Docket No. UM ____
Exhibit PAC/500
Witness: Timothy J. Hemstreet

BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

PACIFICORP

Direct Testimony of Timothy J. Hemstreet

September 2018

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ATTACHED EXHIBITS

Exhibit PAC/501—Existing and Proposed Depreciable Lives for Renewable Resources

Q. Please state your name, business address, and position with PacifiCorp d/b/a Pacific Power.

A. My name is Timothy J. Hemstreet. My business address is 825 NE Multnomah Street, Suite 1500, Portland, Oregon 97232. My present position is Director of Renewable Energy Development.

QUALIFICATIONS

Q. Briefly describe your education and professional experience.

A. I hold a Bachelor of Science degree in Civil Engineering from the University of Notre Dame in Indiana and a Master of Science degree in Civil Engineering from the University of Texas at Austin. I am also a Registered Professional Engineer in the state of Oregon. Before joining the Company in 2004, I held positions in engineering consulting and environmental compliance. Since joining PacifiCorp, I have held positions in environmental policy, engineering, project management, and hydroelectric project licensing and program management. In 2016, I assumed the role of Director of Renewable Energy Development, in which I oversee the development of renewable energy resources.

Q. Please explain your responsibilities as Director of Renewable Energy Development.

A. The renewable energy development group is responsible for identifying and developing company-owned renewable generation resource options and efficiency improvements—including wind, solar, and hydroelectric resources—to enhance or improve the efficiency of PacifiCorp's renewable resources portfolio.

PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony?

A. My testimony:

- Provides an overview of PacifiCorp's recommended depreciable lives for its renewable generating resources. PacifiCorp reviewed its hydro and wind resource generating assets and performed an evaluation of depreciable lives in support of this filing. Based on this assessment, the company proposes certain changes to the depreciable lives established in the previous depreciation study filed in 2013.[1]
- Describes how PacifiCorp developed estimated plant economic lives for its wind and hydro generation resources included in the company's new depreciation study submitted with Mr. John J. Spanos's testimony as Exhibit PAC/202 (the Depreciation Study) in this filing.
- Summarizes the proposed changes in the depreciable plant lives of the renewable resources and the basis for including updated information regarding new and anticipated hydroelectric operating licenses, the repowering of PacifiCorp's existing wind fleet, as well as the assumed depreciation lives for new wind resources that will be brought online in 2020.

Q. Have you provided PacifiCorp's estimated plant economic lives for its renewable generation assets?

A. Yes. Exhibit PAC/501 attached to my testimony contains a complete list of PacifiCorp's renewable generation plants and their recommended depreciable lives.

[1] *In the Matter of PacifiCorp dba Pacific Power, Application for Authority to Implement Revised Depreciation Rates,* Docket No. UM 1647.

DEPRECIABLE LIVES FOR HYDROELECTRIC GENERATION RESOURCES

Q. What is PacifiCorp's general approach for developing the depreciable lives of its hydroelectric generating facilities?

A. PacifiCorp's approach as reflected in the Depreciation Study, is primarily based on Federal Energy Regulatory Commission (FERC) hydroelectric plant license expiration dates. The vast majority of the facilities (comprising 99 percent of the company's installed hydroelectric generating capacity) require a FERC license to operate. The terms of the FERC license requirements largely determine the capital expenditures required to make necessary improvements to the hydroelectric plant during the license period to implement protection, mitigation, and enhancement measures. It is therefore appropriate for the term of the FERC license to set the depreciable life of the hydroelectric generation resource.

The status of the FERC relicensing processes for PacifiCorp's licensed hydroelectric facilities was reviewed to determine any changes required by new licensing information. These changes are due to either recent license issuances or PacifiCorp's expectations of the term of new licenses based upon the scope of likely or proposed protection, mitigation, and enhancement measures that will be required during a new license term, which FERC uses to assess the appropriate new license term in a licensing order.

For its unlicensed hydroelectric facilities, PacifiCorp assessed the depreciation lives based on the current operating conditions of the facilities as observed since the 2013 depreciation study and the estimated remaining life of the physical assets as determined by the company's hydro resources engineering staff.

Q. What major changes did PacifiCorp make regarding the depreciable lives of its hydroelectric generating resources?

A. The major changes PacifiCorp made are driven primarily by changes in expected license terms for FERC regulated projects that have either been recently issued a new license or that the company intends to relicense in the near future. FERC issued a new 40-year license for the Wallowa Falls project in Oregon in January 2017; as a result PacifiCorp extended the depreciable life of that project to 2057 to match the new license term.[2] Additionally, PacifiCorp expects FERC to issue a new 40-year license for the Prospect No. 3 project in Oregon in late 2018 so PacifiCorp proposes extending the depreciable life of the Prospect No. 3 facility to 2058. The company also expects that FERC will issue new 40-year licenses for the Weber and Cutler facilities in Utah when their existing licenses expire in 2020 and 2024, respectively. Exhibit PAC/501, "Existing and Proposed Depreciable Lives for Renewable Resources" lists the estimated retirement dates of the company's hydro and wind generating resources and the proposed changes to the existing depreciable lives.

Q. Why does PacifiCorp assume that facilities it intends to relicense will be issued 40-year licenses?

A. The company's recent experience with new license terms for projects with moderate changes or for which construction is required to comply with new license requirements, like the Wallowa Falls project, is that FERC will issue a 40-year license unless unique conditions are met. This is consistent with FERC's recent "Policy Statement on Establishing License Terms for Hydroelectric Projects," issued in

[2] The new license for Prospect No. 3 is available at https://www.ferc.gov/industries/hydropower/gen-info/licensing/active-licenses/P-308.pdf

October 2017.[3] In the policy statement, FERC adopted a default 40-year license term for licensed hydro-power projects at non-federal dams. FERC also articulated that projects with limited new improvements or construction that are required under a new license could justify a shorter license term of not less than 30 years. PacifiCorp estimates that moderate infrastructure improvements will be necessary during new license terms for its hydroelectric projects; thus, a 40-year depreciable life was viewed as appropriate.

Q. Did PacifiCorp extend the depreciable life of any of its other hydro facilities for reasons other than new or anticipated license terms?

A. Yes. PacifiCorp made slight adjustments to extend the depreciable lives of several small hydro facilities with less than three megawatt capacity that are not licensed by FERC. Small extensions of between four to eight years are proposed for the Paris, Gunlock, Santa Clara, Veyo, Last Chance and Granite facilities to reflect their continuing operational status and the estimated remaining life of their physical assets. PacifiCorp also extended the depreciable lives for the Bend and Eagle Point facilities of 14 and 15 years, respectively, because these facilities will not be decommissioned in the near-term and will continue to provide service to customers for the new proposed depreciable life.

Q. Did PacifiCorp reduce the depreciable life of any of its hydro facilities?

A. Yes. The depreciable life of the Viva Naughton hydroelectric facility, a small 0.74 megawatt capacity hydroelectric facility, located at the cooling water storage reservoir for the Naughton steam generating facility in Wyoming, was reduced by 11

[3] FERC's policy statement is available at https://www.ferc.gov/whats-new/comm-meet/2017/101917/H-1.pdf.

years, from 2040 to 2029, to reflect the planned retirement date of the Naughton steam generating station.

Q. Has the company proposed any changes to the estimated retirement date of its Klamath hydroelectric assets?

A. No. PacifiCorp's estimated retirement dates for the Klamath hydroelectric facilities are unchanged from the 2013 depreciation study and remain consistent with the timing of decommissioning anticipated by the Klamath Hydroelectric Settlement Agreement.

Q. Could environmental issues affect the estimated plant economic life of hydro resources in the future?

A. Yes. While no new significant environmental compliance issues have emerged since the 2013 depreciation study, the dynamic nature of evolving environmental stewardship requirements and FERC licensing requirements, coupled with asset specific attributes will continue to impact PacifiCorp's ability to economically achieve license extensions or economically operate unlicensed hydro facilities for the benefit of customers. For instance, assets that must mitigate project effects on species listed under the Endangered Species Act may be subject to unique environmental stewardship requirements, which can change based upon the status of the listed species. On the other hand, long-term investments PacifiCorp is making to comply with its current license requirements—such as the installation of fish passage measures at many of its newly relicensed hydroelectric facilities—may positively influence the ability to relicense these facilities in the future and continue economic operation. If conditions change as a result of evolving requirements or unforeseen

circumstances, the depreciable lives of PacifiCorp's hydroelectric assets will be adjusted accordingly in a future depreciation study.

DEPRECIABLE LIVES FOR NEW WIND GENERATING RESOURCES

Q. Please describe the process PacifiCorp used to assess the depreciable lives of its wind resources.

A. In PacifiCorp's 2013 depreciation study, the company recommended, and the Public Utility Commission of Oregon adopted, extending the previously assumed 25-year depreciable life for its wind-powered generation resources to 30 years. PacifiCorp has assessed this depreciable life against current industry trends for wind generation facilities and continues to believe that a 30-year depreciable life is appropriate for such facilities whose wind turbine generators are designed to meet industry standards and that are maintained consistent with manufacturer recommendations. New wind projects require a greater investment per turbine due to the larger wind turbine size as compared to earlier turbine technologies. Thus, some new utility-owned wind assets, for which ongoing generation offtake and maintenance funding is more certain, have been considered for longer asset lives of up to 40 years.

Q. What asset life is PacifiCorp proposing for the new wind facilities that are currently being developed and expected to enter service in 2020?

A. PacifiCorp is currently developing 950 megawatts of new wind facilities in Wyoming associated with its Energy Vision 2020 project that are expected to begin commercial operation in 2020. PacifiCorp proposes a 30-year asset life for these new facilities, consistent with the 30-year asset life for the company's existing wind facilities that was approved in the 2013 depreciation study.

Q. Is a 30-year asset life consistent with how PacifiCorp evaluated proposed new wind projects as part of its Energy Vision 2020 proposal?

A. Yes, in the Energy Vision 2020 cases, PacifiCorp assumed a 30-year asset life for new company-owned wind assets as part of such new wind resources' economic evaluation.[4]

DEPRECIABLE LIVES FOR REPOWERED WIND GENERATING RESOURCES

Q. Is PacifiCorp proposing changes to the depreciable lives of its existing wind resources?

A. Yes. PacifiCorp is currently repowering the majority of its existing wind fleet, which, for its wind facilities constructed between 2006 and 2010, will result in the replacement of the existing nacelles and rotors at the facilities with more modern equipment that includes longer blades and higher capacity generators.[5]

Repowering of PacifiCorp's wind fleet will benefit customers by requalifying the repowered facilities for the full value of available production tax credits when brought online by the end of 2020, increasing zero-fuel cost generation from the existing wind fleet by an average of approximately 26 percent, and extending the asset lives of the repowered facilities. PacifiCorp plans to repower its existing wind facilities in 2019 and 2020. The company therefore recommends extending the depreciable lives of the repowered facilities to provide for a 30-year asset life after the repowering equipment upgrades are installed. This results in an extension of the

[4] The Energy Vision 2020 cases are resource pre-approval proceedings in Idaho (Case No. PAC-E-17-07), Utah (Docket No. 17-035-40), and Wyoming (Docket No. 20000-520-EA-17) related to new wind resources and transmission infrastructure.

[5] PacifiCorp is also evaluating repowering its Foote Creek I facility, which would involve the replacement of the existing wind turbine generators installed in 1999 with new, modern equipment. PacifiCorp anticipates that this facility will be repowered in 2020 if satisfactory arrangements are obtained and permits are received that would allow this facility to be repowered and provide benefits to customers as compared to the status quo.

depreciable lives of PacifiCorp's existing wind facilities by 10 to 21 years, depending on the facility. The company's proposed depreciable lives for its wind facilities are shown in Exhibit PAC/501.

Q. What are the current asset lives of the wind facilities to be repowered?

A. All of the existing wind facilities are currently being depreciated assuming a 30-year asset life. The facilities PacifiCorp plans to repower or is evaluating for repowering are currently scheduled to be retired between 2029 and 2040. The retired assets from repowering are treated as an interim retirement for accounting purposes and transferred to the wind plant depreciation reserve.

Q. Will repowering the wind facilities extend their useful operating lives beyond the currently planned retirement dates?

A. Yes. PacifiCorp believes that repowering the wind facilities will extend their operation 30 years from the repowering date, extending their useful lives by at least 10 years.

Q. How will repowering extend the useful life for 30 years from the repowering date?

A. The repowering projects are being designed by the turbine equipment suppliers to meet the same design requirements that apply to complete wind turbine generators used in new wind facility construction. The wind turbine equipment suppliers will have their wind turbine designs for the repowering projects certified by an independent third party to ensure that they meet or exceed applicable International Electrotechnical Commission design standards used in the wind turbine industry.

These design standards are intended to ensure that the equipment is appropriate for the site conditions and will perform satisfactorily over the standard design life.

Q. What factors are independently reviewed to assess and certify the design of the repowered wind facilities?

A. The third-party design assessment evaluates the site-specific load assumptions based upon the climactic conditions at each facility and will assess the control and protection systems for the wind turbine and their ability to meet the site design conditions. It will also assess the electric components, the rotor blades, hub, machine components (i.e., drivetrain, main bearing, and gearbox), and the suitability of the existing tower upon which the new wind turbine equipment will be installed to meet the new design loads.

Q. Does PacifiCorp have land rights that allow its repowered wind facilities to operate for 30 years after repowering?

A. PacifiCorp reviewed its existing land rights for its existing wind generation facilities and determined that nearly all projects have land rights that will allow the facilities to operate for 30 years after repowering is completed. PacifiCorp will seek to prudently extend lease terms beyond the initial period, as required, to support the longer depreciable lives of its repowered wind resources.

Q. Does this conclude your direct testimony?

A. Yes.