Exhibit No.___(RAV-1T)
Docket UE-14____
Witness: Richard A. Vail

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, V. PACIFIC POWER & LIGHT COMPANY, a division of PacifiCorp Respondent	Docket UE-14____

PACIFIC POWER & LIGHT COMPANY

DIRECT TESTIMONY OF RICHARD A. VAIL

May 2014

Q. Please state your name, business address, and present position with Pacific Power & Light Company (Pacific Power or Company), a division of PacifiCorp.

A. My name is Richard A. Vail. My business address is 825 NE Multnomah, 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 (OATT).

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. Before my current position in Transmission, I was director of asset management since 2007. 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 test year costs associated with certain capital investments in the Company's distribution and transmission systems.

I discuss the following capital investments:

- The costs to plan and build the first sequence of distribution 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).
- The costs to plan and build the new 115/12.47 kV distribution source to provide capacity relief at the Selah substation (Selah Substation Capacity Relief).
- The costs to plan and build the Fry substation 115 kV capacitor bank (Fry Substation Project).

My testimony will demonstrate that the Company prudently managed these costs and that these investments will be used and useful during the test period 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 distribution and transmission projects discussed in my testimony are shown below:

Project	Total-Company ($m)	Washington-Allocated ($m)
Union Gap Substation Upgrade	8.65	8.65
Selah Substation Capacity Relief	4.55	4.55
Fry Substation Project	6.38	1.47
Total	19.58	14.67

The costs are also shown in the testimony and exhibits of Ms. Natasha C. Siores.

UNION GAP SUBSTATION UPGRADE

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 first sequence of work included in this rate case and estimated to be in service in August 2014. The work is being done using a sequenced approach to avoid extended outages in the area system. The first sequence of work involves relocating 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. Currently, there are three 115/12.47 kV distribution substation transformers at the Union Gap substation. Two of the existing distribution transformers will be replaced by a new 25 Mega Volt Ampere (MVA) transformer. The existing third transformer, rated 20 MVA, will be relocated onsite at the substation and continue to be used and useful.

Q. Please describe the benefits of this first sequence of work.

A. The existing two transformers to be replaced during this first sequence of work currently have a combined capacity of 21 MVA. This project increases total distribution transformer capacity at Union Gap Substation from 41 MVA to 45 MVA. The new transformer and the remaining existing transformer will be connected to new switchgear to reduce the distribution substation footprint and allow for the remaining two sequences of work to be completed while continuing to reliably serve local distribution load.

Q. Please describe the future sequences of work for the Union Gap Substation Upgrade not included in the test period in this case.

A. The second sequence of work is estimated to be in-service in May 2015 and includes upgrading the existing 230 kV bus into a ring bus, including the installation of six new 230 kV breakers and the addition of a new 230/115 kV, 250 MVA transformer to 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. The last sequence of work is estimated to be placed in service in June 2016 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.

Q. Does 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 work provides used and useful benefits to Washington customers when placed in service. As discussed above, and specific to the first sequence of work included in this case, the increased distribution transformer capacity when placed in service will allow for continued reliable load service at the substation. The upgrade as a whole does not need to be completed for each individual sequence to be used and useful to serve customers.

Q. Please describe the details of the project cost.

A. The total cost of the first sequence of the project is $8.65 million, including costs associated with engineering, project management, materials and equipment, construction, right-of-way, and an allowance for funds used during construction (AFUDC).

Q. Please explain why the 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 2011 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. As discussed above, the new 230/115 kV transformer is planned to be placed into service in May 2015.

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

A. Yes. PacifiCorp's 2011 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. Full project completion is planned for June 2016. Additionally, the two existing distribution transformers replaced by this project were loaded to 99.5 percent of their combined thermal capability. The new transformer position will add 4 MVA of summer capacity, providing the ability to serve future local distribution load increases from the Union Gap substation.

SELAH SUBSTATION CAPACITY RELIEF

Q. Please describe the Selah Substation Capacity Relief project.

A. The Selah Substation Capacity Relief project is necessary to provide a new 115/12.47 kV distribution source at the nearby Pomona Heights substation, located north of Yakima, Washington, to alleviate overloading on the transformers at the Selah and

Wenas substations. The project is estimated to be in service in December 2014.

Construction at the Pomona Heights substation will include installation of a new 115/12.47 kV transformer, including a 115 kV transrupter and standard 12.47 kV switchgear, switches, and bus-work. Existing transformer capacity at Selah Substation is 45 MVA in the summer and 54 MVA in the winter. Existing transformer capacity at Wenas Substation is 25 MVA in the summer and 31 MVA in the winter. By adding transformer capacity at Pomona Heights substation, the total capacity in the area will be increased to 95 MVA summer and 115 MVA in the winter. The new transformer will be connected on the north 115 kV bus in the east corner of the Pomona Heights substation yard, which will require expansion of the yard on the northeast side of the substation. A 3.6 MVA capacitor bank will also be installed for power factor compensation. The project includes construction of two new feeders to pick up load from the Selah and Wenas substations.

Q. Please describe the details of the project cost.

A. The total cost of the project is $4.55 million, including costs associated with engineering, project management, materials and equipment, construction, right-of-way, and AFUDC.

Q. Please explain why the investment in the Selah Substation Capacity Relief project is needed.

A. The plant investment for Selah Substation Capacity Relief is needed due to overload conditions at the Selah substation affecting two transformers. The first transformer, T-3207, is projected to be loaded to 100 percent of the 24 MVA winter guideline rating during the 2013-2014 winter season, increasing to 101 percent by the 2014-

2015 winter season. Additionally, transformer T-3207 is projected to reach its 20 MVA summer guideline rating in 2015, with loading projected to reach 105 percent of the guideline rating by 2019. The second transformer, T-3537, is projected to be loaded to 90 percent of its 30 MVA winter guideline rating by the 2014-2015 winter season. As of 2013, the load at the Selah substation over the next five years is projected to grow at an annual rate of 0.9 percent for summer and 0.5 percent for winter, primarily due to load growth in the area from new residential construction and expansion of agricultural-based businesses. This project will enable additional distribution load to be reliably served through the Pomona Heights substation. Approximately 10 MVA of existing Selah substation load and 4 MVA of existing Wenas substation load will be transferred to the Pomona Heights substation, freeing up capacity to serve new and existing load on those existing distribution systems.

FRY SUBSTATION PROJECT

Q. Please describe the Fry Substation Project.

A. The Fry Substation Project consists of installing two 20 MVA and two 30 MVA capacitor banks and three 115 kV breakers connecting to the existing bus at the Fry substation. In addition, selective protective relay equipment will also be upgraded. The Fry substation is located near Albany, Oregon. The project is estimated to be in service in December 2014.

Q. Please describe the details of the project cost.

A. The total cost of the project is $6.38 million, including costs associated with engineering, project management, materials and equipment, construction, right-of-way, and AFUDC.

Q. Why is the investment in the Fry Substation Project needed?

A. The plant investment for the Fry Substation Project is needed to bring the Fry substation and the 115 kV Albany, Oregon area transmission system into compliance with mandated NERC reliability standards. Specifically, early NERC screening studies identified imminent performance violations following two single contingencies. The first contingency would occur during 2015 heavy summer loading conditions when the loss of the Bethel-Parish Gap 230 kV line will result in a 137 percent overload on the Albany-Hazelwood 115 kV line. A second contingency would occur with the loss of the Fry-Parish Gap 230 kV line, which would result in a 124 percent overload on the Albany-Hazelwood 115 kV line. As NERC TPL-002 mandates that the system remain stable with thermal and voltage limits within applicable rating during an event resulting in the loss of one element under Category B (in this case the loss of the Bethel-Parish Gap 230 kV transmission line or Fry-Parish Gap 230 kV transmission line). Without these upgrades to the Fry substation, the loss of either one of the two 230 kV transmission lines will result in exceeding the thermal rating limits of the Albany-Hazelwood 115 kV line and violate NERC TPL-002.

Q. Does this conclude your direct testimony?

A. Yes.