Docket No. 20000-___-ER-23
Witness: Rick A. Vail

BEFORE THE WYOMING PUBLIC SERVICE COMMISSION

ROCKY MOUNTAIN POWER

Direct Testimony of Rick A. Vail

March 2023

Q. Please state your name, business address, and present position with PacifiCorp d/b/a Rocky Mountain Power ("PacifiCorp" or the "Company").

A. My name is Rick A. Vail. My business address is 825 NE Multnomah Street, Suite 1600, Portland, Oregon 97232. I am the Vice President of Transmission at PacifiCorp. I am responsible for transmission system planning, customer generator interconnection requests and transmission service requests, regional transmission initiatives, capital budgeting for transmission, transmission and distribution project delivery, 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. 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 direct testimony in this case?

A. The purpose of my testimony is to describe PacifiCorp's transmission system and the benefits it provides to Wyoming customers, and specifically describe PacifiCorp's major capital investment projects for new distribution and transmission systems included in this rate case. These investments include transmission projects associated with Energy Vision 2024 (Gateway South and Gateway West Segment D.1), various generation interconnection network upgrades, and two new transmission improvements (the Burns 500-kilovolt ("kV") Series Capacitor Bank Replacement and Lone Pine-Whetstone 230-kV Line).

My testimony demonstrates that the Company's decisions are prudent, and that these investments result in an immediate benefit to PacifiCorp's Wyoming customers. I recommend that the Wyoming Public Service Commission ("Commission") find these investments prudent and in the public interest.

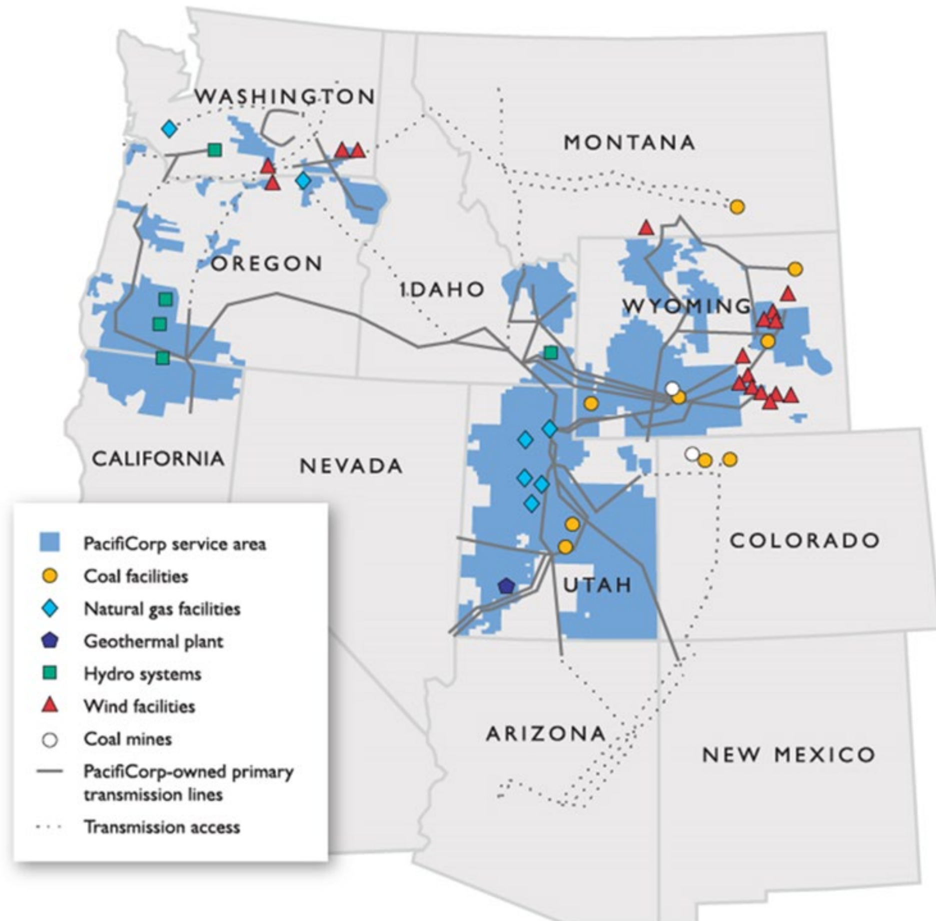
OVERVIEW OF PACIFICORP'S TRANSMISSION SYSTEM

Q. Please provide a brief overview of the purpose of PacifiCorp's transmission system.

A. PacifiCorp's transmission system is designed to reliably transfer affordable electric energy from a broad array of generation resources to loads both within the Company's balancing authority areas ("BAAs") and beyond, including other BAAs that PacifiCorp interconnects with, and participants in the California Independent System Operator's ("CAISO") Western Energy Imbalance Market ("EIM").

Q. Please briefly describe PacifiCorp's transmission system.

A. As seen in the image below PacifiCorp owns and operates over 17,000 miles of transmission lines ranging from 46-kV to 500-kV across multiple western states. PacifiCorp serves nearly two million customers with approximately 150,000 customers located in Wyoming.

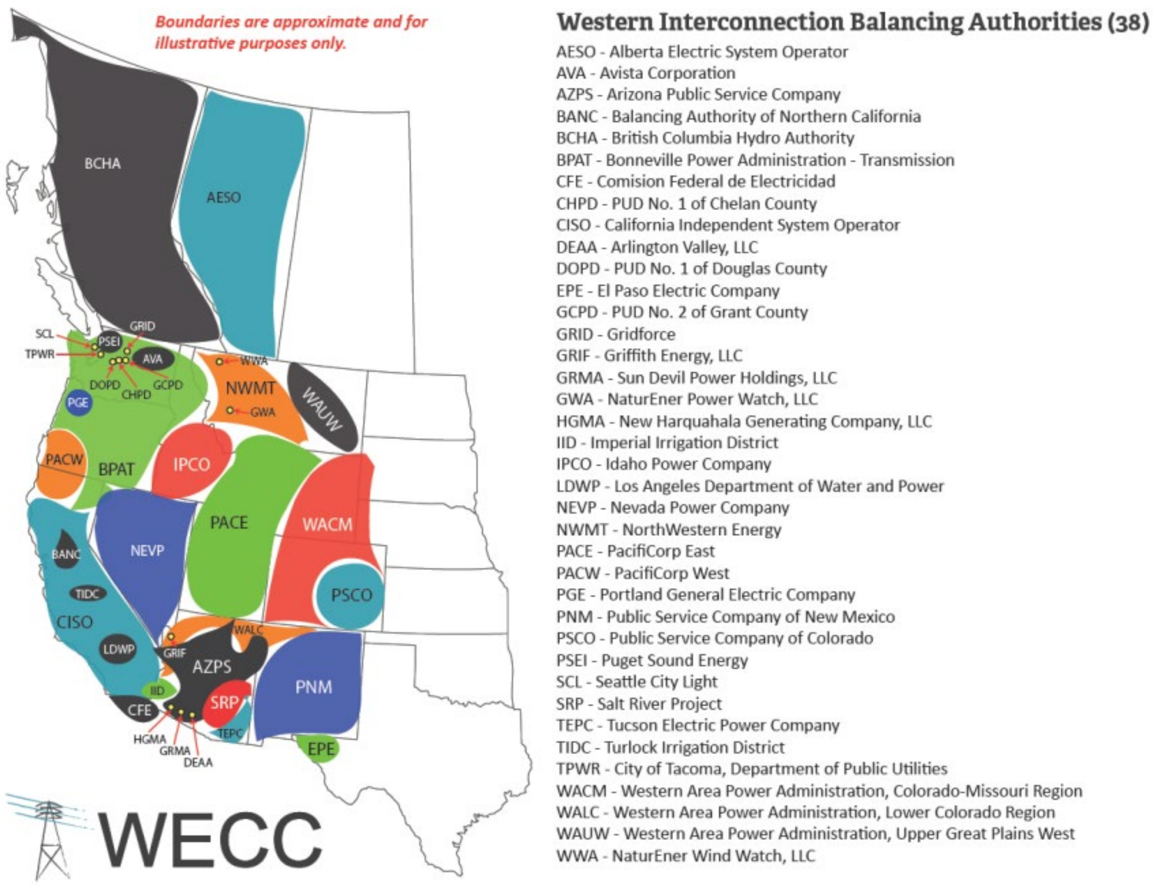


Q. What are balancing authorities and BAAs?

A. A balancing authority is the entity responsible for maintaining balance of load, generation, and interchange in a specific area, and supports interconnection frequency in real time. BAAs include all of the generation, transmission, and loads within a specific metered region.

PacifiCorp is a balancing authority and manages two BAAs: PacifiCorp East ("PACE") BAA and PacifiCorp West ("PACW") BAA. The PACW BAA includes interconnections with the Bonneville Power Administration ("BPA"), northern points of CAISO, and other utilities in California, Oregon, and Washington. The PACE BAA interconnects with utilities in the intermountain west and southwest in the states of

Wyoming, Idaho and Utah, and also provides access to the southern portion of the CAISO. As a balancing authority, PacifiCorp manages the production and consumption of electricity in these areas, by ensuring that there are adequate available generation resources or electricity transfers from other BAAs to meet load. As seen in the figure below, there are 38 BAAs in the Western Interconnection.[1]



Q. How does PacifiCorp operate the two BAAs?

A. PacifiCorp separately balances each BAA for energy and load. To optimize dispatch for the benefit of customers, PacifiCorp dispatches generation across both BAAs to serve load across the entire system. Deliveries of energy over PacifiCorp's transmission

[1] Available here.

system are managed and scheduled in accordance with the Federal Energy Regulatory Commission's ("FERC") requirements. The flexibility of PacifiCorp's integrated transmission system provides options for optimizing dispatch to serve load and designating units for holding reserves, and provides for additional reliability during planned or unplanned generation outages. PacifiCorp also provides transmission service across both BAAs, meaning that a transmission customer can purchase transmission service from any point in one BAA to the other BAA for a single tariff rate.

Q. Please describe PacifiCorp's responsibility for maintaining open access to its transmission system and creating stakeholder transmission planning processes.

A. In 1996, the FERC required transmission system owners like PacifiCorp to provide non-discriminatory access to their transmission systems for all transmission customers.[2] FERC expanded this open-access policy in 2011 by requiring transmission system owners to create regional, inter-regional, and local transmission planning processes.[3]

Under these authorities, the Company is required to provide reliable transmission and interconnection service in accordance with the rates, terms, and conditions of PacifiCorp's OATT, and must participate in stakeholder-drive planning processes covering its six-state transmission footprint.[4] These planning processes

[2] *See, In re Open Access Transmission Services*, Order No. 888, 75 FERC ¶ 61,080 (May 10, 1996).
[3] *See, In re Transmission Planning and Cost Allocation,* Order No. 1000, 136 FERC ¶ 61,051 (Jul. 21, 2011).
[4] *See,* PacifiCorp's Open Access Transmission Tariff Volume No. 11, Attachment K (updated Aug. 31, 2022) (available here).

incorporate economics, reliability, and public policy inputs and requirements to develop comprehensive transmission development strategies.[5]

Where a request for transmission service cannot be reliably provided on the existing system, the Company's OATT and FERC policies require the Company to construct and expand its system to provide FERC-jurisdictional transmission and interconnection service.[6] This obligation to construct transmission facilities in response to transmission or interconnection service requests applies to both newly identified facilities and planned system expansions or upgrades.[7]

Q. Please describe PacifiCorp's responsibility for maintaining reliability on its transmission system.

A. In 2005, Congress directed the FERC to establish reliability standards to ensure the safe and reliable operation of the Nation's Bulk Electric System.[8] The following year, the FERC adopted rules to implement the statute,[9] and delegated these responsibilities to the North American Electric Reliability Corporation ("NERC").[10]

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[5] *See, e.g.,* PacifiCorp's Local Transmission System Plan (2020-2021 Biennial Cycle) (Dec. 30, 2021) (available here).

[6] PacifiCorp's OATT, §§ 28.2 and 15.4 (reflecting FERC's pro forma tariff and requiring PacifiCorp to construct facilities as necessary to reliably provide requested transmission service); *In re Standardized Generator Interconnection Agreements and Procedures*, Order No. 2003, 104 FERC ¶ 61,103 at 767 (2003) (explaining that FERC's pro forma interconnection services "provide for the construction of Network Upgrades that would allow the Interconnection Customer to flow the output of its Generating Facility onto the Transmission Provider's Transmission System in a safe and reliable manner."); *In re Preventing Undue Discrimination and Preference in Transmission Service*, Order No. 890, 118 FERC ¶ 61,119 at 814 (2007) (explaining that despite certain policy reforms, transmission providers "will continue to be obligated to construct new facilities to satisfy a request for service if that request cannot be satisfied using existing capacity").

[7] *See, In re CAISO Tariff Revision,* 133 FERC ¶ 61,224 (2010) (OATT construction obligations attach to planned facilities identified as necessary to grant interconnection requests, stating that "[t]he fact that CAISO has voluntarily chosen to evaluate a network upgrade in its transmission planning process should not affect the obligation to build these facilities.").

[8] 16 USC § 824o.

[9] *In re Electric Reliability Standards Rulemaking,* 71 FR 8662-01, Docket No. RM05-30-000; Order No. 672 (Feb. 17, 2006).

[10] *In re NERC Certification,* 116 FERC ¶ 61,062 (Jul. 20, 2006), *aff'd Alcoa Inc. v. FERC,* 564 F.3d 1342 (D.C. Cir. 2009).

NERC proceeded to establish various reliability standards, including transmission system planning performance requirements (TPL Standards). NERC's TPL Standards establish, among other things, "Transmission system planning performance requirements within the planning horizon to develop a Bulk Electric System ("BES") that will operate reliably over a broad spectrum of System conditions and following a wide range of probable Contingencies."[11] These TPL Standards, along with regional planning criteria (*i.e.*, regional planning criteria established by the Western Electricity Coordinating Council ("WECC")) and utility-specific planning criteria, define the minimum transmission system requirements to safely and reliably serve customers.

Q. How does PacifiCorp ensure compliance with NERC TPL Standards?

A. The Company plans, designs, and operates its transmission system to meet or exceed NERC Standards for BES and WECC Regional standards and criteria. To ensure compliance with applicable TPL Standards, PacifiCorp conducts an annual system assessment to evaluate the performance of the Company's transmission system and to identify system deficiencies. The annual system assessment is comprised of steady-state, stability, and short circuit analyses to evaluate peak and off-peak load seasons in the near-term (one-, two-, and five-year) and long-term (10-year) planning horizons.[12] The assessment is performed using power flow base cases maintained by WECC and

[11] *See* Standard TPL-001-4 — Transmission System Planning Performance Requirements, at A(3) (available here) (last accessed Winter 2023).

[12] Analyses consist of taking a normal system (N-0) and applying events (N-1, N-1-1, N-2, etc.) within each category (P0, P1, P2, P3, etc.) listed within the TPL Standards in order to identify system deficiencies. For example: An N-1-1 event describes two transmission system elements out of service at the same time, but due to independent causes. An example of an N-1-1 event would be a planned outage of one 230 kilovolt transmission line followed by an unplanned outage of any additional element in the system being used to continue service with the initial element out.

developed in coordination among all transmission planning entities in the Western Interconnection. These base cases include load and resource forecasts along with planned transmission system changes for each of the future year cases and are intended to identify future system deficiencies to be mitigated.

As part of the annual system assessment, corrective action plans are developed to mitigate identified deficiencies, and may prescribe construction of transmission system reinforcement projects or, as applicable, adoption of new operating procedures. In certain instances, operating procedures prescribing action to change the configuration of the transmission system can prevent deficiencies from occurring when there are two back-to-back (N-1-1) (or concurrent) transmission system events with allowed system adjustments between two events in form of an operating procedure. However, the use of operating procedure actions have limitations. In particular, actions taken in connection with operating procedures that are designed to protect the integrity of the larger integrated transmission system in the Western Interconnection of the United States can lead to large numbers of customers being at risk of an outage upon the occurrence of the second of two back-to-back (N-1-1) events. An effective corrective action plan is critical to ensuring system reliability so that large numbers of customers are not subjected to avoidable outage risk.

Q. Is compliance with the reliability standards optional?

A. No. The reliability standards are a federal requirement, subject to oversight and enforcement by WECC, NERC, and FERC. PacifiCorp is subject to compliance audits every three years, and may be required to prove compliance during other NERC or WECC reliability initiatives or investigations. Failure to comply with the reliability standards could expose the Company to penalties of up to $1.29 million per day, per violation.[13] Accordingly, compliance with reliability standards is a major driver for the new capital investments in PacifiCorp's system transmission assets identified in and supported by my testimony.

Q. Are there additional concerns that influence PacifiCorp's distribution and transmission system investment decisions?

A. Yes. Depending on the project, there are several factors that inform whether PacifiCorp will build new distribution and transmission facilities, including increased demand for transmission capacity, requests for transmission service, increased demand for distribution capacity, and the age and condition of existing distribution and transmission facilities. The specific concerns for the projects addressed in my testimony are described in more detail below.

CUSTOMER BENEFITS OF PACIFICORP'S TRANSMISSION SYSTEM

Q. Does PacifiCorp currently carry reserves in each BAA sufficient to meet that BAA's requirements?

A. Not always. PacifiCorp often meets its reserve requirements in PACW with resources located in PACE. While meeting reliability standard reserve requirements is not a transmission function, PacifiCorp's transmission system provides flexibility for PacifiCorp to meet its reserve requirements.

Q. Are investments across the system necessary to maintain PacifiCorp's transmission system?

A. Yes. The ability to flexibly use a diverse set of energy resources depends significantly

[13] NERC Rules of Procedure, Sanction Guidelines, Appendix 4B, § 3.2.1 (available here).

on the strength and reliability of PacifiCorp's transmission system connecting those resources to the PacifiCorp retail customers in all six states. Transmission system outages and other real-time operation constraints place additional burden on the remainder of the transmission system as corrective actions plans are implemented to maintain compliance with NERC and WECC standards and guidelines and ensure the reliability of service to all PacifiCorp customers. Increasing PacifiCorp's transmission system capacity enhances reliability and allows more generation to interconnect to serve customer load, as well as allows PacifiCorp flexibility in designating generation resources for reserve capacity to comply with mandatory reliability standards.

Q. Can the benefits of a reliable system be easily quantified?

A. No. Reliability is, essentially, the absence of system disruptions. It is very difficult to quantify the benefit of reliability investments. That said, the access to different regions and redundancy in operations provides reliable service under a variety of conditions that benefits all PacifiCorp's customers.

OVERVIEW OF INVESTMENTS

Q. What specific transmission system investments are you addressing in your testimony?

A. My testimony addresses PacifiCorp's major planned transmission system projects that will go in-service during the test period for this rate case. Each of these investments will increase PacifiCorp's load serving capability, enhance reliability, conform with NERC Reliability Standards, improve transfer capability within the existing system, relieve existing congestion, and interconnect and integrate new wind resources into PacifiCorp's transmission system. These projects include:

- The Gateway South Segment F Aeolus to Mona/Clover 500-kV ("Gateway South") and Gateway West Segment D.1 Windstar to Aeolus 230-kV ("Gateway West Segment D.1") Transmission Lines;
- Certain generation interconnection network upgrades;
- The Burns 500-kV Series Capacitor Bank Replacement; and
- The Lone Pine-Whetstone 230-kV transmission line.

Q. What are the projected investment costs and their anticipated in-service dates?

A. Please see the table below for the total-Company costs and in-service dates for each project. These amounts include costs for engineering, project management, materials and equipment, construction, right-of-way, and allowance for funds used during construction. These costs are also shown in the testimony and exhibits of Mr. Nicholas L. Highsmith. The in-service dates are based on current best available information at the time of preparing this case.

TABLE 1

Project	**Total Company Cost ($m)**	**In-Service Date**
Gateway South	**$2,046.0**	**Q4 2024**
Gateway West Segment D.1	**$285.8**	**Q4 2024**
Network Upgrades	**$35.2**	**Various 2024**
Lone Pine-Whetstone 230-kV Line	**$16.0**	**Q2 2024**

Q. Will PacifiCorp's OATT transmission customers pay their proportional share of these assets?

A. Yes. Transmission customers pay for transmission and ancillary services through the Company's transmission formula rate included in PacifiCorp's OATT.[14] Formula rates

[14] *In re PacifiCorp's Application for Formula Rates*, 143 FERC ¶ 61,162 (May 23, 2013) (letter order approving settlement agreement establishing formula rate).

are updated by the Company's annual transmission revenue requirement ("ATRR") filing that includes the total cost of providing firm transmission service over the test year.[15] This includes all transmission system investments made by the Company, a return on rate base, income taxes, expenses, and certain revenue credits, among other specific elements and adjustments.[16] Transmission assets, including the capital expenditures described in this rate case, will be included in the Company's annual ATRR filing when each asset is placed in service, weighted by months in service as necessary. This annual filing results in a wholesale customer rate by dividing the total ATRR by firm transmission demand. This rate is then assessed against PacifiCorp's transmission customers.[17]

Q. Do PacifiCorp's Wyoming retail customers receive an offsetting revenue credit for a portion of the transmission revenue received under PacifiCorp's OATT?

A. Yes. A portion of PacifiCorp's transmission revenues are credited to the Company's state retail customers. Under this approach, the Company allocates 100 percent of its transmission costs to both state retail and FERC-jurisdictional customers. The FERC, through the Company's ATRR filings, determines the appropriate amount to be recovered from PacifiCorp's wholesale customers. This same amount is then credited to PacifiCorp's retail customers. This ensures that PacifiCorp recovers its transmission expenditures, and both wholesale and retail customers only pay their proportional share of the Company's transmission system.

[15] *See, e.g.,* PacifiCorp's OATT Volume No. 11, Attachment H: ATRR for Network Integration Transmission Service, at 326–365 (available here).

[16] *Id.,* at Attachment H-2: Formula Rate Implementation Protocols, at 366–386; *See, e.g., In re PacifiCorp's 2022 Transmission Formula Annual Update,* Dkt. No. ER11-3643 (May 13, 2022) (available here).

[17] *See, PacifiCorp's Transmission and Ancillary Services Rates* (effective Jun. 1, 2022) (available here).

Gateway South and Gateway West Transmission Lines

Q. Please describe the Energy Gateway Transmission Expansion.

A. In 2007, PacifiCorp launched the Energy Gateway Transmission Expansion, a multi-year strategy to add approximately 2,000 miles of new transmission lines across the west. To-date, three major segments of Energy Gateway are complete and in service.[18] After over a decade of planning, the Company now proposes to move forward with constructing the Gateway South and portion of Gateway West lines (D.1).[19] The following graphic provides an overview of the Energy Gateway Transmission Expansion generally, and the Gateway South and Gateway West lines specifically:

[18] *See generally* here.

[19] *See, e.g.,* PacifiCorp's 2021 IRP, Ch. 4 – Transmission, at 83–102 (available here).

Energy Gateway

This map is for general reference only and reflects current plans.
It may not reflect the final routes, construction sequence or exact line configuration.

Q. Please describe the Gateway South Transmission Project.

A. The Gateway South project includes the following elements:[20]

- A 416-mile, high voltage 500-kV transmission line from the Aeolus substation, near Medicine Bow, Wyoming to the Clover substation near Mona, Utah.
- Rebuilding certain 345-kV transmission facilities in and around the Mona and Clover substations in Utah.

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[20] *See, In the Matter of the Application of Rocky Mountain Power for Situs & Nonsitus Certificates of Public Convenience and Necessity for the Gateway South Transmission Project and the Gateway West Segment D.1 Transmission Project*, Docket No. 20000-588-EN-20 (Record No. 15604).

- Two new series compensation stations.
- Expansion of the Aeolus, Anticline, and Clover substations along with modifications to the Mona substation.
- Additional shunt capacitors at Bonanza (Utah), Riverton and Mustang (Wyoming) substations.
- Additions and modifications to various remedial actions schemes, voltage controllers and control schemes necessary to ensure protection and control of the grid after integration of Gateway South.

Q. Please describe the Gateway West Segment D.1 Transmission Project.

A. Gateway West Segment D.1 includes the following elements:[21]

- A new 59-mile high-voltage, 230-kV transmission line from the Shirley Basin substation in southeastern Wyoming to the Windstar substation near Glenrock Wyoming.
- Rebuild of the existing Dave Johnston – Amasa – Difficulty – Shirley Basin 230-kV transmission line, which runs approximately 57 miles from the Shirley Basin substation in southeastern Wyoming to the Dave Johnston substation near Glenrock, Wyoming.
- A new 230-kV Heward substation adjacent to the Difficulty substation.
- Construction of four miles of high voltage 230-kV transmission line from the Aeolus substation to the Freezeout substation near Medicine Bow, Wyoming.
- Additions to the Shirley Basin, Dave Johnston, and Windstar substations.

[21] *Id.*

Q. Did PacifiCorp obtain certificates of public convenience and necessity ("CPCN") as required by the Wyoming statutes and Commission rules?

A. Yes. The Company filed an application requesting situs and non-situs CPCNs for the Gateway South and Gateway West Segment D.1 projects with the Commission as required in Docket No. 20000-588-EN-20.[22] The Commission approved the CPCNs in a bench decision on May 10, 2022.

Q. Please explain why the Gateway South and Gateway West Transmission Projects are needed.

A. The Gateway South and Gateway West Segment D.1 (collectively referred to as "Transmission Projects") are an important component of the Company's Energy Gateway Transmission Expansion, and Gateway South has long been recognized as a key transmission segment in the region's long-term transmission planning. These lines will provide substantial customer benefits.

For example, the Company needs additional resources to serve load by 2024, and the Transmission Projects enable new, cost-effective Wyoming generation resources to fill this need, and these Transmission Projects allow the Company to interconnect up to approximately 2,030 MW of new resources. These projects also improve reliability of the transmission system by providing capacity between Gateway West and Gateway Central, and relieve transmission congestion on the existing Wyoming transmission system. The Gateway South line allows transfers of up to 1,700 MW from eastern Wyoming to central Utah.

[22] The CPCN approval included additional required ancillary facilities that may not be explicitly detailed in this testimony.

Q. Is the increased capacity provided by the Transmission Projects consistent with the Company's obligation to provide transmission service under its OATT?

A. Yes. PacifiCorp adhered to OATT processes when identifying the need for these transmission projects in response to nearly 2,500 MW of transmission and interconnection service requests, and the Transmission Projects have been included in multiple FERC-jurisdictional executed contracts. For example, PacifiCorp has executed 13 contracts with third-party customers that require construction of one or both of the Transmission Projects, including a transmission service agreement that requires construction of Gateway South to reliably provide 500 MW firm point-to-point ("PTP") transmission service beginning by the contract start date of January 1, 2024. The Transmission Projects are lynchpins in PacifiCorp's ability to meet its obligation to grant generator interconnection service and transmission service under the OATT.

The Transmission Projects will also enhance the Company's ability to comply with mandated NERC and WECC reliability and performance standards. Congestion on the current transmission system in eastern Wyoming limits the ability to deliver energy from eastern Wyoming to PacifiCorp load centers in Wyoming, Idaho, Utah, and the Pacific Northwest. The Transmission Projects will increase transfer capability by approximately 875 MW from the Windstar/Dave Johnston area south to Shirley Basin/Aeolus, which, in turn, will support approximately 1,700 MW of incremental transfer capability from eastern Wyoming to the central Utah energy hub.

Q. Do the Transmission Projects increase the amount of generation that can be interconnected and delivered across the Company's transmission system?

A. Yes. The Transmission Projects will allow the Company to interconnect an additional 2,030 MW of generation resources in eastern Wyoming and increase the system transfer capability by approximately 875 MW from the Windstar/Dave Johnston area south to Shirley Basin/Aeolus, which will create approximately 1,700 MW of incremental transfer capability from eastern Wyoming (Aeolus) to the central Utah energy hub (Mona/Clover).

Q. Did the Company consider alternatives to Transmission Projects?

A. Yes. PacifiCorp and Northern Tier Transmission Group evaluated an alternative to the Gateway South project.

The alternative analyzed one 345-kV line with bundled conductor from Aeolus to Anticline (138 miles), and two 345-kV lines with bundled conductors from Anticline to Populus (approximately 198 miles each), along with other supporting mitigation such as transformers and shunt capacitors at different substations. These analyses indicated that the amount of renewable resources that could be interconnected to eastern Wyoming is reduced by approximately 1,100 MW. The high-level estimated cost of this alternative is $2.023 billion in 2020 dollars. This alternative also showed additional reliability issues on the transmission system between Rock Springs and Monument as well as between Populus and Terminal that would have to be mitigated, resulting in additional cost burdens. Like the Aeolus to Mona line, this alternative does not provide an adequately diverse path for PacifiCorp's network loads.

Q. If the Company did not construct the Transmission Projects would you be able to provide the roughly 2,500 MW of interconnection and transmission service without constructing additional facilities?

A. No. In order to grant only the 500 MW transmission service request, the Company would be required to construct a 230-kV line at a cost of approximately $1 billion. In order to grant the transmission and interconnection service requests, consistent with the Company's OATT, would require construction of the functional equivalent of the Transmission Projects.

Q. Has the Company obtained all necessary permits and rights-of-way ("ROW") for the Transmission Projects?

A. All permits and ROW for the Gateway West Segment D.1 have been obtained. All permits and ROW have been obtained for the Gateway South Project, with the exception of property rights from the Utah Department of Natural Resources ("DNR") lands. The ROW from the Utah DNR are expected to be procured no later than April 15, 2023, and no delays are expected to the current project schedule while the Company secures these rights.

Q. When did PacifiCorp begin construction of the Transmission Projects?

A. The Company began construction of the Gateway South project in June 2022 once all permits and rights-of-way required within Wyoming were obtained. Once the Company received the permits and rights-of-way for Gateway West Segment D.1, construction began in late September 2022. Regular construction status updates are being filed with the Commission as required.

Q. Is the Company confident that the Transmission Projects will be in-service by 2024?

A. Yes. To manage construction schedule risk, the Company has structured and managed the projects on firm, date-certain, fixed-price, turnkey contracts. Construction contractors and equipment suppliers will be held to key construction and delivery milestones, guarantees, and development of compressed schedule mitigation plans, if required. The construction status remains on-track and on schedule.

Q. Are the Transmission Projects currently on budget?

A. Yes. The project budgets consist of firm, date-certain, fixed price, turnkey contracts that include fixed cash flows assessed monthly against confirmed construction progress, in addition to identification and mitigation of projects risks that could stall or delay completion. To-date, the projects are on budget.

Q. What are the remaining major milestones for the Transmission Projects?

A. Key milestones remaining before the October 2024 in-service date for these two projects include:

- Complete construction of the 230-kV Windstar to Shirley Basin line by December 2023.
- Complete all wound core device deliveries by May 2024.
- Complete construction of the 500-kV transmission line and reconstruction of the 230-kV transmission line by October 2024.
- Complete all communications network additions and upgrades by October 2024.
- Complete commissioning and placed in-service in fourth quarter of 2024.

The Transmission Projects are on track to achieve each milestone.

Generation Interconnection Network Upgrades

Q. What are network upgrades?

A. Network upgrades are the modifications or additions to transmission-related facilities that are integrated with and support PacifiCorp's overall transmission system for the general benefit of system users.[23]

Q. Please explain how network upgrade cost allocation works under the OATT.

A. When PacifiCorp receives a request for generation interconnection or transmission service, the Company completes various studies to determine what new facilities or upgrades to existing facilities are required to accommodate the request.[24] The studies classify any required additions to support the requested service into two categories: direct assigned or network upgrade. Direct assigned assets are those assets that only benefit, or are used solely by, the customer requesting generator interconnection or transmission service. Those costs are directly assigned and paid for by that customer and will not be included in either the Company's ATRR or retail rates. Network upgrades, on the other hand, are assets that benefit all customers that use the transmission system. Network upgrade costs can be included in PacifiCorp's ATRR, and like other ATRR amounts, are then credited to PacifiCorp's retail customers in each state.[25]

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[23] *See, e.g.,* PacifiCorp's OATT Volume No. 11, § 1.27 (available here).
[24] *Id.,* at Vol. No. 11, §§ 38–43.
[25] *Id.,* at Vol. No. 11, § 47.

Q. Is the Company requesting recovery of any generation interconnection network upgrades?

A. Yes. There are six generation interconnection projects that were selected from a recent request for proposal to interconnect 1,640 MW of new wind generation to the Company's transmission system in eastern Wyoming. The request for proposal process and the resulting resources selected are described in the testimony of Mr. Rick T. Link. A separate generation interconnection agreement was negotiated and signed for all six projects, and each will require generation interconnection network upgrades to interconnect and integrate with PacifiCorp's system. These projects include:

- Q0409 Boswell Springs Wind. This project is a 320 MW facility that will interconnect to the existing Freezeout 230-kV substation near Aeolus, and is planned to be in-service by December 31, 2024. This project includes a new breaker at the Freezeout substation, and a new remedial action scheme and communications equipment at Aeolus substation.
- Q0713 Cedar Springs IV Wind. This project is a 350 MW wind facility that will interconnect to the existing Yellowcake 230-kV substation near Windstar, and is planned to be in service on January 15, 2025. This project includes construction of a new line position at the Yellowcake substation, including the installation of three new 230-kV circuit breakers, and requires a new microwave system and approximately 18 miles of fiber optic cable between Yellowcake and Windstar substations.
- Q0719 Two Rivers Wind. This project is a 280 MW wind facility that will interconnect to the existing Freezeout 230-kV substation near Aeolus, and is

planned to be in-service on December 31, 2024. This project includes expansion and conversion of the Freezeout substation with three new breakers, bus work, and other protection and control equipment with updates to the remedial action scheme.

- Q0785 Anticline Wind. This project is a 100 MW wind facility that will interconnect to a new substation on PacifiCorp's Casper – Claim Jumper 230-kV line, and is planned to be in service on December 31, 2024. This project includes a new three breaker ring bus substation on the Casper – Claim Jumper 230 kV line, substation loop in on transmission line, communications upgrade at Casper substation, and Main Grid operations center updates.
- Q0835 Rock Creek Wind. This project is a 190 MW wind facility that will interconnect to PacifiCorp's existing Foote Creek 230-kV substation, and is planned to be placed in-service on December 15, 2024. This project includes expansion of substation, bus, and line position at Foote Creek substation, expansion for new breaker and line positions at Freezeout and Aeolus substations, construction of new approximately 3.5 miles long 230-kV transmission line between Aeolus and Freezeout substations.
- Q0836 Rock Creek Wind 2. This project is a 400 MW wind facility that will interconnect to PacifiCorp's existing Aeolus 230-kV substation, and is planned to be placed in-service on December 15, 2024. This project includes a new bay for a 230-kV line terminal at Aeolus substation.

Q. Why are these projects classified as network upgrades, and not directly assigned assets?

A. The interconnection study for each project indicated that these upgrades would provide system-wide benefits. Under PacifiCorp's OATT, this requires the Company to include these costs in the Company's ATRR, as opposed to directly assigning these costs to each project. Accordingly, the network upgrade costs for each of these projects are reflected in their respective Large Generator Interconnection Agreements.

Lone Pine-Whetstone 230-kV Line

Q. Please describe the Lone Pine-Whetstone 230-kV Line.

A. The Company intends to build an 11-mile, 230-kV transmission line between Lone Pine and Whetstone substations in Jackson County, Oregon.

Q. Please explain why this project is needed and beneficial.

A. The project is needed to ensure compliance with the NERC Reliability Standard TPL-001-4 and WECC Criterion TPL-001-WECC-CRT-3.1 for category P6 (N-1-1) contingencies on the 230-kV system in southern Oregon. The four primary drivers are:

- Reinforces transmission supply to Grants Pass and Whetstone 230-115-kV substations, improving post-contingency voltage and loading conditions for an outage of either the Meridian-Whetstone 230-kV line or Dixonville-Grants Pass 230-kV line;

- Supports Grants Pass, Oregon and Crescent City, California region load for N-1-1 contingency loss of the Meridian-Whetstone and Dixonville-Grants Pass 230-kV lines. Avoids use of an operating procedure to sectionalize the transmission system following the first outage and associated risk of significant load loss for the second outage;
- Reinforces 230-kV supply to Lone Pine Substation to withstand N-1-1 contingencies. The proposed Lone Pine-Whetstone 230-kV line, in combination with the planned Sams Valley project, will maintain 230-kV supply to Lone Pine for the double outage of the two Meridian-Lone Pine 230-kV lines and it will also provide the necessary reinforcement for the double outage of the Meridian-Lone Pine 230-kV line No. 2 and Meridian-Whetstone 230-kV line. The project avoids the need for an operating procedure to sectionalize the system after a single outage and the associated risk of significant load loss for the second outage; and
- Reinforces 230-kV supply to Whetstone Substation on the existing system and after Sams Valley project. The proposed line would also provide a 230-kV reinforcement to Whetstone, which would allow serving Whetstone and Grants Pass area loads via the Meridian to Lone Pine 230-kV path for N-1-1 loss of the Sams Valley 500-230-kV source and either the Meridian-Whetstone 230-kV line or Dixonville-Grants Pass 230-kV line.

Q. Did PacifiCorp consider alternatives to investing in Lone Pine-Whetstone 230-kV Line?

A. Yes, the Company considered two alternatives. The first was to construct a third 230-kV line from Meridian to Lone Pine substation. The advantage of this project is that it provides a stand-alone solution to the double line outage regardless of the status of the planned Sams Valley project. The main disadvantage of this alternative is that it only solves one specific issue. Compared with the proposed solution, it does not reinforce the Whetstone 230-kV supply and consequently does not resolve the remaining double contingency risks on the 230-kV system serving Medford and Grants Pass. The second alternative is to reinforce both the Lone Pine and Whetstone 230-kV supply by converting the 69-kV Line 6 and constructing a new 230-kV double circuit out of Meridian substation to form a new Meridian-Lone Pine line No. 3 and Meridian-Whetstone line No. 2. This alternative would entail 230-kV bus expansions at Lone Pine, Whetstone and Meridian substations as well as construction of a new 115-69 kV substation. This solution will also necessitate acquiring new ROW between Meridian substation and the transmission corridor containing Line 6. The disadvantage of this alternative is that it could potentially put all five 230-kV lines leaving Meridian in the same corridor. The estimated cost of the alternative would be approximately $37.9 million not including property for the new 115-69-kV substation.

CONCLUSION

Q. Please summarize your testimony.

A. I recommend that the Commission conclude that the projects described above are prudent and in the public interest. As explained in my testimony these projects are necessary to maintain compliance with required standards, to serve load, and provide benefits to the Company's customers.

Q. Does this conclude your direct testimony?

A. Yes.

BEFORE THE PUBLIC SERVICE COMMISSION OF WYOMING

IN THE MATTER OF THE APPLICATION OF ROCKY MOUNTAIN POWER FOR AUTHORITY TO INCREASE ITS RETAIL ELECTRIC SERVICE RATES AND TO REVISE THE ENERGY COST ADJUSTMENT MECHANISM	)	DOCKET NO. 20000-___-ER-23 (RECORD NO. _____)

AFFIDAVIT, OATH AND VERIFICATION

Richard A Vail (Affiant) being of lawful age and being first duly sworn, hereby deposes and says that:

Affiant is the *Vice President, Transmission* for PacifiCorp, which is a party in this matter.

Affiant prepared and caused to be filed the foregoing testimony. Affiant has, by all necessary action, been duly authorized to file this testimony and make this Oath and Verification.

Affiant hereby verifies that, based on Affiant's knowledge, all statements and information contained within the testimony and all of its associated attachments are true and complete and constitute the recommendations of the Affiant in his official capacity as *Vice President, Transmission.*

Further Affiant Sayeth Not.

Dated this 27 day of February, 2023

Richard A Vail
VP, Transmission

STATE OF OREGON)
) SS:
COUNTY OF MULTNOMAH)

The foregoing was acknowledged before me by *Richard A Vail* on this 27th day of February, 2023. Witness my hand and official seal.

Notary Public

My Commission Expires:

OFFICIAL STAMP
ROBIN MARY ANGELINE MOORE
NOTARY PUBLIC-OREGON
COMMISSION NO. 1022191
MY COMMISSION EXPIRES FEBRUARY 24, 2026