Sophie Hayes (12546)
Western Resource Advocates
307 West 200 South, Suite 2000
Salt Lake City UT 84102
801-212-9419
sophie.hayes@westernresources.org

Steven S. Michel
Western Resource Advocates
409 E. Palace Avenue, Unit 2
Santa Fe NM 87501
Telephone No. (505) 820-1590
Email: smichel@westernresources.org

*Attorneys for Western Resource Advocates*

**BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH**

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| **In the Matter of the Application of Rocky Mountain Power, a Division of PacifiCorp, for Authority to Change its Depreciation Rates Effective January 1, 2021** | Docket No. 18-035-36 |

# PREFILED DIRECT TESTIMONY OF

# NANCY L. KELLY

# ON BEHALF OF

# WESTERN RESOURCE ADVOCATES

**March 20, 2020**

## I INTRODUCTION AND SUMMARY

**Q: Please state your name, employer, position, and business address.**

A: My name is Nancy L. Kelly. I am employed by Western Resource Advocates ("WRA") in its Clean Energy Program as a Senior Policy Advisor. My business address is 9463 N. Swallow Rd., Pocatello, ID 83201.

**Q: Please describe WRA.**

A: WRA is a non-profit conservation organization, dedicated to protecting the land, air, and water of the West. WRA's Clean Energy Program develops and implements policies to reduce environmental impacts of the electric power industry in the Interior West by advocating for a western electric system that provides affordable and reliable energy, reduces economic risks, and protects the environment through the expanded use of energy efficiency, renewable energy resources, and other clean energy technologies. WRA has offices in Salt Lake City, Utah; Boulder and Denver, Colorado; Carson City, Nevada; Phoenix, Arizona; and Santa Fe, New Mexico.

**Q: Please describe your current duties, work experience, and educational background.**

A: I provide policy analysis and regulatory support to WRA in electric-industry-related matters. I have worked in the industry for more than 20 years, and I have participated in regulatory dockets in Utah, Colorado, Nevada, and New Mexico. Before joining WRA in 2008, I worked with the Utah Office of Consumer Services as a consultant and Utility Economist; my primary areas of responsibility included interjurisdictional cost allocation, regional transmission initiatives, and integrated resource planning. I began my

professional career as an academic economist at Idaho State University where I spent three years as a faculty member in the Department of Economics and close to five years as the economist in the Center for Business Research and Services. I received a B.S. in economics from Idaho State University in1983, and completed my fieldwork toward a PhD in economics from the University of Utah in 1991.

**Q: Have you previously testified before the Public Service Commission of Utah ("Commission")?**

A: Yes. Most recently I filed written testimony supporting the stipulation in Docket No. 19-035-42 (*In the Matter of the Application of Rocky Mountain Power for Approval of the 2020 Inter-Jurisdictional Cost Allocation Agreemen*t).

**Q: On whose behalf are you testifying today?**

A: I'm testifying on behalf of WRA.

**Q: Please explain WRA's interest in this proceeding.**

Operating coal plants is becoming increasingly costly relative to other available alternatives, and this is happening at a time when the effects of climate change are becoming clearly visible and the public desire to address the growing crisis is increasing. Coal-fired power has provided reliable electricity for many years, but because coal-fired generation emits significant levels of planet-warming carbon emissions, continuing to burn coal is becoming increasingly risky as well as costly. Therefore, of interest to WRA are the proposed depreciable lives of PacifiCorp's twenty-three partially- and wholly-owned coal-fired generating units for which this case sets depreciation rates.

For depreciation purposes, the life of a generation asset is not permanently set at the time a unit is put in service; rather, the Company may adjust its estimates of depreciable lives over time as circumstances warrant. The objective of setting and resetting accounting lives is to allow the Company to recover its costs over the appropriate period – that is, while the plant is in service. Historical and engineering data, as well as factors affecting the economic operation of facilities, are relevant in setting depreciable lives.

In this filing, PacifiCorp proposed shortened lives for seven of the twenty-three units: Cholla Unit 4, Colstrip Units 3 and 4, Craig Units 1 and 2, and Jim Bridger Units 1 and 2. The lives of the remaining sixteen were unchanged.

However, since filing this case in September of 2018, PacifiCorp filed its 2019 Integrated Resource Plan ("2019 IRP").[1] The 2019 IRP demonstrated significant benefits from further shortening the lives of Cholla Unit 4 and Bridger Units 1 and 2 and of closing two units at the Naughton plant four years early.[2]

Additionally, evidence developed through the 2019 IRP, as well as from the rapidly evolving energy landscape, suggests that other of PacifiCorp's coal-fired generating units whose lives were unchanged from the 2012 Depreciation Study are unlikely to operate cost-effectively over their currently proposed lives.

Given that Cholla Unit 4, Bridger Units 1 and 2, and Naughton Units 1 and 2 are likely to close in the near-term pursuant to the IRP, and other units whose lives remain

[1] *2019 Integrated Resource Plan*, Volumes I and II, Oct 18, 2019.
[2] As discussed below, IRP modeling demonstrates a Present Value Revenue Requirement ("PVRR") benefit of approximately $471 million over the 20-year IRP planning period if coal units are retired consistent with the shorter IRP retirement lives as opposed to the longer proposed depreciable lives.

unexamined by either the 2018 Depreciation Study or the 2019 IRP are unlikely to operate through their proposed depreciable lives, WRA's interest in this proceeding has been to evaluate appropriate depreciable lives for coal units and methods for considering and accounting for potential mismatches between operational lives and depreciable lives.

**Q: Does the Stipulation provide provisions to address shorter lives than those proposed in this filing?**

A: The stipulated depreciation rates incorporate the shorter life of Cholla Unit 4.[3] And, while the stipulated depreciation rates do not directly incorporate the shorter IRP lives for Jim Bridger Units 1 and 2 or Naughton Units 1 and 2, the Stipulation does provide provisions to consider these shorter IRP lives and a commitment to discuss potential rate impacts associated with earlier retiring units and how to address them.

**Q: Please describe these provisions.**

A: As an initial matter, the stipulation provides that, in signing, signatories are not implying any agreement or expectation about the operational lives of coal resources (para. 26). Through the stipulation, parties have committed to discuss strategies that may be implemented to address rate impacts associated with earlier retirements at coal plants stemming from the 2019 IRP (para. 21) as well as strategies that may be implemented over the longer term to address rate impacts associated with potential earlier retirements of coal resources whose current depreciable lives extend 10 or more years into the future (para. 22).

[3] It also provides for the gas conversion of Naughton Unit 3, which ceased coal-fired operation on January 31, 2019 in compliance with Regional Haze requirements. The unit will retire in 2029.

These provisions are important to WRA because we believe it is prudent to address potential mismatches between cost-recovery and actual operations.

**Q: What is the purpose of your testimony?**

A: WRA supports the Stipulation. Of particular importance to WRA, this stipulation provides a path for PacifiCorp and parties to work together and think proactively about rate mitigation options in the face of earlier retiring coal units. The purpose of my testimony is to provide the Commission with additional background information about the likelihood of earlier coal unit retirements.

## II DISCUSSION

**Q: Is there background information you would like the Commission to consider as it evaluates approval of the Stipulation?**

A: Yes. I would like the Commission to consider how the proposed depreciable lives of the coal-fired units were established for the Depreciation Study; how these proposed lives compare with the economic analysis of coal units in the 2019 IRP; and whether the depreciable lives of PacifiCorp's coal units reflect their likely operating lives. To the extent that depreciable lives exceed actual operating lives, the depreciation rates associated with these units will be too low to fully recover costs over their useful lives. The Commission should be mindful about delaying cost recovery decisions from the present to the future, and the prudence of considering and accounting for economic early retirements in the nearer term.

**Q: Please describe how PacifiCorp determined the economic lives of its twenty-three partially- and wholly-owned coal-fired generating units for this filing and how these economic lives were incorporated into the Depreciation Study.**

A: Unlike many of the asset lives determined as part of a depreciation study, the analysis of the expected remaining lives for PacifiCorp's coal-fired assets are an estimation of the remaining *economic lives*; they are not based on engineering studies or analyses of historical data. PacifiCorp used its judgment to estimate the economic lives of the units and provided that information to Mr. John Spanos, PacifiCorp's depreciation consultant, who then developed depreciation rates using those lives.

Mr. Chad Teply explained that in developing estimates of the remaining economic lives, the Company began with the depreciable lives from the last depreciation case and then considered needed capital expenditures, impacts to ongoing operating and maintenance expenses, and the potential for accelerated timelines as a result of resource planning decisions. PacifiCorp considered this information in the context of (1) major equipment condition; (2) fuel cost and availability; (3) environmental compliance obligations; and (4) policy and market drivers. He further explained that for this Depreciation Study, the Company proposed to estimate economic lives for individual units instead of whole plants as had been done for past studies.[4]

[4] Teply at pp. 3-4.

**Q: Did PacifiCorp propose to change the depreciable life of any of its coal-fired generating units based on its assessment?**

A: Yes. PacifiCorp proposed shortening the lives of seven units and provided explanations for these decisions. PacifiCorp proposed shortening the lives of the following:

- Cholla Unit 4 by seventeen years from 2042 to 2025 to align with a 2025 Regional Haze compliance obligation. In 2025, Cholla will have operated for 44 years.[5]
- Colstrip Units 3 and 4 by nineteen years from 2046 to 2027 "to facilitate least-cost, least-risk analysis, decision making, and planning as announced retirements of Colstrip Units 1 and 2 (non-Company resources) in 2022 approach," and for consistency with other joint owners who have "reached agreements with their regulators to establish 2027 as the new depreciable life." In 2027, Colstrip Unit 3 will have operated for 43 years and Colstrip Unit 41.[6]
- Craig Unit 1 by nine years from 2034 to 2025 to align with its approved Regional Haze obligation. Inn 2025, Craig Unit 1 will have operated for 45 years.[7]
- Craig Unit 2 by eight years from 2034 to 2026 "to facilitate least-cost, least-risk analysis, decision making, and planning as Craig Unit 1 approaches retirement in 2025." In 2026, Craig Unit 2 will have operated for 47 years.[8]
- Jim Bridger Unit 1 by nine years from 2037 to 2028 and Jim Bridger Unit 2 by five years from 2037 to 2032 "to align with the Company's 2017 IRP preferred portfolio."

[5] Teply, p. 9.
[6] Teply, p. 10.
[7] Teply, p. 9.
[8] Teply, p. 10.

In 2028, Jim Bridger Unit 1 will have operated for54 years; in 2032, Jim Bridger Unit 2 will have operated for 57 years.[9]

PacifiCorp proposed leaving the lives of the remaining sixteen units unchanged from the 2013 approved depreciable lives used in the 2012 Study.[10]

**Q: This case was filed in September of 2018, nearly a year and a half ago. What delayed this proceeding?**

A: On December 3, 2018, less than three months after PacifiCorp filed this case, the Company publicly released its preliminary coal retirement analysis, conducted as part of the 2019 IRP. The initial results brought into question the economic viability of a significant portion of the coal fleet, which, in turn, brought into question the estimated economic lives used for this case. Parties generally agreed that the pending depreciation cases should be stayed until after the 2019 IRP was filed.

**Q: How did the 2019 IRP Preferred Portfolio coal retirement dates compare with the proposed depreciation lives?**

A: The 2019 IRP further accelerated the retirements of three units and identified the early retirement of an additional two. The IRP accelerated the retirement of Cholla 4 by almost five years from April of 2025 to the end of 2020; Bridger Unit 1 by five years from 2028 to 2023; and Bridger Unit 2 by four years from 2032 to 2028. In addition, the retirements of Naughton Units 1 and 2 were accelerated by four years from 2029 to 2025.[11]

[9] Teply, p. 9.
[10] According to Ms. Nikki Kobliha, the 2013 approved depreciable lives used in the 2012 Depreciation Study were based on a 61-year engineering life. *See* Kobliha, p. 8.
[11] Naughton Unit 3 had ceased coal-fired operation January, 31, 2019 and will be converted to natural gas in 2020.

**Q: Have you prepared a table comparing the approved lives, the proposed lives, and the retirement dates resulting from the 2019 IRP?**

A: Table 1. provides this information.

Table 1.

| Unit | In Service Date | PacifiCorp Share Capacity (MW) | 2013 Approved Depreciable Life | 2018 Proposed Depreciable Life | Years Reduction in Proposed Life Over Approved Life (E minus D) | 2019 IRP Retirment Year | Years Reduction in IRP Life Over Approved Life (G minus D) | Years Reduction in IRP Life Over Proposed Life (H minus F) |
|---|---|---|---|---|---|---|---|---|
| A. | B. | C. | D. | E. | F. | G. | H. | I. |
| Cholla 4 | 1981 | 387 | 2042 | 25-Apr | -17 | 2020 | -22 | -5 |
| Colstrip 3 | 1984 | 74 | 2046 | 2027 | -19 | 2027 | -19 | 0 |
| Colstrip 4 | 1986 | 74 | 2046 | 2027 | -19 | 2027 | -19 | 0 |
| Craig 1 | 1980 | 82 | 2034 | 2025 | -9 | 2025 | -9 | 0 |
| Craig 2 | 1979 | 83 | 2034 | 2026 | -8 | 2026 | -8 | 0 |
| Dave Johnston 1 | 1959 | 106 | 2027 | 2027 | 0 | 2027 | 0 | 0 |
| Dave Johnston 2 | 1960 | 106 | 2027 | 2027 | 0 | 2027 | 0 | 0 |
| Dave Johnston 3 | 1964 | 220 | 2027 | 2027 | 0 | 2027 | 0 | 0 |
| Dave Johnston 4 | 1972 | 330 | 2027 | 2027 | 0 | 2027 | 0 | 0 |
| Hunter 1 | 1978 | 44 | 2042 | 2042 | 0 | 2042 | 0 | 0 |
| Hunter 2 | 1980 | 33 | 2042 | 2042 | 0 | 2042 | 0 | 0 |
| Hunter 3 | 1983 | 418 | 2042 | 2042 | 0 | 2042 | 0 | 0 |
| Huntington 1 | 1977 | 269 | 2036 | 2036 | 0 | 2036 | 0 | 0 |
| Huntington 2 | 1974 | 471 | 2036 | 2036 | 0 | 2036 | 0 | 0 |
| Jim Bridger 1 | 1974 | 459 | 2037 | 2028 | -9 | 2023 | -14 | -5 |
| Jim Bridger 2 | 1975 | 450 | 2037 | 2032 | -5 | 2028 | -9 | -4 |
| Jim Bridger 3 | 1976 | 354 | 2037 | 2037 | 0 | 2037 | 0 | 0 |
| Jim Bridger 4 | 1979 | 359 | 2037 | 2037 | 0 | 2037 | 0 | 0 |
| Wyodak | 1978 | 349 | 2039 | 2039 | 0 | 2039 | 0 | 0 |
| Hayden 1 | 1965 | 353 | 2030 | 2030 | 0 | 2030 | 0 | 0 |
| Hayden 2 | 1976 | 156 | 2030 | 2030 | 0 | 2030 | 0 | 0 |
| Naughton 1 | 1963 | 201 | 2029 | 2029 | 0 | 2025 | -4 | -4 |
| Naughton 2 | 1968 | 268 | 2029 | 2029 | 0 | 2025 | -4 | -4 |
| Naughton 3 (gas) | | | | | | 2029 | | |

Column D displays the currently approved depreciable lives. Column E shows the proposed lives. Proposed lives that differ from the approved lives are shown in purple. Column F displays the difference in years between the approved depreciable lives and the proposed lives. Column G displays the 2019 IRP retirement dates. Lives that differ from either the approved dates or the proposed dates are shown in red. Column H displays the

difference between the approved depreciable lives and the IRP lives. Finally, Column I, displays the difference between the proposed lives and the IRP lives.

**Q: Were you able to assess the benefit of retiring units consistent with the shorter IRP retirement lives as opposed to the longer proposed depreciable lives?**

A: Yes. IRP modeling demonstrates a Present Value Revenue Requirement ("PVRR") benefit of approximately $471 million over the 20-year IRP planning period if coal units are retired consistent with the shorter 2019 IRP lives as opposed to the longer proposed depreciable lives.

**Q: Please explain how you made this determination.**

The $471 million benefit reflects the difference in the PVRR of two simulations undertaken using PacifiCorp's IRP capacity expansion tool, System Optimizer ("SO"). System Optimizer determines the optimal type, timing, and location of resource additions given a set of system parameters and specific economic assumptions, as well as assumed coal unit retirement dates.

Portfolio development case "P-3" was developed using retirement dates consistent with the Company's proposed 2018 depreciation schedule ("Depreciation Portfolio").[12] Its 20-year SO PVRR is $21,951 million. Case "P-45CNW" was selected as the Preferred Portfolio. Its 20-year SO PVRR is $21,480 million. The difference in the two values is $471 million.

[12] Case P-3 was termed "Regional Haze Intertemporal" in the filed IRP.

**Q: Is the SO capacity expansion tool the only modeling tool PacifiCorp uses in evaluating portfolio performance?**

No, in addition to the SO model, PacifiCorp uses an hourly production cost model, Planning and Risk ("PaR), to evaluate the stochastic risk associated with a given resource portfolio.[13]

**Q: How does the Depreciation Portfolio compare with the Preferred Portfolio when considering PaR metrics?**

A: This information is not available. PacifiCorp only develops PaR metrics for top-performing portfolios, and the Depreciation Portfolio was not a top-performer. Based on the 20-year SO PVRR metric, of the forty-nine portfolios developed using medium natural gas and carbon price assumptions, the Depreciation Portfolio ranked tenth in *highest* total cost. Thirty-nine portfolios had lower costs.

**Q: How would you characterize the factors that led to portfolios with *higher* costs than the Depreciation Portfolio?**

A: In general, longer coal unit lives, the installation of Selective Catalytic Reduction pollution controls ("SCRs"), significant transmission additions, and the addition of more expensive resources resulted in higher costs. The exception to this generalization is Case P-15 which retired all coal by 2030. However, while Case P-15 was one of the more expensive portfolios evaluated, it was by no means the highest cost. In fact, IRP

[13] PacifiCorp produces two stochastic metrics. The PaR Stochastic Mean PVRR reflects the expected cost of a resource portfolio when taking into account the stochastic risk associated with five key economic variables: natural gas prices, wholesale market prices, load, hydro generation, and thermal plant outages. The PaR Risk-Adjusted PVRR incorporates into the metric the cost of low-probability, high-cost events.

modeling demonstrated that retiring and replacing all coal-fired generation by 2030 would be more economic than modifying the Depreciation Portfolio by installing SCRs at two of the Jim Bridger units in 2021 and 2022 while maintaining their current depreciable lives of 2037.[14]

**Q: Please describe the factors that resulted in *lower*-cost portfolios than the Depreciation Portfolio.**

A: In general, portfolios with some combination of earlier coal retirements than the Depreciation Portfolio resulted in a reduced 20-year SO PVRR. The 2019 IRP evaluated different combinations of earlier retirements at the Naughton and Jim Bridger plants, all of which *reduced* the 20-year SO PVRR over that of the Depreciation Portfolio. Based on these SO results, the three least-cost portfolios retired Jim Bridger 3 and 4 in 2023, Naughton Units 1 and 2 in 2025, Jim Bridger Unit 1 in 2028 and Jim Bridger Unit 2 in 2032. Ultimately, when PaR results were available and included in the portfolio evaluation, PacifiCorp selected Case P-45CNW as the Preferred Portfolio.

[14] The comparison of Case P-15 with Case P-13 illustrates this point. Case P-13 includes the installation of two SCRs at Jim Bridger. Based on the 20-year SO PVRR, Case P-15 cost $214 million less than Case P-13. Case P-15 ranked sixth in *highest* total cost while Case P-13 ranked third. Case P-13 modifies the Depreciation Portfolio with two changes that lowered the PVRR, while the installation of SCRs at Jim Bridger Units 1 and 2 increased the PVRR. Specifically, including a large gas conversion at Naughton Unit 3 lowered the 20-year SO PVRR by $66 million (the difference between Case P-9 and Case P-3), and retiring Cholla in 2020 rather than in 2025 reduced the 20-year SO PVRR by an additional $12 million (the difference between Case P-11 and Case P-9). *See 2019 IRP Volume II, Appendix M, p. 274-76.*

**Q: What is your conclusion based on this background information?**

A: I believe economic and policy-related pressures facing coal plants will increase. I consider the earlier retirements stemming from the 2019 IRP to be highly likely, and I will address each separately in more detail, since the circumstances differ.

**Q: How likely do you consider the closure of Cholla Unit 4 by the end of 2020 (IRP life) vs. 2025 (proposed life) to be?**

A: The closure of Cholla Unit 4 by the end of 2020 appears certain. In a statement issued January 6, 2020, PacifiCorp announced it would retire Cholla Unit 4 by the end of this year. In its statement PacifiCorp said that continued operation of Cholla Unit 4 was no longer economic for the company's customers beyond 2020 when compared to other resource alternatives.[15]

**Q: What provision does the Stipulation make to address the early closure of Cholla Unit 4?**

A: The Stipulation accounts for the IRP retirement date. That is, the calculated depreciation rate assumes Cholla Unit 4 closes at the end of 2020.

**Q: How likely do you consider the closures of Naughton Units 1 and 2 by the end of 2025 (IRP lives) vs. 2029 (proposed lives) to be?**

A: I think PacifiCorp intends to cease coal-fired operations at the Naughton plant by the end of 2025, unless something unanticipated causes a temporary delay. The Naughton units

[15] *PacifiCorp will close a coal generator in Arizona this year*, Salt Lake Tribune, January 8, 2020. https://www.sltrib.com/news/2020/01/08/pacificorp-will-close/.

are among PacifiCorp's most costly sources of coal-fired power,[16] and PacifiCorp has taken action to end its coal-fired operations at Naughton.

The Naughton plant and the Kemmerer mine that feeds it are located near Kemmerer Wyoming.[17] PacifiCorp held numerous meetings with its Naughton employees, representatives of the mining union, and local and state political leaders following the initial release of the coal retirement study results, and PacifiCorp management met with the affected parties immediately ahead of filing the 2019 IRP. Given the real and lasting impacts that closure of the Naughton plant will have on the community of Kemmerer, it seems improbable that the Company would take the steps it has taken without a clear intention to cease operations as planned. While delays are possible due to unanticipated factors, it seems highly unlikely that the economics of the plant could turn around, extending its economic life.

**Q: What provision does the Stipulation make to address the likely retirement of Naughton Units 1 and 2 in 2025?**

A: The Stipulated rates do not address the likely retirement. The calculated depreciation rates reflect a 2029 depreciable life for Naughton Units 1 and 2. This is one of the reasons why it is important that the stipulation requires parties to discuss strategies that

[16] Based on the December 2018 unit-by-unit retirement 20-year SO PVRR results, retiring Naughton Units 1 and 2 in 2022 ranked first and second in providing customer benefits. In the PaR results using base case assumptions, retiring Naughton Units 1 and 2 in 2022 ranked second and fourth in providing customer benefits. Only retirement of the Hayden Units provided greater benefits.

[17] The Kemmerer mine was purchased by North American Construction Group Ltd. from bankrupt West Moreland in 2019. The contract is secure through 2021.

may be implemented to address rate impacts associated with earlier retirements at coal plants stemming from the 2019 IRP.

**Q: How likely do you consider the closure of Jim Bridger Unit 1 in 2023 (IRP Life) vs. 2028 (proposed life) to be?**

A: I consider the closure of Jim Bridger Unit 1 by 2023 to be an essential component of PacifiCorp's ongoing negotiations with the State of Wyoming and the Environmental Protection Agency ("EPA") regarding its Regional Haze compliance obligations. On that basis alone, I consider it highly likely.

On January 10, 2014, EPA approved Wyoming's State Implementation Plan ("SIP"). The Wyoming SIP required installation of SCRs on the four units at the Jim Bridger plant. SCRs were installed on Units 3 and 4 in 2015 and 2016 and SCRs are required on Units 1 and 2 by the end of 2022 and 2021 respectively.[18] As discussed above, PacifiCorp has evaluated installing SCRs at Jim Bridger Units 1 and 2, and the cost cannot be justified.

However, just over a year ago, on February 5, 2019, PacifiCorp filed with Wyoming an application and revision to its approved SIP that would allow the units to continue to operate without the installation of SCRs. In lieu of installing SCRs at Units 1 and 2, PacifiCorp has proposed to meet plant-wide average monthly-block pound per hour emission limits.[19] It appears that closure of Unit 1 by the end of 2023 would assist PacifiCorp in meeting the plant-wide limits it proposes and could assist it in winning

[18] 2019 IRP Volume I, pp. 47-48.
[19] 2019 IRP Volume I, pp. 47-48.

approval of its application and SIP revision. If the application and revision are not approved, Unit 2 must close in 2021 and Unit 1 in 2022. Given these compliance considerations, and given the near-term nature of the decision, I expect Bridger Unit 1 to close by no later than year-end 2023, and possibly by year-end 2022.

**Q: What provision does the Stipulation make to address the likely retirement of Jim Bridger Unit 1 in 2023?**

A: The Stipulated rates do not address the likely retirement. The calculated depreciation rate reflects a 2028 depreciable life for Jim Bridger Unit 1. As stated above, this is one of the reasons why it is important that the stipulation requires parties to discuss strategies that may be implemented to address rate impacts associated with earlier retirements at coal plants stemming from the 2019 IRP.

**Q: How likely do you consider the closure of Jim Bridger Unit 2 in 2028 (IRP Life) vs. 2032 (Proposed Life) to be?**

A: I expect PacifiCorp to close Jim Bridger Unit 2 no later than 2028. However, for two reasons, I also think it could close earlier. First, as discussed above, Unit 2 has a current Regional Haze compliance obligation of 2021. If PacifiCorp is not successful in winning approval of its application and SIP revision, Unit 2 must cease coal-fired operations by the end of next year.

Another pressure not related to Regional Haze compliance obligations could also impact the retirement date of Unit 2. If the MSP stipulation in Docket No. 19-035-02 (*In the Matter of the Application of Rocky Mountain Power for Approval of the 2020 Inter-Jurisdictional Cost Allocation Agreement*) is approved by all states, Oregon will exit the

Bridger plant in 2025, and PacifiCorp will file, roughly a year from now, its analysis and recommendations in Utah, Idaho, and Wyoming regarding potential additional allocations of Bridger's plant and mine costs. The Bridger units are some of PacifiCorp's more expensive units, and Bridger mine costs have been on the rise. PacifiCorp could recommend closing Bridger Unit 2 in 2025 consistent with the Oregon Exit dates in order to avoid shifting the costs and risks of those units to Utah, Idaho, and Wyoming, or Commissions could reject those costs if recommended. Therefore, I think it's possible that Unit 2 could close earlier than 2028.

**Q: What provision does the Stipulation make to address the likely retirement of Jim Bridger Unit 2 in 2028?**

A: The calculated depreciation rate reflects a 2032 depreciable life for Jim Bridger Unit 2. As I said above, these misalignments between the IRP lives and depreciation dates merit additional consideration.

**Q: Do you have concerns regarding the proposed lives of PacifiCorp's coal-fired generation and the resulting depreciation rates that do not stem directly from the distinction between the proposed depreciation lives and the IRP lives?**

A: Much has changed since the last Depreciation Study in 2012. Given the rapidly evolving energy landscape, as well as the increasing public sensitivity to the costs and risks associated with climate change, I am skeptical of coal-unit lives that extend into the late 2030's and 2040s. Specifically, I question whether: (1) Hunter Units 1-3 will operate through 2042; (2) Huntington Units 1 and 2 will operate through 2036; (3) Jim Bridger Units 3 and 4 will operate through 2037; and (4) Wyodak will operate through 2039. I

suspect the proposed depreciable lives are too long and the depreciation rates too low to match cost recovery with actual operations.

**Q: Do you have evidence to support your skepticism of these longer lives?**

A: The 2019 IRP provided plenty of economic evidence to support shorter lives for Bridger Units 3 and 4.[20] Unfortunately, however, alternative lives for Hunter, Huntington, and Wyodak were not examined as part of the 2019 IRP, other than as part of the initial unit-by-unit analysis. That initial analysis brought into question their economic viability, depending on the modeling tool used and the market assumptions applied.[21]

**Q: Do any of these longer-lived units face Regional Haze compliance obligations?**

A: Yes. All but Hunter Unit 3 face current Regional Haze compliance obligations that arose as part of the first Regional Haze planning period and are in various stages of review and litigation.

On January 10, 2014, EPA issued a final action in Wyoming that, among other requirements, required installation of SCR controls at Wyodak within five years.[22] PacifiCorp appealed, and the court granted a stay on September 9, 2014. It ordered that the deadline for complying would be extended for the duration of the time that the stay is in effect. If the court upholds the EPA action, PacifiCorp will have slightly less than five

[20] For example, as discussed above, based on the SO 20-year PVRR, the lowest-cost portfolios assumed Bridger Units 3 and 4 closed in 2023 while Naughton Units 1 and 2 were shuttered in 2025. Jim Bridger Unit 1 retired in 2028 and Jim Bridger Unit 2 in 2032.
[21] *See* Table R.3. 2019 IRP, Volume II, Appendix R, p. 597.
[22] 2019 IRP, Volume I, p. 47.

years to comply. Given that SCRs are unlikely to be cost effective, Wyodak would cease coal-fired operation within that five-year window.

EPA's final rule in Utah, issued June 1, 2016, requires installation of SCRs on Hunter Units 1 and 2 and Huntington Units 1 and 2 by August 4, 2021. PacifiCorp also appealed that decision, and the court granted a stay. Then, on July 3, 2019, the State of Utah submitted a SIP revision to EPA for approval that makes the closure of the Carbon Plant enforceable under the SIP and removes the requirements to install SCR on the Hunter and Huntington units. EPA is currently reviewing the Revision. [23]

Whether EPA approves the revised SIP or not, SCRs are still likely to be required at Hunter and Huntington sometime over the next decade because states must demonstrate reasonable progress toward the goal of achieving natural visibility conditions in specific National Parks and Wilderness Areas by 2064. The second implementation period of the Regional Haze Program is underway, and Regional Haze SIPS are due to EPA by July 31, 2021 with EPA action expected in 2023. Units at Hunter and Huntington are likely candidates (including Hunter Unit 3) and SCRs could be required before 2030. Given that SCRs are unlikely to be cost effective, the Hunter and Huntington plants could close sometime within the next decade, roughly 10-15 years earlier than currently planned.

[23] 2019 IRP, Volume I, p. 46.

**Q: Given your evaluation of the factors affecting the operational lives of coal resources, please explain why you support this stipulation that potentially mismatches cost-recovery and actual operations.**

A: PacifiCorp is pursuing economic retirements at coal units pursuant to the IRP. PacifiCorp is also still in the process of evaluating the economics of its coal resources at a time when the spotlight on coal is intensifying due to its costs, environmental consequences, and impacts on the global climate. Setting depreciation rates at this time is not easy. Given the economic pressures and uncertainty facing coal plants, it may be appropriate to collect costs over longer or shorter periods of time than actual operable lives. WRA supports working with PacifiCorp and other parties to mitigate rate impacts and retain flexibility in the face of an uncertain future. This stipulation provides a path for PacifiCorp and parties to think proactively about rate mitigation options in the face of earlier retiring coal units.

**Q: What do you recommend?**

A: I recommend the Commission find the stipulation just and reasonable in result.

**Q: Does this conclude your testimony?**

A: It does.