Rocky Mountain Power
Docket No. 18-035-36
Witness: Chad A. Teply

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

Direct Testimony of Chad A. Teply

September 11, 2018

Q. Please state your name, business address, and present position.

A. My name is Chad A. Teply. My business address is 1407 West North Temple, Suite 310, Salt Lake City, Utah. My position is Senior Vice President of Strategy and Development for Rocky Mountain Power (the "Company"), a division of PacifiCorp.

QUALIFICATIONS

Q. Briefly describe your education and professional experience.

A. I have a Bachelor of Science Degree in Mechanical Engineering from South Dakota State University. I joined MidAmerican Energy Company (a Berkshire Hathaway Energy affiliate company) in November 1999, and held positions of increasing responsibility within the generation organization. In April 2008, I moved to Northern Natural Gas Company (a Berkshire Hathaway Energy affiliate company) as Senior Director of Engineering. I joined PacifiCorp in February 2009. In my current role as Senior Vice President of Strategy and Development, my responsibilities encompass strategic planning, regulatory support, stakeholder engagement, development and execution of major generation resource additions, major environmental compliance projects, and major transmission projects.

Q. Please explain the responsibilities of the resource development staff within your organization.

A. My resource development staff is responsible for developing generation resource options that the Company can potentially implement, if determined to be least cost on a risk-adjusted basis. Resource development staff is also responsible for developing and providing performance and cost information related to supply-side resource options used in the Company's integrated resource planning ("IRP") process, and maintaining

data on existing resource capacities, performance, and costs. Resource development staff also maintains cost and performance information on current and emerging environmental regulations that may affect the operation of the Company's thermal generating assets.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. My testimony:

- Describes the process used by the Company to develop estimated economic lives for the thermal generation resources that are incorporated into the Company's new depreciation study submitted with Mr. John J. Spanos's testimony as Exhibit RMP___(JJS-2) (the "Depreciation Study") in this filing.
- Provides an overview of the recommended changes to the depreciable lives of the Company's thermal generation resources based on the Company's assessment of major factors and changes since the 2013 depreciation study.
- Presents the Company's recommendations on decommissioning costs. I explain how these costs were developed from updated studies and are now applied on a plant-by-plant basis.

DEVELOPMENT OF DEPRECIABLE PLANT LIFE

Q. Why is it necessary to estimate the economic life of a generation asset to develop depreciation rates?

A. One component of the Company's cost of service is the recovery of capital investment. This recovery is accomplished through depreciation expense over the life of each resource. Because depreciation rates spread a certain amount of cost over a certain

period of time, it is necessary to have a reasonable estimate of the economic life of a resource at the time it is placed into service to properly calculate its depreciation expense. The estimated plant economic life of a generation asset is the period of time that begins when the asset is placed in service and starts generating electricity, and ends when the asset is removed from service. In other words, it is the period of time during which customers benefit from the asset.

Q. Is a plant's estimated economic life permanently set when the plant is placed into service?

A. No. For depreciation purposes, all generation asset economic lives are estimates that may be adjusted over time as circumstances warrant. The Company reevaluates its economic life estimates each time it performs a depreciation study. In this case, the Company provided estimated generation plant depreciable lives information to Mr. Spanos for his use in preparing the Depreciation Study.

Q. Are you also providing the Company's estimated thermal generation plant economic lives information for this docket?

A. Yes. Exhibit RMP___(CAT-1) accompanying my testimony contains a complete list of PacifiCorp's thermal generation plants and their recommended depreciable lives.

DEPRECIABLE LIVES FOR THERMAL GENERATION RESOURCES

Q. Please describe the process the Company used to assess the depreciable lives of its thermal generation resources.

A. The Company began with the estimated retirement years from the 2013 depreciation study. The Company then considered capital expenditures, impacts to ongoing operating and maintenance expenses, and the potential for accelerated timelines for

resource planning decisions. These factors were considered in the following context: (1) major equipment condition; (2) fuel cost and availability; (3) environmental compliance obligations; and (4) policy and market drivers.

Based on the unique circumstances that affect individual units at a given plant, the Company also modified its current practice of using a single retirement year for a plant. Instead of using a single retirement year for a plant, the Company proposes to use the depreciable lives of the individual coal-fired generation units at each plant.

Q. Please explain how major equipment condition can affect the depreciable life of a thermal generation resource.

A. Major equipment condition is influenced by the planned outage schedule. Thermal resources, including the coal-fired, gas-fired, and geothermal resources involving the production and transport of steam, normally undergo overhauls on four-year cycles, eight-year cycles, or 12-year cycles. The Company establishes outage schedules for coal-fired resources based on its industry operating experience. It establishes overhaul schedules for gas-fired combustion turbine-based resources based on the number of operating hours and starts of the units and the recommendations of the original equipment manufacturer. Major equipment or component replacements, such as replacing cooling towers, condenser re-tubing, replacing turbine components, re-winding generators, or replacing steam generator components, may be required at these overhaul milestones. These periodic milestone replacements are important to the ongoing operation of the resource. If capital investment is required, the resource may no longer be economic to operate, depending on the level of investment and expected remaining life.

Q. Please explain how fuel cost and availability can affect the depreciable life of a thermal generation resource.

A. Fuel cost, fuel availability, and, to an extent, fuel quality can influence the economic life of a thermal generation resource. Significant changes in the cost, availability, or quality of the resource's fuel supply can drive major capital expenditures or result in increased run-rate costs that could make the resource uneconomic to operate. Issues at captive mines that serve the Company's resources are likely to have more direct impacts, depending upon the availability of alternative competitive market suppliers. Switching to a different fuel source, and procuring and delivery of this alternate fuel, could require major capital expenditures, or result in increased run-rate fuel costs, which can also drive economic-life decisions for individual resources.

Q. Please explain how environmental regulations can affect the depreciable life of a thermal generation asset.

A. Existing, evolving, and emerging air emissions standards, water intake and effluent discharge standards, and solid waste regulations may impact the economics of operating an asset. New regulations or changes to existing air, water, or solid waste regulations influence the timing of capital expenditures for compliance and the subsequent operating and maintenance costs. Capital expenditures for compliance with environmental regulations include air pollution controls, water intake infrastructure modifications, discharge constraints, cooling system changes, and new or upgraded coal combustion waste infrastructure to transport and store bottom ash, fly ash, and scrubber waste. Capital expenditures, once made, must be recovered over the remaining life of the asset. If a major capital investment is required to meet a new environmental

standard but it is not feasible or economic to recover the investment over the remaining life of the asset, this could result in the early retirement of the asset.

Q. Have any significant new environmental regulations or compliance obligations been implemented since the Company's last depreciation study that could affect thermal generation resource depreciable lives?

A. Yes. Several environmental regulations and compliance obligations have been implemented since the Company's 2013 depreciation study. First, the United States Environmental Protection Agency ("EPA") and the states of Arizona, Colorado, Utah, and Wyoming have continued to implement their Regional Haze state and federal implementation plans. Since 2013, the Company has taken steps to install emissions control equipment, and negotiate alternative compliance outcomes for certain units[1], and is currently supporting ongoing requests for reconsideration of and, in some instances, litigation over, other implementation plan requirements[2]. These efforts and outcomes affect several of the Company's wholly-owned or partially-owned generation resources. The Company generally assesses its compliance obligations and alternatives as part of its regular IRP filings, the most recent of which are the 2017 IRP and the 2017 IRP Update, which are available on the Company's website. Detailed discussion of the Company's completed compliance projects and upcoming compliance decisions

[1] In 2014, installation of new low_NOx burners, a scrubber upgrade, and new baghouse at Hunter Unit 1. In 2015, installation of selective catalytic reduction ("SCR") systems at Jim Bridger Unit 3 and Hayden Unit 1. In 2016, installation of SCR systems at Jim Bridger Unit 4 and Hayden Unit 2. Also in 2016, an SCR alternative for Dave Johnston Unit 3 was approved by EPA. In 2017, an SCR system was installed at Craig Unit 2 and an SCR alternative for Cholla Unit 4 was approved by EPA. In 2018, an SCR alternative for Craig Unit 1 was approved by EPA. The Company is in discussions with the Wyoming Department of Environmental Quality and the EPA regarding an SCR alternative for Jim Bridger Units 1 and 2.

[2] The EPA is currently in the process of reconsideration of Utah Regional Haze compliance requirements and litigation of EPA's Regional Haze federal implementation plan requirements for Hunter Units 1 and 2 and Huntington Units 1 and 2. Litigation of EPA's Regional Haze federal implementation plan requirements for Wyodak and Naughton Units 1 and 2 is also still on-going.

is included in the referenced IRPs and reflected in the proposed depreciable lives for individual units discussed further in this filing.

Second, since 2013 the EPA has initially proposed, partially litigated, rescinded, and now proposed replacement of the Clean Power Plan focused on reduction of carbon dioxide ("CO_2") emissions from the United States energy sector. While no specific greenhouse gas compliance expenditures were pursued in response to the Clean Power Plan, the Company's IRP continues to incorporate assumptions and sensitivities regarding potential greenhouse gas policy outcomes.

Finally, since 2013 the EPA has proposed, partially litigated, and modified its Coal Combustion Residual regulations as part of the Resource Conservation and Reclamation Act, as well as its Effluent Limitation Guidelines as part of the Clean Water Act. These regulations require utilities with coal-fired generation facilities to meet certain compliance obligations for ash and coal residue handling, infrastructure, and storage facilities, as well as their process wastewater streams. Although the Company's Depreciation Study considers these environmental regulations, it is not significantly impacted at this time by anticipated compliance obligations in these areas.

Q. Did the Company make capital expenditures for environmental compliance with the intent to extend the resource lives of thermal generation resources?

A. No. While the Company has made capital additions since 2013 on a number of its coal-fueled generation assets to comply with environmental regulations, the Company's analysis and justification of these investments assumed that the plant lives would not be extended. Rather, the Company assumed the compliance expenditures would allow the individual unit to operate through their currently-approved depreciable lives.

Q. What emerging policy and market drivers affect the estimated depreciable lives of generation resources?

A. Since the Company's 2013 depreciation study, policymakers in the Company's service territory have continued to propose, consider, and promulgate state-specific policies affecting the Company's generation resource planning. The Company's long-term resource planning and estimated depreciable lives of thermal generation resources are influenced by a variety of policy and market drivers, including wholesale power and natural gas prices, public policy and regulatory initiatives, and events and trends affecting the economy.

One notable public policy example is Oregon Senate Bill 1547-B, which was signed into law by the governor of Oregon on March 8, 2016. Senate Bill 1547-B, the Clean Electricity and Coal Transition Plan, extends and expands the Oregon Renewable Portfolio Standard requirement to 50 percent of electricity from renewable resources by 2040 and requires that coal-fueled resources be eliminated from Oregon's allocation of electricity by January 1, 2030.

This and other planning environment drivers are discussed in detail in Chapter 3 of the Company's 2017 IRP, which is publicly available on the Company's website.

Q. Based on these considerations, what major changes does the Company propose to the depreciable lives of its thermal generation resources?

A. The Company is proposing several changes to its thermal generation depreciable lives based on its analysis of the various factors described earlier in my testimony.

First, the Company recommends accelerating the depreciable life of Cholla Unit 4 from 2042 to 2025 to align with the unit's approved Regional Haze Rule compliance

obligation timeline. This compliance date was established in settlement discussions between the facility joint owners, state and federal agencies, and stakeholders in 2015 and 2016; approvals were received through subsequent state and federal agency public processes in 2017 and 2018. Cholla Unit 4 will be 44 years old in 2025.

The second recommended change is to accelerate the depreciable lives of Jim Bridger Units 1 and 2 from 2037 to 2028 and 2032, respectively, to align with the Company's 2017 IRP preferred portfolio. The 2017 IRP preferred portfolio reflects the Company's analysis of potential alternate Regional Haze Rule compliance outcomes for Units 1 and 2 that result in a least-cost, least-risk outcome for customers when compared to installation of major emissions control equipment retrofits in 2021 and 2022, as currently required in the Wyoming Regional Haze state implementation plan, as approved by EPA. Approval of these accelerated depreciation dates facilitates alternate Regional Haze compliance decision-making for Units 1 and 2. The Company has not yet received state or federal agency approvals of this alternate Regional Haze compliance outcome for Jim Bridger Units 1 and 2, but has engaged the agencies in discussions regarding potential alternative compliance. Jim Bridger Unit 1 will be 54 years old in 2028, and Jim Bridger Unit 2 will be 57 years old in 2032.

The third recommended change is to accelerate the depreciable life of Craig Unit 1 from 2034 to 2025 to align with its approved Regional Haze Rule compliance obligation timeline. This compliance date was established in settlement discussions between the facility joint owners, state and federal agencies, and stakeholders in 2015 and 2016; approvals were received through subsequent state and federal agency public processes in 2017 and 2018. Craig Unit 1 will be 45 years old in 2025.

The fourth recommended change is to accelerate the depreciable life of Craig Unit 2 from 2034 to 2026 to facilitate least-cost, least-risk analysis, decision making, and planning as Craig Unit 1 approaches retirement in 2025, as currently expected, and Craig Unit 2 economics and joint owner business planning decisions are made in the interim. The Craig Unit 2 joint owners and stakeholders have not approved accelerated retirement of the unit, nor has formal engagement on that potential outcome been initiated. Craig Unit 2 will be 47 years old in 2026.

The fifth recommended change is to accelerate the depreciable life of Colstrip Units 3 and 4 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 Colstrip Units 3 and 4 economics and joint owner business planning decisions are made in the interim. The Colstrip Units 3 and 4 joint owners and stakeholders have not approved accelerated retirement of those units, nor has formal engagement on that potential outcome been initiated. However, certain joint owners (Avista – 15 percent, and Puget Sound Energy – 25 percent) have reached agreements with their respective regulators to establish 2027 as the new depreciable life for the units. Colstrip Units 3 and 4 will be 43 years old and 41 years old, respectively, in 2027.

For the Company's remaining thermal generation resources, I recommend to maintain the current depreciable lives consistent with prior depreciation studies.

Q. Has the Company changed the depreciable lives for its natural gas-fired simple-cycle combustion turbine resources?

A. No. The Company is not recommending any change to the depreciable lives of its

simple-cycle natural gas combustion turbines. The simple-cycle combustion turbines in the Company's fleet are aero-derivative combustion turbines and operate when economic and/or when required for system reliability purposes. Operating profiles and assumptions pertaining to outage schedules and equipment longevity for these units have not materially changed. Moreover, fuel availability for the simple-cycle gas combustion turbine units has not changed. The original equipment manufacturer's 30-year useful life recommendation has not changed and remains consistent with the 2013 depreciation study.

Q. Has the Company changed the depreciable lives for its natural gas-fired combined-cycle combustion turbine resources?

A. No. The Company is not recommending any change to the depreciable lives of its combined-cycle gas combustion turbines. These plants operate when economic and/or when required for system reliability purposes. Since the 2013 depreciation study, the operating profiles and assumptions pertaining to outage schedules and equipment longevity for these units have not materially changed. Moreover, fuel availability for the combined-cycle gas combustion turbine resources has not changed. The original equipment manufacturer's 40-year useful life recommendation has not changed and remains consistent with the 2013 depreciation study. However, it is feasible with continued maintenance investment and technology advancements that these facilities could operate economically beyond the original equipment manufacturer's 40-year useful life recommendation.

DECOMMISSIONING/DEMOLITION COSTS

Q. Is the Company proposing changes to decommissioning costs in the Depreciation Study for the Company's thermal generation resources?

A. Yes. The Company performed updated decommissioning cost studies in the 2014 to 2016 timeframe on a selection of its thermal generation resources considered reasonable proxy resources for extrapolation across the fleet. These studies were used as the primary basis for the decommissioning costs in this filing, with certain updates made to reflect plant-specific attributes and updated commodity and scrap market costs. Based on these studies, the Company proposes to replace the previously approved decommissioning cost of $40 per kilowatt for all coal-fueled plants with the plant-by-plant decommissioning costs provided in Exhibit RMP___(CAT-2). The Company also proposes to replace the previously approved decommissioning cost of $15 per kilowatt for all natural gas-fueled plants with an updated decommissioning cost estimate of $10 per kilowatt.

The Company hired a third-party engineering firm to complete the baseline decommissioning studies. The decommissioning costs in Exhibit RMP___(CAT-2), include plant demolition, ash pile and ash pond abatement and closure, asbestos and other hazardous materials abatement and remediation, and final site cleanup and restoration as applicable to each plant.

Q. Does this conclude your direct testimony?

A. Yes.