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*Via Electronic Filing*

Public Utility Commission of Oregon  
Attn: Filing Center  
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**Re: In the Matter of PacifiCorp, dba Pacific Power, 2023 Integrated Resource Plan  
(Docket No. LC 82)**

Enclosed please find Sierra Club's "Round 0" Comments for filing in the above-captioned docket.

If you have any questions or require any additional information, please do not hesitate to contact me.

Respectfully submitted,

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Enclosure

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

LC 82

In the Matter of

PACIFICORP d/b/a PACIFIC POWER,

2023 Integrated Resource Plan

Sierra Club's  
"Round 0" Comments

**I. Introduction**

Sierra Club appreciates the opportunity to provide initial feedback on PacifiCorp's 2023 Integrated Resource Plan ("IRP"). These comments are intended to focus on discrete areas that can be addressed and revised prior to July 31, 2023, when PacifiCorp intends to file its final 2023 IRP. Due to the short timeframe in which to provide these comments and limited timeframe in which to review confidential information, Sierra Club's comments are inherently limited in scope. As a result, these comments do not encompass all of Sierra Club's comments on PacifiCorp's IRP or Clean Energy Plan. Sierra Club intends to review PacifiCorp's final 2023 IRP and Clean Energy Plan, once filed, and provide further comment.

As described more fully below, Sierra Club recommends that PacifiCorp make the following modifications to its initial 2023 IRP:

1. Increase the "medium" CO<sub>2</sub> price to account for increasing environmental regulations impacting PacifiCorp's coal fleet;
2. Ensure fuller incorporation of the Inflation Reduction Act by:
  - a. Applying the Energy Communities tax bonus to all eligible communities, including communities in northern Oregon;
  - b. Applying financing options under the Energy Infrastructure Reinvestment ("EIR") program for coal plant closure and transition;
  - c. Applying the production tax credit ("PTC") and investment tax credit ("ITC") to standalone solar and pumped hydro;
3. Complete model runs of the P01-JB-3-4 GC, P04-Huntington RET28, P17-Col3-4 RET25, and P20-JB3-4 CCUS variants under all of the different price/policy scenarios;

In addition, Sierra Club recommends that PacifiCorp quantify the costs of Pathway 1 and Pathway 2 in its Clean Energy Plan.

## **II. The “Medium” CO<sub>2</sub> Price Should be Increased to Account for Federal Environmental Regulations**

As in previous IRPs, PacifiCorp used four different CO<sub>2</sub> price scenarios in the 2023 IRP: zero, medium, high, and a price forecast that aligns with the social cost of greenhouse gasses. According to PacifiCorp, the medium and high scenarios are derived from a variety of sources, including government and electric utility forecasts, and expert third-party multi-client (off-the-shelf) subscription services. These scenarios apply a CO<sub>2</sub> price as a tax beginning 2025. Sierra Club’s understanding is that the use of a carbon price is not intended to represent an exact carbon tax but serves as a proxy for environmental legislative and regulatory risk.

The medium CO<sub>2</sub> price, which was used for development of the preferred portfolio, closely tracks the medium CO<sub>2</sub> price from the 2021 IRP, and, starting in 2033, is *lower* than the price trajectory assumed in the 2021 IRP. Yet, since the 2021 IRP, significant federal regulatory movement has suggested increasing environmental legislative and regulatory risk. For instance, the U.S. Environmental Protection Agency (“EPA”) has proposed numerous regulations, all of which are likely to increase the operating costs of PacifiCorp’s thermal fleet. These include, but are not limited to:

### *1. Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants*

On May 11, 2023, EPA proposed new carbon pollution standards for coal and gas-fired power plants, which will require significant carbon dioxide emission reductions at coal plants and new gas plants. For coal plants, units that are willing to retire by 2032 can maintain their current emission rate, but cannot increase it. If they accept an operational limit of 20 percent of full capacity starting in 2030, they can continue to operate until 2035 without additional controls. Units that choose not to accept those limitations but retire before 2040 will be required to co-fire at least 40 percent methane gas starting in 2030. Finally, units that wish to continue operating past 2040 must install carbon capture and storage technology and begin capturing 90 percent of their CO<sub>2</sub> emissions starting in 2030.

### *2. Good Neighbor Plan (also referred to as the Ozone Transport Rule)*

On March 15, 2023, EPA finalized its Good Neighbor Plan, which requires states whose ozone-forming pollution is crossing state lines and interfering with other states’ ability to meet national ambient air quality standards to significantly reduce NO<sub>x</sub> emissions. Under the Plan, between 2025 and 2026, Utah’s NO<sub>x</sub> emission budget drops from 15,917 tons to 6,258 tons, and in 2027, the limit drops further to just 2,593 tons. In other words, Utah’s NO<sub>x</sub> emission budget

reduces by nearly 84 percent between now and 2027.<sup>1</sup> These emission budgets are based upon the assumption that selective catalytic reduction (“SCR”) pollution control technology will be installed on coal plants,<sup>2</sup> including PacifiCorp’s Hunter and Huntington plants.

### 3. *Coal Combustion Residual Rule*

On May 18, 2023, EPA proposed an update to its coal combustion residual (“CCR”) rule, which regulates the disposal of coal ash in landfills and disposal ponds. Under previous versions of the rule, coal ash ponds and landfills that closed prior to 2015 were not regulated; however, EPA’s proposed rule would close this loophole by regulating ash ponds and landfills that closed earlier. According to an analysis completed by Earthjustice, five PacifiCorp coal plants, with a total of 10 previously unregulated ash ponds or landfills, are likely to be impacted: Jim Bridger (1 landfill), Naughton (1 landfill), Wyodak (1 ash pond, 1 landfill), Huntington (2 landfills), and the previously closed Carbon plant (2 ash ponds, 2 landfills).<sup>3</sup>

### 4. *Regional Haze*

EPA’s Regional Haze program is ongoing and requires emission reductions that will ensure natural visibility in our national parks and class I areas by 2064. Under Regional Haze Round 1, EPA required SCRs be installed at Wyodak Unit 1.<sup>4</sup> While the 10th Circuit has stayed that requirement, litigation is ongoing and the SCR requirement has not been rescinded. EPA is currently reviewing state implementation plans under Round 2 of the program in both Wyoming and Utah, which would ultimately require additional pollution reduction at PacifiCorp’s thermal fleet.

While Sierra Club appreciates that PacifiCorp also considered portfolios under a high CO<sub>2</sub> price and social cost of carbon price, only the medium CO<sub>2</sub> price was used for portfolios evaluated for the preferred portfolio. Given increasing federal regulation on fossil fueled generating units, it is unreasonable for PacifiCorp to use a price-proxy that is lower than the price used in the 2021 IRP. Sierra Club recommends that the medium CO<sub>2</sub> price be better aligned with actual environmental legislative and regulatory risk by increasing the medium CO<sub>2</sub> price from its current price point.

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<sup>1</sup> See State Budgets under the Good Neighbor Plan for the 2015 Ozone NAAQS, U.S. Env’t. Prot. Agency (Mar. 15, 2023), available at <https://www.epa.gov/csapr/state-budgets-under-good-neighbor-plan-2015-ozone-naaqs>.

<sup>2</sup> Notably, PacifiCorp’s 2023 IRP preferred portfolio assumes that selective non-catalytic reduction (“SNCR”) control technology may be installed on its Utah plants and meet the requirements of the Good Neighbor Plan. EPA’s proposed rule makes clear that emission reductions are based upon the installation of SCR, and Sierra Club recommended throughout the stakeholder engagement process that PacifiCorp model SCRs at both Hunter and Huntington to account for this likely requirement.

<sup>3</sup> See Earthjustice, *Toxic Coal Ash in Wyo.: Addressing Coal Plants’ Hazardous Legacy* (May 4, 2023), available at <https://www.earthjustice.org/feature/coal-ash-states/wyoming>; Earthjustice, *Toxic Coal Ash in Utah: Addressing Coal Plant’s Hazardous Legacy* (May 4, 2023), available at <https://earthjustice.org/feature/coal-ash-states/utah>.

<sup>4</sup> See 79 Fed. Reg. 5032, 5046 (Jan. 30, 2014).

### III. Inflation Reduction Act

Sierra Club appreciates PacifiCorp’s initial efforts to include some provisions of the Inflation Reduction Act in its preliminary 2023 IRP analysis. However, additional changes to certain model input assumptions are still needed to more accurately reflect the full extent of these provisions. As described below, Sierra Club recommends that PacifiCorp make specific modifications to assumptions regarding: a) tax credits for standalone solar and pumped hydro; b) energy community tax bonus credits; and c) the Energy Infrastructure Reinvestment program.

#### A. Available Tax Credits for Standalone Solar and Pumped Hydro

The IRA extended and expanded the availability of the investment tax credit (“ITC”) and production tax credit (“PTC”) for renewable energy, including standalone solar and pumped storage hydropower. However, Sierra Club’s review of PacifiCorp’s 2023 IRP indicates that the ITC and PTC were not applied to standalone solar and the ITC was not applied to pumped storage hydropower.<sup>5</sup> Sierra Club assumes this was merely an oversight and recommends that PacifiCorp revise its modeling to include the ITC and PTC for standalone solar and the ITC for pumped storage hydropower.

Table 7.2 – Total Resource Cost for Supply-Side Resource Options (Continued)

Supply Side Resource Options Mid-Calendar Year 2022 Dollars (\$)	Elevation (ASPL)	Capacity Factor %	Fixed(\$/MWh)	Storage Efficiency	Levelized Fuel										Credits		Total Resource Cost with PTC / ITC / 45Q Credits	
					\$/annhr	\$/MWh	O&M / \$/yr	Capitalized Premium	OBM Capitalized /yr	Integration Cost /yr	Total Resource Cost	PTC Tax Credits / ITC (Solar Only) / 45Q Tax Credits (CCUS Only)						
<b>Resource Description</b>																		
Adiabatic CAES, RESE, 500 MW, 12000 MWh	6500	80%	\$34.62	N/A	\$ -	\$ -	\$ 1.05	6.27%	\$ 0.07	\$ -	\$ -	\$35.73	\$ -	\$ -	\$35.73			
Adiabatic CAES, RESE, 500 MW, 24000 MWh	6500	80%	\$46.98	N/A	\$ -	\$ -	\$ 1.05	6.27%	\$ 0.07	\$ -	\$ -	\$48.10	\$ -	\$ -	\$48.10			
Pumped Hydro, Southern OR	N/A	42%	\$78.09	N/A	\$ -	\$ -	\$ 0.51	0.00%	\$ -	\$ -	\$ -	\$78.60	\$ -	\$ -	\$78.60			
Pumped Hydro, Portland North Coast	N/A	42%	\$78.09	N/A	\$ -	\$ -	\$ 0.51	0.00%	\$ -	\$ -	\$ -	\$78.60	\$ -	\$ -	\$78.60			
Pumped Hydro, Central WY	N/A	42%	\$78.09	N/A	\$ -	\$ -	\$ 0.51	0.00%	\$ -	\$ -	\$ -	\$78.60	\$ -	\$ -	\$78.60			
Pumped Hydro, Eastern WY	N/A	42%	\$78.09	N/A	\$ -	\$ -	\$ 0.51	0.00%	\$ -	\$ -	\$ -	\$78.60	\$ -	\$ -	\$78.60			
Pumped Hydro, Central UT	N/A	42%	\$78.09	N/A	\$ -	\$ -	\$ 0.51	0.00%	\$ -	\$ -	\$ -	\$78.60	\$ -	\$ -	\$78.60			
Idaho Falls, ID, 20 MW, 26.1% CF	4,700	26%	\$41.45	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$41.45	\$ -	\$ -	\$41.45			
Lakeview, OR, 20 MW, 27.6% CF	4,800	28%	\$41.33	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$41.33	\$ -	\$ -	\$41.33			
Millard, UT, 20 MW, 30.2% CF	5,000	30%	\$35.55	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$35.55	\$ -	\$ -	\$35.55			
Millard, UT, 200 MW, 30.2% CF	5,000	30%	\$30.35	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$30.35	\$ -	\$ -	\$30.35			
Rock Springs, WY, 200 MW, 23.9% CF	6,400	28%	\$33.85	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$33.85	\$ -	\$ -	\$33.85			
Yakima, WA, 200 MW, 24.2% CF	1,000	24%	\$39.59	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$39.59	\$ -	\$ -	\$39.59			
Idaho Falls, ID, 200 MW, 26.1% CF + BESS: 100% pwr, 4 hours	4,700	26%	\$92.87	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$92.87	\$ -	\$ (16.12)	\$76.75			
Lakeview, OR, 200 MW, 27.6% CF + BESS: 100% pwr, 4 hours	4,800	28%	\$87.55	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$87.55	\$ -	\$ (16.12)	\$71.43			
Millard, UT, 200 MW, 30.2% CF + BESS: 100% pwr, 4 hours	5,000	30%	\$80.30	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ -	\$ -	\$80.30	\$ -	\$ (16.12)	\$64.17			
Rock Springs, WY, 200 MW, 23.9% CF + BESS: 100% pwr, 4 hours	6,400	28%	\$87.38	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$88.36	\$ -	\$ (16.12)	\$72.23			
Yakima, WA, 200 MW, 24.2% CF + BESS: 100% pwr, 4 hours	1,000	24%	\$102.55	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$103.52	\$ -	\$ (16.12)	\$87.40			
Pocatello, ID, 200 MW, CF: 37.1%	4,500	37%	\$59.30	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$60.27	\$ -	\$ (16.12)	\$44.14			
Pocatello, ID, 200 MW, CF: 37.1%	4,500	37%	\$47.74	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$48.71	\$ -	\$ (16.12)	\$32.58			
Arlington, OR, 20 MW, CF: 37.1%	1,500	37%	\$59.05	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$60.03	\$ -	\$ (16.12)	\$43.90			
Arlington, OR, 200 MW, CF: 37.1%	1,500	37%	\$47.13	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$48.10	\$ -	\$ (9.67)	\$38.42			
Monticello, UT, 20 MW, CF: 29.5%	4,500	30%	\$75.22	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$76.19	\$ -	\$ (9.67)	\$66.51			
Monticello, UT, 200 MW, CF: 29.5%	4,500	30%	\$60.79	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$61.76	\$ -	\$ (9.67)	\$52.09			
Medicine Bow, WY, 20 MW, CF: 43.6%	6,500	44%	\$49.90	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$50.88	\$ -	\$ (9.67)	\$41.20			
Medicine Bow, WY, 200 MW, CF: 43.6%	6,500	44%	\$40.11	N/A	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$41.08	\$ -	\$ (9.67)	\$31.41			
Goldendale, WA, 20 MW, CF: 37.1%	1,500	37%	\$61.60	n/a	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$62.58	\$ -	\$ (16.12)	\$46.45			
Goldendale, WA, 200 MW, CF: 37.1%	1,500	37%	\$49.04	n/a	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$50.01	\$ -	\$ (16.12)	\$33.89			
Offshore, Northern, CA, CF: 47.0%	0	47%	\$103.63	n/a	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$104.60	\$ -	\$ (13.36)	\$91.24			
Offshore, Northern, CA, IGW, CF: 47.0%	0	47%	\$103.59	n/a	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$104.56	\$ -	\$ (13.36)	\$91.20			
Pocatello, ID, 200 MW, CF: 37.1% + BESS: 100% pwr, 4 hours	4,500	37%	\$93.96	85%	\$ -	\$ -	\$ -	0.00%	\$ -	\$ 0.97	\$ -	\$94.93	\$ -	\$ (11.56)	\$83.37			

#### B. Energy Communities Tax Credit

In addition to the extension of, and, in some cases, expansion of the ITC and PTC, the IRA provides an additional 10 percent tax credit bonus for new clean energy projects located in “energy communities.” An “energy community” is any census tract where a coal mine or coal-fired power plant has closed since 2009 and all directly adjacent census tracts; brownfield sites;

<sup>5</sup> Pumped hydro is not eligible for the PTC.

and areas where fossil fuels have accounted for at least (1) 0.17 percent of direct employment or (2) 25 percent of local tax revenues and where the unemployment rate is above the national average for the previous year.<sup>6</sup> Sierra Club appreciates that PacifiCorp incorporated these tax bonus credits for some communities in Wyoming and Utah; however, it does not appear that PacifiCorp applied the energy communities tax bonus in other qualifying areas, including communities in northern Oregon.

On April 4, 2023, the Internal Revenue Service (“IRS”) issued Notice 2023-29, providing guidance on eligibility requirements for energy communities under the IRA.<sup>7</sup> As part of this Notice, the IRS provided appendices listing qualifying “energy communities.” Additionally, the U.S. Department of Energy has released a map of eligible energy communities.<sup>8</sup>

With this updated information, Sierra Club strongly recommends that PacifiCorp update its 2023 IRP modeling to include the “energy communities” tax bonus for all qualifying communities. Specifically, PacifiCorp should assume that resources in northern Oregon receive the 10 percent bonus. PacifiCorp’s 2023 Public Supply-Side Resource Data Summary lists wind energy in Arlington, OR as a proxy resource, an area which qualifies as an energy community as it directly adjoins a census tract with a qualifying coal closure.

### **C. Energy Infrastructure Reinvestment Program Variant**

The Energy Infrastructure Reinvestment (“EIR”) program is a new financing option made available to utilities by the IRA. The purpose of the program is to provide low-cost financing to “retool, repower, repurpose, or replace” energy infrastructure with cleaner alternatives by allowing the U.S. Department of Energy Loan Programs Office to provide up to \$250 billion in loans through September 2026. According to recent guidance issued by the U.S. Department of Energy, EIR financing could be used for “[p]rojects that enable operating Energy Infrastructure to avoid, reduce, utilize, or sequester air pollutants or anthropogenic emissions of greenhouse gases.”<sup>9</sup> “Energy Infrastructure” is defined to include “a wide variety of facilities and sites, including, but not limited to, decommissioned or operating power plants, related grid interconnection facilities, [and] existing transmission lines and related facilities . . .” among other

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<sup>6</sup> 26 U.S.C. § 45(b)(11)(B).

<sup>7</sup> See Internal Revenue Serv., *IRS issues guidance on eligibility requirement for energy cmtys. for the bonus credit program under the Inflation Reduction Act* (Apr. 4, 2023), available at <https://www.irs.gov/newsroom/irs-issues-guidance-on-eligibility-requirement-for-energy-communities-for-the-bonus-credit-program-under-the-inflation-reduction-act>.

<sup>8</sup> See U.S. Dep’t of Energy, *Energy Cmty Tax Credit Bonus*, available at [https://arcgis.netl.doe.gov/portal/apps/experiencebuilder/experience/?data\\_id=dataSource\\_3-1888dd08255-layer-4%3A2571&id=a2ce47d4721a477a8701bd0e08495e1d](https://arcgis.netl.doe.gov/portal/apps/experiencebuilder/experience/?data_id=dataSource_3-1888dd08255-layer-4%3A2571&id=a2ce47d4721a477a8701bd0e08495e1d). Notably, this map does *not* include eligible brownfield sites, which would likely make even more areas of Oregon eligible for the energy community tax credit bonus.

<sup>9</sup> U.S. Dep’t of Energy, Loan Program Off., *Program Guide for Title 17 Clean Energy Financing Program* at 25 (May 19, 2023), available at <https://www.energy.gov/lpo/articles/program-guidance-title-17-clean-energy-program>.

facilities.<sup>10</sup> Sierra Club believes that a wide variety of projects could qualify for EIR financing, including transmission line upgrades necessary to bring online clean energy resources and coal plant retirement costs when the plant is to be replaced with clean energy resources.

Throughout the stakeholder process, Sierra Club recommended that PacifiCorp incorporate cost reductions for its anticipated transmission line upgrades as well as coal plant retirements to account for available EIR financing. In response, PacifiCorp indicated that the EIR is likely to “have project-specific requirements that are beyond the scope of the supply-side resource estimates considered in PacifiCorp’s IRP process.”<sup>11</sup> While Sierra Club appreciates that the EIR will require project-specific analysis, this financing is available only through September 2026 and it is therefore critically important that PacifiCorp take steps now to analyze the potential benefits of securing EIR financing, even while recognizing that final costs are likely to change.

For instance, this program could provide very low-cost financing and refinancing terms (e.g., 4 percent, 30 years) for both the retiring coal plant as well as replacement clean generation resources. Analysis completed by Strategen Consulting indicates that utilizing the EIR to retire and replace four of PacifiCorp’s coal plants by 2025 could result in Net Present Value (“NPV”) cost savings to customers on the order of \$2.1 billion. These numbers are conservative estimates as they do not incorporate the abated costs of likely SCR requirements or gas conversion. Assumption, data, and methodology for these calculations are described in Appendix A.

<b>Retiring Coal Plant</b>	<b>EIR NPV Savings</b>
Jim Bridger Unit 3 & 4	\$621 million
Huntington	\$653 million
Hunter	\$612 million
Wyodak	\$200 million

Accordingly, Sierra Club recommends that the Company perform a variant analysis that includes EIR program cost savings for the early retirement and replacement of Jim Bridger 3 and 4, Huntington, Hunter, and Wyodak, as well as assign \$0 in associated network upgrade costs (other than facility interconnection) for resources coinciding with a plant retirement (i.e., up to the retiring plant’s nameplate value).

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<sup>10</sup> *Id.* at 26.

<sup>11</sup> PacifiCorp Response to Sierra Club’s Initial Comments on PacifiCorp 2023 IRP Filed in Utah (May 25, 2023).

#### IV. Run Portfolio Variants with Similar Results to the Preferred Portfolio Against a Broader Number of Price/Policy Scenarios

PacifiCorp’s modeling approach was to develop an optimized portfolio against five different natural gas-carbon price scenarios (P-MM, P-MN, P-HH, P-LN, P-SC). This was done to determine the most economic resource mix under a variety of future price/policy scenarios. Following the development of these five portfolios, PacifiCorp manually created 24 alternative portfolio variants (P01-P24) to assess the results of different assumptions. The results of each portfolio variant, under the medium natural gas, medium carbon price scenario, were compared against the P-MM portfolio to assess performance across four categories: ST Value (PVRR, \$m), Risk Adjusted Value (ST PVRR plus 5 percent of 95th stochastic, \$m), Energy Not Served (Average annual ENS as a percent of load), and CO<sub>2</sub> Emissions (total emissions 2023-2042, thousand tons).

It is notable that PacifiCorp’s preferred portfolio (P-MM) did not rank the best amongst the alternative portfolio variants in any category. While no single portfolio was top ranked across all categories, many portfolios performed similarly or even better than the preferred portfolio. These included P01-JB3-4 GC (evaluating converted Jim Bridger units 3 and 4 to gas in 2026 rather than 2030), P04-Huntington RET28 (evaluating retiring Huntington in 2028), P17-Col3-4 RET25 (evaluating retiring Colstrip in 2025), and P20-JB3-4 CCUS (evaluating installing CCUS on Jim Bridger units 3 and 4 in 2028), summarized below.

Case-MM	ST Value			Risk Adjusted			ENS Average Percent of Load			CO <sub>2</sub> Emissions		
	PVRR (\$m)	Change from Lowest Cost Portfolio (\$m)	Rank	ST PVRR plus 5% of 95th Stochastic (\$m)	Change from Lowest Cost Portfolio (\$m)	Rank	Average Annual ENS, 2021-2040 % of Average Load	Change from Lowest ENS Portfolio	Rank	Total CO <sub>2</sub> Emissions, 2023-2042 (Thousand Tons)	Change from Lowest Emission Portfolio	Rank
P-MM	38,398	\$0	5	38,350	\$0	5	0.0045 %	0.0000 %	15	240,842	0	12
P01-JB3-4	38,324	(\$75)	4	38,279	(\$71)	4	0.0036 %	-0.00086	4	235,378	(5,464)	5



<b>GC</b>								%				
<b>P04-Huntington RET 28</b>	38,518	\$120	10	38,468	\$118	8	0.0036%	-0.00083%	5	240,553	(289)	11
<b>P17-Col3-4 RET 25</b>	38,462	\$63	7	38,419	\$69	6	0.0045%	0.00001%	16	237,528	(3,314)	7
<b>P20-JB3-4 CCUS</b>	37,891	(\$507)	1	37,911	(\$439)	1	0.0044%	-0.00005%	11	230,904	(9,938)	3

PacifiCorp evaluated some of these portfolios against some of the other price policy scenarios (aside from medium gas, medium carbon price), but the Company did not evaluate these portfolios against all of the available price policy scenarios. For instance, P01-JB3-4 GC is evaluated under the medium gas, medium carbon price and medium gas, zero carbon price scenarios, but no others.

Given the similar rankings between these five scenarios, PacifiCorp should run P-MM, P01, P04, P17, and P20 against all five price scenarios and compare the results.

## V. Clean Energy Plan Should Quantify Costs of Pathways 1 and 2

While Sierra Club is continuing to review PacifiCorp’s Clean Energy Plan, it is notable that under PacifiCorp’s 2023 IRP Preferred Portfolio, the Company will be unable to meet House Bill (“HB”) 2021 emission reduction targets by 2030. As a result, the Company proposes two “pathways” in order to limit the percentage of system fossil-fueled resources that are assigned to Oregon. Under Pathway 1 thermal resource allocation to Oregon customers will be capped at an unspecified upper limit. Under Pathway 2, “new large commercial load is assumed to be served with voluntary program options where Oregon retail customers get the benefit of non-emitting generation.”<sup>12</sup> Pathway 2 will similarly require that thermal generation be capped for Oregon ratepayers, but, again, PacifiCorp does not quantify the cap.

<sup>12</sup> PacifiCorp Clean Energy Plan at 80.

Both Pathways raise numerous questions, which will undoubtedly be explored throughout the IRP process.<sup>13</sup> However, as a preliminary matter, Sierra Club notes that neither Pathway would reduce system emissions, but simply reallocate which state on PacifiCorp’s system is “responsible” for those emissions. Sierra Club continues to evaluate whether these options would comply with HB2021 and whether another alternative would be preferable for meeting both the letter and the spirit of HB2021. Regardless, PacifiCorp’s Clean Energy Plan does not quantify the relative costs of pursuing either Pathway 1 or 2. Without this information, it is not possible for stakeholders or the Commission to fully evaluate which would be in Oregon ratepayers’ best interest. Sierra Club recommends that PacifiCorp provide a cost quantification, preferably in PVRR format, of Pathway 1 and 2.

## **VI. Conclusion**

Sierra Club appreciates the opportunity to provide this initial feedback on PacifiCorp’s 2023 IRP. Should the Company have any questions regarding these comments and any of the recommendations made herein, Sierra Club would be happy to provide further information or clarification.

Respectfully submitted,

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<sup>13</sup> For instance, assuming that Oregon’s allocation of thermal generation is capped, will other PacifiCorp states accept a higher allocation? Will new large commercial load opt into voluntary programs at sufficient numbers to meet PacifiCorp’s assumptions? What level of capping is necessary to meet HB2021 emission reduction targets?

## Appendix A: EIR Calculation Assumptions

### Data

Coal plant financial data was obtained through Federal Energy Regulatory Commission (“FERC”) Form 1 filings and PacifiCorp PUC Depreciation Studies. Operations and maintenance data was obtained through S&P Global. Costs and capacity factors for clean energy replacement resources were obtained through PacifiCorp’s 2023 Supply-side Resource Database.

### Assumptions

Analysis Assumptions	<ul style="list-style-type: none"> <li>● NPV analysis conducted from 2025-2032 to standardize across calculations for all coal plants.</li> </ul>
EIR Assumptions	<ul style="list-style-type: none"> <li>● EIR loan financing assumed to be 4% interest, 30 year loans</li> <li>● 25% of clean replacement is financed through EIR while the remaining 75% is financed by PacifiCorp at the WACC</li> </ul>
Clean Replacement Assumptions	<ul style="list-style-type: none"> <li>● Clean replacement is sized to match annual net generation of the replacement coal plant</li> <li>● Production Tax Credit incorporated through 2032</li> <li>● Energy community bonus applied to eligible projects</li> <li>● The following proxy resources were used for each coal plant replacement                             <ul style="list-style-type: none"> <li>○ Jim Bridger Units 3&amp;4 → Medicine Bow WY Wind 200MW</li> <li>○ Hunter Coal Plant → Milford UT Solar 200MW</li> <li>○ Huntington Coal Plant → Milford UT Solar 200MW</li> <li>○ Wyodak Coal Plant → Rock Springs WY Solar 200MW</li> </ul> </li> </ul>
Coal Plant Assumptions	<ul style="list-style-type: none"> <li>● O&amp;M costs applied only to PacifiCorp’s ownership share of net generation</li> <li>● Annual principal payments calculated with 2020 depreciable balance of plant and a loan end year equal to the 2021 IRP intended retirement year</li> </ul>