

Investigation No. 17-04-019
Exhibit No. PAC/200-I
Witnesses: Joseph P. Hoerner
and Rick T. Link

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

PACIFICORP

Chapter 2

Direct Testimony of Joseph P. Hoerner and Rick T. Link

Redline Version

ERRATA

December 2018

CHAPTER 2

PACIFICORP OPERATIONS AND PLANNING

Joint Testimony of Joseph P. Hoerner and ~~Shayleah J. LaBray~~ Mr. Rick T. Link

1 A. INTRODUCTION

2 This joint testimony addresses Issue 1 identified in the Scoping Memo. Issue 1 seeks
3 information regarding whether PacifiCorp engages in least-cost planning and dispatch on a
4 system-wide basis or a control area basis. The joint testimony provides a high level overview
5 of PacifiCorp's operations and addresses each of the specific questions identified in the
6 Scoping Memo, specifically:

- 7 1) To what extent does PacifiCorp operate its generation and transmission system as
8 an integrated six-state system in which customer loads are served from a common
9 pool of resources?
- 10 a. What are PacifiCorp's different transmission control areas?
11 b. Which generation and transmission resources exist in each control
12 area, and what are their operational characteristics?
13 c. To what extent do transmission constraints limit PacifiCorp from
14 functioning on a fully integrated basis?
15 d. Which resources outside of PacifiCorp's Western control area
16 provide quantifiable benefits to California electric customers?
- 17 2) Which currently in-service PacifiCorp transmission and generation resources in
18 the Western and Eastern control areas pre-date PacifiCorp's merger with Utah
19 Power, and which have been added to service since then?

1 **B. PACIFICORP SYSTEM OPERATIONS**

2 PacifiCorp operates its system on an integrated basis across its six-state territory. The
3 resource mix that PacifiCorp operates is very diverse with large levels of hydro, wind, solar,
4 coal, natural gas and geothermal generation to meet its peak demand of over 12,500
5 Megawatts (MW). Between 2008 and 2010, PacifiCorp added approximately 758 MW of
6 company-owned wind generation. PacifiCorp's most recent company-owned generation
7 facility is the Lakeside II combined-cycle natural gas plant, which began commercial
8 operation on June 1, 2014. In addition, PacifiCorp has over 200 interconnections with other
9 balancing authority areas (BAAs) and transmission operators, including the California
10 Independent System Operator (CAISO). For system balancing purposes, PacifiCorp relies on
11 regional energy market hubs for wholesale energy transactions. The primary market hubs in
12 the PacifiCorp west BAA (PACW) are Mid-Columbia (Mid-C) and California-Oregon
13 Border (COB). In PacifiCorp's east BAA (PACE), the primary market hubs are Mona, Four-
14 Corners, and Palo Verde. PacifiCorp also joined the EIM in 2014, which, as of October
15 2017, is comprised of the CAISO, Arizona Public Service Company, Portland General
16 Electric, Puget Sound Energy, and Nevada Energy.¹

17 PacifiCorp currently has 1,600 MW of transmission rights, east to west, connecting
18 its PACE and PACW BAAs. This includes 510 MW of Idaho Power Company transmission
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20 PacifiCorp to serve load in PACW without building additional resources in PACW. It also
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2 capability² required for both BAAs, reducing operational costs.

3 PacifiCorp's geographic footprint allows it to take advantage of efficiencies and
4 economies from both a planning and operational perspective due to retail load characteristics,
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6 and variable resources is capable through the network of transmission capability and the Jim
7 Bridger facility's ability to export to the PACE BAA or deliver its energy into the PACW
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11 when prices are higher in the Pacific Northwest, PacifiCorp is able to deliver its PACE
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13 market purchases.

14 PacifiCorp's dispatchable generation resources in the PACW BAA are large hydro
15 units on the Lewis river, smaller hydro units on the Klamath river and other smaller river
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² A blackstart is the process of restoring an electric power station or a part of an electric grid to operation without relying on the external electric power transmission network.

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19 BAAs, PacifiCorp is able to effectively manage price exposure to natural gas spikes, as well
20 as market fluctuations that may be due to low hydro years or low periods of variable resource
21 generation. This type of diversity benefit is only capable through the management of both
22 BAAs on an integrated basis. While PacifiCorp does have extensive transmission capability
23 throughout its service territory, in the past there may have been times where the system was
24 transmission constrained to provide additional power from PACE to PACW. However, the
25 introduction of the EIM and the capability to wheel power through the CAISO from PACE,
26 as well as the spring 2018 entrance of Idaho Power Company into the EIM provides
27 PacifiCorp the ability to improve its intra-hour delivery of energy from the east to the west,
28 including additional renewable energy from Wyoming.

1 As the EIM has grown, and provided a significant benefit to customers,⁴ it has also
2 provided PacifiCorp the ability to enhance the integration of its system across both BAAs
3 due to the enhanced dispatch on a five-minute basis, and, more importantly, due to the
4 availability of additional transmission capability. The PACE BAA has been an integral part
5 of providing EIM benefits to California customers in its ability to decrement its coal fleet and
6 receive imports from the ISO during times in the day when solar production is high in
7 California. These imports from California carry the additional benefit of offsetting coal
8 emissions and allow the company to meet its load using low cost renewable power. During
9 the spring time, when California is more likely to be in over-supply conditions due to lower
10 loads across the state, PacifiCorp's hydro facilities are less able to decrement to receive the
11 low priced imports due to stream flow management at the facilities. The PACE BAA, with
12 its large operating range across its coal fleet, contains the more nimble resources that are able
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14 can be allowed on the system, both internally and externally through the EIM. The benefit of
15 importing low cost power through the EIM is a direct benefit to California customers through
16 lower net power costs, as well as the environmental benefit of displacing the thermal
17 emissions.

18 **C. PACIFICORP'S INTEGRATED RESOURCE PLANNING PROCESS**

19 The overarching question set forth in the Scoping Memo for Issue 1 is whether
20 PacifiCorp engages in least-cost planning and dispatch on a system-wide basis or a control
21 area basis. PacifiCorp engages in least-cost planning on a system-wide basis. The Integrated
22 Resource Plan (IRP) presents the company's plans to provide reliable and reasonably priced

⁴ See Exhibit PAC/700-I, CAISO November 1, 2017 News Release identifying \$107 million in total gross benefits to PacifiCorp's customers since the market launched on November 1, 2014.

1 service to its customers across its multi-jurisdictional service territory. The analysis
2 supporting this plan helps PacifiCorp, its customers, and its regulators understand the effect
3 of both near-term and long-term resource decisions on customer costs, the reliability of
4 electric service PacifiCorp customers receive, and changes to emissions from the generation
5 sources used to serve customers.

6 The primary objective of the IRP is to identify the best mix of resources system-wide
7 to serve customers in the future. The best mix of resources is identified through analysis that
8 measures cost and risk. The least-cost, least-risk resource portfolio (Preferred Portfolio), is
9 the portfolio that can be delivered through specific action items at a reasonable cost and with
10 manageable risks, while considering customer demand for clean energy and ensuring
11 compliance with state and federal regulatory obligations.

12 PacifiCorp prepares the IRP on a biennial basis and files the IRP with its six state
13 commissions.⁵ The preparation of the IRP is done in an open public process, defined as the
14 “public input process,” with consultation between all interested parties, including
15 commissioners and commission staff, customers, and other stakeholders. This public input
16 process provides parties with a substantial opportunity to contribute information and ideas in
17 the planning process, and also serves to inform all parties on the planning issues and
18 approach for a current IRP cycle.⁶ The public input process for PacifiCorp’s most recent
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⁵ In California, PacifiCorp files its IRP in the Renewables Portfolio Standard docket R.15-02-020 to satisfy the renewable portfolio standard procurement plan requirements. The company is currently participating in the Commission’s proceeding to develop an integrated planning process for California, R.16-02-007.

⁶ PacifiCorp’s 2017 IRP included five state-specific meetings and seven public input meetings (most spanning two days) from June 2016 through March 2017.

1 Appendix C (Public Input Process) and fully complies with IRP Standards and Guidelines as
2 defined by PacifiCorp's state commissions.

3 The IRP provides a framework and plan for future actions to ensure PacifiCorp
4 continues to provide reliable and least-cost electric service to its customers. Specifically, the
5 IRP evaluates, over a twenty-year planning period, the future loads of PacifiCorp's customers
6 and the resources required to meet this load.

7 To fill any gap between changes in loads and existing resources, while taking into
8 consideration potential early retirement of existing coal units as an alternative to investments
9 that achieve compliance with environmental regulations, the IRP evaluates a broad range of
10 available resource options, as required by PacifiCorp's state commission's rules. These
11 resource alternatives include supply-side, demand-side, and transmission alternatives. The
12 IRP describes how PacifiCorp meets requirements to evaluate resource alternatives and
13 includes the impact to system costs, system operations, supply and transmission reliability,
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15 evaluation of the alternatives in PacifiCorp's most recent 2017 IRP are detailed in Volume I,
16 Chapter 7 (Modeling and Portfolio Evaluation Approach) and Chapter 8 (Modeling and
17 Portfolio Selection Results).

18 To perform the analysis and evaluation, PacifiCorp employs a suite of models that
19 simulate the complex operation of the PacifiCorp system and its integration within the
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2 forecast of the resource portfolio generated by the SO model, accounting for operating
3 reserves, volatility and uncertainty in key system variables⁷. The models allow for a rigorous
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6 The IRP analysis is designed to define a resource plan that is least cost, after
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8 cost, risk adjusted plan, portfolio resource options are developed and tested against each
9 other. This testing includes examination of various tradeoffs among the portfolios, such as
10 average cost versus risk, reliability, customer rate impacts, and average annual CO₂
11 emissions.

12 PacifiCorp's IRP includes a near-term, two-to-four year action plan (Action Plan).
13 The Action Plan details near-term actions necessary to ensure PacifiCorp continues to
14 provide reliable and least-cost electric service after considering risk and uncertainty. The
15 Action Plan also provides a progress report on action items contained in the prior IRP and
16 IRP Update⁸.

17 The 2017 IRP and related Action Plan are filed with each commission. As previously
18 noted, in California the IRP is filed in the Renewables Portfolio Standard docket, R.15-02-
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9 results. Similarly, an acknowledgment does not imply that favorable ratemaking treatment
10 for resources proposed in the IRP will be given.

11 Recent IRPs and public input meeting materials can be located on PacifiCorp's
12 website at the following location: <http://www.pacifiCorp.com/es/irp.html>.

13 **D. CONCLUSION**

14 PacifiCorp plans for and operates its system on an integrated basis, providing
15 quantifiable benefits to the company's California customers. PacifiCorp's diverse resource
16 portfolio and transmission system ensures reliable electric service to the company's retail
17 customers in all six-state service territories. Without the integrated system, PacifiCorp
18 customers in California would face additional cost risk to procure west-side resources for
19 service to load, the provisions of reserves, and blackstart capability. The company's
20 transmission system provides access to PacifiCorp's diverse resource portfolio, including
21 high capacity factor renewable generation in Wyoming that contributes to PacifiCorp's
22 compliance to the California Renewables Portfolio Standard. PacifiCorp's interconnections

- 1 to other utilities across the west have also facilitated participation in the EIM, producing over
- 2 \$107 million in benefits to customers.

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13 **D. CONCLUSION**

14 PacifiCorp plans for and operates its system on an integrated basis, providing
15 quantifiable benefits to the company's California customers. PacifiCorp's diverse resource
16 portfolio and transmission system ensures reliable electric service to the company's retail
17 customers in all six-state service territories. Without the integrated system, PacifiCorp
18 customers in California would face additional cost risk to procure west-side resources for
19 service to load, the provisions of reserves, and blackstart capability. The company's
20 transmission system provides access to PacifiCorp's diverse resource portfolio, including
21 high capacity factor renewable generation in Wyoming that contributes to PacifiCorp's
22 compliance to the California Renewables Portfolio Standard. PacifiCorp's interconnections

- 1 to other utilities across the west have also facilitated participation in the EIM, producing over
- 2 \$107 million in benefits to customers.