Exhibit No. CAT-1T
Docket UE-180778
Witness: Chad A. Teply

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Petition of PACIFIC POWER & LIGHT COMPANY For an Order Approving a Change in Depreciation Rates Applicable to Electric Property.	Docket UE-180778

PACIFIC POWER & LIGHT COMPANY

DIRECT TESTIMONY OF CHAD A. TEPLY

September 2018

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ATTACHED EXHIBITS

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

A. My name is Chad A. Teply. My business address is 1407 West North Temple, Suite 310, Salt Lake City, Utah. My present position is Senior Vice President of Strategy and Development. I am testifying for Pacific Power & Light Company (Pacific Power), 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 new depreciation study submitted with Mr. John J. Spanos's testimony as Exhibit No. JJS-3 (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.[1]
- Presents the company's recommendations on decommissioning costs, which were developed from updated studies and 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

[1] *In the matter of the Petition of Pacific Power & Light Company For An Accounting Order Authorizing a Revision to Depreciation Rates*, Docket UE-130052.

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 No. CAT-2 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, and is instead proposing changes in this study to reflect 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, and 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, 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 on the availability of alternative competitive market suppliers. Switching to a different fuel source, and procuring and delivering 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 have impacts on 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 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 and the investment is not feasible or economic over the remaining life of the asset, this could result in the early retirement of the resource.

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, negotiate alternative compliance outcomes for certain units,[2] and is currently supporting ongoing requests for reconsideration and, in some instances, litigation, of other implementation plan requirements.[3] 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

[2] 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.

[3] 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.

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 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 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. PacifiCorp's Depreciation Study recommendations consider these environmental regulations as well, but are not significantly impacted at this time by anticipated compliance obligations in these areas.

Q. Was extending thermal generation resources lives the basis for the company's capital expenditures for environmental compliance?

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 compliance expenditures would allow the individual unit to operate through their respective currently approved depreciable lives.

Q. Please explain how 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 area 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 are 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.

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, as proposed and approved by the Commission in the company's 2015 limited-issue rate case, is to accelerate the depreciable life for all four units at the Jim Bridger plant from 2037 to 2025 to align with Oregon.[4] Since approval of that case, Pacific Power has been deferring the amount collected over and above the current depreciation rates in a regulatory liability account. The company's proposal for treatment of this account balance is in the testimony of Mr. Steven R. McDougal, Exhibit No. SRM-1T.

The second 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 the 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 in Washington to establish 2027 as the new

[4] *Wash. Utils. and Transp. Comm'n v. Pacific Power & Light Company,* Docket UE-152253.

depreciable life for the units. Colstrip Units 3 and 4 will be 43 years old and 41 years old, respectively, in 2027.[5]

For the company's remaining thermal generation resources, similar to Bridger and Colstrip, I recommend to align the depreciable lives with the depreciable lives being requested for the state of Oregon in our parallel depreciation study filings. This recommendation supports compliance with Oregon's Senate Bill 1547-B, the Clean Electricity and Coal Transition Plan, and facilitates least-cost, least-risk analysis, decision making, and planning in anticipation of Washington energy policy developments and customer-driven demands. Aligning with Oregon will also help facilitate multi-state environmental planning, and provide additional flexibility in developing future compliance strategies.

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.

[5] While Order 12 in Docket UE-152253 also approved the accelerated depreciation for Colstrip 4 from 2046 to 2037, the company is proposing to align with other Washington utilities for Colstrip 3 & 4.

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 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 coal-fueled and natural-gas-fueled generation resources that are 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. As such, 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 No. CAT-3. 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 No. CAT-3, 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.