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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of PacifiCorp's 2021 Integrated Resource Plan	Docket No. 21-035-09

Sierra Club's Reply Comments

Redacted Version

April 7, 2022

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SIERRA CLUB'S REPLY COMMENTS
[REDACTED VERSION]

I. Introduction

Sierra Club appreciates the opportunity to provide these Reply Comments on PacifiCorp's 2021 Integrated Resource Plan ("IRP"). Since opening comments were filed on March 4, 2022, significant new information has come to light through additional PLEXOS modeling conducted by PacifiCorp on behalf of Oregon Public Utility Commission Staff, meaning that intervenor opening comments were unable to fully address certain issues. This new modeling removed minimum take coal fuel requirements at Jim Bridger. As Sierra Club explained in its Opening Comments,[1] a minimum take assumption at Jim Bridger through [redacted] was not only contrary to how PacifiCorp modeled fueling requirements at its other plants but was also particularly inappropriate for Jim Bridger because it is not currently subject to a minimum take requirement at either of its two coal supplies: Black Butte and the Bridger Coal Company ("BCC" or "Bridger mine"). For Black Butte, a contract does not exist beyond April 2022,[2] and if modeling demonstrated that customers would benefit from reducing output from Jim Bridger, PacifiCorp

[1] Sierra Club Opening Comments at 25-33.
[2] *In the Matter of the Application of PacifiCorp (U 901 E) for Approval of its 2022 Energy Cost Adjustment Clause and Greenhouse Gas-Related Forecast and Reconciliation of Costs and Revenue*, Proceeding No. A.21-08-004, PacifiCorp (U 901 E) Brief Summary of Dates that Existing Coal Supply Agreements Are Scheduled for Renewal (Nov. 10, 2021), *available at* https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M425/K516/425516818.PDF.

could avoid entering into a new contract that locks customers into high quantities of unnecessary coal supply. For BCC, the supply is from an affiliate mine whose production can be scaled down in the future at little or no cost. By ignoring these circumstances and instead imposing an assumption in PLEXOS that Jim Bridger is, and will be, required to purchase certain quantities of coal PacifiCorp distorted the modeling results by giving the false impression that relatively high capacity and late retirement for Jim Bridger is economic for ratepayers.

These comments are responsive to issues raised by other parties, as well as the new PLEXOS modeling described above and other information that has been disclosed since Sierra Club's Opening Comments.

In addition to recommendations made in Sierra Club's Opening Comments, Sierra Club makes the following recommendations:

- The model sensitivity performed without must take requirements for Jim Bridger ("No Minimum Scenario") should be considered for the preferred portfolio, as it reduces the PVRR by $156 million when compared to the top performing case P02-MM.
- As recommended by Western Resource Advocates ("WRA"), the Commission should direct PacifiCorp to remove minimum take requirements at Jim Bridger in future IRPs.
- Replacement energy for Jim Bridger under the No Minimum Scenario, estimated by Sierra Club to be on the order of [redacted] MW of new wind, should be considered in the upcoming all-source request for proposals ("RFP").
- The Commission should provide guidance to PacifiCorp that no additional investment in either the Black Butte or Bridger Coal Company mines will be authorized prior to a thorough prudency review of an updated long term fuel supply plan for Jim Bridger. That long term fuel supply plan should evaluate supplying Jim Bridger entirely with coal from the Bridger mine. It should also evaluate the feasibility of closing the Bridger mine in the [redacted] timeframe (or sooner) and fueling the Jim Bridger plant from stockpiled coal for the remainder of its life. WRA similarly recommends that PacifiCorp should be required to update its mine plan for the Bridger mine, which is a subset of the long term fuel supply plan for Jim Bridger.

- If the No Minimum Scenario is not adopted as the preferred portfolio, the P02h sensitivity, which retired Jim Bridger Units 3 and 4 prior to 2030, should be considered for the preferred portfolio.
- For future IRPs, PacifiCorp should be directed to:
  - Conduct a re-optimization step if any post-modeling reliability adjustments are made;
  - Evaluate longer duration batteries and offshore wind to meet reliability needs;
- As recommended in Sierra Club's Opening Comments, and supported by the Office of Consumer Services ("OSC"), the Commission should not acknowledge the Natrium plant.

II. Removing Highly Inappropriate Minimum Take Volume Assumptions from Jim Bridger Coal Supplies Yields Substantial Benefits and Would Affect the Near-Term Action Plan

In PacifiCorp's Oregon IRP filing, the Company performed a model sensitivity without must take requirements for Jim Bridger ("No Minimum Scenario") and responded to associated bench requests issued by the Oregon Administrative Law Judges ("ALJs").[3] This new information revealed that when inappropriate minimum take assumptions are removed from the model, Jim Bridger output is significantly reduced and total portfolio cost is significantly lowered as compared to PacifiCorp's top-performing portfolio, P02-MM. **This result is meaningful evidence that the minimum take assumptions at Jim Bridger are driving uneconomic generation**. If adopted, the No Minimum Scenario would be substantially better for PacifiCorp customers than the IRP Preferred Portfolio.

[3] *In the Matter of PacifiCorp, d/b/a Pacific Power, 2021 Integrated Resource Plan,* Docket. No. LC 77, PacifiCorp Response to ALJ Bench Requests 1, 6-7 (Ore. P.U.C. Mar. 3, 2022), *available at* https://edocs.puc.state.or.us/efdocs/HAC/lc77hac15285.pdf; *In the Matter of PacifiCorp, d/b/a Pacific Power, 2021 Integrated Resource Plan,* Docket. No. LC-77, PacifiCorp Response to ALJ Bench Requests 2 through 5 (Ore. P.U.C. Feb. 23, 2022), *available at* https://edocs.puc.state.or.us/efdocs/HAC/lc77hac134828.pdf; Confidential Attachment "Attach ALJ Bench Request 1-1 CONF" to PacifiCorp Response to ALJ Bench Request 1 in OR LC 77 (included in "Attach DPU 1.1-2 10th SUPP CONF") (provided as Sierra Club Attach. 1); Confidential Attachments "Attach ALJ Bench Request 1-4 CONF" to PacifiCorp Response to ALJ Bench Request 1 in OR LC 77 (included in "Attach DPU 1.1-2 10th SUPP CONF") (the two confidential attachments included in 1-4 "JB34 Hourly Generation ST 48540 CONF" and "JB34 Hourly Reserve Provision ST 48540 CONF" are provided as Sierra Club Attach. 2)

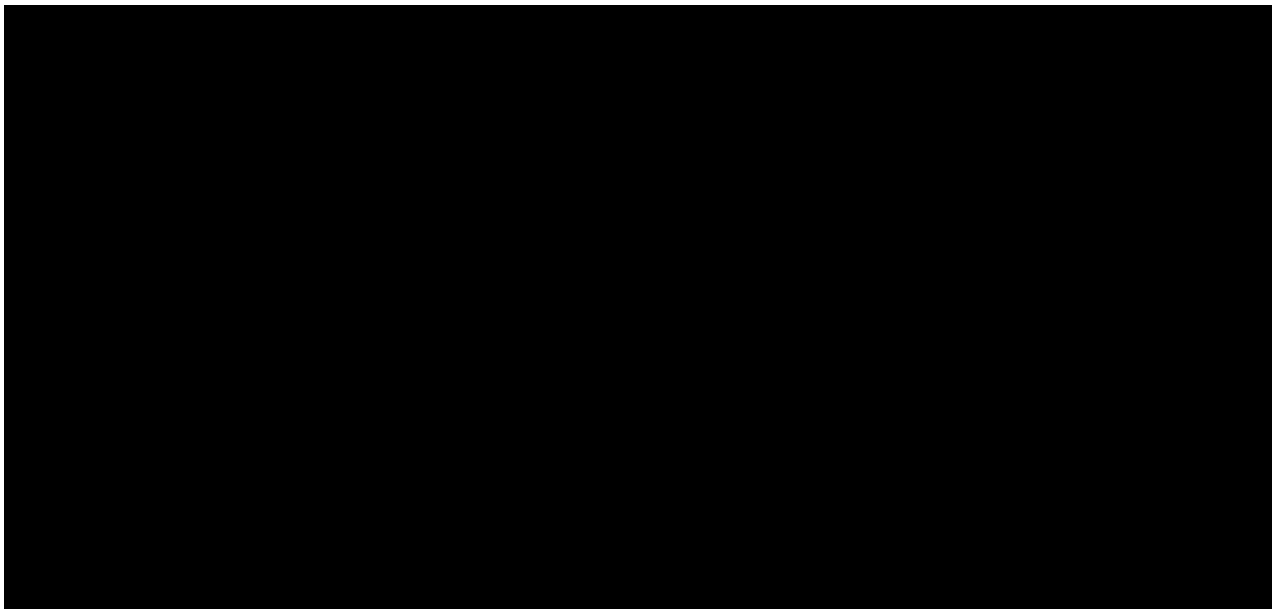
A. Summary of the No Minimum Scenario

Based on the data files provided by PacifiCorp in response to the Oregon ALJs' Bench Request, the findings of the No Minimum Scenario can be summarized as follows:

- From 2022-2037, annual generation at Jim Bridger Units 3 and 4 is reduced by [redacted] percent on average, relative to PacifiCorp's IRP Portfolio.
- After 2030, there is [redacted] output from the plant.
- In 2025, the modeled reduction in energy output from Jim Bridger 3 and 4 (in GWh, relative to PacifiCorp's IRP) equates to the annual output from adding [redacted] of new Wyoming wind resources. Between 2025 and 2030, this number remains relatively stable.
- Removing the minimum take assumption reduces the PVRR by $156 million when compared to the top performing case P02-MM.

The significant difference in generation between the No Minimum Scenario and PacifiCorp's IRP Preferred Portfolio are illustrated in the confidential chart below.

Confidential Figure 1. Jim Bridger Units 3 and 4 Generation Under the Preferred Portfolio and the No Minimum Scenario



Notably, the $156 million reduction in PVRR easily makes the No Minimum Scenario lower cost than PacifiCorp's Preferred Portfolio (P02-MM-CETA).

B. Problems with PacifiCorp's Characterization of the No Minimum Scenario

In its response to the Oregon ALJs' Bench Request, PacifiCorp claims that the $156 million (PVRR) benefit would be offset by the need to retrofit the plant to process coal from the Powder River Basin ("PBR"), to the tune of $[redacted] (PVRR).[4] PacifiCorp's claim that this PRB coal processing facility is needed rests on the idea that PacifiCorp would need to resort to PRB coal fuel in the event that take or pay provisions were not executed with its current suppliers (i.e., Black Butte, and BCC).[5] The Company claims that it would be "unrealistic" for its current suppliers to deliver significantly lower volumes of coal absent such take or pay provisions.[6]

The Commission should be highly skeptical of these claims because the modeling results suggest that **no new long-term coal supply agreements with minimum take obligations are necessary to meet the fueling requirements of Jim Bridger under the No Minimum Scenario**.

Based on the results provided in the confidential attachment to Oregon ALJ Bench Request 1-1, Sierra Club estimates that only [redacted] MMBtu (or [redacted] tons) of coal are needed *in total* to supply Jim Bridger Units 3 and 4 from 2022 through 2037. This is approximately what PacifiCorp projected to mine from BCC *alone* over [redacted].[7] Thus, it is conceivable that PacifiCorp could continue BCC mine production for [redacted] at

[4] Confidential PacifiCorp Response to ALJ Bench Request 1 in OR LC 77(included in "Attach DPU 1.1-2 10th SUPP CONF") (provided as Sierra Club Attach. 3).
[5] *In the Matter of PacifiCorp, d/b/a Pacific Power, 2021 Integrated Resource Plan,* Docket. No. LC 77, PacifiCorp Response to ALJ Bench Request 1 (Ore. P.U.C. Mar. 3, 2022).
[6] *Id.*
[7] Confidential Attachments "OR UE-375 TAM (RalstonReplyTest) BRIDGER" and "OR UE-390 TAM (RalstonReplyTest) BRIDGER" to PacifiCorp Response to Sierra Club Data Request 9.2 (included in "Attach DPU 1.1-2 10th SUPP CONF") (provided as Sierra Club Attach. 4 and Attach. 5 respectively) (projecting [redacted] tons received from BCC in 2021 and [redacted] tons in 2022). Notably, the projections in Attachments 4 and 5 forecast PacifiCorp's share of production from BCC, meaning that additional coal would be produced for Idaho Power; *see also, PacifiCorp Will Close Jim Bridger Longwall Mine in November*, Coal Age (Sept. 23, 2021), *available at* https://www.coalage.com/breaking-news/pacificorp-will-close-jim-bridger-longwall-mine-in-november/ (noting that the BCC surface mine produced 1.5 million tons in 2020 and the underground mine produced 1.4 million within the first nine months of 2021).

current production levels and produce enough coal to operate Jim Bridger through 2037 under the No Minimum Scenario. This would avoid the need to enter any long-term contracts with minimum take obligations.

PacifiCorp has indicated that total stockpile capacity at both BCC and the Jim Bridger plant is approximately 4,075,000 tons and that, hypothetically, this capacity could be expanded.[8] Accordingly, PacifiCorp could conceivably stop BCC mining after [redacted] and still have enough coal to meet the fueling requirements of the No Minimum Scenario. Importantly, there would be no need to rely upon any future coal from Black Butte.

Moreover, PacifiCorp has repeatedly explained that ownership of BCC provides it with flexibility to ramp production up or down at the mine. Because there is no contract with minimum take requirements from BCC, this further supports that PacifiCorp should be able to meet Jim Bridger's fueling needs without entering into a new coal supply agreement with inflexible purchasing requirements.

As is apparent, these findings call into question the need for PacifiCorp to execute a new contract with the Black Butte mine—particularly one with a minimum take provision—which PacifiCorp plans to do as early as *this month*. Sierra Club urges the Commission to provide guidance in this IRP that no new Jim Bridger fuel costs will be approved prior to thorough Commission review and an updated long-term fuel supply plan for the plant, discussed further below.

Finally, the ability for BCC alone to meet Jim Bridger's needs through 2037 also suggests that the PRB coal processing investment is not necessary and should not be viewed as an offsetting factor in the $156 million PVRR benefit of the No Minimum Scenario.

[8] PacifiCorp Response to Sierra Club Data Request 9.1 in OR LC 77 (included in "Attach. DPU 1.1 - 10th Supplemental") (provided as Sierra Club Attach. 6).

C. Jim Bridger Retirement Under the No Minimum Scenario

Irrespective of the foregoing issues on coal supply, Sierra Club also has significant concerns regarding PacifiCorp's claims about the appropriate retirement date for the Jim Bridger plant.

First, it is readily apparent from the results provided in the confidential attachment to Oregon ALJ Bench Request 1-1 that the Jim Bridger plant provides [redacted] energy value in any year after 2030. In fact, the hourly dispatch results provided in the confidential attachment to Oregon ALJ Bench Request 1-4 show that Jim Bridger 3 is [redacted]. Meanwhile, Jim Bridger 4 [redacted].[9]

Second, generation patterns for the two units as presented in the workpapers also raise additional questions about the model results relative to the units' technical constraints.[10] For example, the finding that Jim Bridger Unit 3 operates for only [redacted] hours in 2037 does not seem to match the PLEXOS inputs provided in the Company's original filing which included a minimum uptime significantly longer than [redacted] hours.[11] A similar mismatch occurs for Jim Bridger 4. This suggests that perhaps different modeling assumptions were applied in the 2037 timeframe simply to justify PacifiCorp's preferred plant retirement date.

Third, the results of the No Minimum Scenario show that the long-term ("LT") model, which PacifiCorp uses for making resource retirement decisions, assumed a [redacted] level of dispatch from Jim Bridger than did the more temporally granular short-term ("ST") PLEXOS

[9] Sierra Club Attach. 2, "JB34 Hourly Reserve Provision ST 48540 CONF."
[10] Sierra Club Attach. 2, JB34 Hourly Generation ST 48540 CONF."
[11] Confidential Plexos Inputs Workpaper accompanying PacifiCorp's 2021 IRP "Plexos Inputs - 2021 IRP 091021_CONF.xlsx."

model which includes hourly dispatch. In fact, the LT model for the No Minimum Scenario assumes that Jim Bridger dispatch would actually [redacted] while the ST model shows [redacted].[12] This suggests that the LT model is likely [redacted] in PacifiCorp's portfolio. Because the LT model is where resource retirement decisions are made, it is possible that this LT model run may contain systemic biases that inflate Jim Bridger's value thereby delaying Jim Bridger's retirement relative to the value demonstrated in the more granular ST model. Indeed, when comparing the annual generation output from the LT model of the No Minimum Scenario to the LT model of PacifiCorp's Preferred Portfolio, the two scenarios are virtually identical as shown in the table below:

[12] Sierra Club Attach. 1, "Attach ALJ Bench Request 1-1 CONF."

Confidential Table 1. Jim Bridger Generation Output from the LT Model

	No Minimum	P02-MM-CETA
2021		
2022		
2023		
2024		
2025		
2026		
2027		
2028		
2029		
2030		
2031		
2032		
2033		
2034		
2035		
2036		
2037		

The drastic difference, then, between the LT and ST model results indicate a problem either in the model itself or in the approach to modeling. As a result, Commission should be highly skeptical of PacifiCorp's assertion that PLEXOS continues to select Jim Bridger Units 3 and 4 to run on coal through 2037.[13]

Sierra Club recommends that in future IRPs, the Company fully explain any discrepancies between the LT and ST models, including potential implications for coal retirement dates.

Finally, the fact that Jim Bridger raises significant questions about the plant's reliability value and the

[13] *In the Matter of PacifiCorp, d/b/a Pacific Power, 2021 Integrated Resource Plan,* Docket. No. LC 77, PacifiCorp Response to ALJ Bench Request 1 (Ore. P.U.C. Mar. 3, 2022) ("PLEXOS LT optimization of the P02-MM study continues to select Jim Bridger Unit 3 and Jim Bridger Unit 4 to run on coal and generate energy through the existing end-of-life in 2037").

need to keep this resource online for reliability purposes. PacifiCorp's results suggest that Jim Bridger provides some incremental reliability value in 2037. However, this is challenged by the fact that Jim Bridger Unit 3 is projected to [redacted]. This finding also challenges the notion that a 500 MW nuclear resource would be needed as a replacement, which is what PacifiCorp has recommended in both its preferred case and the P02h variant, discussed below.

Accordingly, in contrast to PacifiCorp's assertions that the No Minimum Scenario supports operating Jim Bridger 3 and 4 through 2037, a more reasonable interpretation of the sensitivity is that Jim Bridger 3 and 4 should retire no later than [redacted], and potentially as early as [redacted]. This would further put into doubt any need for PBR coal to supply Jim Bridger, as discussed directly above in Section II(B).

D. The No Minimum Scenario—If Selected—Would Impact the Near-Term Action Plan and Upcoming All Source RFP as Well as Future Coal Supply Agreements for Jim Bridger

The No Minimum Scenario shows substantially reduced output at Units 3 and 4 in all years beginning [redacted]. As Confidential Figure 1 above shows, the discrepancy between Jim Bridger generation in the preferred portfolio and the No Minimum Scenario becomes most pronounced beginning in [redacted], meaning that if the No Minimum Scenario were to become the preferred portfolio, the near-term action plan and the upcoming All Source RFP would be significantly impacted.

PacifiCorp's response to the Oregon ALJs' Bench Request did not provide details on specific resource additions in the No Minimum Scenario. However, Sierra Club estimates that reducing Jim Bridger's output under this scenario could equate to replacement energy on the order of over [redacted] MW of new wind in the 2025-2030 timeframe. Thus, a significant amount of additional

new renewable resources would likely be needed under the No Minimum Scenario but would not otherwise be procured if PacifiCorp's preferred portfolio is pursued instead. Sierra Club recommends that such incremental resources be considered within the upcoming All Source RFP in order to incorporate the risk that Jim Bridger retires significantly earlier than the 2021 IRP preferred portfolio predicts.

The No Minimum Scenario further raises questions about any future coal supply agreement with Black Butte and continued operations at BCC beyond [redacted]. Specifically, and as described above, because Jim Bridger's generation is substantially reduced, it is likely that PacifiCorp could meet the entirety of the plant's coal supply needs from BCC alone. It is critical that the Utah Commission thoroughly review the fueling strategy for Jim Bridger, particularly as PacifiCorp moves toward entering into a new coal supply agreement at Black Butte that could unreasonably lock ratepayers into significant fuel costs for multiple years and artificially force Jim Bridger's continued operation at relatively high capacity levels well beyond what is economic. Sierra Club recommends that the Commission not allow any cost recovery related to Black Butte coal supplies after April 2022 until a thorough prudency review has been completed, which should include all evidence from this IRP proceeding. The same should be true for BCC, i.e., the Commission should not allow any cost recovery for further production from the mine until after the Commission has had an opportunity to thoroughly evaluate the mine's operating plan. Sierra Club would expect that operating plan to evaluate the feasibility of supplying all of Jim Bridger's coal through BCC under the No Minimum Scenario and decommissioning the BCC mine as early as [redacted] or sooner.

E. The No Minimum Scenario Results Support Western Resource Advocates' Recommendations Concerning Jim Bridger

As WRA rightfully noted in its Opening Comments, "[a]bsent PacifiCorp reconsidering its decision to fuel the Jim Bridger plant with coal through 2037, PacifiCorp will likely seek to Reassign some portion of the plant to Utah customers, pursuant to the *2020 Inter-Jurisdictional Allocation Protocol*. If the Commission were to approve a Reassignment . . . Utah's customers would pay for almost 70 percent of PacifiCorp's share of Jim Bridger'[s] costs."[14] In order to ensure that this Commission has accurate information before determining whether to continue paying for Jim Bridger and potentially taking on a larger share in the future, WRA recommended that Jim Bridger be modeled without assumed minimum take requirements, that an alternative mine plan with lower minimum take requirements be developed for BCC, and that new coal supply agreements should be thoroughly scrutinized and of short duration, reflecting the limited hours of economic operations using optimized modeling.[15] The results of the No Minimum Scenario directly show why such action is necessary, and Sierra Club supports each of these recommendations.

First, removing assumed minimum take requirements at Jim Bridger resulted in a forecast of only economic output from the plant, which, as noted above, is significantly lower—[redacted] percent lower—than the preferred portfolio projects. This information is critical to accurately assessing Jim Bridger's true value to the system. Notably, removing minimum take constraints in PLEXOS unless a plant is contractually subject to a minimum take requirement is the approach that PacifiCorp took *for every other coal plant besides Jim Bridger.* In other words, except for Jim Bridger, PacifiCorp does not assume that a new coal supply agreement would be necessary at

[14] WRA Opening Comments at 16.
[15] *Id.* at 26.

any of its coal plants. There is no justification for taking a different approach at Jim Bridger except to artificially inflate the plant's output and manipulate the plant's apparent value to the system.

Second, the results of the No Minimum Scenario demonstrate that it is past time for PacifiCorp to thoroughly reevaluate its fueling strategy for Jim Bridger and that a new BCC mine plan, with meaningfully lower production, should be evaluated. In fact, Sierra Club recommends that this Commission order a new Long Term Fuel Supply Plan for Jim Bridger, which would include a new mine plan for BCC as well as anticipated third party purchases. This plan should thoroughly evaluate different fueling options for Jim Bridger, including fueling the plant exclusively from BCC mine coal and not entering into a new coal supply agreement with Black Butte, as discussed above. Direction from the Commission on this point is critical because PacifiCorp is *currently negotiating* a new coal supply agreement with Black Butte, which could unreasonably lock Utah customers into an unnecessary minimum take requirement.

Finally, the need to reevaluate fueling at Jim Bridger, which was demonstrated through the No Minimum Scenario, underscores WRA's third recommendation—that the Commission scrutinize the terms of all new coal supply agreements and that such agreements should be short-term and with minimum take requirements reflective of the limited number of economic operations. The Commission should provide this explicit guidance to PacifiCorp, putting the Company on notice that entering into a new, multi-year coal supply agreement at Black Butte with high minimum take requirements and without evaluating the potential to avoid such an agreement will not be treated favorably when PacifiCorp seeks cost recovery.

III. Even When Minimum Take Requirements Are Included at Jim Bridger, the P02h Variant, Which Modeled Early Retirement of Jim Bridger 3 and 4 by 2030, Indicates that Early Retirement Would Be Beneficial to Ratepayers

In addition to the No Minimum Scenario demonstrating that Jim Bridger Units 3 and 4 should be ramped down to [redacted], output after 2030, the P02h variant case also demonstrates that early closure would be beneficial to ratepayers, even with its inappropriate inclusion of minimum take requirements. This is true because, as Sierra Club pointed out in its Opening Comments, PacifiCorp inappropriately forced in an expensive nuclear resource in 2030 in the P02h scenario which was likely unnecessary. Additional information obtained through discovery since Sierra Club's Opening Comments further confirms that the nuclear plant forced into the P02h variant was unsupported and likely suboptimal. If, instead, PacifiCorp had allowed the model to select smaller or lower cost resources, such as solar plus storage with longer duration batteries (e.g., 6 or 8 hours), non-emitting peakers, off-shore wind, or expanded demand side management, P02h would have been undoubtedly lower cost than the preferred portfolio.

A. PacifiCorp's Decision to Add a 500 MW Nuclear Plant in 2030 in the P02h Variant Was Not Based on Any Comprehensive Analysis or Modeling of Reliability

As Sierra Club noted in its Opening Comments, PacifiCorp's preferred IRP portfolio (P02-MM) was first modeled using the LT model to economically select resources. This initial portfolio was then subject to subsequent reliability adjustments based on the more detailed ST model results that revealed instances of unserved energy on an hourly basis. Using this method, PacifiCorp's selected a 500 MW nuclear plant to be added in 2038 following Jim Bridger retirement under their P02-MM scenario.

However, PacifiCorp does not appear to have conducted similarly comprehensive modeling, with hourly resolution, for each of the variant cases, including P02h. When Sierra Club requested the

same hourly data files used for the reliability adjustments in the P02-MM model run, but for the P02h scenario, PacifiCorp informed Sierra Club that, "there are no additional hourly data files for the P02h variant case . . . the same hourly data files already provided . . . for the P02-MM case were relied upon for assessing reliability of the P02h case."[16] In other words, PacifiCorp performed no additional analysis for the P02h variant that would have justified manual decisions made outside of the model, including the addition of a 500 MW nuclear plant in 2030.

In essence, PacifiCorp simply assumed that, because it chose to add a 500 MW nuclear plant to the P02-MM portfolio in 2038 when Jim Bridger Units 3 and 4 retire, the same nuclear plant should be added if the units retire by 2030 under the P02h variant. This assumption is highly inappropriate because the loads and resources in the 2030 timeframe are not equivalent to those in 2038. Meanwhile, as PacifiCorp has confirmed, it did not perform any re-optimization of portfolios after making reliability adjustments, including the second nuclear addition in P02h.

These additional revelations only serve to underscore several points raised in Sierra Club's Opening Comments. For example, it supports the conclusion that the early retirement of Jim Bridger 3 and 4 is likely to be the most economic option among those evaluated by PacifiCorp because one of the primary reasons that the P02h variant appears more expensive than P02-MM is due to the addition of a very expensive nuclear unit in 2030. However, as PacifiCorp has admitted, it did not perform a detailed hourly analysis on the P02h variant case to justify the need for a second nuclear addition in the 2030 timeframe.

[16] Email from Carla Scarcella, PacifiCorp to Rose Monahan, Sierra Club (Jan. 26, 2022) (provided as Sierra Club Attach. 7).

B. Analysis of ST Hourly Data Files Shows that the Additional Nuclear Plant in the P02h Variant Case Was Likely Unnecessary

Even if it was appropriate for PacifiCorp to rely on the same ST hourly data files produced for P02-MM to assess reliability needs under P02h—which it was not—those hourly data files do not demonstrate that a nuclear resource was necessary following Jim Bridger retirement. Instead, Sierra Club believes that a less expensive or smaller resource could have sufficed to meet PacifiCorp's reliability needs in 2030 under the P02h variant. If the 2030 nuclear unit were replaced with a smaller or less expensive resource, such as solar plus storage with longer duration batteries (e.g., 6 or 8 hours), expanded DSM, or non-emitting peakers then the P02h variant could easily become lower cost than the preferred portfolio.

Through discovery,[17] PacifiCorp was asked to provide any LT and ST model work papers as well as supporting reliability assessment work papers for any preliminary resource portfolios that PacifiCorp developed for the 2021 IRP, prior to applying the granularity and reliability adjustments or any subsequent portfolio refinements. According to PacifiCorp's response, two LT portfolios were run *without* adjustments and used to develop the granularity and reliability adjustments:

- PLEXOS study number 3112 (P02-MMR (CO,NG) Intentional)
- PLEXOS study number 2993 (P02-MMR (CO,NG) Intl UTWY)

These preliminary portfolios were primarily used to evaluate the difference in resource value between the LT and ST models in order to understand which resource options could produce reliable portfolios. Although the difference between those two studies was not clearly explained, PacifiCorp produced a set of workpapers for both studies. Each set included a workpaper for

[17] PacifiCorp Response to Sierra Club Data Request 6.1 in OR LC 77 (included in "Attach DPU 1.1-2 6th SUPP") (provided as Sierra Club Attach. 8).

each year from 2025 to 2040,[18] detailing the hourly data of unserved energy. For the PLEXOS 3112 study, unserved energy was [redacted] for half of those years while for the rest it ranged from [redacted] MW on an annual basis. For example, in year 2031, there are [redacted] of projected unserved energy:[19]

[redacted]

These shortages occur in [redacted].[20] It is thus possible that additional energy could be available in the system, but may be constrained in the model; however, such details are not available in the workpapers. Results for other years are similar with [redacted] being the highest amount of unserved energy experienced in one of the system areas in the 3112 run up to 2032. The workpapers also reveal some shortages in the system's regulation reserves during some summer days.

Given the [redacted], it is far from clear how PacifiCorp concluded that a 500 MW nuclear addition in 2030 was needed in the P02h case. PacifiCorp stated that early retirement of Jim Bridger 3 and 4 "accelerated the need for additional long duration resources that could run around the clock. The best fit was nuclear located at the Jim Bridger site."[21] However, given the [redacted] there does not appear to be substantial evidence that a nuclear plant was the

[18] The Confidential Attachments to PacifiCorp Response to Sierra Club Data Request 6.1 in OR LC 77 include workpapers for years 2026-2040 for study 2993, and 2025-2040 for study 3112 (included in "Attach DPU 1.1-2 6th SUPP CONF").
[19] Confidential Attachment "3112 Capacity Requirements P02-MMR (CO) Intl UTWY 2031 6-17-21" to PacifiCorp Response to Sierra Club Data Request 6.1 in OR LC 77 (included in "Attach DPU 1.1-2 6th SUPP CONF") (provided as Sierra Club Attach. 9).
[20] *Id.*
[21] *In the Matter of PacifiCorp, d/b/a Pacific Power, 2021 Integrated Resource Plan,* Docket No. LC 77, PacifiCorp Reply Comments at 17 (Ore. P.U.C. Dec. 23, 2021), *available at* https://edocs.puc.state.or.us/efdocs/HAC/lc77hac144535.pdf.

"best fit" or "least cost" option. Sierra Club acknowledges that the level of unserved energy could increase with the earlier retirement of Jim Bridger 3 and 4. However, PacifiCorp has not produced sufficient hourly generation data to show when Jim Bridger will be operating in 2031 under its preferred portfolio, nor has it provided evidence that the unserved energy would reach such high levels that a nuclear plant was the only viable replacement resource.

PacifiCorp did indicate that, "[t]he duration and timing of shortfalls identified by control area in a given year is what led to specific resource selections."[22] While this statement still does not provide much insight into how resources, such as a nuclear plant added to P02h, were identified and selected, it does appear that PacifiCorp may have developed some sort of criteria for determining which resources are needed to resolve reliability problems under different conditions. However, if these criteria exist, they were not provided as part of the IRP filing. Alternatively, it is possible there are no specific, reviewable criteria and PacifiCorp made these additions *ad hoc* or merely based on individual "professional judgment."

This latter approach would be consistent with PacifiCorp's Reply Comments in Oregon which stated that "[t]he proxy nuclear resources were selected economically using the entirety of data the LT, MT and ST stages of the model provided."[23] This statement suggests that no specific model result or criteria was relied upon, and instead it was primarily PacifiCorp's judgement that determined the type and magnitude of the reliability-based resource adjustments.

In sum, without having additional information on the unserved energy if Jim Bridger 3 and 4 retired in 2030 or how PacifiCorp systematically identified appropriate replacement resources, any resource additions seem subjective and not the result of proper analysis.

[22] *Id*. at 18.
[23] *Id*. at 35.

IV. The Office of Consumer Services Rightfully Requests Non-Acknowledgment Due to the Inappropriate Inclusion of the Natrium Plant and Proxy Nuclear Resources in Resource Selection

Sierra Club supports the Office of Consumer Services' ("OCS") recommendation that the Commission not acknowledge PacifiCorp's 2021 IRP due to the inappropriate inclusion of 'non-existent, speculative . . . resources."[24] As OCS pointed out, the inclusion of the Natrium nuclear facility and additional proxy nuclear resources in the preferred portfolio does not comply with Utah's IRP Guidelines, because the advanced nuclear reactors are not "known" resources that can be compared against other resources on a "consistent and comparable basis."[25] Sierra Club identified many of the uncertainties surrounding the Natrium project in Opening Comments, which OCS also raised, including cost, fuel supply, and regulatory feasibility.

OCS further, and rightfully, pointed out that because "the cost assumptions of the Natrium project are confidential and not transparent . . . the ability of stakeholders to assess the accuracy of the modeling and the projected savings [was] hindered."[26] The secrecy surrounding Natrium's costs is hard to understand. There are numerous public news articles discussing the project's costs,[27] and, as PacifiCorp has repeatedly stated, Natrium is a first-of-its-kind demonstration project that is expected to be heavily funded by the federal government (e.g., taxpayers). As a result, there is no competition for the Natrium plant, and it is thus unclear what competitive harm could come from any cost disclosure.

Sierra Club is not opposed to utilities evaluating and, when appropriate, even pursuing new resources that may not be currently commercially available. Such investment in innovative

[24] OCS Comments at 1. Notably, Sierra Club agrees with PacifiCorp's decision to exclude from consideration new gas resources and does not support OCS's comments in that regard.
[25] *Id.* at 1.
[26] *Id.* at 6.
[27] *See, e.g., id.* at 6 n.19 (citing article stating that the Natrium project is expected to cost $4 billion).

energy solutions could help to reduce PacifiCorp's carbon emissions while maintaining a reliable grid. However, unproven, commercially unavailable resources are not appropriate for inclusion in IRP resource selection or an IRP action plan because, quite simply, they are too hypothetical and their inclusion inserts too great a risk to the preferred portfolio. There are many *potential* resources that PacifiCorp (and other utilities) routinely evaluate and consider. That evaluation does not translate to inclusion in an IRP, requiring incredibly optimistic and unsupported assumptions.

By seeking acknowledgment of the Natrium plant, PacifiCorp seeks to shift risk in pursuing this resource from its shareholders to its ratepayers. The Commission should not allow PacifiCorp to saddle its ratepayers with such an enormous risk, particularly because acknowledgment is *not necessary* for PacifiCorp to continue to pursue the Natrium project if PacifiCorp believes doing so is prudent.

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Respectfully submitted,

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