Exh. JDW-1CT
Docket UE-230482
Witness: John D. Wilson
REDACTED

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of **PACIFIC POWER & LIGHT COMPANY** **2022 Power Cost Adjustment Mechanism Annual Report**	**DOCKET UE-230482**

TESTIMONY OF

JOHN D. WILSON

ON BEHALF OF STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

Power Cost Adjustment Mechanism

March 28, 2024

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I. INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is John D. Wilson. I am Vice President at Grid Strategies, LLC. Grid Strategies is based in the Washington, DC area, although my office is in Lexington, KY.

Q. Please state your qualifications to provide testimony in this proceeding.

A. I received a BA degree from Rice University in 1990, with majors in physics and history, and a Master of Public Policy degree from the Harvard Kennedy School of Government, with an emphasis in energy and environmental policy, and economic and analytic methods.

Since 2019, I have been a consultant, first, at Resource Insight, Inc., and now at Grid Strategies, LLC. Previously, I was deputy director of regulatory policy at the Southern Alliance for Clean Energy ("SACE") for more than twelve years, where I was the senior staff member responsible for SACE's utility regulatory research and advocacy, as well as energy resource analysis. I engaged with southeastern utilities through regulatory proceedings, formal workgroups, informal consultations, and research-driven advocacy.

My work has considered, among other things, the cost-effectiveness of prospective new electric generation plants and transmission lines, retrospective review of generation-planning decisions, conservation program design, ratemaking and cost recovery for utility efficiency programs, allocation of costs of service between rate

classes and jurisdictions, design of retail rates, and performance-based ratemaking for electric utilities.

My professional qualifications are further summarized in Exhibit JDW-2.

Q. Have you testified previously before the Washington Utilities and Transportation Commission (the Commission)?

A. Yes. I most recently testified concerning power costs on behalf of Commission staff ("Staff") in PacifiCorp's 2023 general rate case, Docket UE-230172.

Q. Have you testified before other commissions?

A. Yes. I have testified more than 50 times before utility regulators in nine U.S. states and Nova Scotia, and I have appeared numerous additional times before various regulatory and legislative bodies.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to review PacifiCorp's net power costs for 2022, including the WIJAM Balancing Adjustment and the PTC Tracker. I am also reviewing PacifCorp's application of the PCAM deadband and asymmetrical sharing bands and its PCAM amortization request.

Q. Have you prepared exhibits in support of your testimony?

A. Yes. I prepared Exh. JDW-2 through Exh. JDW-14C. The information contained in these exhibits is correct to the best of my knowledge and belief.

II. RECOMMENDATIONS AND SUMMARY

Q. Please summarize your testimony.

A. My testimony raises two major policy issues for the Commission's consideration. First, my testimony recommends an alternative method for calculating the WIJAM Balancing Adjustment and, if the Commission agrees to this method, reducing the 2022 WIJAM Balancing Adjustment from $83.5 million to $79.5 million.

As discussed in Section VI of my testimony, there are two flaws in PacifiCorp's Balancing Adjustment method. One flaw is that PacifiCorp's method calculates costs based on Washington's monthly net position rather than an hourly net position. Since most power costs are incurred on an hourly or even a sub-hourly basis, this is a conceptual error in the calculation process. Further, PacifiCorp's method also values the WIJAM Balancing Adjustment using system power prices (which are themselves improperly calculated on a monthly basis).

To address these problems, I recommend that the Commission direct that the WIJAM Balancing Adjustment be valued based on power costs representing resources that are immediately deliverable to Washington customers. As a default, the valuation should be based on the day-ahead price for the Mid-Columbia power market hub. To the extent that undispatched generation from PacifiCorp's Chehalis and Hermiston natural gas power plants is available at a lower price than Mid-C, that valuation should also be used.

As shown in Table 1, the recommended reduction in net power costs as a result of improving the WIJAM Balancing Adjustment would result in a reduction in net power costs of $3.9 million, or about 1.9%.

Table 1: Recommended Reduction in Actual Net Power Costs ($ millions)

	PacifiCorp	Recommendation
Total Proposed	$ 212.4	$ 212.4
WIJAM Balancing Adjustment		($ 3.9)
Total Recommended	**$ 212.4**	**$ 208.5**

My second major recommendation is that the Commission should direct PacifiCorp to participate in a full third-party audit of the dispatch of Chehalis and Hermiston for 2022. As discussed in Section VIII of my testimony, I do not believe that Chehalis and Hermiston were appropriately and economically dispatched throughout 2022. However, I was unable to arrive at a conclusive estimate of the economic cost of uneconomic dispatch.

To develop such an estimate, I believe a detailed audit with full access to PacifiCorp's records and models is necessary. I recommend that any rates approved by the Commission at the conclusion of this proceeding be subject to refund if the audit discloses evidence of uneconomic, and therefore imprudent, dispatch of PacifiCorp's Chehalis and Hermiston plants.

Other findings discussed in my testimony include:

- It remains reasonable for PacifiCorp to forecast the WIJAM Balancing Adjustment in rate cases on a monthly basis.

- PacifiCorp's proposed 24-month amortization period is reasonable because the standard one-year cost recovery period would have a substantial impact on rates.
- I have verified PacifiCorp's calculation of the PCAM Recovery Amount and the Washington PTC Tracker.

III. CALCULATION OF THE PCAM RECOVERY AMOUNT

Q. How does PacifiCorp's Actual NPC compare to its Approved Base NPC?

A. PacifiCorp's Actual NPC was approximately $212.4 million, which led to PacifiCorp undercollecting by $72.7 million because the approved Base NPC is $139.8 million.[1] After application of the PCAM deadband and asymmetrical sharing bands, the Deferred NPC Baseline Adjustment (DNBA), and interest accrued during 2022 and through the end of 2023, the amount owed to PacifiCorp through the PCAM recovery is $71.5 million.[2]

Q. How did PacifiCorp calculate the $139.8 million Base NPC?

A. The $139.8 million Base NPC amount is the result of two Base NPCs that were in effect for calendar year 2022.

The Base NPC in effect from January 1, 2021 through April 30, 2022 was agreed to by settlement in PacifiCorp's 2021 general rate case (Docket UE-191024) in July

[1] Painter, Exh. JP-1T at 8:21 - 9:5.
[2] Painter, Exh. JP-1T at 2:14 - 4:22.

2020. The settlement included an October 2020 update to Base NPC that increased the original Base NPC of $101.7 million by $17.9 million, for a total of $119.6 million eligible for recovery in 2022.[3] This amount resulted in an NPC rate of $24.91 / MWh.

The Base NPC in effect from May 1, 2022 to December 31, 2022 were set in PacifiCorp's 2022 power cost only rate case (PCORC) (Docket UE-210402). The PCORC authorized $145.2 million in Base NPC eligible for recovery in 2022.[4] This amount resulted in an NPC rate of $35.57 / MWh.

Combining the two Base NPC amounts over their respective monthly periods results in an authorized Base NPC of $136.0 million,[5] but the inputs to this calculation are based on forecast retail sales in Washington from the respective rate cases. Accordingly, PacifiCorp calculated the monthly collections using actual retail sales priced at the authorized monthly rates, as set out above, which resulted in the actual NPC collections of $139.8 million.[6]

Q. To what does PacifiCorp attribute undercollection of NPC?

A. PacifiCorp attributes the increase in NPC to extreme weather events, global energy prices as affected by the conflict in Ukraine, increased market purchases, and both higher market prices and natural gas fuel prices. PacifiCorp had a $43 million increase in market purchases, $31 million increase in natural gas fuel expenses, and a $2 million increase in

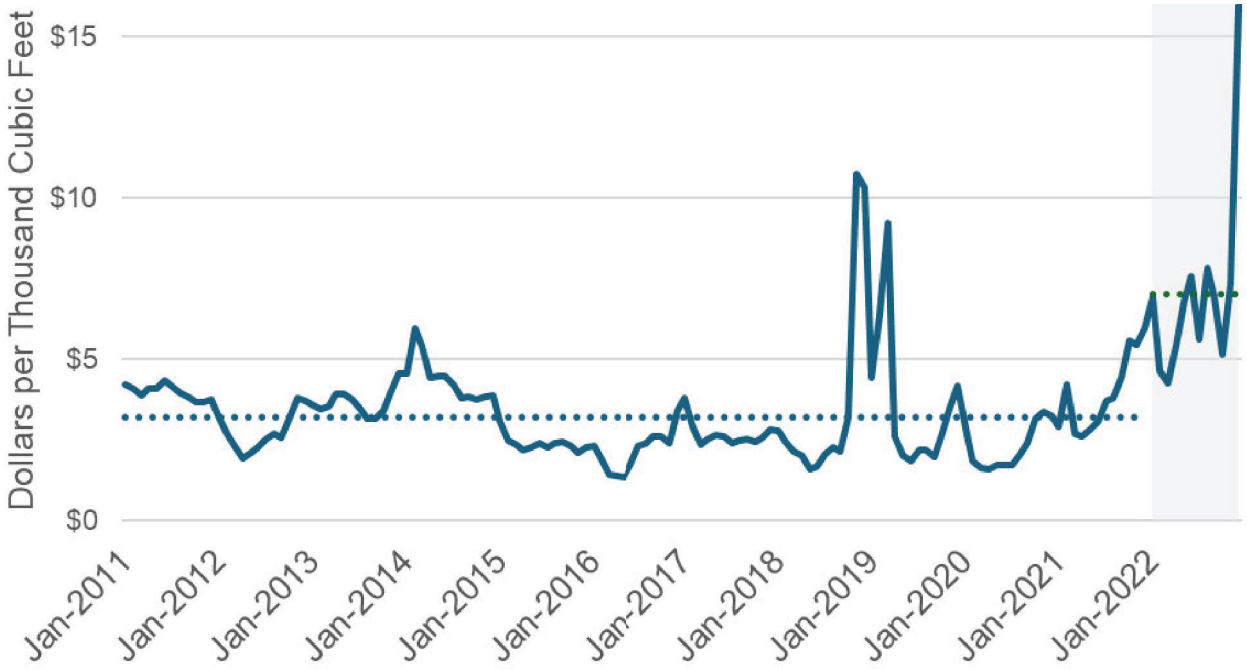
[3] Painter, Exh. JP-1T at 2:16-19, 3:15.
[4] Painter, Workpaper 230482-PAC-PCAM-WP1-6-15-23 (C), Exhibit JP-2 PCAM Calculation.
[5] Calculated from Painter, Workpaper 230482-PAC-PCAM-WP1-6-15-23 (C), Exh. JP-2 PCAM Calculation; and Wilson, Exh. JDW-3C, Attachment, tabs WIJAM Base NPC UE-191024 and WIJAM Base NPC UE-210402.
[6] Painter, Workpaper 230482-PAC-PCAM-WP1-6-15-23 (C); Exh. JP-2 PCAM Calculation.

wheeling and other expenses. These increases were partially offset by a $2 million reduction in coal fuel expense and a $200 thousand increase in wholesale sales revenue.[7]

Q. Were natural gas and market power prices higher in 2022 than they have been in recent years?

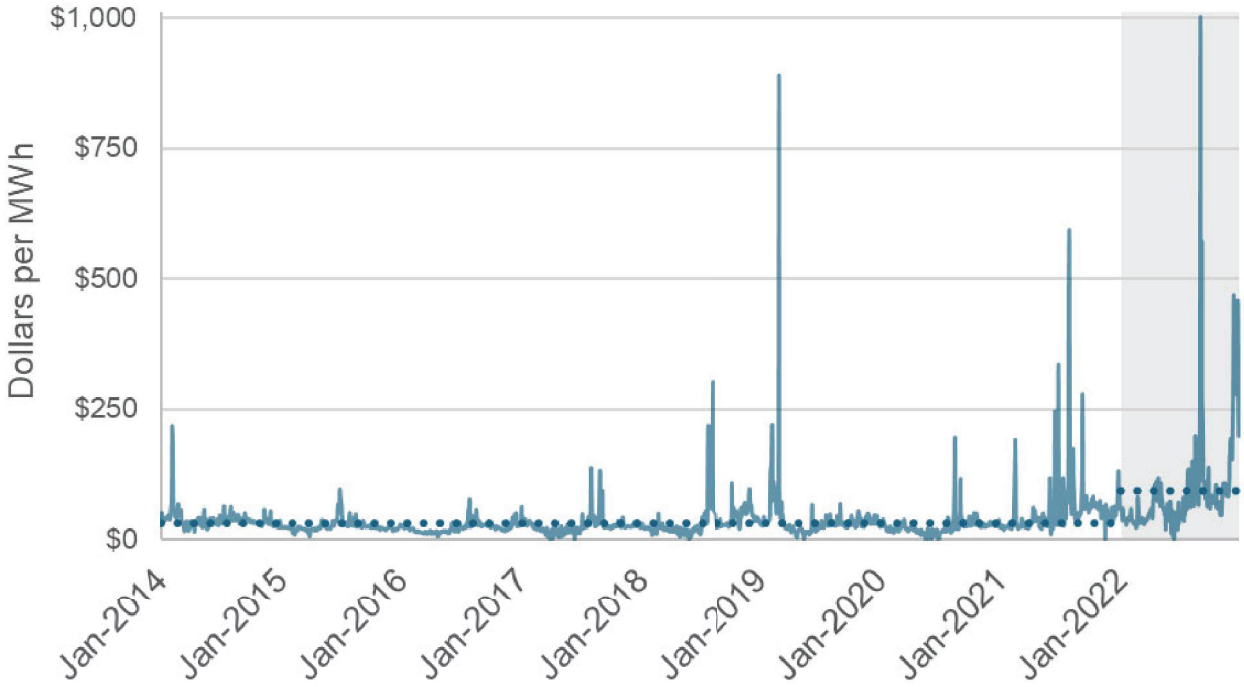
A. Yes. As shown in Figure 1, natural gas prices at Sumas were approximately double recent prices. As shown in Figure 2, market power prices at Mid-Columbia were approximately triple recent prices.

Figure 1: Natural Gas Prices at Sumas[8]



[7] Painter, Exh. JP-1T at 12:3 – 13:20.
[8] U.S. Energy Information Administration, *Sumas, WA Natural Gas Pipeline Imports from Canada*, available at: https://www.eia.gov/dnav/ng/hist/na1277_ysums-nca_3m.htm.

Figure 2: Market Power Prices at Mid-Columbia[9]



Q. Has PacifiCorp properly calculated the total PCAM recovery amount?

A. Yes, I have reviewed PacifiCorp's calculation of the PCAM deadband and asymmetrical sharing bands, as well as the Deferred NPC Baseline Adjustment (DNBA), and did not find any errors or concerns.

However, as discussed in Sections VI and VIII, I recommend that the Commission adopt a revised calculation of the WIJAM Balancing Adjustment and disallow certain net power costs. If the Commission adopts either or both of those recommendations, then the total PCAM recovery amount should be reduced accordingly.

[9] U.S. Energy Information Administration, *Wholesale Electricity and Natural Gas Market Data*, available at: https://www.eia.gov/electricity/wholesale/.

IV. PCAM AMORTIZATION REQUEST

Q. Please summarize PacifiCorp's request for a 24-month amortization period beginning January 1, 2024.

A. PacifiCorp proposes to change Tariff Schedule 97 to recover the $71.5 million PCAM deferral balance using a 24-month amortization period. PacifiCorp proposed that the amortization recovery period would begin on January 1, 2024, but that proposal will need to be updated to reflect a likely decision date for this proceeding.

Q. Do you support PacifiCorp's amortization request?

A. Yes. The standard one-year cost recovery period would have a substantial impact on rates. In the 2023 Rate Case, the Commission approved a Net Power Cost forecast of $190.2 million,[10] so the $71.5 million that PacifiCorp proposes to recover through the PCAM would represent a 37.6% increase in power cost rates. To mitigate such a high fluctuation without substantially increasing customer costs by accruing large carrying charges for the deferral balance, I agree that it is appropriate to cut that rate impact approximately in half over the next year of revenue recovery.

[10] *Wash. Utils. & Transp. Comm'n v. PacifiCorp d/b/a Pac. Power & Light Co.*, Dockets UE-230172 & UE-210852, Order 08/06, 131, ¶ 16 (Mar. 19, 2024).

V. WASHINGTON PTC TRACKER

Q. Please summarize PacifiCorp's request for $1.6 million in recovery of the PTC Tracker.

A. As PacifiCorp Witness Painter explains, renewable energy production tax credits (PTCs) associated with company-owned facilities are credited to customers for rate-making purposes. Base PTCs and Actual PTCs receive separate accounting treatment and any differences are trued-up on an annual basis. Recovery of the variance in PTCs is returned to or recovered from customers consistent with the PCAM structure, but not as a part of that structure. In other words, the variance in PTC revenues is not subject to the deadband or asymmetric sharing bands.

PacifiCorp's cumulative PTC differential of $1.6 million, to be recovered from customers, considers the total PTC differential as well as interest accrued during 2022 and through the end of 2023.

Q. Can you confirm that PacifiCorp has calculated the PTC Recovery amount in a manner consistent with prior decisions?

A. Yes, I have verified the calculations.

VI. WIJAM BALANCING ADJUSTMENT

A. Background on the WIJAM Balancing Adjustment

Q. Please summarize PacifiCorp's method to adjust NPC using the WIJAM Balancing Adjustment.

A. As summarized by PacifiCorp Witness Mitchell in the 2023 Rate Case, PacifiCorp allocates the costs and benefits from its multi-state system to Washington using the Washington Inter-Jurisdictional Allocation Methodology (WIJAM). The key features of the WIJAM are:

- Excluding the costs and benefits of emitting resources that are not electrically located in the PacifiCorp Balancing Authority Area West (PACW) and non-Washington QFs;
- Inclusion of existing and new system transmission; and
- Inclusion of Energy Imbalance Mechanism (EIM) benefits on a system basis.[11]

The WIJAM Memorandum of Understanding (MOU) is supported by WUTC Staff.[12]

Because PacifiCorp supplies power to Washington customers that is not accounted for in Washington's share of dispatched power supplies, there is a net negative position on an annual and monthly basis in the accounting of Actual NPC. The WIJAM Balancing Adjustment assigns a cost to the net power supplied to Washington customers from the PacifiCorp system.

[11] Mitchell, Exh. RJM-1Tr, Docket No. UE-230172, at 5:15 – 6:17.
[12] Wilding, Exh. MGW-2, Docket No. UE-191024.

Q. Why is the WIJAM Balancing Adjustment important?

A. The 2022 WIJAM Balancing Adjustment is 30.7% of the $212.4 million in Actual NPC reported by PacifiCorp. The total $83.5 million adjustment is comprised of a $64.9 million increase in short-term power purchase costs plus a $18.6 million decrease in short-term power sales revenues.[13]

Q. Can you provide a simple example of how the balancing adjustment works?

A. Yes. Imagine if PacifiCorp supplied its system needs with just two hypothetical power plants and a short-term market power purchase. Under the WIJAM rules, PacifiCorp includes the cost of one power plant ("East") in Washington rates but excludes the cost of the other power plant ("West") from NPC. In my illustration, I'll also use simplified factors to represent Washington's allocation of costs and output. I'll assume that 25% of East's costs (and output) and 20% of short-term power purchase costs (and output) are assigned to Washington under WIJAM rules.

Using some simple assumptions for system demand and unit cost during a hypothetical hour in which Washington's net position is 150 MW hours short, Table 2 shows how Washington NPC comprise both the actual costs of system resources and a balancing adjustment.

[13] Painter, Workpaper 230482-PAC-PCAM-WP3-6-15-23, tab "Net Position Balancing."

Table 2: Hypothetical WIJAM Balancing Adjustment

	System (MWh)	Washington (MWh)	Washington Cost ($)
Demand	2,500	500	
East Generation ($50/MWh)	1,000	250	$ 12,500
West Generation ($50/MWh)	1,000	0	$ 0
Short-Term Purchase ($60/MWh)	500	100	$ 6,000
Total Resources	**2,500**	**350**	**$ 18,500**
Net Position	0	(150)	
Average Purchase Cost	$ 60 / MWh		
Balancing Adjustment		150	$ 9,000
Washington Total		**500**	**$ 27,500**

Q. Please explain PacifiCorp's method for implementing the WIJAM Balancing Adjustment.

A. PacifiCorp's sales/purchase price method considers the Washington net position and the volume of short-term system sales and purchases. For background, it is worth noting that in 2022, PacifiCorp had short-term firm power sales *and* purchases in each month, and that PacifiCorp calculated Washington's net position as being short (negative) in each month.[14]

If the Washington net position is short (negative), then the adjustment to NPC is positive reflecting Washington's use of system power. PacifiCorp determines prices for system power in two steps.[15]

[14] Painter, Workpaper 230482-PAC-PCAM-WP3-6-15-23, tab "Net Position Balancing."
[15] I have not located a narrative description of what I am referring to as the sales/purchase price method in PacifiCorp's evidence. My description is based on review of formulas in PacifiCorp's workpapers. Painter, Workpaper 230482-PAC-PCAM-WP3-6-15-23, tab "Net Position Balancing."

First, to the extent that PacifiCorp recorded system sales in each month, then existing system sales are reduced and priced at the monthly average system power sales price. Second, if recorded system sales are insufficient to account for Washington's net short position in a given month, then the remaining power requirement is priced at the average system power purchase price for the month.

If the monthly Washington net position were long (positive), then the adjustment to NPC would be negative reflecting excess value from power whose costs were assigned to Washington. The order of the two steps would be reversed in this circumstance, although this circumstance did not arise in any month in 2022.

Q. Are there aspects of PacifiCorp's sales/purchase price method that you consider to be fundamentally correct?

A. Yes. First, I generally support PacifiCorp's approach to calculating the Washington net position as being reasonably determined based on the WIJAM MOU. Specifically, PacifiCorp calculates the net position for Washington as the difference between total requirements and total resources, and the quantity of each requirement and resource included is calculated using the correct allocation factor.

Second, I support PacifiCorp's choice to use short-term pricing data to value PacifiCorp system power supplied to Washington rather than also including long-term price or cost data in that valuation. To the extent that PacifiCorp's existing long-term power supply resources are available for dispatch, the cost of dispatch is a short-term cost. In contrast, it would not be reasonable to benchmark system price hypothetical

additional long-term resources (such as new wind or solar plants) based on the cost of existing long-term power purchase agreements.

Q. Is the WIJAM Balancing Adjustment described in the WIJAM MOU?

A. No.

Q. Does the WIJAM foreclose the position you offer on behalf of Staff here?

A. No. As noted in the WIJAM MOU, "as the party advocating for these changes, PacifiCorp bears the legal and factual burden to sufficiently demonstrate that these modifications better align the cost allocation methodology with the principles described above in its forthcoming general rate case."[16] And further, "[t]he proposed allocation of a particular expense or investment under this Agreement is not intended to and will not prejudge, or prevent any party from taking a position on, the prudence of those costs or the extent to which any particular cost may be reflected in rates."[17]

B. Concerns with PacifiCorp's WIJAM Balancing Adjustment Method

Q. Why have you evaluated PacifiCorp's WIJAM Balancing Adjustment method?

A. First of all, evaluation of WIJAM Balancing Adjustment is important because these costs represent 30.7% of Actual NPC reported by PacifiCorp. It is in customers' interest to

[16] Wilding, Exh. MGW-2, Docket No. UE-191024, at 2.
[17] Wilding, Exh. MGW-2, Docket No. UE-191024, at 3.

determine whether PacifiCorp's pricing assumptions for system power are just and reasonable for Washington customers.

Furthermore, in the 2023 Rate Case, AWEC witness Mullins testified that PacifiCorp's power cost modeling does not result in optimal dispatch for serving Washington customers. As I understand his argument, witness Mullins does not agree that it is appropriate for PacifiCorp to fill Washington's net short position using just market purchases and sales. He also expressed concern about using a monthly, rather than an hourly, evaluation of the net short position. Witness Mullins evaluated the Company's Aurora modeling and observed that in the total-company scenario, Washington's gas plants are often ramped down in favor of non-Washington plants, not market purchases.[18]

I found some merit in witness Mullins' argument, but the evidence in the 2023 Rate Case was insufficient to fully evaluate the WIJAM Balancing Adjustment method. To the extent that actual system balancing purchases exist in hours in which there is a net short position, it is reasonable for PacifiCorp to allocate the cost of additional system balancing purchases to Washington customers to fill the net short position.

Nonetheless, I agree in principle with witness Mullins that it is not reasonable to price Washington's net short position based on the average monthly price of system balancing purchases if that power could have been supplied at a lower cost, such as by dispatching Washington-jurisdictional gas plants. In hours in which there are insufficient actual system balancing purchases to fill Washington's net short position, I considered

[18] Mullins, Exh. BGM-1CT, Docket Nos. UE-230172 and UE-210852 at 38-41.

that witness Mullins could be correct that Washington's gas plants are often ramped down in favor of non-Washington plants.

If witness Mullins is correct, then even if PacifiCorp system costs are optimized, the result may not be optimal for resources included in the WIJAM. In such circumstances, PacifiCorp would have failed to demonstrate that system balancing purchases, during periods in which Washington's gas plants could have been dispatched at lower cost, provided "quantifiable direct or indirect benefits to Washington [ratepayers] commensurate with its costs."[19]

In addition to lacking sufficient evidence for a thorough evaluation, in my 2023 Rate Case testimony I did not consider it urgent that the Commission review the WIJAM Balancing Adjustment because any problems with the method could be addressed in PCAM review proceedings, such as this one. In this proceeding, it is possible to evaluate whether the actual costs proposed for recovery by PacifiCorp are calculated in a reasonable manner.

Q. Have you identified any other concerns with the WIJAM Balancing Adjustment during your evaluation?

A. Yes. PacifiCorp explained that the accounting data it relies upon for its PCAM filing may store operating data in a different month. PacifiCorp explains this issue as follows:

> … prior period adjustments can result in hourly data not always matching monthly accounting period data on a month-for-month basis. One example of this is when there are telecommunication issues between the MV-90 meter data management system making telephone calls to all the meters at the generator sites to retrieve interval metering data if the issue is not

[19] Wilding, Exh. MGW-2, Docket No. UE-191024, at 1, citing Docket UE-050684, Order 04 ¶ 68.

> discovered until subsequent accounting periods. For example, a generator in December 2021 had 1,000 MWh of generation but there was a communication disruption with the transfer of the interval meter data to the meter data management system and that system only received 900 MWh when the December 2021 accounting entries were made. If the issue was not discovered until the February 2022 accounting period, the additional 100 MWh would be recorded in the February 2022 accounting period along with the dollars associated with the generation purchase. All the accounting systems rely on monthly level granularity data and would store the 900 MWh in December 2021 and the 100 MWh in February 2022. Then, when a request for hourly generation is made, the trading system is queried and the 1,000 MWh in December 2021 is obtained from the query because by the time the request was made the meter data was corrected in the system. The result is the WIJAM file in December 2021 shows 900 MWh but the hourly detail has 1,000 MWh. To reconcile the difference, the prior period adjustments in the WIJAM file for February 2022 would need to be added to the WIJAM file for December 2021 to agree to the hourly information. This fact is important to realize when requesting hourly information that hourly information is not available on an accrual accounting basis that matches the periods at which monthly entries are made in the accounting systems. Hourly data is always on an operation month basis. It would not be possible to show hours in February 2022 that relate to hours in December 2021 in this example.[20]

This explanation raises two material concerns about PacifiCorp's NPCs. First, it is evident that if accounting data are not aligned with the timeframe of system operations, PacifiCorp's NPCs are inaccurate. As some generation, transactions, and other drivers of NPCs may be accounted for in the wrong month or even year, these mismatched costs will have some effect on the overall PCAM deferral account balance, possibly affecting customer rates.

If the costs at issue were simply trued-up over time through equitable rate adjustments, then the impact of a timing mismatch between accounting and operations on customers' cumulative billing would likely be negligible. However, PacifiCorp's Washington NPCs are not simply trued-up over time, as the deferral balance is subject to

[20] Wilson, Exh. JDW-4C.

carrying costs and the PCAM deadband and asymmetric sharing bands. Thus, if there is a substantial mismatch between accounting data and actual operations, then carrying costs could be inflated (or understated) and the effects of the PCAM deadband and asymmetric sharing bands could result in an overall shift of cost responsibility between PacifiCorp and its customers.

The WIJAM Balancing Adjustment is the subject of the second material question about PacifiCorp's NPCs raised by misalignment of accounting data with the timeframe of system operation. The WIJAM Balancing Adjustment values system power supplied to Washington based on the average monthly price of short-term firm power transactions. Errors that shift the accounting for system power from low-cost months to high-cost months would result in an increase in the WIJAM Balancing Adjustment.

For example, if the monthly accounting for September shows a net position of (10,000) MWh and the hourly accounting shows a net position of (9,000) MWh, then the WIJAM Balancing Adjustment for September includes costs for 1,000 MWh more system power than Washington customers actually required. If that 1,000 MWh discrepancy is counter-balanced in October, when average power prices are lower, then the WIJAM Balancing Adjustment priced those 1,000 MWh at a higher-than-justified price.

However, I will note that in Section D below, I find that, in 2022 at least, there were not significant differences between hourly/monthly data and monthly accounting.

C. Factors Considered in Evaluating the WIJAM Balancing Adjustment Method

Q. What factors did you consider in your evaluation of the WIJAM Balancing Adjustment?

A. In designing an evaluation of PacifiCorp's WIJAM Balancing Adjustment, I considered two factors. One factor is the price basis for system power. I considered three alternatives, including PacifiCorp's system sales/purchase price method, the day-ahead market price at the Mid-Columbia hub, and the dispatch cost for PacifiCorp's Washington-jurisdictional natural gas plants.

The other factor is PacifiCorp's decision to use a monthly net position and monthly average sales/purchase pricing data as compared to using hourly net position and short-term pricing data.

Q. Please explain how you determined the quantity and price of power sales and purchases for the PacifiCorp system and for its western region.

A. Confidential power sales transaction data were provided by PacifiCorp on an hourly basis.[21] The quantity of each power sale is provided in a column titled "MWH," which includes "Actual_quantity" and "Scheduled_quantity." The cost of each power sale is provided in columns titled "Actual_dollars" and "Scheduled_dollars."[22]

[21] Wilson, Exh. JDW-5C. Power sales transaction data are found in Confidential Attachment WUTC 16-2, workbook "2022 Hourly STF Sales CONF."
[22] Wilson, Exh. JDW-6.

Confidential power purchase transaction data were provided by PacifiCorp on an hourly basis.[23] The quantity of each power sale is provided in a column titled "MWH," which includes varying combinations of the "Actual_quantity," "Scheduled_quantity," "Unscheduled_quantity," "Bookout_quantity" and "Pathout_quantity." The cost of each power sale is provided in corresponding columns.[24]

Energy Imbalance Market (EIM) transactions are not included in these quantity and pricing calculations, consistent with PacifiCorp's method. Also consistent with PacifiCorp's method, short-term firm purchases included in the "Other Firm Purchases" category are not included; these appear to be associated with Grant PUD Priest Rapids project power.[25]

To calculate hourly power sales prices, the cost of power sales were summed for each hour and divided by the sum of power sales. A similar calculation was done for power purchases.

To calculate the same quantity, cost and price data, the sales data were filtered by "loadarea" for "West" transactions.[26]

[23] Wilson, Exh. JDW-5C. Power sales transaction data are found in Confidential Attachment WUTC 16-2, workbook "2022 Hourly Owned-Contracted Renewable and Non-Emitting generation-STF Purchases CONF," tab "STF Purchases."
[24] Wilson, Exh. JDW-6, parts (f) and (g).
[25] Wilson, Exh. JDW-7.
[26] Wilson, Exh. JDW-5C, part (d).

Q. Please explain how you determined the day-ahead market price at the Mid-Columbia hub.

A. On November 13, 2023, PacifiCorp stated that it did not have access to hourly price settlement data for the Mid-Columbia hub.[27] On January 4, 2023, PacifiCorp provided instructions on obtaining instructions to obtain proprietary data directly from ICE.[28] On February 7, 2024, after receiving written authorization from ICE, PacifiCorp provided daily peak and off-peak price settlement data to Staff by email.

The peak and off-peak prices were assigned to hours based on the peak and off-peak hourly designations in the sales and purchase data files described above. This ensured that holiday treatment was consistent across the datasets.

Q. Please explain how you determined the dispatch cost for PacifiCorp's Washington jurisdictional natural gas plants.

A. The dispatch cost for natural gas plants includes variable operating and maintenance costs (O&M) and fuel costs. The variable O&M costs provided by PacifiCorp for [redacted]. The variable O&M costs provided by PacifiCorp for Hermiston use [redacted].[29]

[27] Wilson, Exh. JDW-5C, part (e).
[28] Wilson, Exh. JDW-8, attachment.
[29] Wilson, Exh. JDW-9C. VOM costs are found in Attach WUTC 16-1 1st SUPP CONF, 2022 VOM data_2021-04_Chehalis-Hermiston CONF.

The fuel cost is calculated on a daily basis since PacifiCorp did not provide a heat rate curve for either plant.[30] PacifiCorp provided daily volumes and fuel prices for each plant, which are multiplied together to determine the plant fuel cost.[31]

PacifiCorp provided generation data for Bridger, Chehalis, Colstrip, and Hermiston.[32] In the case of Hermiston, the [redacted] data were used.

Q. Please explain how you determined the monthly and hourly net position for Washington.

A. The hourly net position is total resources minus total requirements, or net system load.

Total requirements include load[33] and short-term firm sales. Neither the hourly load nor the hourly short-term firm sales data supplied by PacifiCorp exactly match the monthly data in PacifiCorp's workpapers, as shown in Table 3 and Table 4.[34] PacifiCorp provided hourly short-term firm sales data, which are the same as the confidential power sales transaction data described above. However, PacifiCorp's monthly "Other Firm Sales" data are real power loss reimbursements from transmission customers and

[30] In response to a request for "marginal dispatch costs for each capacity amount" of each Washington jurisdictional gas unit, PacifiCorp stated that this information "is not maintained … in the ordinary course of business." Wilson, Exh. JDW-5C, parts (f) and (g).
[31] Wilson, Exh. JDW-9C. Daily volumes and prices are found in Attach WUTC 16-1 1st SUPP CONF, 2022 Chehalis-Hermiston Historical Prices CONF. Wilson, Exh. JDW-10C. Additional daily volumes found in Attach WUTC 16 3rd SUPP CONF.
[32] Wilson, Exh. JDW-11C. Generation data found in attachment AWEC 16-2, folder "23-035-01 CONF Attach EBA FR 6-8 RMP", file "ThermalGas_2022_Hrly Owned Gen FINAL CONF".
[33] Wilson, Exh. JDW-5C. Load data found in attachment WUTC 16-1.
[34] All references to monthly data in this answer refer to Painter, Workpaper 230482-PAC-PCAM-WP3-6-15-23, tab WIJAM NPC Before Balancing.

PacifiCorp states that it does not have the reporting systems to collect these data on an hourly level.[35]

Table 3: PacifiCorp Hourly Load Data Compared to Monthly Accounting

	Hourly	Monthly	Difference
January	[redacted]	478,256	[redacted]
February	[redacted]	381,093	[redacted]
March	[redacted]	356,953	[redacted]
April	[redacted]	345,088	[redacted]
May	[redacted]	323,840	[redacted]
June	[redacted]	333,478	[redacted]
July	[redacted]	424,226	[redacted]
August	[redacted]	422,620	[redacted]
September	[redacted]	324,327	[redacted]
October	[redacted]	339,495	[redacted]
November	[redacted]	417,688	[redacted]
December	[redacted]	499,352	[redacted]
Total	**4,646,416**	**4,646,416**	0

Table 4: PacifiCorp Hourly/Monthly Short-Term Firm Sales Data Compared to Monthly Accounting

	Hourly Analysis		Monthly	Difference
	STF	Other		
January	[redacted]	[redacted]	37,210	[redacted]
February	[redacted]	[redacted]	34,797	[redacted]
March	[redacted]	[redacted]	40,981	[redacted]
April	[redacted]	[redacted]	31,665	[redacted]
May	[redacted]	[redacted]	21,996	[redacted]
June	[redacted]	[redacted]	44,175	[redacted]
July	[redacted]	[redacted]	18,297	[redacted]
August	[redacted]	[redacted]	19,021	[redacted]
September	[redacted]	[redacted]	22,896	[redacted]
October	[redacted]	[redacted]	22,951	[redacted]
November	[redacted]	[redacted]	18,719	[redacted]
December	[redacted]	[redacted]	23,866	[redacted]
Total	[redacted]	[redacted]	**336,573**	[redacted]

[35] Wilson, Exh. JDW-4C. Other firm sales data found in attachment WUTC 27 1st Supplemental, tab "Other Firm Sales-MWH".

Total resources were supplied in a series of responses to data requests, nearly all data supplied was on an hourly basis. However, similar to the monthly real power loss data discussed above, for a very small percentage of resources PacifiCorp only has monthly data that cannot be assigned to specific hours. Where a mix of hourly and monthly data are used in my testimony, I will refer to that as "hourly/monthly data," and I will refer to PacifiCorp's filing data as "monthly accounting."

All hourly/monthly data summarized in my testimony include application of the appropriate WIJAM Allocation Factor to convert system generation to Washington-allocated generation.[36] Where applicable, discrepancies between hourly/monthly data and PacifiCorp's monthly accounting are discussed.

- **Long term firm purchases**: All long-term firm purchase data were provided on an hourly basis.[37] However, the "Other Purchases" file includes 8,761 hours of data – a 25th hour of data was provided for November 6th. Since this hour cannot be included in an 8,760 hour dataset, there is a discrepancy of 13 MWh relative to the monthly accounting and the possibility that hourly data are misaligned for a portion of the year. PacifiCorp was asked to review this discrepancy but did not do so.[38]
- **Qualifying facilities**: PacifiCorp provided all qualifying facilities data.[39]

[36] Painter, Workpaper 230482-PAC-PCAM-WP3-6-15-23, tabs "WIJAM NPC Before Balancing," "Actual Factors."
[37] Wilson, Exh. JDW-5C. Long-term purchase data are found in Confidential Attachment WUTC 16-2, workbook "2022 Hourly Owned-Contracted Renewable and Non-Emitting generation-STF Purchases CONF," tabs "GemState," "PGE Cove, "Wind Purchases," "Solar Purchases," and "Other Purchases."
[38] Wilson, Exh. JDW-12.
[39] Wilson, Exh. JDW-12, Qualifying facilities data found in attachment.

- **Mid-Columbia contract "Grant Surplus"**: The data provided by PacifiCorp are [redacted] MW less than the monthly accounting.[40]
- **Cowlitz Swift (Storage & Exchange)**: In response to a request for hourly data, PacifiCorp provided the data separated into two components, an hourly component and a monthly component that reflects output from the Swift generators used by Cowlitz.[41] Asked to provide information regarding how these monthly data are considered on an hourly basis, PacifiCorp appears to indicate that the monthly transactions are valued on a monthly basis only.[42]
- **PSCo Exchange and SCL State Line**: PacifiCorp provided data for these two resources, but the data sheet has significant irregularities.[43] One issue is that the data sheet does not include 8,760 hours; a number of days have only 8, 16, or 19 hours and while there is a 23-hour day for daylight savings time, there is no 25-hour day. Another issue is that the hourly PSCo Exchange data are only present through the end of February and include only [redacted] MWh as compared to [redacted] MWh in the monthly data.
- **Short-term firm purchases**: There are three subcategories of short-term firm purchase data. The first subcategory, also called "short term firm purchases,"

[40] Wilson, Exh. JDW-5C. Mid-Columbia contract data are found in Confidential Attachment WUTC 16-2, workbook "2022 Hourly Owned-Contracted Renewable and Non-Emitting generation-STF Purchases CONF," tab "MIDC Wanapum-PR," column G. See also Wilson, Exh. JDW-7.
[41] PacifiCorp Response to UTC Staff Data Request No. 16, Confidential Attachment WUTC 16-2, workbook "2022 Hourly Owned-Contracted Renewable and Non-Emitting generation-STF Purchases CONF," tabs "Swift #2 Gen," "Cowlitz Swift Return (monthly)."
[42] PacifiCorp Response to UTC Staff Data Request No. 26 – 1st Supplemental.
[43] PacifiCorp Response to UTC Staff Data Request No. 16, Confidential Attachment WUTC 16-2, workbook "2022 Hourly Owned-Contracted Renewable and Non-Emitting generation-STF Purchases CONF," tab "Exchange".

includes the confidential hourly short-term purchase transaction data described above as well as monthly data for several imbalance or energy loss transactions;[44] together, PacifiCorp reports [redacted] MWh less on an hourly/monthly basis than in its filing using monthly accounting. The second subcategory, EIM Settlements, includes [redacted] MWh less reported on an hourly basis than in PacifiCorp's monthly accounting.[45] PacifiCorp provided some Other Firm Purchases data on an hourly basis and other data on a monthly basis,[46] resulting in [redacted] MWh more reported on an hourly/monthly basis than in monthly accounting. Altogether, there is [redacted] MWh more energy reported using the hourly/monthly data than included in the monthly accounting data.

- **Secondary purchases**: PacifiCorp provided some Secondary Purchases data on an hourly basis and other data on a monthly basis,[47] resulting in [redacted] MWh more reported on an hourly/monthly basis than in monthly accounting.
- **Coal and natural gas generation**: PacifiCorp provided hourly output data for the four Washington-jurisdictional plants.[48] Hourly data for Jim Bridger, Chehalis and Hermiston matched PacifiCorp's monthly data. However, the Colstrip hourly generation data include generation from both units 3 and 4. Washington's net

[44] Wilson, Exh. JDW-4C. Monthly data provided in Confidential Attachment WUTC 27 1st Supplemental, tab "Other Firm Purchases-MWH".
[45] Wilson, Exh. JDW-5C. EIM data found in Confidential Attachment WUTC 16-2, workbook "2022 Hourly EIM Transfers CONF".
[46] Wilson, Exh. JDW-4C. Hourly other firm purchases data provided in Confidential Attachment WUTC 27 1st Supplemental, tabs "Dry Gulch," "Endur Hourly," and "EAS PPT 2022 hourly;" monthly data provided in tab "Other Firm Purchases-MWH".
[47] Wilson, Exh. JDW-4C. Hourly secondary purchases data found in Confidential Attachment WUTC 27 1st Supplemental, tabs "Endur Hourly," and "EAS PPT 2022 hourly;" monthly data found in tab "Secondary Purchases-MWH".
[48] Wilson, Exh. JDW-12 and Exh. JDW-11C, Confidential Attachment AWEC 16-2, folder "23-035-01 CONF Attach EBA FR 6-8 RMP."

position is based on the output of unit 4 only, but PacifiCorp only has monthly accounting data to distinguish output from the two units. The hourly data for units 3 and 4 are adjusted to match PacifiCorp's monthly accounting data for unit 4, effectively assuming that the ratio of unit 3 to unit 4 generation is constant in each month. While the annual output of units 3 and 4 is approximately equal, there are months in which one or the other unit is the primary source of generation from the plant.

- **Hydro generation**: PacifiCorp provided all hydro generation data.[49]
- **Other generation**: PacifiCorp provided all other generation data.[50]

Table 5 summarizes the discrepancies between the monthly accounting filed by PacifiCorp and the hourly/monthly data (aggregated on a monthly basis) supplied by PacifiCorp as described above. While the annual differences between the datasets are less than [redacted] in some months the hourly/monthly data have a net position that is as much as [redacted] higher or lower than the corresponding value in PacifiCorp's monthly accounting.

[49] Wilson, Exh. JDW-5C. Hydro data found in Confidential Attachment WUTC 16-2, workbook "2022 Hourly Owned-Contracted Renewable and Non-Emitting generation-STF Purchases CONF," tabs "Owned Hydro -East," "Owned Hydro - West."

[50] Wilson, Exh. JDW-5C. Other generation data found in Confidential Attachment WUTC 16-2, workbook "2022 Hourly Owned-Contracted Renewable and Non-Emitting generation-STF Purchases CONF," tabs "Owned Wind - East," and "Blundell - Geothermal."

Table 5: PacifiCorp Hourly/Monthly Requirements, Resources, and Net Position Compared to Monthly Accounting

	Hourly/Monthly Data			Monthly Accounting			Difference		
	Requirements	Resources	Net Position	Requirements	Resources	Net Position	Requirements	Resources	Net Position
January	[redacted]	[redacted]	[redacted]	515,465	329,086	(186,379)	[redacted]	[redacted]	[redacted]
February	[redacted]	[redacted]	[redacted]	415,890	306,920	(108,970)	[redacted]	[redacted]	[redacted]
March	[redacted]	[redacted]	[redacted]	397,935	332,937	(64,997)	[redacted]	[redacted]	[redacted]
April	[redacted]	[redacted]	[redacted]	376,753	324,994	(51,760)	[redacted]	[redacted]	[redacted]
May	[redacted]	[redacted]	[redacted]	345,836	264,315	(81,520)	[redacted]	[redacted]	[redacted]
June	[redacted]	[redacted]	[redacted]	377,652	273,836	(103,816)	[redacted]	[redacted]	[redacted]
July	[redacted]	[redacted]	[redacted]	442,523	395,508	(47,015)	[redacted]	[redacted]	[redacted]
August	[redacted]	[redacted]	[redacted]	441,641	381,943	(59,698)	[redacted]	[redacted]	[redacted]
September	[redacted]	[redacted]	[redacted]	347,222	331,554	(15,668)	[redacted]	[redacted]	[redacted]
October	[redacted]	[redacted]	[redacted]	362,446	345,328	(17,118)	[redacted]	[redacted]	[redacted]
November	[redacted]	[redacted]	[redacted]	436,407	359,890	(76,516)	[redacted]	[redacted]	[redacted]
December	[redacted]	[redacted]	[redacted]	523,219	388,065	(135,154)	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]	4,982,989	4,034,375	(948,614)	[redacted]	[redacted]	[redacted]

Table 5 illustrates the monthly net position, using the hourly/monthly data, but for purposes of my analysis, I relied primarily on the hourly net position. The hourly net position is simply the hourly requirements (load and other firm short-term sales) minus the hourly resources.

The remaining data supplied on a monthly basis only represents less than 1% of the total dataset. I also calculated a monthly net position using these data in order to analyze the entire hourly/monthly dataset.

D. Evaluation of the WIJAM Balancing Adjustment Method

Q. Please summarize your evaluation of the WIJAM Balancing Adjustment method.

A. I recalculated the WIJAM Balancing Adjustment using the price basis options and either a monthly or an hourly period for the net position and pricing data. I found that it is reasonable and advantageous for the WIJAM Balancing Adjustment method to:

a) Value system power delivered to Washington customers (the net position) using either a combination of the marginal cost of gas dispatch and the day-ahead price at Mid-Columbia, or simply the day-ahead price at Mid-Columbia; and

b) Use an hourly basis for calculating the net position and applying the marginal cost and pricing valuation.

Q. Why should the WIJAM Balancing Adjustment method use an hourly basis rather than PacifiCorp's monthly accounting?

A. PacifiCorp's monthly accounting method values system power delivered to Washington customers based on monthly average system sales and purchase prices that are then applied to Washington's monthly net position. Figure 3 shows a representative period from 2022 in which the WIJAM net position is short, and to balance accounts for Washington customers, additional power cost is added. But as this example shows, there are hours in which the WIJAM net position is long and the price to purchase and sell power varies considerably from hour to hour. It is more reasonable to value the system power supplied to Washington customers on an hourly basis – as the costs are incurred - rather than using system monthly average pricing.

Figure 3: Example of Hourly WIJAM Balancing Adjustment Net Position and System Purchase and Sales Prices – CONFIDENTIAL

REDACTED

Q. Is the difference between PacifiCorp's monthly accounting and the hourly/monthly data a significant driver of cost differences?

A. No, at least not in 2022. PacifiCorp's WIJAM Balancing Adjustment is $83.5 million. Using the hourly/monthly data, but otherwise following PacifiCorp's adjustment method results in a slightly higher adjustment of $83.8 million. This confirms the finding suggested by Table 5 that there are not significant differences between the hourly/monthly data and the monthly accounting. Based on my review, I believe that in any given year the differences between monthly accounting and the hourly/monthly resources and requirements data could result in either a small positive or negative difference.

In other words, it is important to use the hourly/monthly data provided by PacifiCorp in discovery responses to align the hourly net position with an appropriate

hourly valuation, and not because of a meaningful difference between the resource or requirements datasets.

Q. Does the monthly data supplied by PacifiCorp significantly affect the balancing adjustment method?

A: Yes, but the cost of meeting the monthly net position does not vary much between the valuation methods I considered. As noted in Section VI.C above, the data supplied on a monthly basis only represents less than [redacted] of the total dataset. I calculated a monthly net position using these data, and valued the power required to satisfy this monthly net position at the corresponding monthly average price, depending on the valuation method.

The cost to satisfy this monthly net position varied between $2.2 and $3.5 million; because this difference is relatively small, I will not explicitly discuss this and keep the focus on the more significant differences between the valuation methods. Accordingly, I will refer to the method I recommend as one that is based *primarily* on hourly WIJAM net positions and system pricing values, but it should be remembered that it is necessary to include a small monthly adjustment as a part of the method.

Q. What is the impact of switching from monthly accounting to a balancing adjustment based primarily on an hourly WIJAM net position and system pricing values?

A. The WIJAM Balancing Adjustment would increase substantially, from $83.5 million to $101.9 million. Purchase costs go up by $64.9 million and sales revenues go down by $18.6 million.

Q. Why does the adjustment go up when switching to an hourly analysis?

A. It appears that the adjustment goes up because during hours with high demand, prices are much higher than average. In the greater number of hours with low demand, prices tend to be lower than average, but not enough lower to result in a net balance.

However, this increase in the adjustment is an artifact of using system prices as the basis for the adjustment. If the Mid-C price is used for power valuation, the WIJAM Balancing Adjustment decreases. I attribute this effect to the higher variability in power prices at other hubs that PacifiCorp trades on, particularly those for the eastern portion of its system. For example, the standard deviation of power prices at the Palo Verde hub in 2022 was $117 per MWh, compared to $100 per MWh at Mid-C.[51]

Q. What is the impact of using Mid-C to value power in the WIJAM Balancing Adjustment?

A: Switching from valuing the hourly WIJAM net position from system power transaction prices to Mid-C reduces the WIJAM Balancing Adjustment from $101.9 million to $82.5 million. While the sales revenues of $4.2 million are about the same as using system power sales prices, the purchase cost decreases substantially to just $84.1 million.[52]

Notably, the $82.5 million adjustment cost determined using this method is about $1 million less than the $83.5 million requested by PacifiCorp in its filing. I interpret the difference between the effect of Mid-C power prices (lower adjustment cost) and

[51] U.S. Energy Information Administration, *Wholesale Electricity and Natural Gas Market Data*, available at: https://www.eia.gov/electricity/wholesale/.

[52] As discussed above, there is also an adjustment to the monthly portion of the adjustment method, in this case decreasing the adjustment by about $1.0 million.

PacifiCorp system power prices (higher adjustment cost) as indicating that the price PacifiCorp pays for system power during high net position hours is caused by purchases in other parts of the PacifiCorp system.

Q. How did you evaluate the unrealized potential for cost savings to Washington customers from increased (or decreased) dispatch of the two Washington-jurisdictional gas plants on the PacifiCorp system?

A: As discussed in Section VI.B above, I agree in principle with AWEC witness Mullins that it is reasonable to value Washington's net short position using alternative resources that could have been supplied to Washington customers at a lower cost, such as by dispatching Washington-jurisdictional gas plants. In hours in which there are insufficient actual system balancing purchases to fill Washington's net short position, I considered that witness Mullins could be correct that Washington's gas plants are often ramped down in favor of non-Washington plants.

To evaluate this potential, I compared the hourly dispatch cost for Chehalis and Hermiston to hourly power market prices: first to the PacifiCorp system price and second to the Mid-C price. Where the hourly dispatch cost was lower than the market price, I valued the opportunity to increase the plant dispatch up to 90% of its maximum dispatch, either to reduce system purchases at the market price or to increase system sales at the market price. If the hourly dispatch cost was higher than the market price, I assumed no change in plant dispatch.

I applied this method under three scenarios: monthly pricing at PacifiCorp system market prices, hourly pricing at PacifiCorp system market prices, and hourly pricing at Mid-C market prices.

Q. Why did you constrain the dispatch of Chehalis and Hermiston to 90% of maximum dispatch in your balancing adjustment evaluation?

A. The Chehalis and Hermiston plants are infrequently dispatched above 90% capacity factors. For purposes of my testimony, I assumed that it is necessary for PacifiCorp to withhold dispatch of 10% of plant capacity from each plant for reliability purposes, such as spinning reserves. This specific assumption is guided by my general professional experience, and the results of my analysis do not appear to be particularly sensitive to small adjustments in this value.

Q. Please discuss your evaluation of the WIJAM Balancing Adjustment using natural gas plant dispatch costs and monthly pricing at PacifiCorp system market prices.

A. I conducted this evaluation to most closely replicate application of the position that AWEC witness Mullins presented in his 2023 Rate Case testimony to PacifiCorp's current adjustment method.[53] Using this method, the monthly WIJAM net position is valued first assuming increased dispatch of Chehalis and Hermiston at cost, as described above, with any remaining requirements valued based on the system purchase price.

[53] Mullins, Exh. BGM-1CT, Docket Nos. UE-230172 and UE-210852 at 38-41.

This resulted in a $74.6 million WIJAM Balancing Adjustment, which is $8.8 million less than the $83.5 million adjustment proposed by PacifiCorp in its filing.

However, I do not consider this to be a reasonable alternative. Much of the modeled dispatch value of Chehalis and Hermiston essentially represents a transfer of power output from hours with surplus dispatch capacity to hours with a net position that cannot be fully satisfied by lower-cost dispatch of these plants.

This is the same logic I discussed above as to why PacifiCorp's monthly accounting process is not the most reasonable balancing adjustment method. The misleading opportunity suggested by valuing the WIJAM net position based on monthly, rather than hourly, undispatched power at average monthly dispatch costs helps to illustrate the fallacy of using a monthly accounting process in a balancing adjustment.

Q. What is the impact of including natural gas plant dispatch value in the balancing adjustment based primarily on an hourly WIJAM net position?

A. The balancing adjustment cost is reduced substantially. As discussed above, the balancing adjustment using an hourly net position and system pricing is $101.9 million. Including the value available from lower-cost dispatch of Chehalis and Hermiston reduces the adjustment to $93.3 million. And if market power is valued at Mid-C prices rather than at PacifiCorp system power transaction prices, the balancing adjustment is further reduced to $79.5 million.

For reference purposes, Table 6 provides a summary of the balancing adjustment amounts discussed above. The amounts that I consider most reasonable are indicated by bold text.

Table 6: Summary of Alternative WIJAM Balancing Amounts

	Monthly Accounting and Pricing	Primarily Hourly Data with Monthly Pricing	Primarily Hourly Data and Pricing
System Power Transaction Prices	$83,490,680	$83,793,879	$101,943,357
Mid-C Power Prices			**$82,488,497**
Marginal Gas Dispatch Cost and System Prices		$74,643,342	$93,267,586
Marginal Gas Dispatch Cost and Mid-C Power Prices			**$79,546,932**

Q. Why isn't it more reasonable to use system power transaction prices than Mid-C power prices?

A. To answer this question, it is worth highlighting that the WIJAM Balancing Adjustment is a deviation from a strict cost-of-service approach to net power costs. The WIJAM Balancing Adjustment is necessary because PacifiCorp's system power supply includes resources that are not considered reasonable to directly allocate to Washington customers. Accordingly, rather than identifying the actual cost of power supplied to Washington customers, an accounting adjustment is made to reflect the value of the power supplied.

One problem with valuing the WIJAM Balancing Adjustment at PacifiCorp's system transaction prices is that those transactions are already included in net power costs. Those transaction costs have been allocated to either Washington or some other state according to the WIJAM and associated agreements regarding cost allocation. PacifiCorp's WIJAM Balancing Adjustment method effectively purchases (or sells) those megawatt hours of power a second time.

To overcome this problem, I begin with the principle that Washington customers are not served by marginal system power. While the PacifiCorp system power transaction prices are a reasonable valuation tool for marginal system power, PacifiCorp's market transactions serve customers in six states. The marginal cost of power varies across PacifiCorp's service territories. Transmission constraints and line losses may result in PacifiCorp purchasing power at, say, Palo Verde even when the cost to purchase power at Mid-C or generate power at Chehalis is lower. The use of system power transaction prices to value the Washington Balancing Adjustment fails to consider the impact of transmission availability, ancillary service requirements, and other factors that may affect Washington differently than other parts of its eight-state grid.

Thus, while PacifiCorp's system power transactions may be reasonable from a system perspective, it is not reasonable to create valuation prices for the balancing adjustment that are, evidently, inflated by the cost of market transactions that occur far away from Mid-C.

For accounting purposes, it is more reasonable to use a transparent price benchmark for the hourly price of power to Washington customers. Pricing at the Mid-C hub is recognized as the best pricing benchmark for Washington power customers[54] and is the most reasonable choice for use in the WIJAM Balancing Adjustment.

[54] See, for example, Wilson, Exh. JDW-13.

Q. Did you identify any other issues with PacifiCorp's WIJAM Balancing Adjustment method?

A. Yes. PacifiCorp's valuation of system power transactions includes only short-term firm transactions and does not include Energy Imbalance Market (EIM) transactions. EIM transactions take place in a 5-minute market administered by the CAISO. According to the CAISO's Electric Region Definitions, Mid-Columbia is the default electric pricing hub for PacifiCorp.[55]

I did not evaluate a system power transaction method that included both short-term firm and EIM transactions for two reasons. First, I found it reasonable to exclude EIM transactions since they occur on a very short time frame and are not intended to address regional shortfalls in resources. At the time that these transactions occur, unit commitments (startups/shutdowns) and fuel purchases have already occurred, constraining the flexibility of dispatch response. One would expect regional shortfalls in resources, such as those intended to be accounted for using the Washington Balancing Adjustment, to be identified and resolved on at least a day-ahead basis. In my experience reviewing the power market transactions for utilities in California, I have observed that those utilities transact far more power on the day-ahead market than in the so-called "real time" markets.

Second, in a data response provided on January 4, 2024, PacifiCorp stated, "the Company advises that the Western Energy Imbalance Market (EIM) does not have EIM

[55] Wilson, Exh. JDW-13.

pricing at the Mid-Columbia (Mid-C) market hub."[56] Based on that representation, I understood that the Company could not supply such data.

It is unclear whether this response was a misunderstanding or misleading. As noted above, the administrator of the EIM (CAISO) considers the Mid-C hub to be the node at which pricing for PacifiCorp's western market transactions occur. On March 25th, PacifiCorp provided EIM pricing data for two days in 2022.[57] Subsequently, I was able to obtain EIM pricing data for aggregated pricing nodes located at Mid-C from the CAISO Open Access Same-time Information System (OASIS). Thus, PacifiCorp is evidently able to supply the data that Staff had previously requested.[58]

At this point, I noticed that the volume (counting MWh imported and exported equally without netting) of hourly EIM transactions was comparable to the volume of short-term firm sales and purchases. For PacifiCorp's western balancing area, EIM transactions made up [redacted] percent of total short-term transactions.[59]

Considering that PacifiCorp will soon join the EDAM, if it continues to use a system power price as the valuation basis for the WIJAM Balancing Adjustment (which is not my recommendation), then it may be appropriate to include EIM transactions in the price determination since it represents such a large fraction of total short-term transactions.

[56] Wilson, Exh. JDW-8, part (e).
[57] Wilson, Exh. JDW-14C.
[58] Wilson, Exh. JDW-8, part (e).
[59] In the eastern balancing area, EIM transactions made up [redacted] percent of total short-term market power transactions. This is further evidence that the system requirements in the western balancing area differ significantly from those of the eastern balancing area.

Q. Please summarize your recommendation on the WIJAM Balancing Adjustment cost recovery and method.

A. I recommend that the Commission reduce the WIJAM Balancing Adjustment from $83,490,680 to $79,546,932 and reduce the PCAM deferral account amount accordingly.

Furthermore, I recommend that the Commission direct PacifiCorp to update its WIJAM Balancing Adjustment method to use all available hourly requirements and resource data in future annual power cost filings, and to value the balancing adjustment based first on undispatched capacity from Chehalis and Hermiston and second using the Mid-C day-ahead market power price benchmark.

If the Commission determines that it is not appropriate to value the balancing adjustment based on undispatched capacity from Chehalis and Hermiston, then the Commission should reduce the WIJAM Balancing Adjustment to $82,488,497.

VII. WIJAM BALANCING ADJUSTMENT FORECAST

Q. Should the Commission direct PacifiCorp to update its net power cost methods to use hourly data as well?

A. No. For purposes of forecasting, the Commission should not direct PacifiCorp to forecast the WIJAM Balancing Adjustment (or relevant prices) on an hourly basis. As discussed in Section II, most of the difference between forecast and actual costs can be attributed to extreme weather events, global energy prices as affected by the conflict in Ukraine, increased market purchases, and both higher market prices and natural gas fuel prices. While the difference between actual monthly and hourly data differs by a significant

amount for cost recovery purposes, the additional effort required to use hourly pricing from production cost forecasts seems unlikely to result in a meaningful improvement in accuracy, as other factors are likely to be more significant sources of forecast error.

VIII. REASONABLENESS OF ACTUAL NET POWER COSTS

Q. Aside from the PTC Tracker and the WIJAM Balancing Adjustment, please discuss the reasonableness of PacifiCorp's 2022 net power costs.

A. I will first discuss the actual costs submitted, and then discuss the reasonableness of how they were incurred.

With respect to the actual costs submitted, PacifiCorp submitted a data response that confirmed that its cost data are obtained directly from PacifiCorp's ledger.[60] I reviewed PacifiCorp's workpapers for indications of irregular or erroneous data. While I did identify some errors, they were confirmed to be immaterial in discovery responses from PacifiCorp.

Q. Do you have any concerns about the reasonableness of the costs incurred by PacifiCorp?

A. Yes. In the course of reviewing the WIJAM Balancing Adjustment costs, as discussed above, I observed that the Chehalis and Hermiston plants did not appear to be dispatched in response to market prices.

[60] PacifiCorp Response to UTC Staff Data Request No. 9.

As shown in Figure 4, when dispatched, Chehalis and Hermiston are usually operated with a capacity factor between about [redacted]. Considering only hours with both plants dispatched at least [redacted], the correlation of plant capacity factor with the Mid-C price is [redacted] and [redacted] for Hermiston and Chehalis, respectively. Even during the [redacted] hours in which the Mid-C price exceeded [redacted] per MWh and the fuel and variable costs of the two plants was just [redacted] per MWh, both plants were operated at an average capacity factor of just [redacted]. If the plant output had been increased during that time, the net power cost revenues would have been over [redacted] per MWh, which would have helped to reduce net power costs to Washington customers. Thus, it appears that PacifiCorp's operational practices for these gas plants do not put great importance on market power prices.

Figure 4: Dispatch of Chehalis and Hermiston Natural Gas Plants, 2022
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Q. How often were Chehalis and Hermiston operated uneconomically, based on the Mid-C benchmark?

A. For purposes of this analysis, I used the following definitions:

- **Underdispatch**: Mid-C day-ahead price greater than unit cost (fuel plus variable operating)
- **Overdispatch**: Unit cost greater than Mid-C day-ahead price
- **Low dispatch**: Overdispatch, with generation < 10 MWh
- **Offline**: Generation < 1 MWh

As shown in Table 7, the most significant issue is underdispatch, with the potential for the natural gas plants to be operated cost-effectively, either replacing more expensive market power purchases or with the output being sold to the market at Mid-C power market prices.

Table 7: Dispatch Status of Chehalis and Hermiston, 2022

Hours	Chehalis Dispatch Status			
Hermiston Dispatch Status	Underdispatch	Overdispatch	Low dispatch	Offline
Underdispatch	[redacted]	[redacted]	[redacted]	[redacted]
Overdispatch	[redacted]	[redacted]	[redacted]	[redacted]
Low dispatch	[redacted]	[redacted]		[redacted]
Offline	[redacted]	[redacted]	[redacted]	[redacted]

Q. Please provide an example of underdispatch.

A. During the peak period on September 2, 2022, the average plant costs were [redacted] and [redacted] per MWh for Hermiston and Chehalis, respectively. The Mid-C price was [redacted] per MWh. Additional revenue at full dispatch is calculated as the revenue from the unit at full dispatch, priced at Mid-C, minus the unit cost.

As shown in Table 8, during the 16-hour peak period on September 2, 2022, at full output, PacifiCorp's revenues from these two plants could have resulted in over [redacted] in additional net revenues for Washington power costs

Table 8: Underdispatch on September 2, 2022

	Unit Capacity Factor		Unit Cost		Additional Revenue at Full Dispatch	
Time	Hermiston	Chehalis	Hermiston	Chehalis	Hermiston	Chehalis
6:00						
7:00						
8:00						
9:00						
10:00						
11:00						
12:00						
13:00						
14:00						
15:00						
16:00						
17:00						
18:00						
19:00						
20:00						
21:00						
Total						

Q. Please provide an example of overdispatch.

A. During a 16-hour portion of the off-peak period on December 25, 2022, the average plant costs were [redacted] and [redacted] per MWh for Hermiston and Chehalis, respectively. The Mid-C price was [redacted] per MWh. Uneconomic costs at actual dispatch is calculated as the difference between average plant costs and the Mid-C price times the unit generation.

As shown in Table 9, during a 16-hour period on December 25, 2022, if the natural gas plants had been offline and replaced with Mid-C power, PacifiCorp's Washington power costs could have been reduced by over [redacted].

Table 9: Overdispatch on December 25, 2022

	Unit Capacity Factor		Unit Cost		Uneconomic Costs at Actual Dispatch	
Time	Hermiston	Chehalis	Hermiston	Chehalis	Hermiston	Chehalis
6:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
7:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
8:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
9:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
10:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
11:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
12:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
13:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
14:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
15:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
16:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
17:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
18:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
19:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
20:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
21:00	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total			[redacted]	[redacted]	[redacted]	[redacted]

Q. Is PacifiCorp likely to find this analysis credible?

A. No. When asked to review these specific findings, PacifiCorp responded as follows:

> As an initial matter, the Washington Utilities and Transportation Commission (WUTC) staff's analysis is faulty as it does not involve the use of a production cost model to simulate optimal dispatch, in WUTC staff's perfect hindsight review. This fault produces results with no consideration of transmission availability, ancillary service requirements, day-ahead gas nominations, daily ambient derates, or the fact that generation is dispatched in accordance with prevailing prices in the western energy imbalance market (EIM), not the Mid-Columbia (Mid-C) day-ahead market.[61]

And also:

> Furthermore, PacifiCorp owns and operates the largest grid in the western United States (U.S.) with 17,100 miles of transmission lines across 10

[61] Wilson, Exh. JDW-14C.

> western states. The Company owns and operates a diverse portfolio of generation resources including 73 generation facilities in eight states – comprised of coal, natural gas, hydroelectric, solar, geothermal and the largest owned wind fleet by a regulated utility in the Western U.S. Therefore, it is infeasible to use spreadsheet analysis to determine optimal dispatch decisions in the manner that WUTC staff has done.[62]

Q. Did PacifiCorp's response to your analysis raise any new concerns?

A. Yes. In its response to the analysis of September 2, 2022, PacifiCorp provided data that it claims demonstrate that Chehalis and Herriniston "were appropriately and economically dispatched (after consideration of prevailing gas nomination restrictions and regulation instructions) on September 2, 2022."[63]

My first concern with this statement is that PacifiCorp does not explain and support the existence of "prevailing gas nomination restrictions." As summarized above, on that day the average plant costs were [redacted] and [redacted] per MWh for Herriniston and Chehalis, respectively. These costs were well below the Mid-C day-ahead market price. As shown in Figure 5, the gas price provided by PacifiCorp for that day was not particularly high compared to days in the previous or following weeks, suggesting that there was not a market constraint on gas supplies that restricted PacifiCorp from purchasing sufficient gas supplies to take advantage of the high day-ahead power market prices.

[62] Wilson, Exh. JDW-14C.
[63] Wilson, Exh. JDW-14C, part (a).

Figure 5: Confidential Gas Prices Paid by PacifiCorp at Hermiston

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My second concern with this statement is that PacifiCorp does not explain and support the existence of "regulation instructions." PacifiCorp provided data that indicate that its generator bid for Chehalis increased from [redacted] to [redacted] per MWh at [redacted], then returned to [redacted] per MWh at [redacted]. During this [redacted]-hour period, Chehalis' average output was [redacted] to [redacted] MW from an average of [redacted] MW during the periods in which its generator bid was in the low-[redacted] range.[64] While the generator bid during those hours was [redacted] than the marginal unit cost I calculated using cost data from PacifiCorp, it is of a similar enough magnitude that the difference should not have affected dispatch. Thus, it appears that PacifiCorp [redacted] the output at Chehalis by about [redacted] MW for [redacted] hours when it could have committed to full dispatch in the day-ahead market at a price of about [redacted] per MWh.

[64] Wilson, Exh. JDW-14C, attachment.

Similar unexplained high generator bid prices are also indicated for Hermiston in the same response, leaving the question of why Hermiston and Chehalis were not fully dispatched on September 2, 2022 unanswered.

Q. What about PacifiCorp's response regarding the December 25, 2022 dispatch?

A. PacifiCorp's response for December 25, 2022 included almost identical wording to its response for September 2, 2022, even though the circumstances on this date were significantly different.[65] As shown in Figure 5, the gas price provided by PacifiCorp for that day was elevated relative to most of the year. As a result, using data provided by PacifiCorp, I calculated daily operating costs of [redacted] and [redacted] per MWh for Hermiston and Chehalis, respectively.

These costs are higher than the average locational marginal price (LMP) from the EIM provided by PacifiCorp[66] as well as being higher than the day-ahead price at Mid-C. Even though it appears that both plants were operating at a loss, they were fully dispatched.[67]

Q. Do you believe that Chehalis and Hermiston were appropriately and economically dispatched throughout 2022?

A. No. While I understand that it may not always be possible to obtain additional market-priced gas (or re-market purchased gas) on short notice, and that there may be ancillary

[65] Wilson, Exh. JDW-14C, part (c).
[66] Wilson, Exh. JDW-14C, attachment.
[67] PacifiCorp's response indicates that Hermiston can be considered fully dispatched, as [redacted].

service requirements that constrain generator output, the evidence strongly suggests that dispatch of Chehalis and Hermiston did not closely track economic indicators, particularly the day-ahead market. PacifiCorp's response to inquiries about two example days did not provide a clear explanation for what appears to be uneconomic dispatch patters and seemed to raise even more questions.

Q. Were you able to determine the economic cost of Chehalis and Hermiston's uneconomic dispatch?

A. No. As PacifiCorp reasonably points out, it is difficult to conduct a spreadsheet analysis that considers all the confounding factors in economic dispatch and arrive at a conclusive finding. A comprehensive analysis would require full access to PacifiCorp's records, including purchases and sales of gas for each facility, regulation requirements, and other factors that were used to determine its generation bids.

PacifiCorp suggests that a "production cost model to simulate optimal dispatch" is required to conduct such an analysis, and that "Company-modeling datasets/inputs do not exist" for such analysis.[68] I am not convinced that such modeling is necessary, but that may be the case. In any event, the level of analysis required to verify that PacifiCorp's dispatch was economic is beyond the anticipated scope of my review.

For illustrative purposes, I did calculate the potential 2022 cost savings due to strictly economic dispatch based on day-ahead Mid-C prices as [redacted] In reviewing that illustrative value, I considered whether those potential savings might simply be

[68] Wilson, Exh. JDW-14C.

attributable to small operational factors that affected unit operating costs on a day-to-day basis that were not disclosed by PacifiCorp. I found that, by far, the majority of the potential power cost savings were associated with hours in which the difference between each plant's marginal operating cost and the Mid-C price was at least $30 per MWh. This further confirmed my view that these plants were not dispatched in response to market power prices.

However, I cannot recommend that the Commission adopt the [redacted] in potential cost savings as a value that it should rely upon. It is not possible that optimal dispatch of these two gas plants would be 0% when Mid-C prices are lower than the cost of operation and 100% when Mid-C prices are higher than the cost of operation. PacifiCorp would need to consider startup and shutdown costs, ramp rates, spinning reserve requirements, and potentially other ancillary service requirements.

Q. Is it possible that PacifiCorp has optimally dispatched power on a system basis, yet allocated excessive costs to Washington customers?

A. Yes. Even if PacifiCorp system costs are optimized, the result may not be optimal for resources included in the WIJAM. In such circumstances, PacifiCorp would have failed to demonstrate that system balancing purchases, during periods in which power purchased at Mid-C or dispatched from Washington's gas plants, provided "quantifiable direct or indirect benefits to Washington [ratepayers] commensurate with its costs."[69]

[69] Wilding, Exh. MGW-2, Docket No. UE-191024, at 1, citing Docket UE-050684, Order 04 ¶ 68.

Q. Based on your findings, what actions should the Commission take?

A. I recommend that the Commission direct PacifiCorp to participate in a full third-party audit of the dispatch of Chehalis and Hermiston for 2022. PacifiCorp should be directed to provide the auditor with full access to relevant records and to perform any necessary modeling runs as directed by the auditor. The auditor should be jointly selected by Staff and PacifiCorp, but if unable to reach agreement, the Commission should give weight to Staff's recommendation. All costs of the audit should be borne by PacifiCorp as an operating expense.

I recommend that any rates approved by the Commission at the conclusion of this proceeding be subject to refund if the audit discloses evidence of uneconomic, and therefore imprudent, dispatch of PacifiCorp's Chehalis and Hermiston plants.

Q. Does this conclude your testimony?

A. Yes, it does.