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State of Utah
DEPARTMENT OF COMMERCE
Office of Consumer Services

MICHELE BECK
Director

To: PacifiCorp IRP Team
From: The Utah Office of Consumer Services
Michele Beck, Director
Béla Vastag, Utility Analyst
Alex Ware, Utility Analyst
Date: April 28, 2023
Subject: OCS Stakeholder Feedback Form for PacifiCorp's Preliminary 2023 IRP

The Utah Office of Consumer Services submitted an online Stakeholder Feedback Form regarding PacifiCorp's preliminary 2023 IRP on April 28, 2023. The comments (requests and questions) that were submitted in the form's "Respondent Comment" box are included below in case the copying and pasting of this information into the form was not complete or corrupted in some way when the form was submitted.

1. Explain why no natural gas resources were selected in any portfolio except for in the one NG scenario P11-Max NG. Discuss the parameters and assumptions in the model causing no selection of NG resources. Please include this discussion in the text of the final 2023 IRP. Also, are these parameters and assumptions for natural gas fired resources reflected in the 2023 Supply-Side Resource Tables in Chapter 7?
2. Perform a scenario not allowing nuclear and non-emitting peakers and limiting the availability of batteries (say to 500 MW per year?) to show the resulting portfolio. The purpose of this model run is to explore what happens if the nuclear and non-emitting peakers technologies don't materialize and because of very high demand by all US utilities, battery systems are difficult to procure. The purpose of this scenario is to show how and whether system reliability can be maintained without depending on these 3 types of resources. Include a short discussion of the results of this scenario in the final 2023 IRP.
3. How is the energy needed to recharge batteries in the Preferred Portfolio accounted for? What resources are most likely supplying the energy? Is it

possible to identify what resources (solar, wind, nuclear) are needed to provide energy for the batteries? Please include this discussion in the text of the final 2023 IRP.

4. Perform a scenario that includes a long lasting extreme weather event in a planning year where most fossil fuel resources are retired - events such as September 2022 heat wave or February 2021 Texas extreme cold. The purpose is to identify reliability issues when the system is assumed to be relying primarily on intermittent resources and batteries for reliability. Extreme weather events are becoming more common and a discussion of this scenario and how the future system based on the preferred portfolio handles the extreme event should be included in the text of the final 2023 IRP.

5. Provide the total capital costs for the new resources in the preferred portfolio by broad category - e.g. by wind, solar, batteries, nuclear, non-emitting peakers, transmission, etc. Provide this for the Action Plan and for the entire 20-year planning period. Please include tables in the final 2023 IRP with this capital cost information.

6. Provide a customer rate impact analysis (for retail ratepayers) of the preferred portfolio as compared to a **base scenario** - such as the system at December 2022. It is not sufficient to provide customer rate impacts between the final preferred portfolio and the other 2023 IRP portfolio candidates. Provide this information in the text of the 2023 IRP, including using a table similar to Table 8.4 from the 2011 IRP and a chart similar to Figure 4.1 from the 2017 IRP Energy Vision Update.

7. Please run a scenario where new NG resources are assumed to have normal or typical depreciation lives (not shortened to 10 years as explained in the April 13, 2023 Stakeholder meeting). Include this information in the final 2023 IRP.

8. Please respond and provide an explanation on how PacifiCorp will address the risks listed below that are involved in pursuing the selected Natrium nuclear units. The Utah OCS requests that PacifiCorp include its response to these risks in the Nuclear section of IRP Chapter 7 – “Resource Options”.

a. Fuel Risk - how will PacifiCorp procure (include a timeline) the necessary HALEU fuel on time for each unit?

b. Financial Risk - the likelihood of large cost overruns for each unit. Recent construction of nuclear plants in Georgia and South Carolina and other parts of the world have resulted in more than 100% (i.e. more than double costs) cost overruns.

c. Construction Delay Risk – recent nuclear plants have also been hobbled by lengthy construction delays – how can PacifiCorp quickly replace the need capacity?

d. Operational Risk – Sodium nuclear is a first of its kind untested-in-the-real-world technology. What is PacifiCorp's plan if these reactors do not perform as promised or if they fail prematurely? PacifiCorp has no operational experience with Sodium nuclear reactors – how will be PacifiCorp know how to operate these plants effectively?

e. Storage and Disposal of Nuclear Waste Risk – How and where will PacifiCorp store and dispose of the nuclear waste resulting from the planned nuclear resources?

9. Please clarify and provide corrections in the final 2023 IRP as necessary to the following statements in the IRP: Page 238 of the Preliminary 2023 IRP states: *"For the 2023 IRP natural gas resources are available in the endogenous LT model for selection, a change from the 2021 IRP."* But then page 240 states: *"Therefore, new natural gas proxy resources were not made available for selection in any of Initial Portfolios"*.

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 2023-04-28

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Title: Utility Analyst

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Phone: (801) 530 - 6374

*Organization: Utah Office of Consumer Services

Address:

City: Salt Lake City

State: UT

Zip:

Public Meeting Date comments address:

Check here if not related to specific meeting

List additional organization attendees at cited meeting:

N/A

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

The Utah OCS submits 9 detailed questions/requests regarding PacifiCorp's 2023 Preliminary IRP that was filed with the Utah Public Service Commission on April 3, 2023 in Docket No. 23-035-10. These 9 items have been pasted below in the "Respondent Comment" box.

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.

1. Explain why no natural gas resources were selected in any portfolio except for in the one NG scenario P11-Max NG. Discuss the parameters and assumptions in the model causing no selection of NG resources. Please include this discussion in the text of the final 2023 IRP. Also, are these parameters and assumptions for natural gas fired resources reflected in the 2023 Supply-Side Resource Tables in Chapter 7? 2. Perform a scenario not allowing nuclear and non-emitting peakers and limiting the availability of batteries (say to 500 MW per year?) to show the resulting portfolio. The purpose of this model run is to explore what happens if the nuclear and non-emitting peakers technologies don't materialize and because of very high demand by all US utilities, battery systems are difficult to procure. The purpose of this scenario is to show how and whether system reliability can be maintained without depending on these 3 types of resources. Include a short discussion of the results of this scenario in the final 2023 IRP. 3. How is the energy needed to recharge batteries in the Preferred Portfolio accounted for? What resources are most likely supplying the energy? Is it possible to identify what resources (solar, wind, nuclear) are needed to provide energy for the batteries? Please include this discussion in the text of the final 2023 IRP. 4. Perform a scenario that includes a long lasting extreme weather event in a planning year where most fossil fuel resources are retired - events such as September 2022 heat wave or February 2021 Texas extreme cold. The purpose is to identify reliability issues when the system is assumed to be relying primarily on intermittent resources and batteries for reliability. Extreme weather events are becoming more common and a discussion of this scenario and how the future system based on the preferred portfolio handles the extreme event should be included in the text of the final 2023 IRP. 5. Provide the total capital costs for the

* Required fields

new resources in the preferred portfolio by broad category - e.g. by wind, solar, batteries, nuclear, non-emitting peakers, transmission, etc. Provide this for the Action Plan and for the entire 20-year planning period. Please include tables in the final 2023 IRP with this capital cost information. 6. Provide a customer rate impact analysis (for retail ratepayers) of the preferred portfolio as compared to a base scenario - such as the system at December 2022. It is not sufficient to provide customer rate impacts between the final preferred portfolio and the other 2023 IRP portfolio candidates. Provide this information in the text of the 2023 IRP, including using a table similar to Table 8.4 from the 2011 IRP and a chart similar to Figure 4.1 from the 2017 IRP Energy Vision Update. 7. Please run a scenario where new NG resources are assumed to have normal or typical depreciation lives (not shortened to 10 years as explained in the April 13, 2023 Stakeholder meeting). Include this information in the final 2023 IRP. 8. Please respond and provide an explanation on how PacifiCorp will address the risks listed below that are involved in pursuing the selected Natrium nuclear units. The Utah OCS requests that PacifiCorp include its response to these risks in the Nuclear section of IRP Chapter 7 \u0013 \u001CResource Options\u001D. a. Fuel Risk - how will PacifiCorp procure (include a timeline) the necessary HALEU fuel on time for each unit? b. Financial Risk - the likelihood of large cost overruns for each unit. Recent construction of nuclear plants in Georgia and South Carolina and other parts of the world have resulted in more than 100% (i.e. more than double costs) cost overruns. c. Construction Delay Risk \u0013 how can PacifiCorp quickly replace the need capacity? d. Operational Risk \u0013 Natrium nuclear is a first of its kind untested-in-the-real-world technology. What is PacifiCorp\u0019s plan if these reactors do not perform as promised or if they fail prematurely? PacifiCorp has no operational experience with Natrium nuclear reactors \u0013 how will be PacifiCorp know how to operate these plants effectively? e. Storage and Disposal of Nuclear Waste Risk \u0013 How and where will PacifiCorp store and dispose of the nuclear waste resulting from the planned nuclear resources? 9. Please clarify and provide corrections in the final 2023 IRP as necessary to the following statements in the IRP: Page 238 of the Preliminary 2023 IRP states: "For the 2023 IRP natural gas resources are available in the endogenous LT model for selection, a change from the 2021 IRP." But then page 240 states: "Therefore, new natural gas proxy resources were not made available for selection in any of Initial Portfolios".

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.

N/A

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

N/A

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

Thank you for participating.

PacifiCorp Response (5/31/23):

1) Plexos did not select the natural gas proxy resources in part due to the assumed 10-year capital recovery life, reflecting uncertainty risks to this technology in all states, including uncertainties in state and federal policy. The SST table reflects technical life which does not directly consider exogenous risk. The company considered this in the development of its SST for the 2023 IRP and welcomes further discussion on future changes of this representation.

2) The study request is a variant of the No Forward Technology variant, but limiting battery additions to 500 MW per year. A low-battery availability scenario has not been explicitly considered in this IRP, but the company welcomes this discussion when developing sensitivities in future cycles. In the 2023 IRP, sensitivities

* Required fields

were discussed in multiple public meetings and identified in the October 13th public input meeting. The company is open to additional sensitivities but cannot perform all requested studies.

3) The energy used to charge batteries is determined in the optimization of system dispatch. Except as constrained by transmission, it is not feasible to distinguish precisely which resources' generation is used to fill a specific battery (or which resource is used to meet a specific load) without forcing the model to make arbitrary decisions. These decisions would impede model performance. In general, energy storage is charged using during the least-cost-period over the course of a day, and discharged in the highest-cost period. For additional details on the pattern of emissions (which are a reasonable proxy for cost) over the course of a day throughout the year, please refer to the last section of Appendix N: Energy Storage Potential Evaluation, in Volume II of the 2023 IRP.

4) Climate change is now a base assumption in the 2023 IRP and a 1 in 20 load forecast is included as a sensitivity. Additional analysis of long-lasting extreme weather events could be considered in the next IRP.

5) Capital costs for new resources are reported in Chapter 7 – Resource Options on Table 7.1. The ST cost summary model results are provided in the confidential data disk; build costs are also reported on LT_Generator tab in each of the ST cost summary results.

6) See the 2023 IRP Amended Final May 31st filing, Volume 1, Chapter 9 – Modeling and Portfolio Selection Results, Figure 9.46 - Change in the Cumulative PVRR relative to P-MM. [2023 IRP Volume I Final 5-31-23.pdf \(pacificorp.co\)](#)

7) An additional sensitivity has been added to the 2023 IRP Amended filing of May 31 which meets this request.

8) The NatriumTM advanced nuclear demonstration project is described in Chapter 7 of the 2023 IRP. The selection of the NatriumTM nuclear reactor demonstration project assumes the technology can be licensed by the Nuclear Regulatory Commission (NRC)), and that the United States (U.S.) Department of Energy (DOE) will contribute to the investment cost of the project. The Company is in the process of negotiating the NatriumTM nuclear reactor demonstration project contract to establish project delivery, licensing, investment and operating costs, fueling, and performance guarantees to ensure customer risk is minimized. This project has potential risks which include licensing, fuel supply, construction risks, etc. PacifiCorp is aware of these risks and will continue to further evaluate the proposal and possible contingencies to ensure costs and risks are minimized. To help manage risk, contracts may include checkpoints and project schedule contingency. Risks are further assessed in Chapter 9 variant studies which exclude nuclear projects, reflecting one possible contingency.

9) The contradictory statement in the initial 2023 IRP has been removed. Page 240 of the amended 2023 IRP now correctly states, “For the 2023 IRP natural gas resources are available in the endogenous LT model for selection, a change from the 2021 IRP.”