EXHIBIT NO. ___(DSL-1T)
DOCKET NO. UE-14____
2014 PSE PCORC
WITNESS: DOUGLAS S. LOREEN

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY, INC.,** **Respondent.**	**Docket No. UE-14____**

PREFILED DIRECT TESTIMONY (NONCONFIDENTIAL) OF DOUGLAS S. LOREEN ON BEHALF OF PUGET SOUND ENERGY, INC.

MAY 23, 2014

PUGET SOUND ENERGY, INC.

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DOUGLAS S. LOREEN

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PUGET SOUND ENERGY, INC.

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DOUGLAS S. LOREEN

I. INTRODUCTION

Q. Please state your name, business address, and position with Puget Sound Energy, Inc.

A. My name is Douglas S. Loreen, and my business address is 10885 N.E. Fourth Street, Bellevue, Washington 98004. I am employed by Puget Sound Energy, Inc. ("PSE") as Director Project Delivery.

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

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

Q. Please summarize the scope of your prefiled direct testimony in this proceeding.

A. This prefiled direct testimony updates the costs for PSE's major hydroelectric generation projects presented in my Prefiled Direct Testimony in Docket UE-130617 ("2013 PCORC"), Exhibit No. ___(DSL-1T). Specifically, this testimony updates costs for:

(i) Snoqualmie Hydroelectric Redevelopment Project construction (the "Snoqualmie Falls Project")

(ii) Lower Baker Hydroelectric Floating Surface Collector construction (the "Lower Baker FSC Project")

(iii) Lower Baker Hydroelectric New Powerhouse construction (the "Lower Baker Powerhouse Project")

In addition, my testimony updates the Treasury Grants from the Department of Treasury under Section 1603 of the American Recovery and Reinvestment Act of 2009 (the "Treasury Grants") that PSE recently received for the Snoqualmie Falls Project and the Lower Baker Powerhouse Project.

Q. What is the updated level of capital costs included in this case for each project?

A. Table 1, below, shows the updated level of capital costs as of March 31, 2014, included in this case for each project. The numbers do not reflect any credits from the Treasury Grants.

Table 1. Updated Level of Capital Costs as of March 31, 2014

Project	Costs from 2013 PCORC	Current Costs through March 31, 2014
Snoqualmie Falls Project		
Diversion Dam	$6,945,418	$6,945,418
Snoqualmie Falls Plants 1 and 2	$298,252,357	$321,104,146[1]
Total	$305,197,775	$328,049,564
Baker Project		
Lower Baker FSC	$58,294,257	$57,658,093
Lower Baker Powerhouse	$104,649,077	$103,206,727
Total	$162,943,334	$160,864,820

[1] The total cost includes cost of removal for $2.965 million which is reflected as a reduction to accumulated depreciation, see Ms. Barnard's testimony, Exhibit No. ___(KJB-1T).

II. THE SNOQUALMIE FALLS PROJECT

Q. Please describe the Snoqualmie Falls Project.

A. The Snoqualmie Falls Project is a complete redevelopment of the Snoqualmie Hydroelectric Project, which was originally commissioned in 1898. The Snoqualmie Falls Project includes the following elements required by the FERC license:

(i) Plant 1 reconstruction includes: removing the existing turbine/generator unit 5 and installing a new unit; expanding the underground cavity; preserving the four pelton units and upgrading controls, breakers and cables; installing new generator leads, breakers, exciters and automated monitoring and controls; enlarging the vertical shaft to accommodate the new penstock, elevator, and cabling; replacing the two existing penstocks with a single free-standing penstock; excavating the tailrace channel to minimize fish stranding areas; constructing a new intake equipped with coarse and fine trash racks, cleaners, maintenance gate and motor-operated fixed wheel gate; constructing a new intake building to house the elevator shaft, communications and controls; and installing a new step-up transformer and electrical switchgear.

(ii) Plant 2 reconstruction includes: replacing turbine/generator unit 6 with a vertical Francis unit; installing a new flow bypass system consisting of three vertical sleeve dissipation valves; replacing unit 6 penstock with a 7-foot-diameter penstock; seismically retrofitting unit 7 penstock; installing new stairway/pipe bridge to carry new water, sewer and conduit from the powerhouse to the gatehouse; rebuilding gate house and installing new emergency closure gates; removing tunnel liner and installing a new shotcrete liner; constructing a new intake with trash racks, cleaners and gates; and constructing a new structural steel and pre-cast concrete powerhouse that covers the turbine generators and flow bypass valves.

(iii) Rebuilt diversion dam across the Snoqualmie River;

(iv) Electric system interconnection improvements including automatic transfer trip; and

(v) Recreational and cultural improvements including: rebuilding the upper park consisting of new ADA access, viewpoints, interpretive and educational signage and displays; rebuilding the lower park consisting of a new boardwalk, parking, restrooms and interpretive and educational signage and displays; and rebuilding the historic Plant 1 Depot and Carpenter Building to display historic aspects of the project including a fully reassembled Unit 5 turbine generator.

Q. Please generally describe the construction environment for the Snoqualmie Falls Project.

A. The Snoqualmie Falls Project presented a challenging construction environment because of the need to completely redevelop this century-old facility. As-built data were limited, and the location of existing facilities hindered access and the ability to gather field data. The construction required surface and subsurface excavation and stabilization of project work areas with varying geologic conditions. The geographic layout required the creation and coordination of five distinct work areas: Plant 1 aboveground, Plant 1 cavern, Plant 2 intake, Plant 2 gatehouse and Plant 2. The site provided limited construction space and access, which created construction logistics and sequencing limitations. The FERC license allowed for a limited window of time for conducting in-river work (June 1 through October 31, 2013 above the falls; June 15 through October 31, 2013 below the falls), which added to the sequencing challenge. PSE and the contractor also had to coordinate demolition and construction work with the Salish Lodge and visitors to Snoqualmie Falls.

Q. Please generally describe the additional work performed and the change in costs incurred for the Snoqualmie Falls Project since PSE's 2013 PCORC.

A. The additional costs incurred for the Snoqualmie Falls Project can be generally attributed to the following work categories:

(i) Completion of work and close-out for changes consistent with PSE's 2013 PCORC, related to geotechnical conditions, electrical and mechanical systems, and the related schedule extension;

(ii) PSE staff support for schedule extension, plant commissioning and completion of punch list items;

(iii) Additional programming scope for the facility controller;

(iv) Testing and analysis to determine cause and remediation of river sediment build up resulting in minor water flow reductions through the Plant 2 intake; and

(v) Grouting, concrete application (shotcrete) and drain installation in select areas of the Plant 1 elevator shaft to control excessive water seepage through the bedrock.

Q. How do these tasks compare to those previously discussed in PSE's 2013 PCORC?

A. The primary causes for the Snoqualmie Falls Project costs remain the same as those described in PSE's 2013 PCORC: geotechnical conditions encountered during construction and the complexities of retrofitting a hundred-year-old hydroelectric project.

Q. How did PSE control and track project changes during the Snoqualmie Falls Project construction?

A. Snoqualmie Falls Project changes were tracked and controlled against a baseline scope, schedule, and budget established prior to the start of construction. The project baselines are set based upon the design specifications, specific scopes of work, contractor bids and work flow. As the project progressed changes to the scope, schedule, or cost of work went through a review and approval process. PSE maintained a Change Log summarizing individual change proposals and their disposition. PSE Project Management and Project Controls staff analyze the impacts of change items on project budgets, schedules and forecasts at completion. PSE and contractor create mitigation plans to minimize change impacts to the project.

Q. Please explain how PSE and the construction contractor shared the additional costs for the Snoqualmie Falls Project.

A. In an effort to control and share the costs associated with the change orders and associated schedule extensions, PSE and the construction contractor negotiated a contract fee modification in December 2012 that fixed the contractor’s fee and resulted in all remaining work to be reimbursed only for the actual cost of the work. Further, in August 2013, PSE and the construction contractor negotiated a direct reduction of $1 million in the contractor fee.

Q. Please describe the current status of Snoqualmie Falls Project construction.

A. Some work items remain before the Snoqualmie Falls Project achieves final contractual completion. In Plant 1, the elevator shaft continues to experience higher than anticipated water seepage through the bedrock, affecting the ability to operate elevator equipment. PSE and the designer are developing options for either controlling the seepage or replacing the elevator with one designed to operate in a wet environment. In the meantime, Plant 1 remains accessible using a temporary construction elevator in the equipment maintenance shaft.

In Snoqualmie Plant 1, after the plant was in service, a crack was discovered in a branch pipe serving unit 1. Subsequently, all 24 branch pipes serving units 1 through 4 were unbolted to ensure they were not under similar stresses imposed during installation. PSE, the designer and the installation contractor have developed a repair procedure and plan to have the issue resolved by late spring 2014. Upon completing the branch piping repair, final facility controller programming and testing will be performed for Plant 1.

III. THE LOWER BAKER PROJECTS

Q. Please describe the Lower Baker FSC Project.

A. PSE designed the Lower Baker FSC based upon the successful design of the Upper Baker FSC, constructed in 2009. PSE changed some design elements to take advantage of lessons learned from the Upper Baker FSC construction and to tailor it to its location on Lake Shannon. Because of the subsurface geography and hydrology of Lake Shannon, the Lower Baker FSC is not located directly adjacent to the Lower Baker dam and therefore requires longer guide nets, different anchoring, and shore-side fish pod handling facilities that were not required on the Upper Baker FSC. For efficiency, the general contractor built the entire Lower Baker FSC on the shore, which required a detailed plan for launching.

The Lower Baker FSC Project involves the construction and installation of a floating steel barge that collects juvenile fish for downstream transport. The Lower Baker FSC pumps a high volume of water to create an artificial flow that attracts the juvenile fish and leads them to a capture tank. Major project elements include:

(i) Floating surface collector including anchoring systems, water pumps, fish holding areas, control room, and a fish evaluation station;

(ii) Net transition structure, which supports the fish diversion nets;

(iii) Fish diversion nets;

(iv) Fish transport vessels; and

(v) Pier and shore facilities

Q. Please describe the Lower Baker Powerhouse Project.

A. The Lower Baker Powerhouse Project requires the construction of a new, partially underground powerhouse located adjacent to the existing Lower Baker powerhouse. The Lower Baker Powerhouse Project supports the Baker Project

FERC license requirements for regulating flow in the Baker River. Major project elements include:

(i) Powerhouse (largely subterranean) with turbine generator: 30 MW Francis unit, synchronous bypass valve, Howell Bunger valve and spray hood and facility control system;

(ii) 1000-foot, steel-lined tunnel fed by existing penstock;

(iii) Electric system interconnection improvements including transfer trip; and

(iv) Controls upgrades to existing Lower Baker unit 3 powerhouse.

The Lower Baker Powerhouse Project required construction in a narrow canyon with restricted access. The access constraints required specialized construction equipment and limited the contractor's ability to perform simultaneous activities. In addition, geologic conditions required mitigation for unstable slopes.

Q. Please generally describe the additional work performed and the change in costs incurred for the Lower Baker FSC Project since PSE's 2013 PCORC.

A. Costs provided in PSE's 2013 PCORC filing were based on then-current projections of costs at completion of the work. Actual costs are $636,164 lower than projected.

Q. Please describe the current status for the Lower Baker FSC Project construction.

A. All construction activities for the Lower Baker FSC Project have been completed.

Q. Please generally describe the additional work performed and the change in costs incurred for the Lower Baker Powerhouse Project since PSE's 2013 PCORC.

A. Costs provided in the 2013 PCORC filing were based on then-current projections of cost at completion of the work. Actual costs are $1,442,350 lower than projected.

Q. Please describe the current status for the Lower Baker Powerhouse Project construction.

A. During testing of the Lower Baker Powerhouse Project, the new 30 MW hydroelectric turbine generator unit experienced unacceptable levels of vibration at settings above 75% of inflow. The unit is currently being operated up to this level producing approximately 23 MW. The turbine generator supplier tried a number of in-place modifications to eliminate the vibrational issue before concluding that the turbine runner may need to be replaced. The turbine supplier is completing the construction of a small-scale physical model to analyze the vibration before engineering and implementing a final solution. The supply contract remains open until the turbine performance meets specifications. The proposed outage to perform the required rework is scheduled to occur April through July 2015 (114 days).

Q. Please describe the impact to generation from the Lower Baker Powerhouse's vibrational issue.

A. Total generation from the Lower Baker Powerhouse is not directly impacted by the vibrational issue while the unit is in service. The issue prevents PSE from utilizing the unit's full operational range which is needed to comply with the river flow requirements in the Baker Project FERC license. The outage to perform the work required to resolve the vibrational issue will impact generation from the Baker Project. This impact is included in PSE's forecast of rate year generation presented in the Prefiled Direct Testimony of David E. Mills, Exhibit No. ___(DEM-1CT).

IV. TREASURY GRANTS

Q. What is the current status of the Treasury Grant for the Snoqualmie Falls Project?

A. On April 17, 2014 the U.S. Treasury Department approved a Treasury Grant in the amount of $80,241,567 for the Snoqualmie Falls Project. This amount reflects federal sequestration at 7.2%.

Q. What is the current status of the Treasury Grant for the Lower Baker Powerhouse Project?

A. On May 7, 2014 the U.S. Treasury Department approved a Treasury Grant in the amount of $27,634,273 for the Lower Baker Powerhouse Project. This amount reflects federal sequestration of 7.2%.

Q. How do the actual Treasury Grants compare to the amounts estimated in PSE's 2013 PCORC?

A. The actual Treasury Grants are higher than the estimated amounts included in PSE's 2013 PCORC, as shown in Table 2:

Table 2. Actual Treasury Grants Compared to Estimated Treasury Grant from 2013 PCORC

Project	Estimated Treasury Grant from 2013 PCORC	Actual Treasury Grant Amounts
Snoqualmie Falls Project	$77,201,666	$80,241,567
Baker Project	$27,129,083	$27,634,237

The difference between the estimated amounts and the actual amounts relate primarily to a difference in the sequestration rate (8.7% estimated versus 7.2% actual reduction) and some minor differences in the final qualifying costs versus the original estimate.

Q. Explain how the Treasury Grants are reflected in the revenue requirement in this proceeding.

A. The impact of the Treasury Grants to PSE's revenue requirement are presented in the Prefiled Direct Testimony of Ms. Katherine J. Barnard, Exhibit No. ___(KJB-1T).

V. CONCLUSION

Q. Does this conclude your prefiled direct testimony?

A. Yes, it does.