

Docket No. 19-035-02, PacifiCorp's 2019 IRP

DPU's Questions for the December 10, 2019 Technical Conference

The DPU appreciates the Company's efforts to accommodate the questions addressed by the Division below. Where tables, charts, graphs, and data are presented, please provide each respective Excel worksheet in an email to the DPU or on a data disc.

Stochastic variables.

1. The stochastic variables used in the Monte Carlo sampling appear to be the same variables used in the 2017 IRP (load, wholesale electricity and natural gas prices, hydro generation, and thermal unit outages)? Please confirm if this is correct.
2. Please describe the process used to choose these variables.
3. Were other variables considered for the 2019 IRP, even if they were ultimately rejected?
4. Under what circumstances might it be appropriate to include other variables, such as wind/solar/storage prices?
5. With the recent weather events, particularly in the Pacific Northwest, causing demand spikes, coupled with supply disruptions that ultimately led to the March 2019 price spike, would the Company considering adding weather as a stochastic variable in its next IRP? Please explain the reasoning behind your response.

Natural gas forecasts.

1. What is the advantage of using third-party natural gas price forecasts, as opposed to a source such as the EIA?
2. Has PacifiCorp run an analysis to see if, over the last decade or so, the third-party forecasts have been more accurate than EIA forecasts? If so, please provide this data and present it at the Technical Conference.

Please provide this as three-way comparison from year 2008 to the present that shows (a) EIA forecasts for the period 2008 - 2019, (b) the Company's IRP gas price forecast for the same period, (c) compared to actual gas prices from 2008 through 2019. (Please email the data tables to the DPU).

3. Please provide a ten-year comparison of the Company's IRP gas forecasts against actual natural gas prices. Please present this as two separate graphics (a) showing a five-year comparison and (b) a separate chart or table that shows the ten-year comparison. Please discuss any variances, spikes, or points to note. (Please email the data tables to the DPU).

4. Why does the Company use Henry Hub prices in its gas forecasts, when it doesn't buy gas from there? For example, why not use the Opal or other price forecasts from where the gas is actually purchased?
5. Please compare the Opal price forecasts against the Henry Hub forecasts for the past five years (2014-2019) and show the difference and/or similarities in these forecasts. Please present this as a graphic and discuss the reasons for any observations to note. (Please email the data tables to the DPU).

Business Plan.

1. The Company has stated that it will not prepare a 2019 IRP Update. Please provide a comparison of the Company's current 10-year business plan load forecasts (energy and capacity) to the Company's 2019 IRP and 2017 IRP Update. Where there are differences, please discuss and explain any variances. (Please email the Excel file to the DPU).

Modeling methodology.

1. Please describe the methodology used to determine which cases in the family tree would have "children." For example, on slide 5 of the Sept. 5-6 slides, P-11 has children, but P-10, P-32, and P-12 do not. This was discussed at one of the public input meetings, but the Division would appreciate a recap and some more detail. One reason given by PacifiCorp was that in some cases, the cases were fairly similar: for example, P-12 was fairly similar to P-11 and so it sufficed to have children of P-11. Was the process of determining which cases were to have children a mechanistic one? E.g., was there a rule applied, or was it more of an eyeball/judgment test?

Load forecasts.

On page 62 of the IRP, PacifiCorp states the following:

Given the emerging state of electric transportation a forecast explicitly identifying the load associated with electric transportation on PacifiCorp's system is currently unavailable. Electric vehicle load is, however, reflected in the Company's load forecast.

1. Please provide the projected EV counts by year and by state that were included in the load forecast. How were these projections formulated and how are they reflected in the Company's load forecast?
2. Please verify if this is correct. The Company's load forecast is first prepared without DSM. Then the Company adds the DSM supply bundles to the load tables, subtracts for private generation and customer preference communities, and then adds load to

account for electric transportation. If this is incorrect, please explain. Is there anything else that gets factored into or subtracted from the Company's IRP load forecast? Please discuss this.

3. Please provide a ten-year comparison (2009 – 2019) of the Company's IRP Annual System Load and Annual System Coincident Peak (before DSM) forecasts against actual load (demand and energy).

Please present this as four separate graphics showing (a) a five-year comparison of the Company's IRP load forecast (system load) compared to actual system load, (b) a five-year comparison of the Company's IRP load forecast (system coincident peak) vs. actual peak load, (c) a separate chart or table that shows the ten-year comparison of the Company's IRP load forecast (system load) compared to actual system load, and (d) a separate chart or table that depicts the ten-year comparison of the Company's IRP load forecast (system coincident peak) vs. actual system coincident peak. Please discuss any variances, spikes, dips, etc. and reasons behind the variances. (Please email the Excel files to the DPU).

Wholesale electric prices.

1. Please provide in a large size a graphic similar to the Company's comparison of power prices in recent IRPs, which averages Mid C/Palo Verde Flat Power Prices (p. 11, Figure 1.8.) except provide this data for the years 2009 through 2019. Then provide on the same graphic the actual power prices for the same time period (2009 through 2019). Please discuss any variances, factors, and other observations from these data. (Please email the Excel tables to the DPU).

Private Generation.

1. Did the Company or Navigant prepare a 2019 Private Generation Study for the Company's 2019 IRP or did it use the 2017 IRP Navigant report? See pages 29-31 and page 107 of Volume I that indicate there is a new study. However, there is no Appendix O in Volume II.
Is there, or is there not, a Navigant Private Generation Study for 2019 that differs from the 2017 study? Please explain and provide documentation. (The data discs labeled Appendix O are empty).

Flexible Reserve Study.

1. Refer to Appendix F, Flexible Reserve Study, Wind and Solar Data, pages 84-85 that states the following:
Wind and Solar, in comparison to load, often have larger upward and downward fluctuations in output that impose significant and sometimes unforeseen challenges when attempting to maintain reliability.

Did PacifiCorp perform any studies that considered the variability of the other solar and wind resources within the EIM footprint, but outside of PacifiCorp's BAAs?

2. Please explain and discuss the statement found in Appendix F, Flexible Reserve Study, Incremental Regulation Reserve Requirements, on page 104, ¶ 2, which states the following:

The need to develop realistic deviation data for a period during which resources did not exist makes measuring an incremental diversity effect a difficult proposition.

Planning Reserve Margin.

1. In reference to Appendix I, Planning Reserve Margin Study, Planning Capacity Factor, page 139, please explain the change between the 2017 and 2019 effective capacity contribution of East and West Solar. Please discuss these results. Battery Storage.
1. The preferred portfolio is projected to include 595 MW of battery storage by 2023 and 2,821 MW by 2038. Please provide details on procurement plans and schedules.
2. What will be the anticipated result if this amount of battery storage is not realized within the planned timeframe?
3. If procurement of land and permitting is required, has PacifiCorp acquired such land and permits?
4. The battery capacity when paired with the renewable resource equals 25% of the renewable resource capacity. How was this determined?

Carbon Assumptions.

1. Please provide further details and clarify the carbon assumptions (including carbon tax and other assessments) utilized in the IRP.
2. It is our understanding that a carbon tax was originally planned to be implemented in 2030 and the Company moved the time frame forward to year 2025? Is this correct?
3. What are the actual carbon tax price assumptions? What is the medium price for carbon, and what is the high carbon price assumption? Please provide the electronic reference for this data if possible. If not, please file supporting documentation.