TABLE OF CONTENTS

[QUALIFICATIONS 1](#_Toc436109109)

[PURPOSE OF TESTIMONY 1](#_Toc436109110)

[UNION GAP SUBSTATION UPGRADE—SECOND SEQUENCE 2](#_Toc436109111)

[UNION GAP SUBSTATION UPGRADE—FIRST SEQUENCE 3](#_Toc436109112)

[FUTURE WORK FOR THE UNION GAP SUBSTATION UPGRADE—THIRD SEQUENCE 4](#_Toc436109113)

[NECESSITY AND BENEFITS OF THE UNION GAP SUBSTATION UPGRADE 4](#_Toc436109114)

[IDAHO POWER ASSET EXCHANGE 6](#_Toc436109115)

**ATTACHED EXHIBIT**

Exhibit No. RAV-2—Illustration of Idaho Power Asset Exchange

**Q. Please state your name, business address, and present position with PacifiCorp.**

A.My name is Richard A. Vail. My business address is 825 NE Multnomah Street, Suite 1600, Portland, Oregon 97232. My present position is Vice President of Transmission. I am responsible for transmission system planning, customer generator interconnection requests and transmission service requests, regional transmission initiatives, capital budgeting for transmission, and administration of the Open Access Transmission Tariff. I am testifying for Pacific Power & Light Company (Pacific Power or Company), a division of PacifiCorp.

# QUALIFICATIONS

**Q. Please describe your education and professional experience**.

A. I have a Bachelor of Science degree with Honors in Electrical Engineering with a focus in electric power systems from Portland State University. I have been Vice President of Transmission for PacifiCorp since December 2012. I was Director of Asset Management from 2007 to 2012. Before that position, I had management responsibility for a number of organizations in PacifiCorp’s asset management group including capital planning, maintenance policy, maintenance planning, and investment planning since joining PacifiCorp in 2001.

# PURPOSE OF TESTIMONY

**Q. What is the purpose of your testimony?**

A. The purpose of my testimony is to support the costs associated with certain capital investments in the Company’s distribution and transmission systems and the closure of the Company’s transmission asset exchange with Idaho Power Company (Idaho Power Asset Exchange).

**Q. What capital investment are you addressing in your testimony?**

A. My testimony addresses the costs to plan and build the second sequence of transmission work for the Union Gap substation, which will ultimately add a
230/115 kilovolt (kV) transformer and result in a rebuild of the substation (Union Gap Substation Upgrade).

My testimony demonstrates that the Company prudently managed these costs and that these investments will be used and useful and beneficial to Washington customers.

**Q. What are the projected costs associated with the distribution and transmission investments included in rate base in this proceeding and described in your testimony?**

A. The projected costs associated with the Union Gap Substation Upgrade project are shown below:

|  |  |  |
| --- | --- | --- |
| **Project** | **Total-Company ($m)** | **Washington-Allocated ($m)** |
| Union Gap Substation Upgrade, second sequence | 20.88 | 4.7 |

The total cost of the second sequence includes costs associated with engineering, project management, materials and equipment, construction, right-of-way, and an allowance for funds used during construction. The costs are also shown in the testimony and exhibits of Ms. Shelley E. McCoy.

# UNION GAP SUBSTATION UPGRADE—SECOND SEQUENCE

**Q. Please describe the investment for the Union Gap Substation Upgrade.**

A. The Union Gap Substation Upgrade consists of three sequences of work, with the second sequence of work included in this filing and estimated to be in service on May 15, 2016. The Company is using a sequenced approach to avoid extended outages in the area system. The second sequence of work includes relocating the 230 kV bus and constructing it into a ring bus with six new 230 kV breakers to accommodate the addition of a 230/115 kV, 250 MVA transformer.

**Q. Please describe the benefits of the second sequence of work included in this case.**

A. The addition of a new 230/115 kV, 250 MVA transformer will be used and useful in supporting the transmission system by increasing reliability of service to customers in the greater Yakima, Washington area. The new 230 kV ring bus will protect against breaker failure and bus fault events that currently may cause voltage impacts and thermal overloads. The new 230/115 kV transformer will mitigate thermal overload risks resulting from an outage to either of the two existing 230/115 kV transformers.

# UNION GAP SUBSTATION UPGRADE—FIRST SEQUENCE

**Q. Please describe the first sequence of work for the Union Gap Substation Upgrade.**

A. The first sequence included the replacement of two 115/12.47 kV distribution substation transformers with a new 25 Mega Volt Ampere (MVA) transformer and relocating an existing third transformer, rated 20 MVA, onsite at the substation. This sequence also involved the relocation of the existing 115/12.47 kV distribution portion of the substation to accommodate the upgraded layout of the substation, which will be completed in the second and third sequences of work. The first sequence of work was completed and placed into service in August of 2014.

**Q. Was the first sequence of work included in a previous rate case?**

A.Yes. The first sequence of work was included in rates as part of the Company’s 2014 general rate case (2014 Rate Case) and went into service in August 2014. In that proceeding, the Washington Utilities and Transportation Commission (Commission) found that the Company satisfactorily demonstrated that the first sequence of the Union Gap Substation Upgrade was used and useful and that the cost was known and measurable.[[1]](#footnote-2)

# UNION GAP SUBSTATION UPGRADE—THIRD SEQUENCE

**Q. Please describe the third sequence of work for the Union Gap Substation Upgrade, which is not included in the test period in this case.**

A. The third and final sequence of work is estimated to be placed in service in May 2017 and includes a rebuild of the existing 115 kV main transfer bus to a breaker and a half scheme, and fifteen new 115 kV breakers on the 115 kV bus that connect to ten bay positions. The cost associated with the third sequence of work is not included as part of this filing.

# NECESSITY AND BENEFITS OF THE UNION GAP SUBSTATION UPGRADE

**Q. Do each of these three sequences of work result in used and useful improvements beneficial to Washington customers when placed in service?**

A. Yes, each sequence of the Union Gap Substation Upgrade provides used and useful benefits to Washington customers as they are placed in service. As discussed above, and specific to the second sequence of work included in this case, the new 230 kV ring bus will protect against breaker failure and bus fault events that currently may cause voltage impacts and thermal overloads. The new third 230/115 kV transformer will mitigate thermal overload risks resulting from an outage to either of the two existing 230/115 kV transformers. All three sequences do not need to be completed for each individual sequence to be used and useful to serve customers, consistent with the Commission’s decision in the 2014 Rate Case approving the first sequence of the Union Gap Substation Upgrade.

**Q. Please explain why this investment in the Union Gap Substation Upgrade is needed.**

A. The plant investment for the Union Gap Substation Upgrade is needed to comply with reliability standards mandated by the North American Electric Reliability Corporation (NERC). Specifically, the project is necessary to continue to comply with NERC Standard TPL-002 “System Performance Following Loss of a Single Bulk Electric System Element (Category B),” which requires bulk electric system elements, including transmission transformers, to be within thermal limits following the single contingency loss of a transmission system element. An outage of one of the two 230/115 kV transformers results in an overload of the remaining transformer of approximately 50 megawatts (MWs), which can be maintained for a maximum of four hours. PacifiCorp’s West System Assessment for TPL-002 Compliance Requirements notes that for the loss of a Union Gap 230/115 kV transformer in heavy summer loading conditions, overload of the posted four-hour emergency limit of the transformer will be experienced by 2016. To correct this system deficiency, the recommended plan of service is to install a third 230/115 kV transformer at the Union

 Gap substation. The new 230/115 kV transformer is planned to be placed into service in May 2016.

**Q. Are there other system limitations that this investment will alleviate?**

A. Yes. PacifiCorp’s West System Assessment for TPL-003 Compliance Requirements notes nine outages involving 115 kV, 230 kV breaker and bus faults, with stuck breakers and protection systems failures at Union Gap that result in thermal and voltage performance deficiencies. Loss of both 230/115 kV transformers results in
30 MWs of load being shed (approximately 6,000 customers) for the initial outage. This will also result in the remaining transformers at the nearby Pomona Heights substation being overloaded by approximately 150 MWs, which would require corrective measures to remove the overloads from the transformers. To correct all aforementioned system limitations in a cost-effective manner, this plan of service was selected to rebuild the 230 kV and 115 kV buses into a ring bus for the 230 kV bus and breaker and a half configuration for the 115 kV bus, which will eliminate the TPL-003 system deficiencies at the Union Gap substation. Deficiencies related to the 230 kV bus are resolved by the second sequence. Deficiencies related to the 115 kV bus will be resolved by completion of the third sequence. Additionally, the two existing distribution transformers replaced by this project were loaded to 99.5 percent of their combined thermal capability. Completion of the first sequence increased 115/12.47 kV summer capacity by 4 MVA, providing the ability to serve future local distribution load increases from the Union Gap substation.

# IDAHO POWER ASSET EXCHANGE

**Q. Please describe the investment for the Idaho Power Asset Exchange.**

A.The Idaho Power Asset Exchange included the purchase of transmission and substation assets by PacifiCorp from Idaho Power and the sale of like kind assets by PacifiCorp to Idaho Power. Please refer to Exhibit No. RAV-2, which is a diagram that generally shows the assets that were included as part of the Idaho Power Asset Exchange.

**Q. What was the value of the assets PacifiCorp sold and purchased?**

A.PacifiCorp sold transmission and substation assets with a net book value of approximately $43.5 million and purchased like kind assets with a net book value of approximately $43.7 million.

**Q. Was the Idaho Power Asset Exchange previously approved by the Commission?**

A. Yes. The Commission approved the Company’s petition for authorization to exchange certain assets with Idaho Power on September 24, 2015, in Docket UE‑144136, Order 01.

**Q. Can the purchased assets be used to move resources into the PacifiCorp’s Western Balancing Authority Area (PACW)?**

A. Yes. The assets connect directly to the Jim Bridger generating plant which is designated as a PACW resource. The purchase provided PacifiCorp with an owned transmission path across what was formerly the Idaho Power transmission system to connect into the PACW transmission system. Associated with the purchase, point‑to‑point transmission service rights were secured across the Idaho Power system to PacifiCorp’s PACW system. In combination, this provides for 1,600 megawatts of capacity that connects into the PACW system from the Jim Bridger plant.

**Q. Under the new agreement is PacifiCorp limited to use of the transmission system to only move Jim Bridger resources?**

A.No.

**Q. Why was the Idaho Power Asset Exchange needed?**

A.The completion of the new agreement eliminated legacy agreements that hampered the use of the transmission systems and moved all transmission service under the terms and conditions of the parties’ Open Access Transmission Tariffs.

Under the new operating agreement, the Company acquired capacity and ownership of transmission lines that augment the Company’s ability to serve west control area load.  The new arrangements will enable the Company to more efficiently operate its transmission system consistent with current regulatory requirements, and provide the Company with the ability to more effectively manage required system upgrades and serve expected load growth.

**Q. Are there additional benefits?**

A. Yes. Additional benefits PacifiCorp realized in the purchase of these assets include:

* Long term firm transmission service to Hurricane and La Grande substations in Oregon, eliminating prior conditional transmission service to those substations.
* Maintaining the same level of service (1,600 megawatts) with 1,090 megawatts of owned capacity and 510 megawatts of tariff long term firm transmission service.
* Cost of new tariff service for use of Idaho Power’s transmission is commensurate with costs associated with prior service provided under the legacy agreements. There is no financial impact in terms of additional load or measurement changes for PacifiCorp’s load service on PacifiCorp’s transmission system.
* Addition of 200 megawatts (for a total of 400 megawatts) of dynamic transfer capability between PacifiCorp’s eastern and western balancing authority areas.

**Q. Does the allocation of transmission assets discussed in the direct testimony of Ms. Shelley E. McCoy reflect current system operations?**

A. Yes.Theallocation of the assets acquired through the Idaho Power Asset Exchange, along with the reallocation of certain transmission assets previously allocated to PacifiCorp’s eastern balancing authority area and the corrected allocation of the specific transmission assets identified in Ms. McCoy’s direct testimony, reflects current system operations.

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

A. Yes.

1. *Wash. Utils. & Transp. Comm’n v. Pacific Power & Light Company,* Docket UE-140762, Order 08 (March 25, 2015). [↑](#footnote-ref-2)