BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

LC 82

In the Matter of PACIFICORP d/b/a PACIFIC POWER, 2023 Integrated Resource Plan	Joint Advocates Comments on PacifiCorp 2023 Integrated Resource Plan Update and Clean Energy Plan Supplement

JOINT ADVOCATES COMMENTS ON PACIFICORP 2023 INTEGRATED RESOURCE PLAN UPDATE AND CLEAN ENERGY PLAN SUPPLEMENT

JUNE 14, 2024

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I. INTRODUCTION

Sierra Club, Mobilizing Climate Action Together, Green Energy Institute at Lewis and Clark Law School, Northwest Energy Coalition, Oregon Citizens' Utility Board, and Oregon Solar + Storage Industries Association (collectively, "Joint Advocates") thank the Oregon Public Utility Commission ("Commission") for the opportunity to provide comment on PacifiCorp's ("Company") 2023 Integrated Resource Plan ("IRP") Update and Clean Energy Plan ("CEP") Supplement. As these comments will demonstrate, the Update and Supplement mark a dramatic change from the 2023 IRP and CEP, putting PacifiCorp significantly off-course from meeting its House Bill ("HB") 2021 emission reduction targets and thereby jeopardizing Oregon's ability to meet its climate objectives. Rather than invest in clean, low-cost resources, as originally forecasted in the 2023 IRP, PacifiCorp has abandoned such plans and instead proposes long-term reliance on its fossil fleet, including coal units that analyses from as early as 2018, conducted by both PacifiCorp and on behalf of Sierra Club,[1] demonstrate are not economic for customers. These surprising changes are largely a result of unsupported modeling constraints that not only prohibited PLEXOS from selecting new, currently uncommitted resources until 2027 but also allowed PLEXOS to ignore federal regulations limiting pollution from PacifiCorp's coal facilities.

[1] Lulia Gheorghiu, *PacifiCorp Shows 60% of its Coal Units are Uneconomic*, Util. Dive (Dec. 5, 2018), *available at* https://www.utilitydive.com/news/pacificorp-shows-60-of-its-coal-units-are-uneconomic/543566/; Jeff Burks et al., *PacifiCorp Coal Unit Valuation Study*, Energy Strategies (June 20, 2018), *available at* https://www.sierraclub.org/sites/default/files/PacifiCorp-Coal-Valuation-Study.pdf.

PacifiCorp's 2023 IRP Update and CEP Supplement are informational filings because the utility has chosen not to seek acknowledgment. Given the significant and permanent changes that PacifiCorp has introduced, we question whether an Update was the appropriate filing to have been made, as PacifiCorp is not merely providing a status update on the implementation of the 2023 IRP but instead is charting an entirely new resource strategy. We are concerned that PacifiCorp's decision not to seek acknowledgment is an attempt to limit not only stakeholder engagement at this critical juncture but also Commission oversight. We urge the Commission to critically evaluate the 2023 IRP Update and CEP Supplement and provide clear and explicit instruction to the Company, as is required by HB 2021.

These comments address the following topics:

1. PacifiCorp's failure to demonstrate "continual progress" towards meeting HB 2021's emission reduction targets;
2. Necessary Commission action in order to "ensure" that PacifiCorp is able to demonstrate "continual progress" in the future;
3. Significant shortcomings in the 2023 IRP Update that should be corrected in the 2025 IRP;
4. PacifiCorp's failure to comply with Commission direction regarding its CEP Supplement; and
5. A summary of recommendations.

II. PACIFICORP'S 2023 IRP UPDATE AND CEP SUPPLEMENT DEMONSTRATE THAT RECENT COMPANY DECISION MAKING IS MOVING THE COMPANY *FURTHER AWAY* FROM ACHIEVING HB 2021'S EMISSION REDUCTION REQUIREMENTS, NOT MAKING THE LEGALLY REQUIRED "CONTINUAL PROGRESS"

The 2023 IRP Update and CEP Supplement showcase a utility that is stalling compliance with HB 2021, once again delaying a transition from its fossil fleet to clean energy and the associated emission reductions to "sometime in the future." As compared to the 2023 IRP and CEP, the Update and Supplement slash clean energy procurements in favor of continued reliance on fossil fuels, in turn eliminating significant, promised emission reductions and setting PacifiCorp on a path to exceed HB 2021's emission reduction targets in 2030, 2035, and 2040. The abandonment of the clean energy transition ignores the years-worth of data showing that PacifiCorp's coal fleet is uneconomic and harming ratepayers. PacifiCorp's purported justifications for continuing to rely on high-cost, volatile, and polluting resources that are contributing to the climate crisis and, in particular, severe wildfires across the West, crumble

upon even cursory inspection. Acknowledging that the plan falls well short of HB 2021 requirements, the Company proposes "levers" to increase clean energy in Oregon, but these levers are largely paper emission reductions that will be difficult, if not impossible, to implement. In sum, the 2023 IRP Update and CEP Supplement fail to "demonstrate [that PacifiCorp] is making continual progress within the planning period towards meeting the clean energy targets set forth in section 3 of [HB 2021]… ."[2]

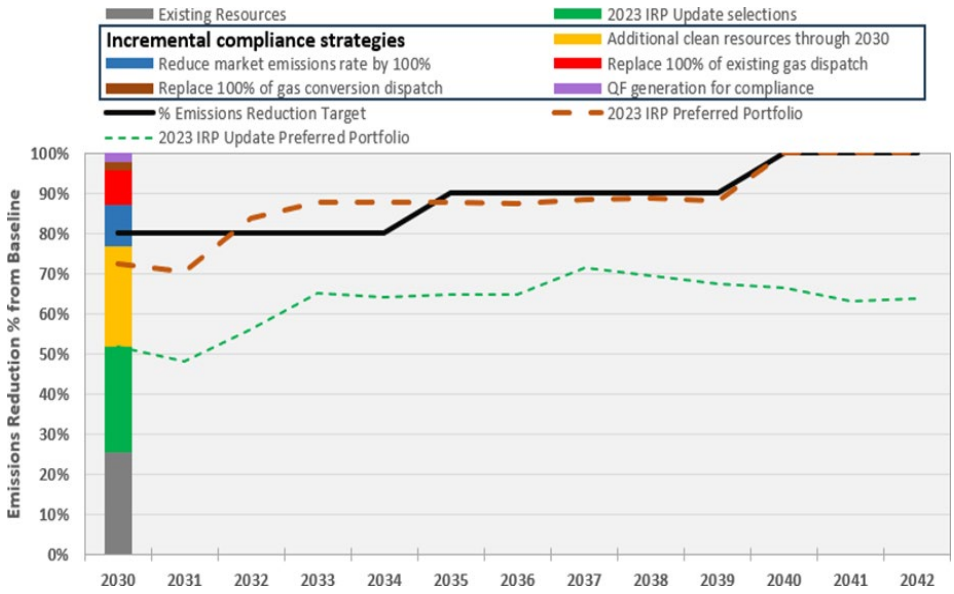
A. PacifiCorp's 2023 IRP Update and CEP Supplement Significantly Increase Continued Reliance on Fossil Fuels and Slash Clean Energy Procurements Compared to the 2023 IRP

HB 2021 sets straight-forward emission reduction targets: 80% reduction from baseline by 2030, 90% reduction by 2035, and 100% reduction by 2040.[3] These reduction targets were not pulled out of thin air; they are scientifically backed and align with the best climate science that show meeting the Paris Agreement's target of keeping global warming to 2 degrees Celsius requires reducing electric power sector greenhouse gas emissions by approximately 80% by 2030. Indeed, after rejoining the Paris Agreement in 2021, the United States set a "nationally determined contribution" to reduce net greenhouse gas emissions 50-52% by 2030, including a goal to reach 100% carbon pollution-free electricity by 2035.[4]

PacifiCorp's 2023 IRP Update and CEP Supplement put forward a plan that, admittedly, will not achieve these targets within the planning horizon (by 2042), if ever.

[2] HB 2021, 2021 Leg., 81st Sess. § 4(4)(e) (Or. 2021) [hereinafter "HB 2021"].
[3] HB 2021 § 3(1)(a)-(c).
[4] The U.S. of Am., *Nationally Determined Contribution* at 1, 3 (Apr. 21, 2021), *available at* https://unfccc.int/sites/default/files/NDC/2022-06/United%20States%20NDC%20April%2021%202021%20Final.pdf.

Figure 1: Reproduction of Figure 2 in the CEP Supplement



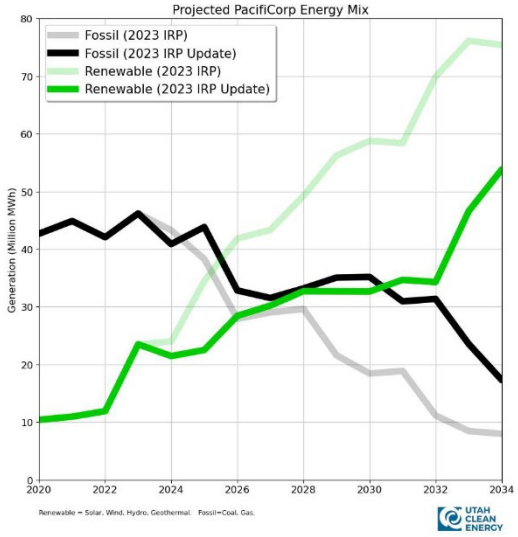
As demonstrated by Figure 2 in the CEP (reproduced above), PacifiCorp projects reducing its greenhouse gas emissions just 50% below baseline by 2030. At its peak, PacifiCorp forecasts reducing emissions by just over 70% in 2037, before allowing emissions to increase again through 2042, with emission reductions hovering above 60% below baseline in that final year of the planning period. The 2023 IRP Update and CEP Supplement definitively show a utility far off-track from meeting HB 2021's requirements. The projected emission reductions are so far off HB 2021's mandate that it cannot reasonably be said that the plan demonstrates continual progress "*towards meeting the clean energy targets*"[5] because the plan does not contemplate meeting the required targets.

Order No. 24-002 indicated that the Commission would consider "forward-looking actions" and whether the utility's plans identified future actions necessary to meet HB 2021 requirements. Comparing the stark difference between the 2023 IRP and the 2023 IRP Update, PacifiCorp has, in fact, *abandoned* previous plans to reduce emissions. Whereas PacifiCorp's plans under the 2023 IRP included significant clean energy procurements that would reduce the Company's reliance on fossil fuels, the 2023 IRP Update reverses course, slashing previous clean energy procurement forecasts in favor of continued reliance on fossil fuels. In the 2023 IRP, PacifiCorp's resource projections would have resulted in renewables generation (solar,

[5] HB 2021 § 4(4).

wind, hydro, and geothermal) surpassing fossil generation (coal and gas) in 2025. Under the 2023 IRP Update, that tipping point has been pushed back to 2032.

***Figure 2: PacifiCorp's Projected Energy Mix*[6]**



This is not surprising because PacifiCorp's solar and storage additions plummeted between the 2023 IRP and 2023 IRP Update, with solar decreasing by 68% and storage decreasing by 79%.[7] And while cumulative wind additions did not decrease between the 2023 IRP and 2023 IRP Update, procurement was significantly delayed. As in prior planning exercises, PacifiCorp assumes that steady, yearly procurement can be replaced with sudden, dramatic increases at specific time intervals, without analyzing the risks of this strategy including fluctuations in pricing, supply chain issues that may make large procurements infeasible, or increased competition for new clean energy.

[6] Figures 2 through 8 were produced by Logan Mitchell, PhD, Climate Scientist and Energy Analyst for Utah Clean Energy. The associated workpapers are provided as Exhibit 1.
[7] *Id.*

Figure 3: Solar Procurements in the 2023 IRP Update Compared to the 2023 IRP

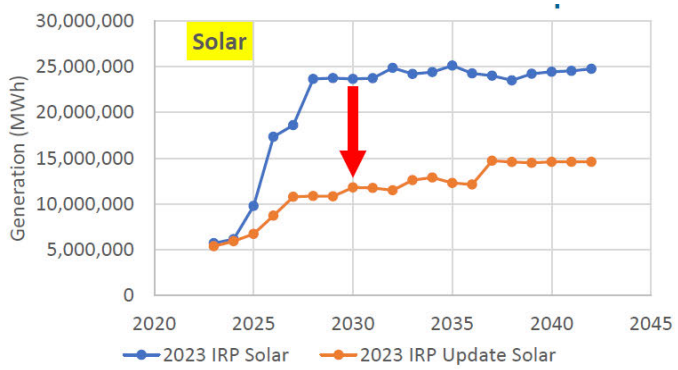


Figure 4: Storage Procurements in the 2023 IRP Update Compared to the 2023 IRP

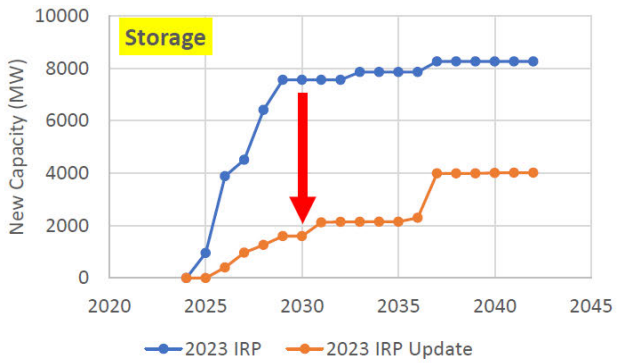
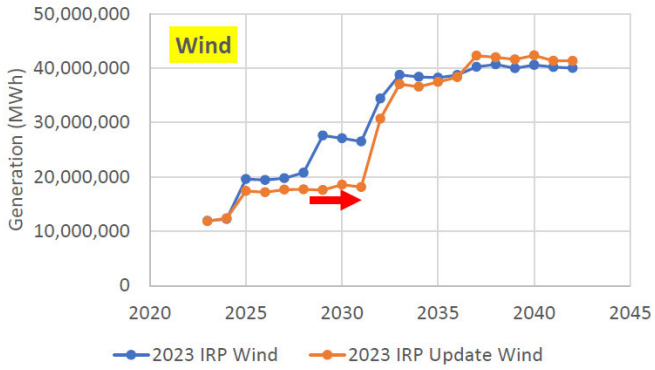
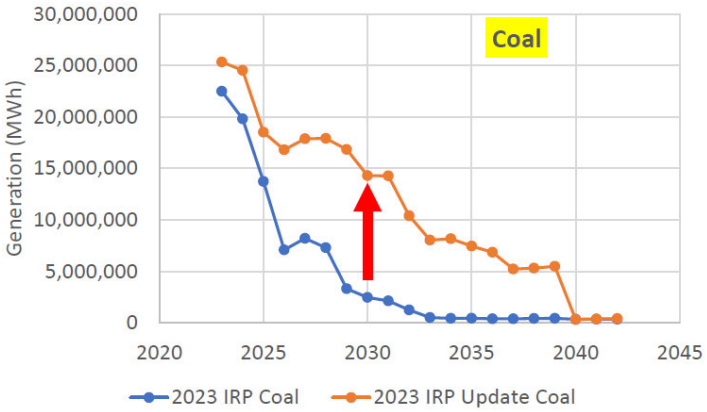


Figure 5: Wind Procurements in the 2023 IRP Update Compared to the 2023 IRP



Conversely, coal generation significantly increased by nearly six times between the 2023 IRP and 2023 IRP Update. This coal generation is assumed to operate without any additional pollution controls like selective non-catalytic reduction ("SNCR") or selective catalytic reduction ("SCR"), despite federal regulations that are likely to require these and potentially other pollution controls (discussed in Section II(B)(1)).

Figure 6: Coal Generation in the 2023 IRP Update Compared to the 2023 IRP



These results are not intuitive given the favorable economics of clean energy compared to the high and volatile costs associated with fossil fuel generation. PacifiCorp largely attributes these resource changes to its decision to remove modeling constraints pertaining to the U.S. Environmental Protection Agency's ("EPA") Good Neighbor Plan (Ozone Transport Rule), which is discussed in depth below. However, PacifiCorp also included other modeling constraints that foreclosed the possibility of near-term clean energy acquisition. Specifically, "**[i]n PacifiCorp's 2023 [IRP] Update preferred portfolio, the earliest uncommitted resource additions are allowed in 2027**."[8] In other words, the PLEXOS model was unable to select new generating resources (that had not already been committed to) until at least 2027, regardless of the economics. This would have greatly skewed the modeling and, along with the many additional errors described below, calls into question the validity of preferred portfolio. It also stands in contrast to Portland General Electric ("PGE"). In finding that PGE had demonstrated continual progress, the Commission noted, in part, that PGE "was undertaking all practicable actions in the near term and *was not artificially limiting any particular resource as compared to others*."[9]

The cumulative effect of these resource changes is that PacifiCorp's 2023 IRP Update projects massively higher CO_2 emissions throughout the planning period: an increase of 114 million metric tons of CO_2 by 2050, or a 39% increase compared to the 2023 IRP.[10]

[8] PacifiCorp Response to Sierra Club Data Request 52 (emphasis added), provided in Exhibit 2.
[9] *Portland Gen. Elec. Co. 2023 Integrated Res. Plan and Clean Energy Plan*, Or. Pub. Util. Comm'n, Docket No. LC 80, Order No. 24-097 at 3 (Apr. 18, 2024) (emphasis added).
[10] Ex. 1.

Figure 7: Emission Reductions Projected in the 2023 IRP Update Compared to the 2023 IRP

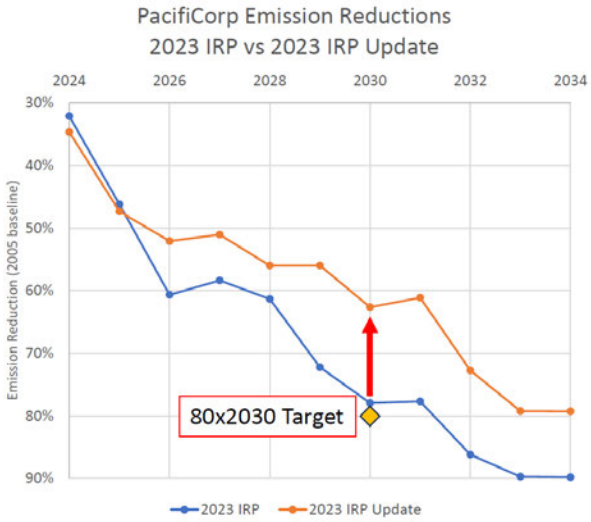
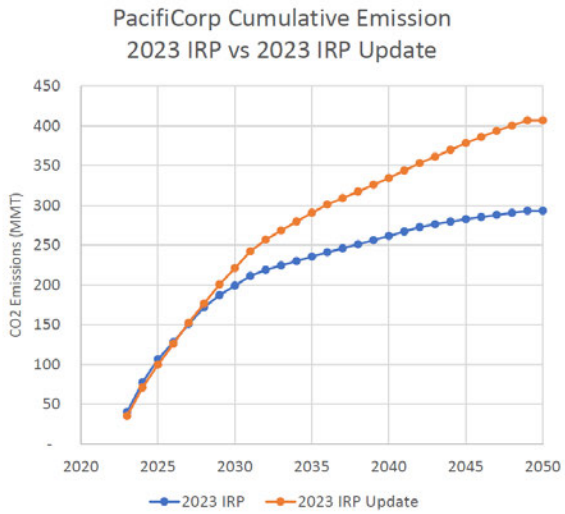


Figure 8: Cumulative Emissions Projected in the 2023 IRP Update Compared to the 2023 IRP



Nevertheless, PacifiCorp asks this Commission to find that it has demonstrated continual progress, relying exclusively on past emission reductions. While laudable, these emission reductions were not driven by HB 2021 compliance because HB 2021 either had yet to exist or PacifiCorp had not yet factored the law into its planning processes. Not only are the past emission reductions insufficient to meet HB 2021's mandates (as demonstrated by Figure 2), but they also represent a "business as usual" approach. HB 2021 decidedly intended to quicken utility emission reductions. As a result, HB 2021 requires utilities to ensure that planning leads to

deeper and faster emission reductions, not to continue normal planning and report out associated greenhouse gas emissions.

B. PacifiCorp's Abandonment of Its 2023 IRP Forecasted Clean Energy Procurement Is Unsupported

PacifiCorp largely alleges that two factors support its continued reliance on fossil fuels: (1) the temporary stay of the Good Neighbor Plan and (2) its wildfire risk and liabilities. Neither of these provide reasonable justification for abandoning low cost, clean energy procurement that would not only help PacifiCorp achieve its HB 2021 requirements but also address its resource adequacy concerns.

1. The Temporary Stay of the Good Neighbor Plan in Utah Does Not Justify PacifiCorp's Decision to Ignore Federal Regulations in Its Resource Planning

PacifiCorp's removal of the Good Neighbor Plan (Ozone Transport Rule) from the 2023 IRP Update, despite no final decision on the legality of that regulation or its applicability to Utah, was one of the primary reasons that PacifiCorp's 2023 IRP Update so dramatically changes course from the 2023 IRP. PacifiCorp's sole justification for removing the Good Neighbor Plan's requirements from the model's constraints was that the United States Court of Appeals for the Tenth Circuit issued a stay of the rule in Utah. A stay is not a final ruling, and it is not reasonable to rely on an interim decision to such a degree. Not only has a final decision yet to be issued, but the case has also been transferred from the Court of Appeals for the Tenth Circuit to the Court of Appeals for the D.C. Circuit, meaning that the court that initially entered the stay will not make a final determination. Prudent planning requires evaluating a range of potential outcomes. Instead, PacifiCorp assumes that a single outcome—no implementation of the Good Neighbor Plan in Utah—is certain to occur. This speculation, if wrong, comes at the expense of PacifiCorp's ratepayers, as the Company has abandoned near-term resource acquisitions that would have put it in a position to maintain reliable and affordable electric service if Hunter and Huntington's operations must be curtailed in order to comply with the Good Neighbor Plan.

Moreover, removal of the Good Neighbor Plan ignores the broader regulatory environment in which PacifiCorp is operating. Since the 2023 IRP Update was filed on April 1, 2024, EPA finalized four new regulations that are likely to impose significant costs on PacifiCorp's coal fleet. While these rules were not finalized until after the Update was filed, the

final rules do not significantly deviate from the draft rules that have been available for months. Accordingly, PacifiCorp could have considered these rules in the 2023 IRP Update and should be well prepared to incorporate these rules into its 2025 IRP. Instead, PacifiCorp unreasonably assumed that environmental regulations would remain static throughout the planning horizon.

These rules are briefly explained below; however, our organizations emphasize that the importance here is not in the rules' specifics but the general trajectory of environmental regulation on coal-burning facilities. In addition to the Good Neighbor Plan, EPA's new regulations are likely to drive PLEXOS modeling in exactly the opposite direction as the 2023 IRP Update: back to selecting coal unit retirements over expensive pollution control installations and replacing those coal units with low cost, clean energy resources.

Ignoring current federal environmental regulations in the 2023 IRP Update, even as new regulations were under consideration and subsequently finalized, underscores why PacifiCorp's decision to abandon any new resource procurement until after the 2025 IRP is very likely to harm ratepayers and sets the Company on a path of being "precisely wrong" rather than "roughly right." If the 2025 IRP forecasts, once again, a need for new resources to replace aging fossil fuels subject to increasingly stringent environmental regulations, PacifiCorp will not be able to procure new resources until several years down the line, even if it restarts currently suspended Request for Proposals ("RFPs") that it could have already acquired or been in the process of acquiring new resources based on the 2021 and 2023 IRPs. Indeed, PacifiCorp representative Rick Link indicated at the May 30, 2024 Special Public Meeting that resources procured following the 2025 IRP would be expected to be online between 2027 and 2029. This means that customers will be locked into paying for higher cost resources than they otherwise would have had PacifiCorp acquired new resources between the 2021 and 2025 IRPs, as it originally intended. Ultimately, whether the Company is entitled to recover the costs of relying on higher cost resources when it could have taken action now to prepare for their replacement will be decided in a future rate case. However, the Commission should put PacifiCorp on notice that its approach to resource planning and decision making could set the Company up for a disallowance.

The EPA regulations that are likely to impact the 2025 IRP include, at a minimum, the following:

a. Clean Air Act, Section 111(d)

On May 9, 2024, Clean Air Act, Section 111(d) regulations setting emission limits for carbon dioxide were finalized in the Federal Register.[11] Under the regulation, carbon dioxide emission limitations are tied to a coal plant's retirement date, as shown below.

Clean Air Act 111(d) Rules for Existing Coal (Steam Generators)		
Requirements by Retirement Date Categories		
Prior to 2032	2032-2039	2039 or later
No obligation, but federally enforceable retirement required	Co-firing 40% (by heat input) natural gas with emission limitation of a 16% reduction in emission rate (lb CO_2/MWh gross basis) by January 1, 2030	Carbon Capture and Sequestration ("CCS") with 90% capture of CO_2 (88.4% reduction in emission rate lb/MWh gross) by January 1, 2032

Notably, for coal units that plan to continue burning coal past 2039, EPA's regulation requires carbon capture and sequestration ("CCS"), not carbon capture, utilization and storage ("CCUS"). As a result, even if carbon capture technology is installed on Jim Bridger Units 3 and 4, the captured carbon could not be sold for utilization under the 111(d) regulation. If PacifiCorp maintains current retirement dates for its coal fleet, Huntington will be required to co-fire 40% with natural gas by January 1, 2030 and Dave Johnston, Hunter, Jim Bridger, and Wyodak will all have to install CCS with a 90% capture rate by 2032. In the 2025 IRP, the PLEXOS model should compare the costs of these expensive upgrades to retirement and replacement with other resources.

b. Clean Water Act, Effluent Limitation Guidelines

EPA's updated effluent limitation guidelines ("ELG") for steam generators strengthened discharge limits for flue gas desulfurization wastewater, bottom ash transport water, combustion residual leachate, and legacy wastewaters.[12] Electric generating units ("EGUs") that permanently cease combustion of coal by December 31, 2034 are not required to meet the 2024 limitations

[11] 89 Fed. Reg. 39798 (May 9, 2024).
[12] 89 Fed. Reg. 40198 (May 9, 2024).

but may continue to meet the less stringent 2020 rule. EPA identified in its rule which EGUs it estimated would likely need to make new investments to comply with the 2024 ELG rule, specifically identifying:[13]

- Jim Bridger
- Hunter
- Huntington
- Dave Johnston
- Wyodak

c. Resource Conservation and Recovery Act ("RCRA"), Coal Ash Regulations

EPA finalized changes to its coal combustion and residuals ("CCR") regulations, closing a loophole that exempted "legacy" CCR surface impoundments from regulation.[14] The Huntington coal plant in Utah as well as the Naughton and Wyodak plants in Wyoming will have new compliance obligations under the updated CCR regulations.

d. Mercury and Air Toxics Standard ("MATS")

EPA strengthened its 2012 MATS regulation, further limiting the emission of hazardous air pollutants from coal-fired power plants by reducing the emission standards for filterable particulate matter to 0.010 lb/MMBtu.[15] The final rule specifically notes that only one coal plant—Colstrip, in which PacifiCorp holds an ownership stake—is projected to require installation of the costliest particulate matter control technology (fabric filter) to meet this limit. According to Talen Energy, the cost of compliance could be more than $600 million.[16]

2. PacifiCorp Has Not Demonstrated That Eliminating Nearly All Resource Procurements Due to Cash Flow Constraints Is Either Necessary or in the Best Interest of Ratepayers

Apart from removing the Good Neighbor Plan modeling constraints, PacifiCorp has indicated that it cannot move forward with the resource procurements forecasted in the 2023 IRP because its wildfire risk and liabilities have limited its cash flow. As a result, PacifiCorp claims that it does not have the capital necessary to build new energy resources. It has been consistently unclear, however, how this factor played into the 2023 IRP Update's modeling. In response to

[13] *Id.* at 40240-41.
[14] 89 Fed. Reg. 38950 (May 8, 2024).
[15] 89 Fed. Reg. 38508 (May 7, 2024).
[16] Tom Lutey, *New Fed. Pollution Laws Present Challenges for Colstrip*, Billings Gazette (Apr. 25, 2024), *available at* https://billingsgazette.com/news/state-regional/government-politics/colstrip-epa-maps-mercury-montana-coal/article_f3e4620e-030e-11ef-a632-b3f3098ff3de.html.

discovery, PacifiCorp asserted that its wildfire liabilities were not factored into its IRP modeling at all.[17] Yet, PacifiCorp has made statements, including at the May 30, 2024 Special Public Meeting, indicating that this has been a major consideration for the Company and its resource decision making[18] and could even be driving its resource decision making.[19] Additionally, and as noted above, PacifiCorp confirmed that it included a modeling constraint that prohibited new resource additions until at least 2027,[20] which may have been used as a proxy for its preference to avoid spending capital on new resources in the near term due to its wildfire liabilities. This type of undisclosed modeling constraint is highly inappropriate, as it skews the preferred portfolio's resource mix in a way that favors continued operation of PacifiCorp's fossil fleet and is based on a decision to avoid capital spending that has not been adequately justified, especially in light of the significant impact that decision has on PacifiCorp's ability to comply with Oregon state law.

Our organizations do not dispute that PacifiCorp is facing significant wildfire liabilities. However, the Company has not demonstrated that significantly delaying nearly all resource procurements that are needed for both reliability and emission reductions is in the best interest of its customers, rather than merely its shareholders. Importantly, this is a corporate strategy, one of many that could have been selected in the face of increasing wildfire risk. As Staff noted in their comments on PacifiCorp's 2023 IRP Update and CEP Supplement, "resource decisions are being made[,]" including plans to increase coal operations.[21] The Commission must view this strategy, which undeniably harms reliability and emission reduction progress, with a critical eye. For the reasons explained below, PacifiCorp has failed to demonstrate that its decision to abandon near-term resource procurements is the least cost, least risk strategy for customers.

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[17] PacifiCorp Response to Sierra Club Data Request 48, provided in Exhibit 2. Sierra Club Data Request 48 asked PacifiCorp to explain whether and how the 2023 IRP Update considered PacifiCorp's wildfire liabilities. PacifiCorp responded, "[t]he Company's modeling for the 2023 Integrated Resource Plan (IRP) Update does not include financial or operational impacts associated with wildfire liabilities."

[18] Special Pub. Meeting LC 82 PacifiCorp IRP Update and CEP Supplement Presentation (May 30, 2024), *available at* https://www.oregon.gov/puc/news-events/pages/default.aspx starting at approximately 1:48 (PacifiCorp representative Rick Link stating that wildfire risk and liability has become a constraint on the Company's resource planning).

[19] *Id.* starting at approximately 1:47 (PacifiCorp representative Rick Link stating that the "strategy that [they] have come up with" is to serve load with near-term battery procurement and market purchases as opposed to procuring new solar and wind and that "that's what we do see in this plan.").

[20] PacifiCorp Response to Sierra Club Data Request 52, provided in Exhibit 2.

[21] Staff Comments on PacifiCorp's 2023 IRP Update and CEP Supplement at 20.

To begin, while PacifiCorp alleges that it *may not* be able to access capital from the market, the Company has not provided any evidence that it *has not* been able to access debt.[22] In April 2024, PacifiCorp reported to the Wyoming Public Service Commission that it had secured over $3.8 billion in debt financing,[23] over double its total revenue requirement.[24] Notably, this financing was secured after the *James v. PacifiCorp* verdict and PacifiCorp's credit downgrading,[25] providing the best evidence that PacifiCorp is still able to secure significant levels of debt financing, even given its wildfire liabilities. While the Company continues to face wildfire lawsuits, the Company also secured legislative changes in Utah that significantly benefit PacifiCorp at the expense of ratepayers, which Berkshire Hathaway Chief Executive Officer ("CEO") Warren Buffet is describing as the "gold standard" for Berkshire's interests[26] precisely because it prioritizes shareholder profits above all else. Both of these factors indicate that PacifiCorp is and will able to access debt markets in order to raise capital.

Second, and as further discussed in Section IV(E), PacifiCorp has yet to incorporate the availability of U.S. Department of Energy financing through the Energy Infrastructure Reinvestment ("EIR") program into its resource planning, meaning that PacifiCorp is very likely over-estimating the cost of procuring new, Company-owned resources. As a result, it's unlikely that PacifiCorp has been able to accurately assess whether its financial standing permits acquisition of new energy resources. Notably, PacifiCorp has incorporated the Internal Revenue Code Section 45Q tax credits, increased under the Inflation Reduction Act ("IRA"), to evaluate CCUS and has determined it *does* have the financial resources to pursue that technology but has

[22] *See, e.g., PacifiCorp Advice No. 23-018 Modifications to Rule 4,* Or. Pub. Util. Comm'n, Docket No. UE 428, PacifiCorp's Reply Br. and Request for Oral Arg. at 18-19 (explaining that while PacifiCorp's credit downgrade *could* impact its ability to raise capital, "PacifiCorp's 2024 offering was successful…").
[23] Wyo. Pub. Serv. Comm'n Open Meeting (Apr. 4, 2024), *available at* https://psc.wyo.gov/calendar/audio-recordings PacifiCorp Chief Executive Officer Cindy Crane's statements starting at approximately 16:30.
[24] *See PacifiCorp Request for a Gen. Rate Revision*, Or. Pub. Util. Comm'n, Docket No. UE 433, PacifiCorp's Exec. Summary at 3 (Feb. 14, 2024) (seeking an approximately $1.23 billion non-net power cost revenue requirement); *PacifiCorp 2025 Transition Adjustment Mechanism*, Or. Pub. Util. Comm'n, Docket No. UE 434, Ex. PAC/301 at Ridenour/1 (identifying a "Functionalized Net Power Cost Revenue Requirement- (Target)" of approximately $585 million).
[25] S&P Global, *Rsch. Update: PacifiCorp Downgraded to 'BBB+', Outlook Revised to Negative; Berkshire Hathaway Energy Co. Outlook Also Negative* (June 20, 2023), *available at* https://disclosure.spglobal.com/ratings/en/regulatory/article/-/view/sourceId/12769293 (S&P Global downgrading PacifiCorp's credit rating in June 2023).
[26] Berkshire's 2024 Annual Shareholder Meeting, CNBC Television (May 4, 2024), *available at* https://www.youtube.com/watch?v=j3qiDOL5V4M&t=2134s starting at approximately 46:30.

avoided incorporating IRA programs like the EIR that could have similar impacts for clean energy resources.

Third, even if Company-owned resources are out of reach, Ms. Kobliha, Chief Financial Officer for PacifiCorp, explained at the May 30, 2024 Special Public Meeting that power purchase agreements ("PPAs") would not threaten PacifiCorp's financial viability. These PPAs could have been secured through now-canceled RFPs, yet PacifiCorp was unable to provide a compelling justification for why it has abandoned both PPAs and utility-owned resource acquisitions.

Finally, this Commission is not tasked with protecting PacifiCorp from bankruptcy. In general, "[a] regulated utility has no constitutional right to a profit, and a company that is unable to survive without charging exploitative rates has no entitlement to such rates."[27] Utility regulation is intended to mimic the outcomes of a competitive market, and bankruptcy may be the appropriate outcome for a business in a competitive market that has failed to properly manage its risks. Utilities have previously gone into bankruptcy without an interruption in service, including Pacific Gas & Electric Company, which went into bankruptcy precisely because of wildfire liabilities. Bankruptcy can provide benefits as well, including allowing businesses to shed liabilities and acquire new financing. The financial health of regulated utilities is certainly a factor that this Commission can take into consideration when discharging its duties "to protect [ ] customers, and the public generally, from unjust and unreasonable exactions and practices and to obtain for them adequate service at fair and reasonable rates."[28] We highlight this issue, however, because the utility's financial health is not the *only* factor that should be taken into consideration. Indeed, as CUB previously noted in this same docket,[29] HB 2021 means that the Commission's traditional least cost, least risk framework has been altered; along with these principles, the Commission must ensure that a utility demonstrates and achieves continual progress in reducing its greenhouse gas emissions. This priority must be on par with

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[27] *Jersey Cent. Power & Light Co. v. Fed. Energy Regul. Comm'n*, 258 U.S. App. D.C. 189, 201 (1987) (citing *Fed. Power Comm'n v. Nat. Gas Pipeline Co. of Am.,* 315 U.S. 575, 590 (1942) and *Mkt. St. Ry. Co. v. R.R. Comm'n*, 324 U.S. 548 (1945) (discussing excluding property from rate base that is not currently used and useful even when the utility "pleads acute financial distress").

[28] ORS 756.040(1).

[29] Or. Citizens' Util. Bd. Round 1 Comments on PacifiCorp's Integrated Res. Plan and Clean Energy Plan at 2-3 (Oct. 25, 2023) [hereinafter "CUB Round 1 Comments"] ("However, with the advent of HB 2021, Oregon no longer operates . . . in the traditional least-cost least-risk planning framework. Reducing emissions must not only be considered—it is mandatory, binding law in the state of Oregon.").

other traditional priorities of utility regulation, including financial health of a utility, reliability, and reasonable rates.

Again, while our organizations recognize that PacifiCorp does face wildfire risk and liabilities, PacifiCorp's knee-jerk decision to abandon near-term resource procurements due to these liabilities has yet to be justified, including demonstrating why some resources—notably resources that would reduce the Company's dependence on rising and volatile fossil fuel prices—cannot be acquired through an RFP.

C. PacifiCorp's Proposed "Levers" to Achieve Oregon's Emission Reduction Targets May Not Be Feasible and Require Much Greater Analysis

Replacing PacifiCorp's fossil fleet with clean, low-cost energy resources is the surest path to meeting HB 2021's emission reduction targets. As PacifiCorp's 2023 IRP Update largely abandons that plan, the Company instead puts forward a number of "levers" that could be used to achieve HB 2021's requirements in other ways. These include proposals ranging from allocating 100% of near-term renewable resources and storage in 2027-2028 to Oregon (up from the current expectation of 25% allocation) to eliminating coal-to-gas conversion allocations to Oregon, among others.

Some of these strategies may be necessary and deserve further exploration, particularly gas allocations to Oregon that are likely infeasible under HB 2021. Unless PacifiCorp significantly reduces gas on its entire system, most, if not all, of those resources will need to be eventually removed from Oregon's rates in order to comply with HB 2021. As is apparent, these types of strategies will impact resource allocations to other states. For instance, if 100% of near-term renewable resources are allocated to Oregon, then 0% of near-term renewable resources are allocated to any other state. Even states without climate targets like Utah, Wyoming, and Idaho may be economically harmed by losing out on access to low-cost resources. These states, then, would need to agree to the allocation methodology, likely through PacifiCorp's Multi-State Process ("MSP") negotiations. Yet, PacifiCorp's 2023 IRP Update, like the 2023 IRP, does not analyze how the proposed Oregon "levers" could impact other states and the likelihood that these states would agree to the new resource allocations. Nor does the Update attempt to assess costs to Oregon in order to come to an agreement with other states on new resource allocations. For example, PacifiCorp suggests that one allocation methodology to reduce Oregon's emissions could be that emitting resources would be allocated to Oregon "to only be dispatched in

emergency situations."[30] This would presumably require other states to maintain and operate emitting resources that could be called upon by Oregon in only limited situations. These states would likely require cost allocations between the states to recognize the benefit that they are providing for Oregon. In other words, states like Utah and Wyoming would want to be paid for the resource adequacy they are providing to the system. The 2023 IRP Update and CEP Supplement make no attempt to quantify those costs.

Our organizations recognize the difficulty of assessing these types of questions through an IRP and CEP. Cost and resource allocations are negotiated through the MSP process and then presented to PacifiCorp's regulators for approval.[31] It may not be possible to model with any level of certainty the likely costs and benefits of PacifiCorp's "levers" until an MSP agreement is completed. Yet, the MSP timeline may not align with HB 2021, and to the extent that PacifiCorp's HB 2021 compliance rests on resource allocations determined through the MSP, PacifiCorp could risk non-compliance with Oregon law if it waits on a new MSP agreement. This underscores the impracticality of seeking to meet HB 2021's emission reduction requirements through allocation methodologies that require buy-in from many different parties.

Finally, even if these thorny questions can be resolved, some, if not all, of these allocation proposals would result in paper emission reductions, shifting emissions from Oregon's books to states without emission reduction requirements. HB 2021 was not intended to simply move emissions out of state but to drive real-world emission reductions.

III. THE COMMISSION MUST ENSURE CONTINUAL PROGRESS BY ORDERING PACIFICORP TO MOVE FORWARD WITH CLEAN RESOURCE PROCUREMENT

When a utility fails to demonstrate continual progress, the Commission is obligated to direct action necessary to ensure continual progress is made. The evidence here demonstrates that PacifiCorp has failed to achieve continual progress precisely because the Company has abandoned near-term clean resource procurement. As a result, it is necessary for the Commission to open a contested case proceeding wherein the Commission can order the necessary procurements and other appropriate remedies.

[30] PacifiCorp Or. Clean Energy Planning Supplement at 16 (Apr. 1, 2024) [hereinafter "CEP Supplement"].
[31] As CUB raised in its Round 1 comments, we also emphasize again here that the "MSP is not a transparent process" for either the Commission or stakeholders that do not have the capacity or resources to participate in its confidential negotiation sessions. CUB Round 1 Comments at 5.

A. HB 2021 Requires That the Commission "Ensure" That Utilities Achieve Continual Progress

HB 2021 requires that utilities such as PacifiCorp submit Clean Energy Plans that "[d]emonstrate the electric company is making continual progress within the planning period towards meeting the clean energy targets" set forth within the Act.[32] For its part, the Commission must "ensure that an electric company demonstrates continual progress . . . and is taking actions as soon as practicable that facilitate rapid reduction of greenhouse gas emissions at reasonable costs to retail electricity consumers."[33] As the Commission has previously acknowledged, in order to "ensure" that a utility to achieving continual progress, the Commission may "require a utility to take actions outside the context of the regulatory determination whether to acknowledge a CEP… ."[34] "[P]roactively provid[ing] additional requirements to a utility to help ensure that targets are actually met,"[35] is necessary because "the purpose of requiring continual progress is to ensure utility action during the years before compliance with the relevant target is required[.]"[36] By the time that the Commission determines compliance with the 2030, 2035, and 2040 emission reduction targets, "a lack of continual progress may not be capable of remedy[.]"[37]

The Commission is required to determine whether a utility has demonstrated continual progress in each CEP and, if not, take the necessary actions to ensure continual progress. This means that the Commission is legally required to determine whether PacifiCorp demonstrated continual progress through its 2023 CEP and may not delay this determination until the next CEP filing. While the Commission has not yet issued rules or definitively identified the scope of factors that will be taken into consideration when determining whether a utility has demonstrated continual progress, Order 24-002 provides guideposts that can be applied here as well as built upon based on the Commission's review of the CEP filing. In Order 24-002, the Commission indicated that it would consider several factors including, "costs, risks, and forecasted emissions reductions trajectories…to determine whether utility actions within the planning period are

[32] ORS 469A.415(4)(e).
[33] *Id.* at 469A.415(6).
[34] *Investigation into HB 2021 Implementation Issues,* Or. Pub. Util. Comm'n, Docket No. UM 2273, Order No. 24-002 at 29-30 [hereinafter "Order No. 24-002"].
[35] *Id.* at 29, n.81.
[36] *Id.* at 29.
[37] *Id.*

sufficient to constitute continual progress toward meeting the [GHG reduction] targets"[38] as well as "forward-looking actions" and "whether utilities are carrying out the actions in their plans (or justifying modifications to those plans)."[39]

B. The 2023 IRP Update Does Not Demonstrate Continual Progress Because PacifiCorp Abandoned Prior Plans to Procure New Clean Energy, Risking Non-Compliance with HB 2021 and Threatening Reliability

As discussed above, PacifiCorp's 2023 IRP Update shows a utility far off from meeting its HB 2021 emission reduction targets. PacifiCorp's current plans are to slash clean energy procurements and continue its reliance on fossil fuels well into the future—the opposite of what HB 2021 requires. Indeed, PacifiCorp does not project meeting HB 2021's requirements in 2030, 2035, 2040, or, apparently, ever. To avoid this outcome, PacifiCorp proposes various "levers" that face significant implementation hurdles and, regardless, would likely be little more than "paper emission reductions."

The primary reason for PacifiCorp's failure to demonstrate continual progress is that PacifiCorp has unreasonably abandoned plans to acquire new clean energy sources. As PacifiCorp explained at the May 30, 2024 Special Public Meeting, "additional clean energy resources by 2030" would move PacifiCorp's emission reductions from roughly 50% below baseline by 2030 to just under 80%, significantly closer to the 2030 target. Other research on achieving a 100% clean grid by 2040 comes to the same conclusion: near-term clean energy procurements are imperative. For instance, in 2023, GridLab completed a study identifying technological pathways to achieving a 100% clean power system in the 2035-2040 timeframe, as Oregon requires. Using the Public Service Company of New Mexico ("PNM") as a case study, GridLab found that all of their portfolios "included large amounts of solar, wind and battery storage based on least-cost planning principles" and that "[b]uilding these resources urgently and consistently is the most important step towards a clean portfolio."[40] The study found that accelerating the deployment of wind, solar, and battery storage resources will be "crucial" to achieving a 100% clean energy system by 2035-2040 and that, for PNM, "total annual capacity builds of wind, solar, and battery storage would have to increase by 130-250%, from approximately 100 MW per year seen from 2013-2022 up to 130-250 MW per year through

[38] *Id.*
[39] *Id.*
[40] Priya Sreedharan et al., *The Moonshot 100% Clean Elec. Study*, GridLab at 2 (Aug. 2023), *available at* https://gridlab.org/Moonshot-study/.

2035."[41] While this study did not evaluate PacifiCorp's system, its findings are broadly applicable, namely that achieving a clean energy system requires significant, prolonged acquisition of clean energy resources—not a "just in time" approach.

Many parties raised concerns through the 2023 IRP process that PacifiCorp's suspension of the 2022 All-Source RFP would ultimately harm ratepayers and put HB 2021 compliance in jeopardy. By canceling both the 2022 All-Source RFP as well as the anticipated RFP following the 2023 IRP, PacifiCorp has effectively delayed new clean energy procurements until, at the earliest, 2027—just three years ahead of the first HB 2021 deadline. Despite Oregon policy and law recognizing the urgency of the climate crisis and the need to transition to clean energy resources in order to reduce greenhouse gas emissions as quickly as possible, PacifiCorp is choosing to squander at least six years—the 2020 all source RFP was the last completed procurement—under the faulty assumption that the energy transition can happen "later." It is difficult to overstate the risk that this strategy places on ratepayers.

Not only does failing to acquire new clean energy resources put HB 2021 compliance at risk, but it also presents a reliability risk for customers. In place of significant clean energy procurements through the 2022 all source RFP and the anticipated 2024 all source RFP, the 2023 IRP Update instead increases reliance on market purchases, along with some battery procurements outside the RFP process. As Commissioner Tawney pointed out during the May 30, 2024 Special Public Meeting, increased reliance on market purchases increases the overall risk profile of the 2023 IRP Update. This is especially true as several utilities, including PacifiCorp, signed a "participant letter" to the Western Resource Adequacy Program ("WRAP") in April 2024 seeking a one-year delay in binding obligations given "significant new headwinds in addressing resource adequacy challenges."[42] This letter provides confirmation that many western utilities, presumably including PacifiCorp, are in need of new resources. Yet, PacifiCorp's increased reliance on market purchases in the 2023 IRP, now without the addition of resources from the 2022 and 2024 all source RFPs, further exposes PacifiCorp to increased resource adequacy risk.

[41] *Id.* at 13-14.
[42] Members of Res. Adequacy Participant Comm., *Letter to W. Stakeholders* at 1 (Apr. 22, 2024), *available at* https://www.westernpowerpool.org/private-media/documents/WRAP_RAPC_Participant_Letter_4_22_24_final.pdf.

C. To "Ensure" Continual Progress, the Commission Must Open a Contested Case Proceeding, Wherein the Commission May Consider Whether to Direct PacifiCorp to Acquire Both Utility-Scale and Small-Scale Clean Energy Resources as Well as Other Remedies

In order to ensure that PacifiCorp demonstrates continual progress—as the Commission must do—the Commission must do more than acknowledge or not acknowledge the utility's plans.[43] When the utility has gone off track—as PacifiCorp has so clearly done—the Commission must step in and use its expertise and authority to course correct. Given that PacifiCorp's 2023 IRP Update and CEP Supplement clearly failed to demonstrate that it is achieving continual progress, the next step is for the Commission to initiate, or direct Commission Staff ("Staff") to initiate, a contested case proceeding whereby the Commission can consider and ultimately order specific remedies.

As the overwhelming evidence in this proceeding indicates that PacifiCorp's failure to demonstrate continual progress is directly tied to its abandonment of near-term clean energy procurement, we recommend that the contested case proceeding specifically address whether the Commission should direct the Company to move forward with both utility-scale and small-scale clean resource procurements, in what quantities, and how the costs of such procurements should be allocated to Oregon. We believe that ultimately the Commission will need to require near-term procurements because PacifiCorp's current intention is to delay any further RFPs (either utility-scale or small-scale) until sometime after the 2025 IRP.[44] As discussed above, this will squander several years of potential progress towards reducing the Company's reliance on fossil fuels and its ability to reduce emissions and only reinforce Company behavior where the Company delays needed action to reduce emissions.

While we recommend that the Commission establish a clear scope for the contested case that would allow it to be considered and resolved in a reasonably quick timeframe (discussed below), the contested case need not be limited to a single remedy, *e.g.*, ordering near-term clean resource procurements. Intervening parties could also raise other potential remedies for the Commission's consideration, including recommended financial penalties for PacifiCorp's failure

[43] *See* Order No. 24-002 at 29-30 (finding that HB 2021's direction that the Commission "ensure" continual progress provides the Commission with authority to require specific utility actions, which stand "in contrast to a fundamental premise of the PUC's [public utility commission] IRP acknowledgment decisions—that IRP decision do not direct a utility to take or not take specific actions, expect as it relates to analysis required in future plans or regulatory filings.").
[44] CEP Supplement at 5.

to demonstrate continual progress, changes to existing programs that could facilitate the more rapid interconnection of clean resources, goals or standards for the deployment of distributed resources, among others.

When initiating the contested case, we recommend that the Commission pose specific questions to intervening parties to address in testimony, including remedies that the Commission may be interested in considering in order to focus the proceeding and ensure a timely resolution. Time is of the essence for meeting HB 2021's requirements, yet PacifiCorp has already wasted several years where progress could have been made. We recommend that the Commission direct the initiation of a new contested case at its August 8, 2024 Special Public Meeting and that a procedural schedule be simultaneously established. The Commission could ensure full contested case procedures—including discovery, testimony, a hearing, final briefing, and a Commission order—within approximately six months. For instance, once the docket is initiated, Company and intervenor simultaneous opening testimony could be due within two months, Company and intervenor simultaneous reply testimony six weeks later, a hearing three weeks after reply testimony, simultaneous opening briefs a month following the hearing, simultaneous reply briefs a month following opening briefs, and a final order one month following close of the record. We highly recommend that the contested case be initiated before the end of this year. The remedies that the Commission requires should address PacifiCorp's failure to demonstrate continual progress in the 2023 IRP and CEP and thus should be ideally implemented as close in possible in time to when the actions would have been carried out if they had been properly included in that year's IRP/CEP.

A new, quickly moving proceeding to affirmatively address PacifiCorp's failure to demonstrate continual progress is necessary in order to give meaning to HB 2021's continual progress requirement. While our organizations recognize that IRP planning is on-going and it may be tempting for the Commission to direct corrections in the 2025 IRP in the hopes that the 2025 IRP will chart a new resource strategy, the 2025 IRP will not address PacifiCorp's failure to demonstrate continual progress in the 2023 IRP. HB 2021 decidedly requires that the Commission do *more* than provide guidance to utilities on future IRPs. Instead, the Commission must take affirmative steps to ensure HB 2021 compliance and the only way to fulfill this statutory obligation is to direct utility actions, even as continuous IRP planning is ongoing.

IV. THE 2023 IRP UPDATE CHANGES CERTAIN ASSUMPTIONS AND CONTINUES OTHERS THAT FAVOR CONTINUED OPERATION OF FOSSIL FUELS, WHILE IGNORING OPPORTUNITIES FOR CLEAN ENERGY DEPLOYMENT

In addition to the issues noted above, the 2023 IRP Update makes several other significant changes from the 2023 IRP which appear to favor continued coal and gas operations at the expense of clean energy procurements. These include (1) PacifiCorp's decision to allow the PLEXOS model to select gas units that would operate for 30 years, rather than 10, with the assumption that these units could be converted to burn hydrogen in the future; and (2) PacifiCorp's decision to include carbon capture, utilization and sequestration technology in the preferred portfolio, with installation by 2028. Neither of these changes are factually supported and neither align with Oregon's climate policy objectives. Simultaneously, PacifiCorp continued certain assumptions that may disfavor clean energy, including favoring nuclear energy and "non-emitting peakers" without providing any additional information on these resources viability and expanding its use of "granularity adjustments." Conversely, PacifiCorp failed to make changes that would more accurately assess the costs and benefits of increasing clean energy procurement, namely through incorporation of the U.S. Department of Energy's Energy Infrastructure Reinvestment loan program. If these issues, along with those addressed above, were corrected, the 2023 IRP Update would likely have forecasted clean energy procurements more closely aligned with the 2023 IRP as being in the best interest of customers.

A. PacifiCorp's Assumption That Gas Units Can Be Converted to Operate on Hydrogen Is Unsupported

As opposed to the 2023 IRP, which limited new gas units to a 10-year useful life, the 2023 IRP Update allowed for the addition of new gas units with a 30-year useful life, which PacifiCorp assumes would be capable of operating with 100% hydrogen fuel.[45] Certain peaking resources, added in 2030 and 2037, were assumed to operate using 100% hydrogen throughout their lives, whereas gas units added in 2029 and 2038-2041 were assumed to operate on gas and were not forecasted to convert to hydrogen within the planning horizon.[46]

PacifiCorp's assumption that peaking units operating on 100% hydrogen fuel will be available by 2030 places significant risk on PacifiCorp's customers. Hydrogen plants are still largely in development and there is no currently operating plant primarily relying on green

[45] PacifiCorp 2023 Integrated Res. Plan Update at 7 (Apr. 1, 2024) [hereinafter "2023 IRP Update"].
[46] PacifiCorp Response to Sierra Club Data Request 50, provided in Exhibit 2.

hydrogen as its fuel source. While there are near-term projects on the horizon, the majority (if not all) of these assume lower hydrogen blending levels, typically no more than 30%.[47] Moreover, the 2023 IRP Update does not appear to address any of the concerns raised by stakeholders in the 2023 IRP, yet increases PacifiCorp's reliance on hydrogen. For instance, Renewable Northwest raised numerous, important questions about the viability of PacifiCorp's hydrogen plans, ranging from the availability of hydrogen production, transportation, and storage infrastructure to realized hydrogen capital and fuel costs.[48] The 2023 IRP Update does not attempt to meaningfully grapple with these issues, once again pushing them off to a later date. For instance, in response to a Staff data request inquiring into the "source and cost of the hydrogen that will be supplied to the 224 MW 100% hydrogen resource added to the IRP Update's preferred portfolio in 2030[,]" PacifiCorp stated that it "has not attempted to identify a specific source of hydrogen for the referenced resource" and that "hydrogen costs modeled in [the Update] are equal to the cost of natural gas plus associated greenhouse gas (GHG) costs through 2039… ."[49]

B. The 2023 IRP Update Includes Unachievable Timeframes for Installing Carbon Capture, Utilization and Storage at Jim Bridger

One of the more dramatic changes from the 2023 IRP to the 2023 IRP Update was PacifiCorp's about-face on the viability of CCUS at Jim Bridger. In the 2023 IRP, PacifiCorp maintained that CCUS was too speculative a technology to justify inclusion in the preferred portfolio,[50] but the 2023 IRP Update includes installation by 2028—just four years away. And yet, since the Update was filed, PacifiCorp acknowledged during a 2025 IRP stakeholder meeting that installing CCUS at Jim Bridger Units 3 and 4 by 2028 is impossible.[51] This is unsurprising, given that the Update also seems to contradict PacifiCorp's Final Plan filed in Wyoming Public Service Commission Docket No. 20000-660-EA-24, just one day before the

[47] Clean Energy Group, *Hydrogen Projects in the U.S., available at* https://www.cleanegroup.org/initiatives/hydrogen/projects-in-the-us/ (last visited June 13, 2024).
[48] Round 1 Comments of Renewable Nw. at 22-25 (Oct. 25, 2023).
[49] PacifiCorp Response to Or. Pub. Util. Comm'n Data Request 277, provided in Exhibit 2.
[50] PacifiCorp 2023 Integrated Res. Plan (Amended Final) at 296-297 (May 31, 2023) [hereinafter "2023 IRP"].
[51] 2025 IRP Pub. Input Meeting #3 (May 6, 2024), *available at* https://www.youtube.com/watch?v=erK-UTswaIM with conversation starting at approximately 1:09:36 and specific quote at 1:12:05. Indeed, on May 15, 2024, James Owen, Vice President of Environmental Fuels and Mining at PacifiCorp, testified to the Utah Legislature's Public Utilities, Energy and Technology ("PUET") Interim Committee that PacifiCorp has done extensive research on carbon capture and has found that it would be "impossible to achieve," and that it would cost around $1 billion per unit. Pub. Utils., Energy, and Tech. Interim Comm., Utah State Legis. (May 15, 2024), *available at* https://le.utah.gov/av/committeeArchive.jsp?mtgID=19438 with conversation starting at approximately 1:15:40.

IRP Update was filed. There, PacifiCorp recommended that "the Commission decline to require a specific low-carbon portfolio standard at this time, as Rocky Mountain Power continues to evaluate CCUS for its technical and economic feasibility… ."[52] The Final Plan explained that it received one proposal from its RFP process for CCUS at Jim Bridger, which came from Enchant Energy ("Enchant"). Notably, PacifiCorp CEO Cindy Crane was the former CEO at Enchant and continues to maintain professional ties, currently serving as Enchant's Executive Board Chair.[53]

Enchant's proposal indicated that the first step towards CCUS at Jim Bridger would be a front-end engineering and design ("FEED") study, "which would provide the initial engineering, schedule, and cost estimate."[54] PacifiCorp has stated that it is still "working to procure partners to conduct" a FEED study.[55] And in response to when the FEED study would need to be completed in order to install CCUS on Jim Bridger by 2028, the Company simply stated that it "is currently pursuing a FEED study that will further inform costs and project timelines of an amine-based carbon capture project at Jim Bridger Unit 3 and Jim Bridger Unit 4. The Company will re-evaluate the economic and technical viability along with potential developmental timelines of the project after the conclusion of the FEED study."[56] In other words, PacifiCorp has no current timeline for when CCUS could be installed at either unit.

The inclusion in a final, preferred portfolio of a near-term resource that PacifiCorp has no ability to bring to fruition within the timeframe it has itself proposed is striking.

C. The 2023 IRP Update Continues to Include the Near-Term Additions of Nuclear and Non-Emitting Peaker Resources, Despite Very Limited Cost and Technical Information Supporting Their Viability

As in the 2023 IRP, PacifiCorp has chosen to include in its preferred portfolio both nuclear resources and "non-emitting peakers," with both coming online in 2030. As discussed below, neither resource has the necessary cost or technical data available that would indicate that these resources will be commercially viable in the near term. While our organizations support PacifiCorp's evaluation of new and evolving technologies, inclusion of these resources in the

[52] *In re Appl. of Rocky Mountain Power for Auth. to Establish Final Low-Carbon Energy Portfolio Standards*, Wyo. Pub. Serv. Comm'n, Docket No. 20000-660-EA-24, Record No. 17536, Final Plan at 2 (Mar. 29, 2024) [hereinafter "PacifiCorp Final Plan"].
[53] Jason Plautz & Carlos Anchondo, *PacifiCorp Weighs Hiring CCS Co. with Ties to its CEO*, E&E News (June 10, 2024)*, available at* https://www.eenews net/articles/pacificorp-weighs-hiring-ccs-company-with-ties-to-its-ceo/.
[54] PacifiCorp Final Plan at 8-9.
[55] PacifiCorp's Response to Sierra Club Data Request 45, provided in Exhibit 2.
[56] *Id.*

preferred portfolio ultimately comes at the expense of acquiring available resources right now. PacifiCorp's optimistic outlook on nuclear and non-emitting peakers also stands in contrast to PacifiCorp's pessimistic outlook on other emerging technologies, like long duration batteries and advanced geothermal, that have shown greater commercial promise.

1. Years after first introducing the proposed Natrium plant, no new cost information is available.

PacifiCorp is again incorporating the unproven Natrium small modular reactor demonstration project in the 2023 IRP Update without fully acknowledging its costs and risks, even though cost and time overruns with nuclear generating units tend to be the rule rather than the exception. The only recent nuclear facility in the United States, Vogtle Units 3 and 4, had an initial cost projection of $14 billion in 2009 with a planned in-service date of 2016. Unit 3 began commercial operations on July 31, 2023 and Unit 4 entered commercial operation on April 29, 2024: 14 and 15 years behind schedule, respectively. The total costs were $34 billion: nearly 2.5 times the original cost projection.

PacifiCorp hand waves the cost increase concerns away by relying on an agreement with the developer, TerraPower, that no cost increase will be passed along to PacifiCorp. This agreement was supposed to be in place by the end of 2023, but does not exist and no update has been given as to when it will become actually binding. At the 2025 IRP Public Input Meeting ("PIM") on May 2, 2024, PacifiCorp acknowledged for the first time that this agreement was not an actual contractual relationship. Tom Burns, Vice President of Resource Planning and Acquisitions, described it as an "unwritten agreement…" and confirmed that "there is no contract in place."[57] The fact that no progress has been made on this front indicates that cost increase liability is still an ongoing concern between TerraPower and PacifiCorp, and thus should be a concern to the Commission. By allowing unrealistic cost and timing for Natrium to be modeled in its current fashion, PacifiCorp is delaying planning and procurement for actual technologies that should be being procured now, which will lead to higher costs and less reliable service.

2. The actual resource or resources assumed to constitute "non-emitting peakers" are still not identified.

The 2023 IRP Update continues to rely on non-emitting peakers without a full operational and cost breakdown of whatever actual technologies are being considered. At the

[57] 2025 IRP Pub. Input Meeting #3 (May 2, 2024), *available at* https://www.youtube.com/watch?v=erK-UTswaIM with conversation starting at approximately 1:21:47 and specific quote at 1:23:28.

May 2, 2024 PIM, PacifiCorp stated that multiple, commercially available technologies are being considered. Yet, later in the same meeting, Daniel MacNeil, PacifiCorp's Commercial Analytics Adviser, seemed to backtrack on the idea that any specific resources are under consideration. Specifically, Mr. MacNeil stated: "If anybody can get me cheap rocks that you can leave on the ground and are clean, give us a call…there was discussion earlier about what is a non-emitting peaking resource. I would love those rocks…we could run our steam plants…forever potentially…we're still working through what that might mean…Is it a combustion turbine? Is it a steam turbine technology with some other fuel? What is the fuel? A lot of big questions…we'll be exploring it."[58] Whatever technologies are under consideration, if they do not share identical fuel costs, operation and maintenance ("O&M") costs, and operational characteristics, then it is not reasonable to lump these technologies in together for planning purposes. Even if these technologies share these attributes, specifically identifying these technologies and providing data as to why they should be planned for in this matter is a necessity.

D. PacifiCorp's Extensive Use of "Granularity Adjustments" in Order to Achieve a Reliable Portfolio Raise Questions as to the Veracity of Its Modeling

In the 2023 IRP, PacifiCorp made certain "granularity adjustments" to the fixed cost of certain resources in order to achieve a "reliable portfolio." Specifically, PacifiCorp determined that the full economic value of certain resources, particularly a resource's flexibility (e.g., the ability of a battery to quickly ramp its output up or down) and its ability to dispatch at specific times, was not fully captured in the long-term ("LT") model. However, the full economic value could be better captured in the short-term ("ST") model, which has a more granular view of the portfolio. As a result, PacifiCorp took resource values determined in the ST model and inputted those values into the LT model in order to steer the initial resource selection process towards a more reliable initial LT portfolio.

On their face, granularity adjustments are not inherently wrong, as they can better capture the value of resources, such as long duration batteries, that is not fully seen in the LT model, with its view of average conditions across large blocks of hours. In the 2023 IRP, parties, including Staff and Sierra Club, raised concerns with the granularity adjustments to the extent the adjustments made were not necessarily intuitive and full data appeared to be missing. For

[58] *Id.* with quote starting at approximately 2:15:26.

instance, large granularity adjustments were made to certain coal units to increase their value, even though coal units are generally inflexible generating resources and the granularity adjustment for these units exceeded the adjustments made for other resources that likely would have more flexibility, including gas units.[59]

In the 2023 IRP Update, PacifiCorp appears to have expanded the use of granularity adjustments. Not only are changes made to the fixed cost of certain resources but also PacifiCorp is adjusting the load profile in the LT model after initial iterations of the portfolio through the ST model.[60] As PacifiCorp describes, "[t]his process can be continual, and results evolve over multiple phases."[61] There is no inherent end to the process. Instead, "[t]he process is considered complete once portfolios are reliable and the present value revenue requirement (PVRR) of reliable portfolios reports changes within a small range."[62] Again, while granularity adjustments may be necessary in order to ensure a reliable portfolio, this process inserts significant discretion into an otherwise impartial modeling exercise. It is also concerning that despite transitioning to PLEXOS, a significantly more sophisticated modeling platform than those used in the past, PacifiCorp is still required to make these out-of-model adjustments in order for the model to "work." We recommend that PacifiCorp increase transparency on its granularity adjustments, including by discussing these adjustments in stakeholder public input meetings, providing full data and workpapers supporting any granularity adjustments made, and clearly identifying in the 2025 IRP where these workpapers can be found.

E. The 2023 IRP Update Failed to Incorporate the Energy Infrastructure Reinvestment Program, Losing Valuable Time to Analyze and Act upon This Financing Opportunity

As PacifiCorp modified its IRP modeling to favor fossil fuels, it also declined to implement stakeholder recommendations that would more accurately price and assess clean energy resources, including the availability of EIR financing

As Sierra Club pointed out throughout PacifiCorp's 2023 IRP—including throughout the stakeholder input process and through formal comments to this and other Commissions—the EIR loan program, made available under the Inflation Reduction Act, has the potential to

[59] *See* Sierra Club's Round 1 Comments on PacifiCorp's 2023 Integrated Resource Plan at 37-42 for a discussion of granularity adjustments.
[60] 2023 IRP Update at 73.
[61] *Id.*
[62] *Id.*

meaningfully impact the Company's resource decision making by significantly reducing the costs of infrastructure investments and resource procurements. The EIR program authorizes the DOE to guarantee up to $250 billion in loans for projects that either (1) retool, repower, repurpose, or replace energy infrastructure that has ceased operations, or (2) enable operating energy infrastructure to avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gasses. Because these loans would be guaranteed by the federal government, they would come with much lower interest rates than traditional financing. Representatives from DOE's Loan Programs Office, which administers EIR financing, indicated that interest rates are available at the current U.S. Department of the Treasury rate +3/8th (0.375) percent + risk-based charge. This calculation typically lowers a utility's costs of capital by between 100 and 140 basis points.

As described in Sierra Club's comments on PacifiCorp's 2023 IRP, EIR financing would reduce the costs of retiring and replacing Jim Bridger Units 3 and 4, Wyodak, Hunter, and Huntington by collectively approximately $1.6 billion. The EIR could also be used for new transmission or transmission upgrades when those additions or upgrades are used to facilitate greater penetration of clean energy onto the grid. Sierra Club's expert analysis estimated that transmission costs could be reduced by upwards of $13 billion.

To put these figures into perspective, when comparing the preferred portfolio to the variant cases that PacifiCorp studied in the 2023 IRP Update, the biggest PVRR increase compared to the preferred portfolio was $4.1 billion,[63] substantially less than the potential cost savings from utilizing the EIR. Similarly, in the 2023 IRP, where PacifiCorp compared many more variant portfolios, the highest differential from the preferred portfolio ("P-MM") was approximately $3.1 billion.[64] This means that EIR financing could fundamentally change the mix of resources selected for a final portfolio. However, EIR financing is capped at $250 billion, is available on a first-come, first-serve basis, and is only available until September 2026—all of which mean that time is of the essence to not only model its potential benefits but also pursue financing.

Although this Commission has directed PacifiCorp to evaluate EIR financing in the 2025 IRP, we continue to have concerns that PacifiCorp will seek to avoid compliance with this clear

[63] 2023 IRP Update at 106 (comparing Utah Stay Ozone Transport Rule Variant to the updated preferred portfolio).
[64] 2023 IRP at 268, Tbl. 9.14.

directive, because the Company has insisted that savings available from the EIR should be evaluated during an RFP process and not an IRP.[65] This argument is fundamentally flawed. As a threshold matter, incorporating the EIR is simply a matter of accurately pricing resources in the IRP. Inaccurate prices result in suboptimal resource selections.[66] In order to properly evaluate how EIR cost savings would influence the selection of resources for a final portfolio, the EIR should be incorporated into the PLEXOS LT model, which is the capacity expansion model where resource acquisitions and retirements are determined. This is necessary because if the Company waits to evaluate EIR financing until an RFP, it may capture cost savings for a particular resource but not understand how those cost savings would or should have influenced other resource decisions. For instance, if transmission costs were appropriately priced in the IRP assuming the availability of EIR financing, then the IRP model may select more transmission upgrades, more resources to utilize that transmission, or some other resource change than it did without assuming the benefits of the EIR. By waiting to evaluate the EIR at the RFP stage, PacifiCorp will have lost the opportunity to include in the RFP resources that would have been selected if the IRP model had incorporated EIR financing. PacifiCorp's claims that it cannot make cost adjustments in its IRP to account for the EIR are simply unpersuasive, and its refusal to incorporate the EIR results in a portfolio that cannot be deemed least cost or least risk.

V. THE CEP SUPPLEMENT DOES NOT CONTAIN STAFF'S RECOMMENDATIONS REGARDING COMMUNITY BENEFIT INDICATOR SCORES IN SMALL-SCALE RFPS OR THE CBRE PILOT

In Order No. 24-073, the Commission adopted four CEP, community-oriented recommendations from Staff:

> **Staff Recommendation 5.** Direct PacifiCorp to develop proposals for the use of Community Benefits Indicators ("CBIs") in scoring in the small-scale renewable ("SSR") RFP, in the design of the Community Based Renewable Energy ("CBRE") pilot, and in scoring for the next all-source RFP.
>
> **Staff Recommendation 6.** Direct PacifiCorp to provide baseline metrics prior to filing its next IRP/CEP Update. If PacifiCorp cannot complete this effort by this timeline,

[65] *See, e.g., PacifiCorp's 2023 Integrated Res. Plan*, Utah Pub. Serv. Comm'n, Docket No. 23-035-10, PacifiCorp's Reply Comments at 29 (Jan. 31, 2024).

[66] PacifiCorp also objected that the EIR could not be incorporated into its IRP because the IRP uses proxy resources and not all resources would be eligible for EIR financing. This is not an insurmountable hurdle. The Company could assume, for instance, that only a percentage of proxy resources are eligible for the EIR, rather than opt to instead entirely ignore the EIR, effectively "throwing the baby out with the bathwater."

PacifiCorp should provide a detailed status update and explanation of how it will ensure that remaining issues are resolved as soon as practicable.

Staff Recommendation 7. Direct PacifiCorp to proceed with the CBRE Grant Pilot, contingent on the Company seeking feedback from the Community Benefits and Impacts Advisory Group ("CBIAG") in Q1 2024.

Staff Recommendation 8. Direct PacifiCorp to work collaboratively with Staff, stakeholders, peer utilities, and the CBIAGs in a dedicated working group to develop clear, actionable improvements to community and stakeholder engagement in subsequent IRP/CEPs by December 31, 2024. If PacifiCorp cannot complete this effort by this timeline, PacifiCorp should provide a detailed status update and explanation of how it will ensure that remaining issues are resolved as soon as practicable, inclusive of the perspectives of peer utilities and the utilities' CBIAGs.

Furthermore, the Commission provided that beyond these four recommendations, to the extent that the CEP's community-based activities or strategies have changed since it was filed in May 2023, the Company should provide new information in the revised CEP filing.

These four recommendations were aligned with Order No. 24-002, where the Commission explained that while it is not yet certain how direct benefits to Oregon communities may impact its decisions in the area of utility resource strategy or procurement, it was persuaded that gathering additional information examining the direct benefits to Oregonians was a necessary first step.

PacifiCorp's IRP Update and CEP Supplement do not address Staff's community-oriented recommendations, nor do they appear to discuss community benefits or community benefit indicators at all. These omissions are consistent with the apparent lack of a strategy for HB 2021 compliance that these comments highlight, and reinforce concerns that stakeholders have raised about whether PacifiCorp recognizes the role and importance of community benefits in HB 2021 compliance.

Despite the clear direction in Recommendation 5, the CEP Supplement does not discuss CBIs with respect to scoring the SSR RFP, the design of the CBRE pilot, or scoring the next All-Source RFP. PacifiCorp has canceled the SSR RFP and the All-Source RFP. Nevertheless, PacifiCorp should have taken advantage of the IRP/CEP Update to begin a discussion on how to use CBIs in the procurement processes that it will presumably undertake in the future, and at least addressed Staff's Recommendation in relation to the CBRE pilot.

Similarly, while Recommendation 6 directs PacifiCorp to provide baseline metrics prior to filing the IRP/CEP Update, neither the CEP Supplement nor the IRP Update include or discuss baseline metrics. Recommendation 6 also gives PacifiCorp the option to provide a detailed status update and explanation if it could not complete this effort prior to filing the IRP Update. We are not aware of such an update or explanation.

Recommendation 7 directed PacifiCorp to proceed with the CBRE Grant Pilot, and our understanding is that the Company has been working on Pilot design. Still, PacifiCorp omits any discussion of the CBRE Pilot in its CEP Supplement. As for Recommendation 8, we are hopeful that the Company will follow this direction, but we are concerned that time is running out since the Company now has just over six months to convene the working group and to develop improvements to its community and stakeholder engagement.

Finally, the 2023 IRP Update and CEP Supplement appear to ignore Staff's Expectation that the Company "[i]nclude at least 92 MW of CBRE in the preferred portfolio, depending on the current pipeline of existing programs."[67] In fact, we did not see any discussion of Staff's Expectation or of the Company's plans with regards to CBREs.

While our organizations recognize that PacifiCorp is working to incorporate HB 2021's equity mandates into its resource planning, we are concerned that not enough attention has been given to meeting the equity mandates. At this time, we recommend that the Commission reaffirm its expectation that PacifiCorp fulfill Staff's Recommendations and Expectations from the 2023 IRP. However, in the future, the Commission may wish to consider penalties if the Company does not meet these Recommendations and Expectations.

VI. SUMMARY OF RECOMMENDATIONS AND CONCLUSION

For the reasons explained above, PacifiCorp's 2023 IRP Update and CEP Supplement contain significant flaws that ultimately produced a fossil-fuel-heavy portfolio grossly out of step with Oregon's climate policies, particularly HB 2021. The Commission must take affirmative action to redirect PacifiCorp and ensure its long-term resource planning aligns with the needs and expectations of Oregon ratepayers. We urge the Commission to immediately open a proceeding in which the Commission can order resource procurements necessary to reduce

[67] *PacifiCorp 2023 Integrated Res. Plan and Clean Energy Plan,* Or. Pub. Util. Comm'n, Docket No. LC 82, Order 24-073, App. A at 28 (Mar. 19, 2024).

emissions, while maintaining reliable and low cost service. Specifically, the Commission should enter an order in this proceeding with the following provisions:

1. A finding that PacifiCorp has failed to demonstrate that it is making continual progress towards achieving the emission reduction targets contained in HB 2021;
2. A directive to Staff to initiate a new contested case proceeding in which the Commission will consider resource procurements necessary to ensure that PacifiCorp does demonstrate continual progress;
3. Direction for the 2025 IRP that PacifiCorp must:
    a. Incorporate into its PLEXOS modeling all finalized state and federal regulations impacting the costs of energy resources and that these regulations must be incorporated unless there is a final order overturning or rescinding the regulations;
    b. Ensure that the Company's preferred portfolio only includes those resources that PacifiCorp is reasonably certain will be available within the forecast period;
    c. Provide complete and clearly marked workpapers identifying granularity adjustments made to load and resource fixed costs;
    d. Incorporate the availability of EIR financing into its PLEXOS modeling during the capacity expansion phase (i.e., the LT model);
4. Regarding Staff's community-focused Recommendations and Expectations for the CEP, reaffirm an expectation that PacifiCorp meet these Recommendations and Expectations by the 2025 IRP/CEP.

Respectfully submitted,

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DOCKET NO.: LC 82

JOINT ADVOCATES COMMENTS ON PACIFICORP 2023 INTEGRATED RESOURCE PLAN UPDATE AND CLEAN ENERGY PLAN SUPPLEMENT

EXHIBIT 1
WORKPAPERS FOR FIGURES 2 THROUGH 8

Generation Categories (MWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	25 3 3 09	2 523 650	18 52 755	16 807 363	17 882 208	17 921 720	16 8 6 593	1 298 39	1 270 961	10 396 925	8 033 907	8 173 193	7 57 319	6 853 198	5 216 865	5 309 0 0	5 92 529	30 2 6	375 1 6	10 767
Existing Gas/Gas Conversion	15 5 8 69	19 332 57	1 322 119	1 731 261	15 307 009	17 150 8 6	16 707 022	15 230 590	15 50 357	12 33 951	8 768 10	9 009 900	8 936 8 0	7 977 059	6 21 281	6 225 906	6 396 259	7 518 87	7 829 22	7 880 879
Hydro	386 869	362 325	68 91	69 370	07 696	253 362	368 203	6 99	7 339	67 388	216 2 3	063 135	312 078	353 291	39 025	307 5 7	207 5 0	082 322	375 399	5 677 507
Wind	11 860 360	12 392 068	17 11 990	17 183 71	17 669 2 8	17 702 902	17 602 83	18 560 6 2	18 1 0 71	30 708 32	37 052 891	36 58 282	37 59 551	38 3 1 282	2 289 29	2 000 038	1 608 69	2 3 781	1 358 717	1 327 605
Solar	5 397 38	5 9 0 530	6 731 020	8 730 806	10 78 070	10 875 901	10 830 750	11 810 967	11 757 63	11 501 99	12 606 32	12 891 6 1	12 29 008	12 129 7 5	1 727 029	1 587 979	1 503 3 5	1 605 305	1 601 568	1 600 203
Other (Renewable)	3 66	3 9 9	3 1 505	3 1 83	325 2 7	339 881	311 677	311 677	311 677	311 661	297 900	276 110	308 9 7	311 616	311 290	3 0 5	3 0 5	3 052	3 0 5	3 0 5
Other (Non-Emitting)	-	-	-	-	-	-	-	3 663 5 6	3 779 083	3 29 109	3 182 515	3 228 102	3 1 8 081	3 088 308	3 076 996	3 092 200	3 155 578	3 236 2	2 791 990	2 765 593
Other (Non-Renewable)	1 553 660	1 06 727	60 058	59 77	13 811	13 6	2 037 867	1 826 719	2 005 536	1 250 373	91 767	932 900	917 357	865 088	829 38	1 0 55	1 5 586	173 053	5 220 121	8 7 793
Demand Response	565 100	556 809	527 655	5 3 026	610 826	691 563	570 625	571 907	57 505	558 56	625 511	517 191	528 391	53 608	553 866	586 908	653 335	562 889	5 5 009	5 7 770
Energy Efficiency	557 188	1 091 593	1 658 293	2 270 051	2 9 5 376	3 668 251	667	5 227 88	6 0 310	6 829 725	7 627 539	8 06 128	9 168 159	9 911 615	10 672 089	11 3 6 197	11 975 838	12 651 185	13 292 356	13 899 916
Market	8 5 3 3	3 858 5 2	7 019 831	6 3 6 07	6 238 901	6 285 1 0	7 631 0 3	7 278 980	8 37 68	6 0 6 696	6 122 317	6 195 83	6 6 6 9	7 5 9 536	6 569 62	6 865 9	7 223 887	7 903 758	8 300 077	8 286 668
Total	70 402 246	73 467 650	71 466 140	71 882 381	76 584 393	79 803 211	81 352 929	83 227 409	85 237 555	87 835 109	89 448 018	90 278 066	91 1 77 225	91 915 346	94 854 932	95 804 810	96 713 635	97 425 908	98 732 851	100 287 746

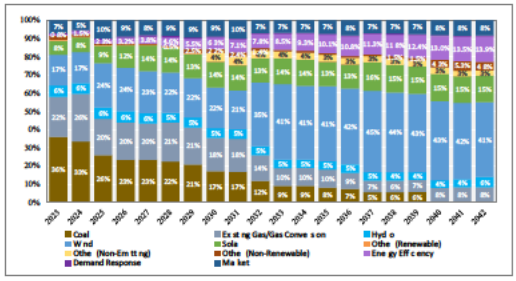
Generation Categories (MWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Coal	36%	33%	26%	23%	23%	22%	21%	17%	17%	12%	9%	9%	8%	7%	5%	6%	6%	0%	0%	0%
Existing Gas/Gas Conversion	22%	26%	20%	20%	20%	21%	21%	18%	18%	1 %	10%	10%	10%	9%	7%	6%	7%	8%	8%	8%
Hydro	6%	6%	6%	6%	6%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	%	%	%	%	6%
Wind	17%	17%	2 %	2 %	23%	22%	22%	22%	21%	35%	1%	1%	1%	2%	5%	%	3%	3%	2%	1%
Solar	8%	8%	9%	12%	1 %	1 %	13%	1 %	1 %	13%	1 %	1 %	13%	13%	16%	15%	15%	15%	15%	15%
Other (Renewable)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other (Non-Emitting)	0%	0%	0%	0%	0%	0%	0%	%	%	%	%	%	3%	3%	3%	3%	3%	3%	3%	3%
Other (Non-Renewable)	2%	1%	1%	1%	1%	1%	3%	2%	2%	1%	1%	1%	1%	1%	1%	2%	2%	%	5%	5%
Demand Response	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Energy Efficiency	1%	1%	2%	3%	%	5%	5%	6%	7%	8%	9%	9%	10%	11%	11%	12%	12%	13%	13%	1 %
Market	7%	5%	10%	9%	8%	9%	9%	9%	10%	7%	7%	7%	7%	8%	7%	7%	7%	8%	8%	8%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Dispatchable resources (% of the system)	7 %	73%	63%	60%	59%	59%	59%	57%	57%	%	36%	36%	35%	3 %	28%	29%	30%	29%	30%	30%

	1 3 0 29	1 2 8 190	850 569	636 51	5 9 398	787 13	852 677	67 559	761 355	13 06	19 19	215 95	215 9 7	179 012	1 9 501	-	-	-	-	-
	1 3 9 3	1 357 5 5	963 1 9	756 388	661 9	1 035 709	955 99	822 299	895 681	75 63	231 831	237 55	239 812	195 731	181 039	-	-	-	-	-
	770 022	722 95	5 3 082	399 621	3 335	701 891	616 022	89 516	526 756	29 5 3	100 069	116 526	72 006	32 20	-	-	-	-	-	-
	78 851	28 20	07 222	69 18	76 937	692 212	597 0 8	238 111	297 893	315 131	1 0 71	128 988	8 205	62 92	-	-	-	-	-	-

Runs as Coal

Coal Generation	3 938 610	1 151 37	950 30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



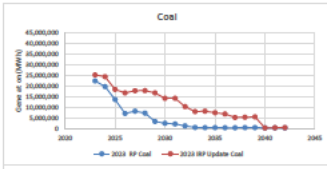
Coa	35 456 0 2	31 312 5 9	32 407 530	29 445 384	22 498 015	19 819 253	13 726 116	7 090 333	8 202 842	7 298 887	3 316 996	2 457 864	2 132 576	1 245 572	504 765	431 194	439 035	87 973	86 769	23 812	34 00	3 4 71	3 4 71	3 4 2 1	0	0	0	0	0	0	0	0	0	0
Ex st ng Gas Gas Conve s on	12 106 3 2	12 093 2 9	13 364 711	13 726 803	24 115 430	23 798 778	24 903 389	21 193 079	21 190 658	22 688 015	18 618 864	16 322 775	17 101 102	10 249 940	8 296 175	7 890 621	7 749 810	7 00 900	6 31 718	6 02 340	6 93 13	6 5 9 59	6 7 4 30	6 7 5 2 9	2 7 7 0 1	1 359 9 6	1 374 6 0	0	0	0	0	0	0	0
Hydro	721 1 0	1 346 3 5	1 215 502	1 822 198	4 384 851	4 317 222	4 458 712	4 455 618	4 392 049	4 235 228	4 336 354	4 418 713	4 453 498	4 410 153	4 202 428	4 052 617	4 277 635	4 56 164	4 00 291	4 32 253	4 21 74	4 0 6 02	4 3 8 07	5 7 2 9 1	3 3 5 4 6	3 398 8 6	3 552 6 7	3 669 082	3 481 500	3 525 524	3 557 186	3 558 323	3 530 633	3 542 916
W nd	4 061 6 0	5 512 6 5	5 010 768	5 145 465	11 933 115	12 260 150	19 608 608	19 429 156	19 771 483	20 772 523	27 609 635	27 115 939	26 530 565	34 412 790	38 745 422	38 408 811	38 250 675	38 33 769	0 47 924	0 98 467	9 90 86	0 5 9 40	40 2 2 57	40 0 1 0 3	38 9 7 5 4	39 102 5 6	39 095 2 0	39 061 560	38 762 573	38 781 117	37 675 358	36 035 749	31 317 325	31 319 014
So ar	2 792 2 2	3 238 7 1	4 386 196	4 550 400	5 729 998	6 161 130	9 789 525	17 337 558	18 610 039	23 647 102	23 747 304	23 646 624	23 735 698	24 857 396	24 200 588	24 393 693	25 112 629	24 53 393	4 06 766	3 95 14	4 15 22	4 4 9 44	24 5 2 22	24 7 0 6 5	23 598 4 0	23 673 4 9	23 704 3 0	23 716 415	23 673 171	23 691 861	23 696 452	23 694 475	23 688 990	23 692 944
Geo herma	139 9 4	304 3 3	342 321	389 514	349 969	349 831	344 911	341 285	328 395	327 512	319 965	319 812	321 029	267 995	250 944	267 185	257 577	65 214	60 480	61 81	61 81	1 64	1 81	1 8 1	61 8 7	61 8 6	61 8 9	61 878	61 877	61 877	61 878	61 878	61 878	61 878
Other Renewab e)	0	0	0	0	799 248	603 827	0	0	0	0	0	3 050 562	3 117 455	5 759 500	8 515 427	8 055 236	8 47 760	8 20 520	8 94 318	8 84 84	8 9 9 06	8 0 1 86	7 9 8 54	7 9 7 5 9	8 191 7 6	8 012 1 9	8 012 3 0	8 030 949	8 061 806	8 029 328	8 033 618	8 038 925	8 040 919	8 035 698
Other Non R new b e)	24 7 5	128 7 3	131 158	127 386	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	59 118	59 118	59 18	59 18	1 9 18	1 9 18	1 9 1 8	1 9 1 8	159 1 8	159 1 8	159 118	159 118	159 118	159 118	159 118	159 118	159 118
Market	0	0	0	0	4 957 961	7 477 756	5 102 434	7 896 304	8 029 036	4 746 550	5 329 714	5 654 135	5 876 900	4 786 976	3 690 853	4 374 560	4 246 356	4 28 577	4 99 963	4 46 709	5 17 87	5 6 7 19	6 0 3 13	6 2 3 2 2	5 7 0 6 5	5 933 7 0	6 007 7 5	5 993 841	5 931 500	5 966 724	5 974 965	5 966 757	5 959 987	5 967 108
To a	55 302 2 5	53 936 6 5	56 858 186	55 207 150	74 927 705	74 947 065	78 092 813	77 902 451	80 683 620	83 874 935	83 437 950	83 145 542	83 427 941	86 149 440	88 565 720	88 033 035	88 740 595	89 05 628	9 87 347	9 04 178	9 05 87	9 9 8 03	90 4 5 53	91 9 5 8 9	82 8 1 7 7	81 701 8 0	81 968 1 9	80 692 843	80 131 545	80 215 549	79 158 575	77 515 225	72 758 850	72 778 676

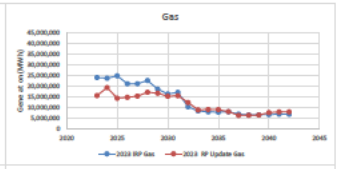
Coa	64%	58%	57%	53%	30%	26%	18%	9%	10%	9%	4%	3%	3%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Ex st ng Gas Gas Conve s on	22%	22%	24%	25%	32%	32%	32%	27%	26%	27%	22%	20%	20%	2%	9%	9%	9%	9%	8%	7%	7%	7%	8%	7%	3%	2%	2%	0%	0%	0%	0%	0%	0%	0%
Hydro	1%	2%	2%	3%	6%	6%	6%	6%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	6%	4%	4%	4%	5%	4%	4%	4%	5%	5%	5%
W nd	7%	10%	9%	9%	16%	16%	25%	25%	25%	25%	33%	33%	32%	0%	4%	4%	3%	43%	45%	45%	45%	45%	44%	44%	47%	48%	48%	48%	48%	48%	48%	46%	43%	43%
So ar	5%	6%	8%	8%	8%	8%	13%	22%	23%	28%	28%	28%	28%	9%	7%	8%	8%	27%	27%	26%	27%	27%	27%	27%	28%	29%	29%	29%	30%	30%	30%	31%	33%	33%
Geo herma	0%	1%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Other Renewab e)	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%	4%	4%	7%	0%	9%	9%	10%	10%	10%	10%	9%	9%	9%	10%	10%	10%	10%	10%	10%	10%	10%	11%	11%
Other Non R new b e)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Market	0%	0%	0%	0%	7%	10%	7%	10%	10%	6%	6%	7%	7%	6%	4%	5%	5%	5%	5%	6%	6%	6%	7%	7%	7%	7%	7%	7%	7%	7%	8%	8%	8%	8%

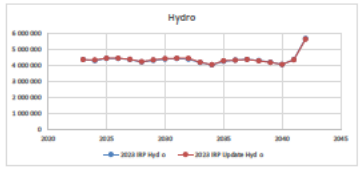
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%

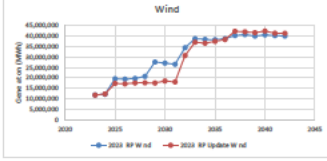
2023 IRP Generation Categories (MWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
2023 IRP Coal	22 98 015	19 819 253	13 726 116	7 090 333	8 202 8 2	7 298 887	3 316 996	2 57 86	2 132 576	1 2 5 572	50 765	31 19	39 035	387 973	386 769	23 812	3 700	3 271	3 271	3 271
2023 IRP Gas	2 115 30	23 798 778	2 903 389	21 193 079	21 190 658	22 688 015	18 618 86	16 322 775	17 101 102	10 2 9 9 0	8 296 175	7 890 621	7 7 9 810	7 900 900	6 831 718	6 02 3 0	6 93 313	6 599 259	6 78 930	6 755 239
2023 IRP Hydro	38 851	317 222	58 712	55 618	392 0 9	235 228	336 35	18 713	53 98	10 153	202 28	052 617	277 635	356 16	60 291	332 253	221 77	076 02	378 907	5 712 951
2023 IRP Wind	11 933 115	12 260 150	19 608 608	19 29 156	19 771 83	20 772 523	27 609 635	27 115 939	26 530 565	3 12 790	38 7 5 22	38 08 811	38 250 675	38 733 769	0 2 7 92	0 698 67	39 990 886	0 589 0 0	0 202 57	0 03 1 073
2023 IRP Solar	5 729 998	6 161 130	9 789 525	17 337 558	18 610 039	23 6 7 102	23 7 7 30	23 6 6 62	23 735 698	2 857 396	2 200 588	2 393 693	25 112 629	2 253 393	2 006 766	23 95 21	2 215 622	2 39 5	2 532 222	2 760 6 5
Geothermal	3 9 969	3 9 831	3 911	3 1 285	328 395	327 512	319 965	319 812	321 029	267 995	250 9	267 185	257 577	265 21	260 80	61 881	61 881	61 86	61 881	61 881
Other (Renewable)	799 2 8	603 827	-	-	-	-	-	3 050 562	3 117 55	5 759 500	8 515 27	8 055 236	8 2 7 760	8 620 520	8 79 318	8 98 38	8 909 906	8 011 286	7 938 15	7 907 519
Other (Non-Renewable)	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118	159 118
2023 IRP Demand Response	122 212	115 7 5	136 877	153 795	215 909	352 650	1 1 060	1 2 297	15 220	162 885	369 796	136 222	133 908	139 7 2	176 80	313 7 5	573 755	172 781	166 238	179 655
2023 IRP Energy Efficiency	5 3,132	1,095,168	1,667,288	2,272 095	2,932,250	3,6 3,795	,366,380	5,095,981	5,88 , 15	6,615,593	7,322,085	8,0 1 81	8,725,206	9, 36,093	10,1 6,771	10,75 ,511	11,3 8,988	11,996,035	12, 26,997	12,578,987
2023 IRP Market	957 961	7 77 756	5 102 3	7 896 30	8 029 036	7 6 550	5 329 71	5 65 135	5 876 900	786 976	3 690 853	37 560	2 6 356	28 577	599 963	9 6 709	5 217 987	5 637 619	6 063 613	6 2 3 202
Total	75 593 049	76 157 978	79 896 978	80 328 341	83 831 779	87 871 380	87 945 390	88 383 820	89 466 576	92 927 918	96 257 683	96 211 071	97 599 709	98 681 463	100 010 922	100 582 434	101 627 930	102 087 219	103 058 808	104 734 541
	5 7227	1120633	172353 1	2381789	307998	3813876	5 2767	5331773	60 0061	67661	7 88315	81711 2	8850625	95919 8	10206662	10788098	11397153	11867630	12022286	
	095	25 65	562 3	10969	1 773	170081	176387	235792	1556 6	150551	166230	129328	125 19	155855	59891	23587	8165	-128 05	- 0 711	

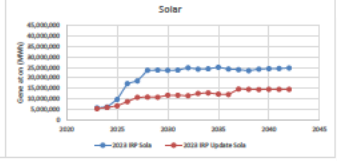
2023 IRP Update Generation Categories (MWh)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
2023 IRP Update Coal	25 3 3 09	2 523 650	18 52 755	16 807 363	17 882 208	17 921 720	16 8 6 593	1 298 39	1 270 961	10 396 925	8 033 907	8 173 193	7 57 319	6 853 198	5 216 865	5 309 0 0	5 92 529	30 2 6	375 1 6	10 767
2023 IRP Update Gas	15 5 8 69	19 332 57	1 322 119	1 731 261	15 307 009	17 150 8 6	16 707 022	15 230 590	15 50 357	12 33 951	8 768 10	9 009 900	8 936 8 0	7 977 059	6 21 281	6 225 906	6 396 259	7 518 87	7 829 22	7 880 879
2023 IRP Update Hydro	386 869	362 325	68 91	69 370	07 696	253 362	368 203	6 99	7 339	67 388	216 2 3	063 135	312 078	353 291	39 025	307 5 7	207 5 0	082 322	375 399	5 677 507
2023 IRP Update Wind	11 860 360	12 392 068	17 11 990	17 183 71	17 669 2 8	17 702 902	17 602 83	18 560 6 2	18 1 0 71	30 708 32	37 052 891	36 58 282	37 59 551	38 3 1 282	2 289 29	2 000 038	1 608 69	2 3 781	1 358 717	1 327 605
2023 IRP Update Solar	5 397 38	5 9 0 530	6 731 020	8 730 806	10 78 070	10 875 901	10 830 750	11 810 967	11 757 63	11 501 99	12 606 32	12 891 6 1	12 29 008	12 129 7 5	1 727 029	1 587 979	1 503 3 5	1 605 305	1 601 568	1 600 203
Other (Renewable)	3 66	3 9 9	3 1 505	3 1 83	325 2 7	339 881	311 677	311 677	311 677	311 661	297 900	276 110	308 9 7	311 616	311 290	3 0 5	3 0 5	3 052	3 0 5	3 0 5
Other (Non-Emitting)	-	-	-	-	-	-	-	3 663 5 6	3 779 083	3 29 109	3 182 515	3 228 102	3 1 8 081	3 088 308	3 076 996	3 092 200	3 155 578	3 236 2	2 791 990	2 765 593
Other (Non-Renewable)	1 553 660	1 06 727	60 058	59 77	13 811	13 6	2 037 867	1 826 719	2 005 536	1 250 373	91 767	932 900	917 357	865 088	829 38	1 0 55	1 5 586	173 053	5 220 121	8 7 793
2023 IRP Update Demand Response	565 100	556 809	527 655	5 3 026	610 826	691 563	570 625	571 907	57 505	558 56	625 511	517 191	528 391	53 608	553 866	586 908	653 335	562 889	5 5 009	5 7 770
2023 IRP Update Energy Efficiency	557 188	1 091 593	1 658 293	2 270 051	2 9 5 376	3 668 251	667	5 227 88	6 0 310	6 829 725	7 627 539	8 06 128	9 168 159	9 911 615	10 672 089	11 3 6 197	11 975 838	12 651 185	13 292 356	13 899 916
2023 IRP Update Market	8 5 3 3	3 858 5 2	7 019 831	6 1 6 07	6 218 901	6 785 1 0	7 633 0 3	7 278 980	8 27 68	6 0 6 696	6 122 317	6 195 83	6 6 6 9	7 5 9 536	6 569 62	6 865 9	7 222 887	7 903 758	8 300 077	8 286 668
Total	70 402 246	73 467 650	71 466 140	71 882 381	76 584 393	79 803 211	81 352 929	83 227 409	85 237 555	87 835 109	89 448 018	90 278 066	91 177 225	91 915 346	94 854 932	95 804 810	96 713 635	97 425 968	98 732 851	100 287 746
	0 98	0.52	1.38	0.80	0.78	1. 3	1. 3	1.29	1. 3	1.26	1.66	1. 2	1.57	1.70	1. 3	1.39	1.38	1. 0	1.37	1.33
Difference																				
Coal	2 8 5 39	70 397	798 639	9 717 030	9 679 366	10 622 833	13 529 597	11 8 0 530	12 138 385	9 151 353	7 529 1 2	7 7 1 999	7 018 28	6 65 225	830 096	885 228	5 057 829	- 0 025	30 875	66 96
Existing Gas/Gas Convers on	-8 566 961	- 66 321	-10 581 270	-6 61 818	-5 883 6 9	-5 537 169	-1 911 8 2	-1 092 185	-1 596 7 5	2 085 011	71 929	1 119 279	1 187 030	76 159	-617 37	-176 3	-97 05	919 615	1 0 92	1 125 6 0
Hydro	2 018	5 103	10 202	13 752	15 6 7	18 13	31 8 9	27 786	20 8 1	57 235	13 815	10 518	3 3	-2 873	-6 266	-2 706	-1 23	5 920	-3 508	-35
Wind	-72 755	131 918	-2 196 618	-2 2 5 685	-2 102 235	-3 069 621	-10 007 152	-8 555 297	-8 390 09	-3 70 66	-1 692 531	-1 82 529	-791 12	-392 87	2 0 1 505	1 301 571	1 617 808	1 755 7 1	1 156 260	1 296 532
Solar	-332 61	-220 600	-3 058 505	-8 606 752	-7 825 969	-12 771 201	-12 916 55	-11 835 657	-11 978 06	-13 355 897	-11 59 26	-11 502 052	-12 818 621	-12 123 6 8	-9 279 737	-8 907 235	-9 712 277	-9 83 239	-9 930 65	-10 160 2
Other (Renewable)																				
Other (Non-Emitting)																				
Other (Non-Renewable)																				
Demand Response																				
Energy Efficiency	1 056	-3 575	-8 995	-2 0	13 126	2 56	78 287	131 507	159 895	21 132	305 5	36 31	2 953	75 522	525 318	581 686	626 850	655 150	865 359	1 320 929
Market	-112 618	-3 619 21	1 917 397	-1 550 230	-1 790 135	2 038 590	2 303 329	1 62 8 5	2 97 78	1 259 720	2 31 6	1 820 923	2 00 138	3 120 959	1 969 661	1 918 785	2 00 900	2 266 139	2 236 6	2 0 3 66
Total	98	52	138	80	78	1 3	1 3	129	1 3	126	166	1 2	157	170	1 3	139	138	1 0	137	133

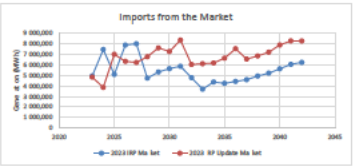


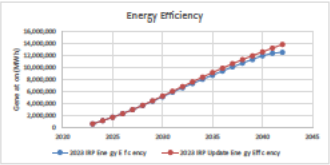


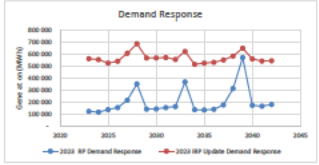




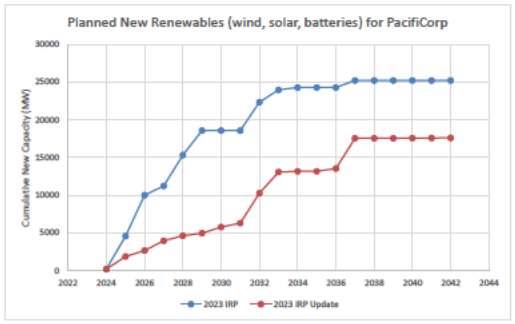








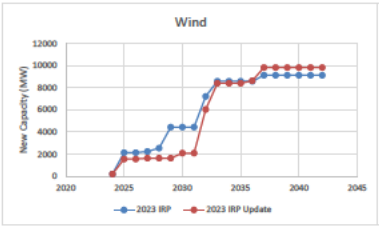
	2023 IRP Preferred Portfo io				2023 IRP Update (4/1/24)				Difference			
	Wind	Solar	Storage	Renwables	Wind	Solar	Storage	Renwables	Wind	Solar	Storage	Renwables
2024	194	0	0	194	194	0	0	194	0	0	0	0
2025	1937	1469	954	4360	1361	300	0	1661	-576	-1169	-954	-2699
2026	0	2524	2929	5453	0	398	400	798	0	-2126	-2529	-4655
2027	100	483	628	1211	79	654	565	1298	-21	171	-63	87
2028	300	1907	1900	4107	0	363	297	660	-300	-1544	-1603	-3447
2029	1900	200	1149	3249	0	0	337	337	-1900	-200	-812	-2912
2030	0	0	0	0	443	369	0	812	443	369	0	812
2031	0	0	0	0	5	5	521	531	5	5	521	531
2032	2783	972	0	3755	3952	0	21	3973	1169	-972	21	218
2033	1359	0	300	1659	2354	449	0	2803	995	449	-300	1144
2034	0	300	0	300	0	93	3	96	0	-207	3	-204
2035	0	0	0	0	0	0	0	0	0	0	0	0
2036	0	0	0	0	228	0	152	380	228	0	152	380
2037	540	0	400	940	1202	1119	1694	4015	662	1119	1294	3075
2038	0	0	0	0	0	0	0	0	0	0	0	0
2039	0	0	0	0	0	0	0	0	0	0	0	0
2040	0	0	0	0	0	0	17	17	0	0	17	17
2041	0	0	0	0	0	0	9	9	0	0	9	9
2042	0	0	0	0	0	14	0	14	0	14	0	14
SUM:	9113	7855	8260	25228	9818	3764	4016	17598	705	-4091	-4244	-7630

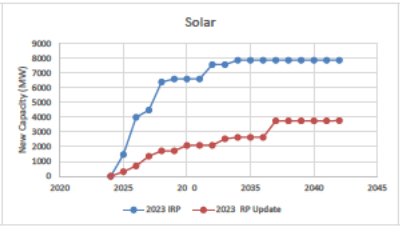


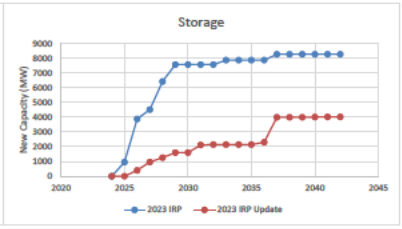
	2023 IRP				2023 IRP Update				Difference			
	Wind	Solar	Storage	Renwables	Wind	Solar	Storage	Renwables	Wind	Solar	Storage	Renwables
2024	194	0	0	194	194	0	0	194	0	0	0	0
2025	2131	1469	954	4554	1555	300	0	1855	-576	-1169	-954	-2699
2026	2131	3993	3883	10007	1555	698	400	2653	-576	-3295	-3483	-7354
2027	2231	4476	4511	11218	1634	1352	965	3951	-597	-3124	-3546	-7267
2028	2531	6383	6411	15325	1634	1715	1262	4611	-897	-4668	-5149	-10714
2029	4431	6583	7560	18574	1634	1715	1599	4948	-2797	-4868	-5961	-13626
2030	4431	6583	7560	18574	2077	2084	1599	5760	-2354	-4499	-5961	-12814
2031	4431	6583	7560	18574	2082	2089	2120	6291	-2349	-4494	-5440	-12283
2032	7214	7555	7560	22329	6034	2089	2141	10264	-1180	-5466	-5419	-12065
2033	8573	7555	7860	23988	8388	2538	2141	13067	-185	-5017	-5719	-10921
2034	8573	7855	7860	24288	8388	2631	2144	13163	-185	-5224	-5716	-11125
2035	8573	7855	7860	24288	8388	2631	2144	13163	-185	-5224	-5716	-11125
2036	8573	7855	7860	24288	8616	2631	2296	13543	43	-5224	-5564	-10745
2037	9113	7855	8260	25228	9818	3750	3990	17558	705	-4105	-4270	-7670
2038	9113	7855	8260	25228	9818	3750	3990	17558	705	-4105	-4270	-7670
2039	9113	7855	8260	25228	9818	3750	3990	17558	705	-4105	-4270	-7670
2040	9113	7855	8260	25228	9818	3750	4007	17575	705	-4105	-4253	-7653
2041	9113	7855	8260	25228	9818	3750	4016	17584	705	-4105	-4244	-7644
2042	9113	7855	8260	25228	9818	3764	4016	17598	705	-4091	-4244	-7630

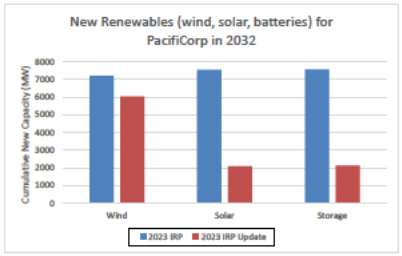
Clean Energy Deployment between 2023 IRP & 2023 IRP Update (%)

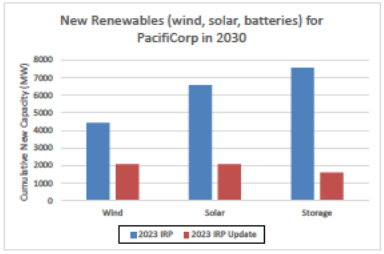
	Wind	Solar	Storage	Renwables
2024				
2025	-27%	-80%	-100%	-59%
2026	-27%	-83%	-90%	-73%
2027	-27%	-70%	-79%	-65%
2028	-35%	-73%	-80%	-70%
2029	-63%	-74%	-79%	-73%
2030	-53%	-68%	-79%	-69%
2031	-53%	-68%	-72%	-66%
2032	-16%	-72%	-72%	-54%
2033	-2%	-66%	-73%	-46%
2034	-2%	-67%	-73%	-46%
2035	-2%	-67%	-73%	-46%
2036	1%	-67%	-71%	-44%
2037	8%	-52%	-52%	-30%
2038	8%	-52%	-52%	-30%
2039	8%	-52%	-52%	-30%
2040	8%	-52%	-51%	-30%
2041	8%	-52%	-51%	-30%
2042	8%	-52%	-51%	-30%











Metric To Metric To Metric Tons

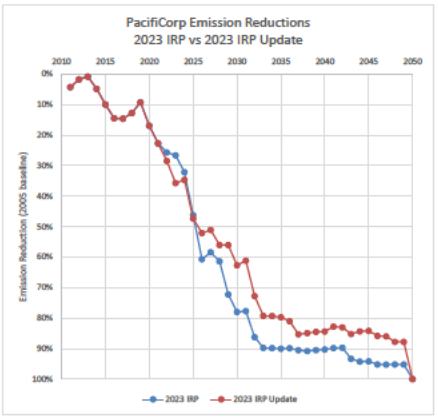
Actuals to 2022

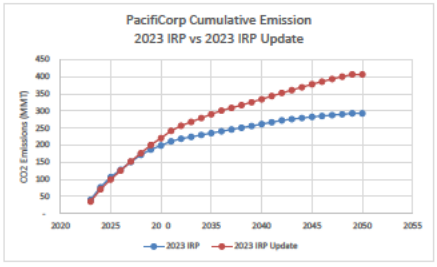
Year	Baseline	2023 IRP	2023 IRP	2023 IRP
2011	54.60	52.30	4.21%	95.79%
2012	54.60	53.68	1.68%	98.32%
2013	54.60	54.19	0.75%	99.25%
2014	54.60	52.00	4.76%	95.24%
2015	54.60	49.19	9.90%	90.10%
2016	54.60	46.74	14.39%	85.61%
2017	54.60	46.65	14.56%	85.44%
2018	54.60	47.65	12.72%	87.28%
2019	54.60	49.57	9.22%	90.78%
2020	54.60	45.39	16.87%	83.13%
2021	54.60	42.24	22.64%	77.36%
2022	54.60	40.61	25.62%	74.38%
2023	54.60	40.0938	26.56%	73.44%
2024	54.60	37.0563	32.13%	67.87%
2025	54.60	29.3604	46.22%	53.78%
2026	54.60	21.4716	60.67%	39.33%
2027	54.60	22.7240	58.38%	41.62%
2028	54.60	21.1084	61.34%	38.66%
2029	54.60	15.1527	72.25%	27.75%
2030	54.60	12.0342	77.96%	22.04%
2031	54.60	12.1717	77.71%	22.29%
2032	54.60	7.5316	86.21%	13.79%
2033	54.60	5.6033	89.74%	10.26%
2034	54.60	5.5506	89.83%	10.17%
2035	54.60	5.4341	90.05%	9.95%
2036	54.60	5.5344	89.86%	10.14%
2037	54.60	5.1815	90.51%	9.49%
2038	54.60	5.0243	90.80%	9.20%
2039	54.60	5.1879	90.50%	9.50%
2040	54.60	5.3005	90.29%	9.71%
2041	54.60	5.5558	89.82%	10.18%
2042	54.60	5.6245	89.70%	10.30%
2043	54.60	3.6239	93.36%	6.64%
2044	54.60	3.1494	94.23%	5.77%
2045	54.60	3.1867	94.16%	5.84%
2046	54.60	2.6280	95.19%	4.81%
2047	54.60	2.6013	95.24%	4.76%
2048	54.60	2.6164	95.21%	4.79%
2049	54.60	2.6199	95.20%	4.80%
2050	54.60	-	100.00%	0.00%
2051	54.60			
2052	54.60			
2053	54.60			
2054	54.60			
2055	54.60			
2056	54.60			
2057	54.60			
2058	54.60			

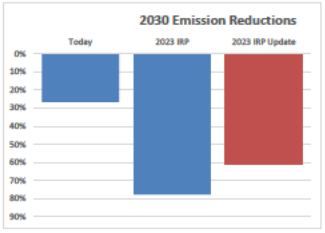
	2023 IRP L	2023 IRP Update	2023 IRP Update
2011	52.3	4.21%	95.79%
2012	53.7	1.68%	98.32%
2013	54.2	0.75%	99.25%
2014	52.0	4.76%	95.24%
2015	49.2	9.90%	90.10%
2016	46.7	14.39%	85.61%
2017	46.6	14.56%	85.44%
2018	47.7	12.72%	87.28%
2019	49.6	9.22%	90.78%
2020	45.4	16.87%	83.13%
2021	42.2	22.64%	77.36%
2022	39.1	28.41%	71.59%
2023	35.1	35.67%	64.33%
2024	35.7	34.67%	65.33%
2025	28.7	47.37%	52.63%
2026	26.2	52.09%	47.91%
2027	26.7	51.06%	48.94%
2028	24.0	56.02%	43.98%
2029	24.0	56.00%	44.00%
2030	20.4	62.65%	37.35%
2031	21.2	61.15%	38.85%
2032	14.9	72.76%	27.24%
2033	11.3	79.24%	20.76%
2034	11.3	79.29%	20.71%
2035	11.1	79.71%	20.29%
2036	10.4	81.00%	19.00%
2037	8.0	85.29%	14.71%
2038	8.2	84.89%	15.11%
2039	8.5	84.49%	15.51%
2040	8.5	84.38%	15.62%
2041	9.4	82.75%	17.25%
2042	9.3	83.02%	16.98%
2043	8.1	85.20%	14.80%
2044	8.6	84.32%	15.68%
2045	8.6	84.17%	15.83%
2046	7.7	85.82%	14.18%
2047	7.7	85.95%	14.05%
2048	6.7	87.77%	12.23%
2049	6.7	87.78%	12.22%
2050	-	100.00%	0.00%

Cumulative emissions (MMT)

Year	2023 IRP	2023 IRP L	Difference	
2023	40	35	(5)	
2024	77	71	(6)	
2025	107	100	(7)	
2026	128	126	(2)	
2027	151	152	2	
2028	172	176	5	
2029	187	200	13	
2030	199	221	22	
2031	211	242	31	
2032	219	257	38	
2033	224	268	44	
2034	230	280	50	
2035	235	291	55	
2036	241	301	60	
2037	246	309	63	
2038	251	317	66	
2039	256	326	70	
2040	262	334	73	
2041	267	344	77	
2042	273	353	80	
2043	276	361	85	
2044	279	370	90	
2045	283	378	96	
2046	285	386	101	
2047	288	394	106	
2048	291	400	110	
2049	293	407	114	
2050	293	407	114	1.388512







Today	2023 IRP	2023 IRP Update
26.56%	77.71%	
		61.15%

DOCKET NO.: LC 82

JOINT ADVOCATES COMMENTS ON PACIFICORP 2023 INTEGRATED RESOURCE PLAN UPDATE AND CLEAN ENERGY PLAN SUPPLEMENT

EXHIBIT 2
PUBLIC DATA REQUEST RESPONSES

Sierra Club Data Request 45

In PacifiCorp's Final Plan filed In the Matter of the Application of Rocky Mountain Power to Establish Low-Carbon Energy Portfolio Standards before the Wyoming Public Service Commission (Record No. 17536), the Company proposed a pre-front-end engineering and design ("pre-FEED" study) for an amine-based carbon capture retrofit at Jim Bridger Units 3 and 4. The Company further explained that a FEED study is required as a "first step" in pursuing CCUS at Jim Bridger and would require 12-18 months to complete. PacifiCorp's 2023 IRP Update includes installing CCUS at Jim Bridger by 2028.

(a) Please provide an update on the status of the pre-FEED study.

(b) Please identify when the pre-FEED study would need to be completed in order to be "on schedule" for installation of CCUS at Jim Bridger 3 and 4 by 2028.

Response to Sierra Club Data Request 45

Referencing PacifiCorp's Final Plan filed in Wyoming Docket 20000-660-EA-24 (Application to Establish Low-Carbon Energy Portfolio Standards) on March 29, 2024, the Company responds as follows:

The Company requested Wyoming Public Service Commission (WPSC) approval of its Final Plan which included conducting additional technical and economic analyses for an Allam Fetvedt Cycle Project at either the Dave Johnston or Wyodak facilities by conducting a pre-front-end engineering and design (pre-FEED) study in conjunction with SK and 8 Rivers and conducting additional technical and economic analyses by conducting a front-end engineering and design (FEED) study at the Jim Bridger facility. With the foregoing clarifications on the two projects, the Company responds as follows for the Jim Bridger FEED study:

(a) The Company is working to procure partners to conduct the FEED study.

(b) The Company is currently pursing a FEED study that will further inform costs and project timelines of an amine-based carbon capture project at Jim Bridger Unit 3 and Jim Bridger Unit 4. The Company will re-evaluate the economic and technical viability along with potential developmental timelines of the project after the conclusion of the FEED study.

Sierra Club Data Request 48

Please explain whether and how the 2023 IRP Update considered PacifiCorp's wildfire liabilities.

Response to Sierra Club Data Request 48

The Company's modeling for the 2023 Integrated Resource Plan (IRP) Update does not include financial or operational impacts associated with wildfire liabilities.

Sierra Club Data Request 50

Page 7 of the 2023 IRP Update states "[a] key change since the filing of the 2023 IRP is the addition of peaking capacity in the form of natural gas resources capable of operating with 100% hydrogen fuel."

(a) Please identify in which year new natural gas resources in the 2023 IRP Update are assumed to convert to operating with 100% hydrogen fuel.

(b) For the year(s) identified in response to subpart (a), please explain how PacifiCorp determined that said year or years were reasonable, including any research or sources relied upon.

(c) Please explain whether all new natural gas proxy resources were cost-allocated to Oregon in the 2023 IRP Update.

Response to Sierra Club Data Request 50

(a) The non-emitting peaking resources added in 2030 and 2037 are assumed to operate using 100 percent hydrogen fuel throughout their lives. The natural gas peaking resources, added in 2029 and 2038-2041, are not assumed to convert to 100 percent hydrogen fuel within the planning horizon. The capability to operate with 100 percent hydrogen fuel addresses risks otherwise associated with procuring resources that are not capable of non-emitting operation.

(b) Not applicable.

(c) No new natural gas proxy resources were assumed to be allocated to Oregon in PacifiCorp's 2023 IRP Update. For details, please refer the confidential work papers supporting the 2023 IRP Update, specifically confidential folder "Chapters, Appendicies, and Input Assumptions", confidential file "CH6 - Portfolio Development CONF_Table 6.1 Fig 6.4 Allocation Unified56000_Sys52430_OR53854_WA56005_2024 03 12.xlsx".

Sierra Club Data Request 52

Please refer to slide 12 of PacifiCorp's Presentation for the 5/30/24 Special Public Meeting, which states "[w]ildfire risk and liability requires PacifiCorp to manage its cash on a day-to-day basis, and with limited capital, money needed for new transmission and new resources is constrained, which can adversely impact reliability over time".

(a) Please explain whether the modeling for the 2023 IRP Update contained any constraint, such as placing a limit on annual investment levels, using a higher cost of capital for borrowing, or some other constraint, to represent in the modeling PacifiCorp's need to manage its cash on a day-to-day basis.

Response to Sierra Club Data Request 52

In PacifiCorp's 2023 Integrated Resource Plan (IRP) Update preferred portfolio, the earliest uncommitted resource additions are allowed in 2027. The Company did not impose constraints in the 2023 IRP Update to reflect limitations on investment levels or to reflect the need to manage cash.

OPUC Data Request 277

Hydrogen - Please describe and provide any research completed by PacifiCorp into the source and cost of the hydrogen that will be supplied to the 224 MW 100% hydrogen resource added to the IRP Update's preferred portfolio in 2030. If PacifiCorp used any reports or studies, please provide them via a link or as an attachment to the data response.

Response to OPUC Data Request 277

PacifiCorp has not attempted to identify a specific source of hydrogen for the referenced resource. The hydrogen costs modeled in PacifiCorp's 2023 Integrated Resource Plan (IRP) Update are equal to the cost of natural gas plus associated greenhouse gas (GHG) costs through 2039 as the value of the clean hydrogen production tax credit (PTC), under section 45V of the Internal Revenue Service (IRS) tax code, is projected to reduce the production cost of hydrogen below the cost of natural gas (including emission costs), such that demand for hydrogen may drive up its price until it is equivalent to natural gas. In 2040-2044, hydrogen prices transition back to a level that represents the hydrogen production cost, including electrolyzers and new renewable resources. The hydrogen production cost forecast is provided by the third party consultant that produces the Company's quarterly market price curves and IRP price-policy scenarios, Siemens. Please refer to Confidential Attachment OPUC 277 which provides details on the referenced hydrogen costs. Note: Confidential Attachment OPUC 277 includes third-party proprietary information which is provided with the permission of the third-party and subject to the confidentiality protections applicable to this proceeding.

Confidential information is designated as Protected Information under Order No. 23-132 and may only be disclosed to qualified persons as defined in that order.