

PacifiCorp - Stakeholder Feedback Form

2023 Integrated Resource Plan

PacifiCorp (the Company) requests that stakeholders provide feedback to the Company upon the conclusion of each public input meeting and/or stakeholder conference calls, as scheduled. PacifiCorp values the input of its active and engaged stakeholder group, and stakeholder feedback is critical to the IRP public input process. PacifiCorp requests that stakeholders provide comments using this form, which will allow the Company to more easily review and summarize comments by topic and to readily identify specific recommendations, if any, being provided. Information collected will be used to better inform issues included in the 2023 IRP, including, but not limited to the process, assumptions, and analysis. In order to maintain open communication and provide the broader Stakeholder community with useful information, the Company will generally post all appropriate feedback on the IRP website unless you request otherwise, below.

Date of Submittal January 18, 2023

*Name: Rose Monahan

Title: Staff Attorney

*E-mail: rose.monahan@sierraclub.org

Phone: _____

*Organization: Sierra Club

Address: 2101 Webster Street, Suite 1300

City: Oakland State: CA Zip: 94703

Public Meeting Date comments address: January 13, 2023 & PacifiCorp/Sierra Club Check here if not related to specific meeting
January 6, 2023 meeting

List additional organization attendees at cited meeting: _____

***IRP Topic(s) and/or Agenda Items:** List the specific topics that are being addressed in your comments.

- Reliability Modeling – disclosures and recommended portfolio
- Inflation Reduction Act
- Transmission

Check here if you do **not** want your Stakeholder feedback and accompanying materials posted to the IRP website.

***Respondent Comment:** Please provide your feedback for each IRP topic listed above.

Sierra Club submits the following stakeholder feedback form in order to provide specific and concrete recommendations in time for adjustments to be made to the 2023 IRP. Sierra Club's hope is that by providing this feedback prior to formal commenting after submission of the IRP, PacifiCorp may be able to more effectively take into consideration Sierra Club's recommendations, make adjustments where appropriate, and ultimately produce a stronger IRP. These recommendations and additional information build upon the January 6, 2023 discussion between Sierra Club and PacifiCorp as well as PacifiCorp's most recent stakeholder input meeting:

1. PacifiCorp should disclose reliability adjustments made to LT and ST model runs (specifics detailed below) either concurrent with, or ideally prior to, the 2023 IRP filing;
2. PacifiCorp should consider a "Commercial + Clean + Reliable Portfolio" that fills reliability gaps identified between the LT and ST models with clean, commercialized resources in order to reduce reliance on non-commercialized resources that inherently increase the risk of the final portfolio. At a minimum, a "Commercial + Clean + Reliable" portfolio would provide useful information on the cost deviation between a portfolio that relies on clean and commercialized resources to meet reliability

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versus a portfolio that includes non-commercialized resources, such as small modular reactor (“SMR”) nuclear projects and proxy non-emitting peakers;

3. Sierra Club’s analysis applying the ITC and PTC 10% bonus tax credit for Energy Communities to the 2021 IRP lead to a reduction in PVRR exceeding \$1 billion, suggesting that applying the bonus tax credit to the 2023 IRP would make a meaningful and significant difference. Sierra Club continues to urge PacifiCorp to incorporate the ITC and PTC 10% bonus tax credit into the 2023 IRP;
4. Rather than applying a blanket 30% transmission cost reduction to account for financing made available through the Inflation Reduction Act (“IRA”) as Sierra Club initially recommended, PacifiCorp should, at a minimum, apply a 30% transmission cost reduction specifically to Cluster Areas (“CAs”) 1, 2, 4, 12, and 14. In parallel, PacifiCorp should seek to secure low-cost financing for these network upgrades through the DOE’s Energy Infrastructure Reinvestment (“EIR”) program.
5. PacifiCorp should factor in fossil plant retirements in its CAs when identifying transmission costs by (a) inputting \$0 associated network upgrade costs (other than facility interconnection) if new clean resources coincide with a plant retirement; and (b) reduce the cost of generation resources being added in conjunction with (or shortly after) a fossil plant retirement corresponding to the EIR financing option available under the IRA.
6. PacifiCorp should provide stakeholders with a complete list of the maximum selectable resources at each location available for LT model resource selection as soon as possible;
7. PacifiCorp should not limit future resource additions at specific locations based on what is currently reflected in the interconnection queue. Instead, PacifiCorp should include more expansive limits for potential resources at each location. Specifically, Sierra Club recommends that PacifiCorp consider increasing the limits on potential resources at specific locations to twice the current queue levels, with a minimum of 1000 MW per location.

Justification for and explanation of these recommendations is expanded upon below.

1. Reliability - Recommended Information Disclosure Concurrent With, or Prior To, 2023 IRP Filing

Based on discussions at the January 6 meeting between Sierra Club and PacifiCorp, it is Sierra Club’s understanding that PacifiCorp intends to apply a reliability-based resource cost adjustment as part of its LT model (i.e., capacity expansion) input assumptions. Sierra Club understands that this reliability-based cost adjustment is intended to minimize any reliability gaps in the resource portfolio selected by the LT model. The magnitude of this reliability-based cost adjustment for each resource will be determined by the results of an initial ST model run conducted after the initial LT model run. Resources that are able to generate during periods of a reliability shortfall (according to the initial ST model run) will be given a greater cost reduction and will therefore be more likely to be selected in subsequent LT model runs.

The rationale provided by PacifiCorp during this meeting helped to clarify the Company’s approach, and gave Sierra Club some greater confidence in it. However, Sierra Club remains concerned about potential distortions to the resource portfolio that could arise from this approach. For example, the magnitude of the cost adjustments applied to each resource could be influenced by a variety of factors in the initial LT and initial ST model runs, some of which may not be applicable in subsequent model runs.

As such, Sierra Club believes it is imperative that PacifiCorp provide adequate transparency about how the resource-specific reliability-based cost adjustments are determined, and how they ultimately affect resource selection. To this end, Sierra Club has several concrete recommendations on information that PacifiCorp should provide concurrent with (or ideally prior to) its 2023 IRP filing:

- a. Detailed results of the initial LT model runs, prior to any reliability-based cost adjustments. At a minimum, these results should include the resource portfolio (i.e., annual load and resource tables), as well as the estimated PVRR.
- b. Detailed results of the initial ST model runs, absent any reliability-based cost adjustments. At a minimum, these results should include the 8760 hourly data that indicates when there is unserved energy.

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- c. Specific reliability-based cost adjustment values (e.g., in \$/kW) for each resource type. PacifiCorp should also provide a detailed narrative description of how these values were determined using the data from the initial ST model run.
- d. A list of resources selected during the initial LT run and the resources selected in the LT run with the granularity adjustments clearly indicating which resources were incremental and which resources did not get selected in the second run (compared to the first).
- e. Detailed results of the ST model run after the granularity adjustments, absent any reliability-based cost adjustments. At a minimum, these results should include the 8760 hourly data that indicates when there is unserved energy.
- f. A list of any resources that were added as part of any final LT or ST run to address any remaining unserved energy and that were forced into the model. For each resource selected for reliability purposes, a detailed justification including the hours that prompted its selection should be provided.

2. Reliability: Recommended “Commercial + Clean + Reliable” Portfolio to Reduce Overall Risk

One additional aspect of Sierra Club’s concerns is that the reliability-based cost adjustments, described above, may unduly bias the LT model’s resource selection towards resources that have not been commercialized and are currently more speculative in nature. For example, in the 2021 IRP, PacifiCorp relied heavily upon SMR nuclear units and non-emitting peakers as reliability resources, despite the fact that these resources have not been commercialized to date. In contrast, PacifiCorp did not consider resources that have had more commercial success to date (globally speaking) such as offshore wind, demand response, enhanced geothermal,¹ and high-capacity factor solar plus storage, among other resources. Sierra Club believes that relying too heavily upon non-commercial resources to meet critical reliability needs would be a risky strategy. In fact, in the Oregon PUC’s acknowledgement of the 2021 IRP, the Commission specifically called for the Natrium SMR project addition in 2028 to be removed from the preferred portfolio in part due to concerns about its commercial readiness.

As such, Sierra Club recommends that PacifiCorp adequately explore low-risk portfolios that rely more heavily upon commercialized clean energy resources to address any reliability concerns. While such a portfolio may deviate from a true “least cost” portfolio, it will be informative to understand the magnitude of this deviation and may ultimately be justified in order to manage risk. Sierra Club believes this “Commercial + Clean + Reliable” portfolio can be accomplished through one of the following methods:

- Method 1: Remove the reliability-based cost adjustment from the LT model runs. Solve for any reliability shortfalls identified in the ST model through the “manual” addition of a subset of clean energy resources that excludes non-commercial resources such as SMRs and non-emitting peakers, and non-clean resources such as natural gas conversions.
- Method 2: Apply the reliability-based cost adjustment only to commercialized resources and exclude cost reductions for non-commercial and non-clean resources.
- Method 3: Perform PacifiCorp’s standard reliability-based cost adjustment, but exclude non-commercial resources from the candidate resource list.

3. ITC and PTC 10% Bonus Tax Credits

¹ While technically no enhanced geothermal project is currently in operation, some PPAs have recently been executed with expected online dates as soon as 2026:

- <https://www.businesswire.com/news/home/20221110005162/en/Fervo-Announces-20-MW-Power-Purchase-Agreement-to-Provide-247-Carbon-Free-Geothermal-Electricity-to-Southern-California>
- <https://www.businesswire.com/news/home/20221011005274/en/Fervo-Energy-to-Provide-247-Carbon-Free-Geothermal-Electricity-to-Clean-Power-Alliance%E2%80%99s-Three-Million-Southern-California-Customers>
- <https://www.prnewswire.com/news-releases/east-bay-community-energy-adds-fervo-geothermal-energy-to-portfolio-opening-doors-to-247-zero-emission-electricity-301553282.html>

In its December feedback form, Sierra Club strongly recommended that PacifiCorp’s 2023 IRP analysis include the 10% ITC and PTC Bonus Tax Credits for Energy Communities, which was a provision adopted in the Inflation Reduction Act (“IRA”). As Sierra Club pointed out, a large amount of PacifiCorp’s service territory appears to overlap with areas that could be designated Energy Communities, and therefore it would be safe to assume that most new wind, solar, and battery storage projects being added from now through 2033 could qualify. During the meeting on January 2, 2023, PacifiCorp acknowledged that these bonus credits could potentially play a role going forward, but did not believe they would be significant enough that they should be explicitly modeled in the 2023 IRP analysis. Sierra Club has since performed its own analysis to quantify the potential magnitude of the Energy Communities bonus tax credits.

The table below summarizes the potential value of these bonus tax credits if applied to all wind, solar, and storage resource additions identified in the 2021 IRP Preferred Portfolio. Notably, if the bonus ITC/PTC tax credits for Energy Communities were applied to these potentially eligible resources, it would lead to a reduction in PVRR that exceeds \$1 billion. To put this in perspective, this is a greater difference in PVRR than was identified for all but one of the eight Variant Portfolios that PacifiCorp studied in its 2021 IRP. The first table below illustrates Sierra Club’s analysis of the annual tax credit bonus value. The second table below provides a summary of the PVRR change in the 2021 Variant Portfolios compared to the potential PVRR change related to the Energy Communities bonus credit.

Added Capacity (MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Wind	194	1641	547	0	255	202	301	0	0	0	0	0	0	156	450	0	268
Solar	345	805	600	0	83	160	477	626	1100	0	0	0	0	702	0	0	0
Storage	288	352	800	0	42	660	477	626	1100	0	0	0	0	702	0	0	0
Tax Credit Bonus	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
PTC (in millions of \$)	\$4.0	\$23.8	\$32.6	\$32.6	\$35.4	\$38.3	\$44.1	\$48.1	\$55.3	\$55.3	\$55.3	\$55.3	\$55.3	\$55.23	\$55.3	\$55.3	\$55.3
ITC (in millions of \$)	\$10.5	\$23.3	\$52.4	\$52.4	\$53.9	\$67.5	\$72.0	\$65.7	\$105.7	\$104.2	\$57.4	\$40.0	\$40.0	\$0.00	\$0.00	\$0.00	\$0.00

<u>Variant Portfolio from 2021 IRP</u>	<u>PVRR (\$M) Change from P02-MM-MM</u>
P02a-JB 1-2 No GC	\$477
P02b-No B2H	\$388
P02c-No GWS	\$128
P02d-No RFP GWS	\$1,036
P02e-No Nuc	\$133
P02f-No Nau	\$54
P02g-CCUS	\$271
P02h-JB3-4 Retire	\$95
Energy Communities 10% Bonus ITC/PTC (this analysis)	(\$1,005)

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Given these results, Sierra Club reiterates its recommendation that PacifiCorp attempt to model the Energy Communities bonus credit in its IRP. Sierra Club recognizes that it may not be appropriate to apply the bonus credit to 100% of clean energy projects in PacifiCorp’s portfolio since not all of them will necessarily be located in an Energy Community location. However, the statutory language is broadly worded such that Sierra Club believes a large majority of projects (i.e., in the 60-80% range) could qualify. As such, PacifiCorp should seek to approximate this level of bonus credit.

4. Transmission

a. *Reduction in Transmission Costs via the EIR Program*

During the meeting between PacifiCorp and Sierra Club on January 6, 2023, PacifiCorp expressed interest in further specificity on how provisions of the IRA might be applied towards transmission network upgrades being considered as part of its 2023 IRP resource portfolio selection, which are informed by the Cluster 2 study results published in November 2022.

PacifiCorp expressed some concern that certain funding made available through the IRA might be used up by other entities before PacifiCorp had an opportunity. Indeed, one of the programs Sierra Club mentioned – the Grid Innovation Program – is limited to \$5 billion and may soon be utilized if PacifiCorp did not already begin pursuing this option. However, Sierra Club does not believe this concern is applicable in the case of the Energy Infrastructure Reinvestment (EIR) program since the total cap on program loans is \$250 billion.

On December 20, 2022, Sierra Club provided a feedback form to PacifiCorp identifying the EIR program as a potential opportunity to secure low interest financing for grid infrastructure, such as network upgrades, to support clean energy additions that partially or fully replace fossil generation resources. Sierra Club’s preliminary analysis suggested that this program could reduce transmission infrastructure costs on the order of ~30% relative to normal utility financing. Accordingly, Sierra Club recommended that PacifiCorp’s 2023 IRP study a scenario that reduced identified network upgrade costs by 30%.

If PacifiCorp were able to successfully participate in this program and use it to reduce the cost of investments in clean energy-enabling infrastructure (including transmission), it could significantly improve the economics of certain clean energy projects being considered in the 2023 IRP analysis and could lead to a different portfolio selection in PacifiCorp’s modeling (as well as different decisions made by RFP respondents who may be responsible for contributing to transmission upgrade costs).

PacifiCorp disputed Sierra Club’s suggestion that a blanket 30% cost reduction for these network upgrades was warranted, but suggested that a more targeted approach might be worth exploring. This response attempts to provide this more detailed request. After some further evaluation, Sierra Club is particularly interested in the network upgrade costs PacifiCorp identified for specific cluster areas in their Cluster Study 2. For example, some of the most costly network upgrades appear to occur in Clusters Areas 1, 2 and 4 which roughly correspond to the Wyoming region. This is particularly noteworthy since Cluster Areas 1, 2, and 4 include over 9000 MW of generation resources, including almost 4,000 MW of wind. Similarly, there are significant costs associated with the network upgrades in Cluster Areas 12, and 14 in Utah, which includes over 3000 MW of solar generation resources. The table below provides a summary of the resources being considered for these clusters and the identified network upgrade costs.

Cluster Area	Battery Storage (MW)	Pump Storage (MW)	Solar (MW)	Solar & Battery Storage (MW)	Wind (MW)	Total (MW)	Network Upgrade Full Cost (\$ M)
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CA01 - NE WY		1,000	199	375	392	1,966	\$2,047
CA02 -SE WY	200			419	1,197	1,816	\$3,969
CA04 - Bridger	200	2,300		900	2,200	5,600	\$9,509
CA12 - SE UT	800	1,300	544	1,072		3,716	\$1,763
CA14 - SW UT				1,561	456	2,017	\$1,604
Total	1,199	4,600	743	4,327	4,245	15,114	\$18,892

Sierra Club is concerned that assigning these extraordinarily high transmission costs to clean energy resources in these cluster areas may cause these resources to not be selected, and may in turn limit the amount of cost-effective coal retirements that might otherwise be selected by the Plexos model.

For instance, these five Cluster Areas also roughly coincide with certain fossil generation resources that are candidates for retirement such as the Jim Bridger, Dave Johnston, Naughton, and Wyodak coal plants in Wyoming, and the Hunter and Huntington plants in Utah. This would make the replacement resources, and enabling transmission investments, potentially eligible for the EIR program.

There are two dimensions to the ability for these new resources to displace the generation from coal plants. First, the addition of renewable resources like wind and solar in proximity to these fossil plants is likely to reduce the dispatch of those fossil plants even if the coal plants are not retired. Second, the addition of these resources may accelerate economic retirement of these fossil resources (assuming reliability needs are still met). In either case, transmission upgrades and/or generation project costs in the vicinity of the coal plant locations are very likely eligible for the EIR program financing.

The potential cost savings to PacifiCorp ratepayers would be significant. For example, Sierra Club estimates that if EIR financing can be used for these transmission network upgrades alone (CA's 1, 2, 4, 12, and 14), it could result in cost savings to PacifiCorp customers on the order of \$8.5 billion (NPV). Given the magnitude of these savings, Sierra Club believes there is a strong possibility they could alter the outcome of PacifiCorp's IRP portfolio analysis. As explained above, absent any cost reductions from the EIR, the high transmission costs identified could cause resources in the identified locations to be cost-prohibitive and not selected as part of PacifiCorp's analysis. However, if the cost reductions from the EIR were achieved, it could lead to an outcome where the preferred portfolio included more of the resources located in CA's 1, 2, 4, 12, and 14.

Additionally, based on Sierra Club's understanding of the EIR program, the final date for the transmission upgrades and clean energy projects to be placed in service could potentially extend beyond the 2026 timeframe identified in statute from the IRA. As long as sufficient agreements are in place, and development activity has commenced prior to 2026, Sierra Club believes it will be possible to secure the necessary financing. This could provide a significant and material benefit to PacifiCorp ratepayers, not only by unlocking more cost-effective generation resources, but by reducing the costs of the supporting transmission investments.

Given these findings, Sierra Club recommends that PacifiCorp's 2023 IRP include an evaluation of a scenario in which the network upgrade costs for the Cluster Areas identified above (i.e., CA01, CA02, CA04,

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CA12, and CA14) is reduced by approximately 30%. In parallel, PacifiCorp should pursue all available options to secure newly available financing options through the IRA, including the EIR program. Should PacifiCorp continue to dispute the validity of a 30% cost reduction, Sierra Club strongly recommends that PacifiCorp identify an acceptable cost reduction to take into account financing available under the EIR.

b. Reduction in Transmission Costs via Generator Replacement

As described above, PacifiCorp has identified significant transmission network upgrade costs in certain cluster areas that are both rich in renewable resources (e.g. southern Utah for solar, Wyoming for wind) and contain large fossil generation plants that may be subject to retirement in the near future.

Sierra Club is concerned that these transmission costs may prove to be cost prohibitive for certain viable resource additions in those cluster areas. For this reason, Sierra Club strongly recommends that PacifiCorp explore all options available to *reduce* those transmission costs, such as through the EIR program as described in section 4a above. In addition, there may also be opportunities for PacifiCorp to *avoid* some of these transmission costs altogether when adding these resources. This could occur if PacifiCorp is able to retire existing generation resources and utilize its existing transmission capability for the new resources. This is underscored by the fact that FERC recently approved revisions to PacifiCorp's OATT on January 10, 2023 which includes a new generator replacement process that could facilitate such replacement.

For example, if the Jim Bridger plant were to retire prior to 2030 (of which PacifiCorp's share equates to ~1,400 MW), then the Company's transmission system would be able to support a large share of the 2,200 MW of wind currently seeking interconnection in Cluster Area 4, without the need to invest over \$9 billion in network upgrades. This represents a vast improvement in the project economics that would make both the early retirement and wind additions more likely to be selected by the LT model. Moreover, the project economics of the wind resource additions could be *even further* improved if those wind projects themselves qualified for financing under the EIR program described above.

As such, Sierra Club strongly recommends that PacifiCorp include resource options in each Cluster Area with a potential fossil plant retirement such that:

1. Some amount of clean resource additions have \$0 in associated network upgrade costs (other than facility interconnection) if coinciding with a plant retirement (i.e., up to the retiring plant's nameplate value).
2. The cost of generation resources being added in conjunction with (or shortly after) a fossil plant retirement should be reduced corresponding to the EIR financing option.

5. Transmission and Portfolio Selection Options: Maximum Resource Limits

During the January 13, 2023 stakeholder meeting, PacifiCorp indicated that the LT model resource selection process would include location-specific candidate resources that are linked to the current set of resources in the interconnection queue and cluster study. Additionally, PacifiCorp confirmed that for each location, the amount of resources identified represents an upper limit for what the model can select (with some possible exceptions).

Sierra Club recommends that PacifiCorp provide stakeholders with a complete list of the maximum selectable resource at each location as soon as possible. This will assist in determining whether these limits on allowable resource selection are reasonable.

Additionally, Sierra Club is concerned that it may not be appropriate to limit future resource additions based on what is presently reflected in the interconnection queue. It is possible that more resources will seek to join the interconnection queue even prior to the next IRP cycle or IRP update. Furthermore, in many ways the IRP provides a signal to project developers about where the most valuable locations are on PacifiCorp's system and where they should seek to develop projects. If PacifiCorp prematurely limits available resources at certain locations in its model, then the results may suggest to developers that PacifiCorp has little or no interest in those locations simply because no developers had entered the queue at that time. Instead, Sierra Club recommends

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that PacifiCorp include more expansive limits on potential resources at each location. Not only will this help reveal a more optimal portfolio, but it could also help inform the market where they should prioritize future project development activities based on PacifiCorp's system needs. Specifically, Sierra Club recommends that PacifiCorp consider increasing the limits on potential resources at specific locations to twice the current queue levels, with a minimum of 1000 MW per location.

Thank you for your consideration of this feedback.

Data Support: If applicable, provide any documents, hyper-links, etc. in support of comments. (i.e. gas forecast is too high - this forecast from EIA is more appropriate). If electronic attachments are provided with your comments, please list those attachment names here.

Recommendations: Provide any additional recommendations if not included above - specificity is greatly appreciated.

PacifiCorp Response (2/13/23):

Thank you for submitting this stakeholder response. We appreciate your feedback and anticipate a lengthier discussion on these items in greater detail following the official PacifiCorp IRP filing which will be submitted on March 31, 2023. As always, PacifiCorp appreciates your input as a valued stakeholder in its long-term planning objectives. Referring to the initial seven items given in this form:

- 1.) PacifiCorp will identify all reliability adjustments for all portfolios in the 2023 IRP confidential data disc.
- 2.) PacifiCorp understands that there are greater feasibility risks associated with both nuclear and non-emitting peaker resources but would note that neither is available until 2030. PacifiCorp is not able to commit to such a sensitivity at this time.
- 3.) The Company has incorporated Energy Community bonus credits to certain locations (Wyoming and parts of Utah). This will be discussed at an upcoming public meeting.
- 4.) PacifiCorp believes that review of the modeling results and consideration of the potential transmission investment savings is appropriate to address this issue.
- 5.) This describes PacifiCorp's current treatment of costs and allows resource additions with no network upgrade costs prior to the coal plant retirement, subject to an hourly generation limit.
- 6.) PacifiCorp is receptive to this proposal and will ensure that this is discussed in the IRP filing or during the post-filing public input period.
- 7.) A large majority of Cluster 2 and transmission upgrades beyond the near-term cluster items are unlimited and allow for further expansion. Cluster 2 will be discussed at an upcoming public meeting.

Please submit your completed Stakeholder Feedback Form via email to IRP@PacifiCorp.com

Thank you for participating.

* Required fields