upgrades at the Snoqualmie Falls Project.

**Q. As part of the FERC license implementation of the Baker River Project did PSE complete energy efficiency improvements that produced incremental electricity?**

A. Yes, as previously discussed, the FERC license authorized PSE to build the new Lower Baker Powerhouse to comply with minimum flow requirements

downstream of the Lower Baker dam, and the new powerhouse will increase the current installed plant capacity of 79.3 MW by an additional 30 MW at Lower Baker.

**Q. Has PSE calculated the incremental electricity to be produced on an annual basis as a result of the upgrades undertaken to implement the Baker River Project FERC license?**

A. Yes, the incremental electricity produced as a result of the Baker River Project FERC license implementation is 109,575 MWh on an annual basis. Please see Exhibit No. ___(PKW-6) for a description of PSE's calculation of the incremental electricity generated as a result of the upgrades. Please see Exhibit No. ___(PKW-7) for the FERC Order certifying the amount of incremental electricity produced as a result of the upgrades at the Baker River Project.

**Q. Did the upgrades PSE undertook to implement the FERC licenses result in any new water diversions or impoundments at the Baker River Project or the Snoqualmie Falls Project?**

A. No.

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[redacted]

## VI. PRODUCTION OPERATIONS AND MAINTENANCE COSTS

**Q. How has PSE prepared its forecast of hydroelectric and wind production operations and maintenance expense for the rate year?**

A. PSE developed the rate year production O&M expense in accordance with the 2011 GRC Order, utilizing October 2011 through September 2012 test year data and making certain pro forma adjustments as previously allowed by the Commission.

**Q. What is PSE's forecast of hydro and wind production O&M for the rate year?**

A. Rate year production hydro O&M costs are forecast to be $14.2 million, a decrease of $3.7 million from the 2011 GRC hydro production O&M costs of $17.9 million. Rate year production wind O&M costs are forecast to be $31.9 million, an increase of $1.0 million from the 2011 GRC wind production O&M costs of $30.9 million. Please see Exhibit No. ___(LEO-3C) for the rate year production O&M costs. Please see the Prefiled Direct Testimony of Mr. L. Edward Odom, Exhibit No. ___(LEO-1CT), for a discussion of production O&M for the gas-fired generators.

## A. Hydro Production O&M Costs

**Q. Please summarize the hydro O&M costs.**

A. Please see Table 2 below for a summary of hydro O&M costs.

**Table 2. Hydro O&M Costs**

| Resources | 2011 GRC | Test Year 10/1/11 - 9/30/12 | Adjustments | 2013 PCORC 9/1/13 - 8/31/14 | 2013 PCORC vs. 2011 GRC |
|---|---|---|---|---|---|
| Lower Baker | $5,653,795 | $5,087,915 | $245,380 | $5,333,295 | $(320,500) |
| Upper Baker | $1,053,605 | $2,338,297 | - | $2,338,297 | $1,284,692 |
| Baker Licensing | $4,927,789 | $2,817,066 | $818,467 | $3,635,532 | $(1,292,257) |
| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
| Snoqualmie | $1,849,780 | $1,941,778 | $316,646 | $2,258,424 | $408,645 |
| Snoqualmie Licensing | $644,719 | $349,144 | $293,766 | $642,910 | $(1,809) |
| White River | - | - | - | - | - |
| **Hydro Total O&M** | **$17,864,766** | **$16,074,867** | **$(1,866,409)** | **$14,208,459** | **$(3,656,307)** |

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**Q. What is the nature of the adjustments PSE's has made to test year hydro production O&M expense?**

A. PSE has made several adjustments to test year hydro production O&M as discussed below:

(i) added $0.2 million to test year O&M to reflect the addition of two hydro journey worker positions at Lower Baker Generating Station to support O&M for Lower Baker Unit 4 (new generation);

(ii) added $1.1 million to test year O&M costs to reflect rate year FERC relicensing costs associated with the Baker Project and the Snoqualmie Falls Project;

(iii) [redacted]

(iv) added $0.3 million to test year O&M to reflect normal operation staffing level at the Snoqualmie Falls Project. Snoqualmie staff had been reassigned to Electron and White River during the test year as the Snoqualmie plant was off-line while improvements associated with the FERC license renewal were implemented.

**Q. What is the nature of the adjustment to hydro O&M for [redacted]?**

A. [redacted].

**Q. Please describe the labor adjustment for the Snoqualmie Falls Project production O&M.**

A. Staffing requirements at the Snoqualmie Falls Project during the test year were less than required during normal operations; accordingly, Snoqualmie personnel

were reassigned to support activities at other facilities. As the Snoqualmie Falls Project will be available for generation during the rate year, the reassigned personnel will return to the Snoqualmie Falls Project to support normal generation operations. The adjustment is to reinstate $0.2 million of Snoqualmie Falls Project personnel test year labor that was charged to Electron O&M during the test year and $0.1 million to reflect labor cost associated with the instrument, controls & electrical (ICE) technician position to support the new generation.

**Q. Please describe the labor adjustment for Lower Baker Project production O&M.**

A. Lower Baker Unit No. 4 will be placed in service in June 2013. This unit represents new generation added subsequent to the test year. Baker Project test year O&M was increased $0.2 million to reflect rate year labor associated with two journeyman positions added in early 2013 to support this new generation.

**Q. Please describe the adjustment to reflect rate year FERC relicensing costs associated with the Baker Project and the Snoqualmie Falls Project.**

A. The increase in test year O&M licensing costs are a result of pro-formed costs to reflect the budgeted licensing O&M costs during the rate year. This is consistent with the treatment in the 2011 GRC.

## B. Wind Production O&M Costs

**Q. Please summarize the wind O&M costs.**

A. Please see Table 3 below for a summary of wind O&M costs.

**Table 3. Wind O&M Costs**

| Resources | 2011 GRC | Test Year 10/1/11 - 9/30/12 | Adjustments | 2013 PCORC 9/1/13 - 8/31/14 | 2013 PCORC vs. 2011 GRC |
|---|---|---|---|---|---|
| Hopkins Ride + Expansion | $6,945,862 | $6,732,323 | $646,102 | $7,378,425 | $432,563 |
| Wild Horse | $11,485,619 | $11,335,787 | $582,718 | $11,918,504 | $432,885 |
| Wild Horse Exp. | $1,577,517 | $1,578,623 | $13,373 | $1,591,996 | $14,479 |
| Lower Snake River | $10,891,023 | $5,910,744 | $5,054,068 | $10,964,812 | $73,790 |
| **Wind Total O&M** | **$30,900,021** | **$25,557,477** | **$6,296,260** | **$31,853,738** | **$953,717** |

**Q. What is the nature of the adjustments PSE's has made to test year wind production O&M expense?**

A. PSE has made some adjustments to test year wind production O&M that total the $6.3 million, as discussed below:

(i) added $5.3 million to test year wind production O&M expense to reflect projected rate year contract maintenance and royalty costs under the Vestas/Siemens maintenance contracts and royalty contracts for the Hopkins Ridge, Wild Horse/Wild Horse Expansion and Lower Snake River Phase I wind projects based upon projected rate year wind generation; and

(ii) added $1.0 million to test year O&M to reflect projected rate year other production O&M costs for the LSR Phase 1 wind facility. The LSR facility was placed in service in late February of 2012 and was operational for only seven months during the test year. The adjustment used a pro forma expense based upon the actual other production O&M expense for the twelve months ending February 2013.

**Q. Are there any notable additions or proposals to the rate year production O&M as compared to the 2011 GRC?**

A. No. The proposed adjustments are consistent with adjustments made in the 2011 GRC.

**Q. How is routine and corrective maintenance provided for the wind turbines?**

A. PSE's wind turbines are maintained by the manufacturer, Vestas, in accordance with the terms of five-year service agreements. PSE has three service agreements in place—one each for Hopkins Ridge, Wild Horse, and the Wild Horse Expansion. The wind turbines at the Lower Snake River Phase I project were placed in service beginning in February of 2012. Siemens has been contracted to provide all maintenance services at the Lower Snake River Phase I facility. The term of the initial contract terminates after five years following turbine commissioning on February 29, 2012.

**Q. Please explain PSE's proposed adjustment to wind royalty expense.**

A. Wind turbine production royalties represent variable dollar per MWh fees paid under contract to project stakeholders. These fees are based on the actual generation of PSE's wind turbines. Consistent with the 2011 GRC Order, PSE has pro formed the royalty costs based upon the wind generation included in the rate year power portfolio. In this regard, the rate year royalty expense for PSE's wind facilities have increased to $6.7 million for the 2013 PCORC rate year as compared to $6.5 million for the 2011 GRC rate year for a rate year to rate year increase of $0.2 million.

**Q. Do the wind turbine production royalty payments reflect contract increases?**

A. Yes. In accordance with the terms of PSE's development and land lease agreements with project stakeholders, the annual royalty rate paid per MWh of energy production is subject to an annual adjustment for inflation.

## VII. CONCLUSION

**Q. Does this conclude your testimony?**

A. Yes, it does.