**BEFORE THE PUBLIC UTILITY COMMISSION**

**OF OREGON**

LC 67

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| In the Matter of<br><br>PACIFICORP, dba PACIFIC POWER's<br><br>2017 Integrated Resource Plan | STAFF'S COMMENTS IN RESPONSE TO ENERGY VISION 2020 UPDATE |

## I. Introduction and Summary

On July 28, 2017, PacifiCorp (or Company) filed its Energy Vision 2020 Update, which includes supplemental economic analysis related to its Wind Repowering and New Wind and Transmission projects (collectively, Energy Vision 2020), as a supplemental update to its Reply Comments in this proceeding. In light of the additional analysis included in the Company's Energy Vision 2020 Update, the schedule to this docket was amended to include the opportunity for Staff and other parties to file comments in response to the supplemental information filed by PacifiCorp.

In these comments, Staff of the Public Utility Commission of Oregon (Staff) addresses the issues related to the Company's Wind Repowering Project and New Wind and Transmission projects. Staff continues to evaluate the Company's 2017 Integrated Resource Plan (IRP), and will review the participants' comments prior to submitting its Final Comments on September 22, 2017.

## II. Energy Vision 2020 Supplemental Update

*Wind Repowering Project*

The Wind Repowering Project involves installation of new, upgraded infrastructure for 999 MW of existing PacifiCorp wind resources.[1] This represents an increase from the original proposal of 905 MW with the inclusion of the Goodnoe Hills plant in the repowering plan. PacifiCorp plans to upgrade existing wind facilities by installing new rotors with longer blades and new nacelles with higher-capacity generators. These improvements are projected to increase generation between 13 and 35 percent when compared to existing infrastructure.

The driver of the project is the economic opportunity associated with production tax credits (PTCs).[2] PacifiCorp asserts that repowering the fleet by 2020 will allow the Company to capture 100 percent of available PTC benefits, while maximizing the value

[1] LC 67 - PacifiCorp 2017 Integrated Resource Plan Energy Vision 2020 Update ("Energy Vision 2020 Update") at 2 (July 28, 2017).
[2] Energy Vision 2020 Update at 1-2.

of existing PTCs and minimizing the period between the expiration period of prior PTCs and the eligibility for new PTCs.[3] The project will likely cost more than $1 billion.[4] PacifiCorp's updated analysis shows projected customer benefits in the range of $40-80 million under certain assumptions about natural gas prices and cost of carbon.[5] PacifiCorp states that "Customer benefits are expected to exceed the cost of wind repowering and save customers money."[6]

*New Wind and Transmission*
PacifiCorp is also seeking acknowledgement to build up to 1,270 MW of new wind resources[7] with a commercial operation date of no later than December 31, 2020, based on economic benefit versus need. This project would include the completion of the Aeolus-to-Bridger/Anticline transmission line.[8] The Company stated that it has a time-sensitive need to initiate a Request for Proposal (RFP) without first having an acknowledged IRP Action Plan, in an attempt to acquire a limited-time opportunity for securing 100 percent of the current federal PTCs.[9]

The Energy Vision 2020 Update includes new analysis that shows a range of present value revenue requirement (PVRR) benefits from a *cost* of $121 million to a high benefit of $437 million which occurs under a high gas, high carbon cost future. The estimate of benefits presented by the Company to Staff in April 2017 ranged from a cost of $80 million to a benefit of about $480 million. The update reflects changes in certain assumptions regarding policies and prices.

## III. Response to PacifiCorp's Energy Vision 2020 Update

*Acknowledgment of Economic Opportunities in the IRP*
Traditionally, the IRP process has been a vehicle for long-term planning, and for Commission acknowledgement of major resources needed to meet near-term reliability and regulatory needs. PacifiCorp's Energy Vision 2020 proposal asks that the Commission use the IRP process to assess a purely economic opportunity. A thorough "least-cost, least-risk" assessment of this type would require not only an analysis of the proposed new plant, but a reexamination of each existing system resource and its potential economic replacements. Such an exhaustive review of the PacifiCorp system is not possible in this proceeding due to time constraints, so Staff and stakeholders are

[3] Energy Vision 2020 Update at 2.
[4] LC 67 - PacifiCorp 2017 Integrated Resource Plan Northwest and Intermountain Power Producers Coalition's Comments at 12.
[5] Energy Vision 2020 Update at 16, Table 3.1.
[6] Energy Vision 2020 Update at 2.
[7] *Action Item 1b Wind Request for Proposals: PacifiCorp will issue a wind resource request for proposals (RFP) for at least 1,100 MW of Wyoming wind resources that will qualify for federal wind production tax credits and achieve commercial operation by December 31, 2020.*
[8] *Action Item 2a Aeolus to Bridger/Anticline: By December 31, 2020, PacifiCorp will build the 140-mile, 500 kV transmission line running from the Aeolus substation near Medicine Bow, Wyoming, to the Jim Bridger power plant (a sub-segment of the Energy Gateway West transmission project).*
[9] Potential wind projects could be eligible to meet the Internal Revenue Service (IRS) guidance for qualifying projects which requires demonstration of spending 5 percent of the project capital investment by January 1, 2017.

limited to analyzing the Energy Vision 2020 proposal based solely on the narrow analysis provided by PacifiCorp. In this context, Staff is able to discuss the potential risks and benefits of the Energy Vision 2020 proposal as it relates to other options considered in the IRP, but Staff cannot determine the merits of this particular economic opportunity relative to other potential economic alternatives not considered by the Company.

*Specific Concerns with the Wind Repowering Project*
PacifiCorp filed updated economic analysis for this project in its Energy Vision 2020 Update indicating a significant reduction economic benefits to ratepayers from what was originally filed in LC 67 in April of this year.

Staff's review of PacifiCorp's updated economic analysis of the Wind Repowering Project finds the expected (i.e., "medium gas/medium CO2" case) economic benefit reduced by almost two-thirds, from $35 million[10] to $13 million[11] over the 20-year horizon. The update includes changes in price (and other) assumptions and results of the Planning and Risk (PaR) runs which reduce the original estimation of benefits from the System Optimizer (SO) model. Staff finds this reduction in benefits troubling since the results demonstrate very marginal (potential) benefits relative to the real cost of adding $1 billion to rate base.

In fact, if one eliminates the "high CO2" scenarios, which under current federal policy are arguably unlikely, the risk becomes a scenario in which future gas prices fall. If gas prices rise moderately, the Company's analysis shows a marginal customer benefit (around a $20 million benefit over 20 years for a $1 billion investment).[12] On the other hand, if gas prices remain relatively stable and rise slowly – as has been recent experience – the Company's analysis shows a *cost* to ratepayers of close to $40 million. In other words, the benefit under the "medium" case is half of what the cost is under the "low" case, which is a reflection of present conditions (low gas cost and zero carbon cost).

Given that this project is approaching break-even under the range of scenarios, and that in the Company's analysis it becomes a cost to customers under low price conditions, Staff does not believe it is appropriate that ratepayers should bear the risks of this $1 billion project without any critical reliability need supporting it. The risks are many, and given there is almost no margin for error before the project becomes uneconomic, any of them could harm ratepayers—potentially significantly. Three of the most concerning are the following:

- A loss of PTCs, due to schedule delay, unfavorable IRS review, or capacity factor overestimation;
- Energy revenue shortfall due to capacity factor overestimation; and

[10] Presented by PacifiCorp to Commission Staff April 27, 2017. Attached as Appendix A, at 3.
[11] Energy Vision 2020 Update at 16.
[12] Energy Vision 2020 Update at 16, Table 3.1.

- Energy revenue shortfall due to realized market prices falling short of the Company's assumed forward curve.

Staff notes that if any of the Company's assumptions prove less beneficial than anticipated, the very small marginal benefits projected for customers become a cost. Given the large potential downside of the risk compared to the relatively small upside, Staff cannot support the Wind Repowering Project if all of the risk is placed on ratepayers.

*Specific Concerns with the New Wind Project with associated Transmission*
Staff's review of PacifiCorp's updated economic analysis of the New Wind and Transmission finds that it poses significant risk to ratepayers not normally entertained for capital projects not contemplated to meet critical reliability needs.

On April 27, 2017, PacifiCorp presented to Staff a Wyoming wind and transmission project summary indicating an expected economic benefit of between $17 million and $21 million.[13] In its July 28, 2017, informational filing, this figure became $85 million, or $137 million when taken over the full 30 year life of the wind projects.[14] The potential increase in benefits is due to "changes and updates made in assumptions, inputs, and modeling."[15] The wide swing in benefits level is a clear indication that the expected economic benefit cannot be known with any certainty even in the expected case.

In the Company's Energy Vision 2020 Update, the potential impacts range from a *cost* of $121 million under low gas conditions and no carbon cost, to a benefit of $437 million in the high gas, high carbon cost scenario. The fact that the range of benefits is so wide in both directions is a troubling indicator that there is a great deal of risk in this proposal. Although potential benefits are large (around $400 million) in the "high gas, high CO2" cases,[16] Staff is unconvinced of the likelihood of this scenario given the current federal policies and market conditions. Much more likely, in Staff's opinion, is that gas prices will remain low or rise moderately and that carbon policy will introduce little or no hard cost within the analysis timeframe. Under these conditions, represented by the "low" or "medium" gas and "low" or "medium" carbon prices, half of the results show a marginal customer benefit of $19 million to $124 million while the other half show a customer *cost* of between $26 million and $121 million. To Staff these results are little better than a flip of the coin – if certain assumptions are realized, the customer realizes a small benefit. However, if assumptions are not realized, the customer pays the cost.

Further, the Company's sensitivity analyses all indicate that the expected cost or benefit fluctuates by hundreds of millions of dollars with changes to natural gas and carbon dioxide cost assumptions.

There are other areas of risk that are not explored by the Company. Staff notes that if the project comes on-line one day late and hence only qualifies for 80 percent of the

[13] Presented by PacifiCorp to Commission Staff April 27, 2017. Attached as Appendix A.
[14] Energy Vision 2020 Update at 42 and 48.
[15] *Ibid.* Cover letter.
[16] Energy Vision 2020 Update at 23, Table 4.1.

PTCs, the economic benefit will decrease by $160 million, and become an economic harm to ratepayers. The risk of construction cost overruns is also a concern, when the expected economic benefits are very small compared to the over $2 billion capital cost. Even realized generation falling short of the modeled capacity factor could easily reverse the economics of the project, as it will affect both the total energy revenue and the PTCs received (which are based on megawatt-hours actually generated). Taken together, Staff is challenged to see this proposal as "least risk" compared to other actions that do not have the sheer magnitude of these risks.

## IV. Conclusion

The Company's update to its original proposal to re-power existing wind plants, acquire new Wyoming wind generation, and construct a segment of the Gateway West transmission line presents updated PVRR results under revised assumptions. The Company's analysis indicates marginal customer benefits over the IRP analysis timeframe under these assumptions for certain price-policy cases.

However, the benefit is not overwhelming in most of the best assumed cases and is very dependent on the assumption of high carbon cost and high gas prices. Staff considers both of these assumptions not as likely as the counter scenario – that carbon cost remains zero or low and that gas prices remain stable or increase slowly. Under these "low" to "medium" conditions, it is much less clear that there is any benefit to ratepayers, and in fact, Energy Vision 2020 could easily wind up harming customers greatly and needlessly.

Staff reiterates that the Company is bringing forth this proposal as an economic opportunity. Under other conditions, namely that a reliability need exists that this resource could fill, Staff would be more accepting of ratepayers assuming additional risk. But in this case, the Company is asking ratepayers to bear the complete burden of risk for a marginal potential benefit that will not be known for decades, if ever.[17]

Therefore, because this proposal represents a mismatch between risk and benefit, and also fails to allocate the associated risks to shareholders, Staff cannot offer support for this proposal at this time.

Staff will file its Final Comments and Recommendations on Pacific Power's 2017 IRP on September 22, 2017.

[17] It is unlikely that Staff would go back and analyze how the projects "turned out" in 2036 without specific direction to do so.

This concludes Staff's comments.

Dated at Salem, Oregon, this 24th day of August, 2017.

Geoffrey Ihle
Senior Economist
Energy Resources & Planning

Lisa Gorsuch
Senior Utility Analyst
Energy Resources & Planning

# 2017 Integrated Resource Plan

## Wind Repower, Energy Gateway & 2017R RFP

## Public Utility Commission of Oregon Staff

## April 27, 2017


PacifiCorp
A BERKSHIRE HATHAWAY ENERGY COMPANY

# Introduction to Wind Repowering

**Benefits of Wind Repowering**

- Projects capture an additional 10-years of production tax credits (PTCs) for the full output of each repowered facility—these savings are passed through to customers.
- Modern technology and longer blade lengths increase annual energy production by an estimated 11% to 32%, depending upon the project.
- Existing foundations and towers are utilized, resulting in minimal environmental impact and permitting requirements.
- New equipment reduces future operating costs.
- Re-sets assumed 30-year project life.

**Repowering Overview**

- PacifiCorp executed wind turbine generator (WTG) equipment purchases in December 2016 with General Electric and Vestas.
- These "Safe Harbor" equipment purchases support repowering of the Wyoming wind fleet (Glenrock, Rolling Hills, Seven Mile Hill, High Plains, McFadden Ridge, and Dunlap), the Marengo project in Washington, and the Leaning Juniper project in Oregon by the end of 2020, enabling the projects to qualify for 100% of PTCs.
- PacifiCorp continues to assess other repowering opportunities.
- Repowered WTGs must meet the Internal Revenue Service 80/20 test, meaning that the retrofitted WTG qualifies for PTCs if the fair market value of the retained property (i.e., tower and foundation) is no more than 20% of the facility's total value after installation of the new property (i.e., nacelle and blades).

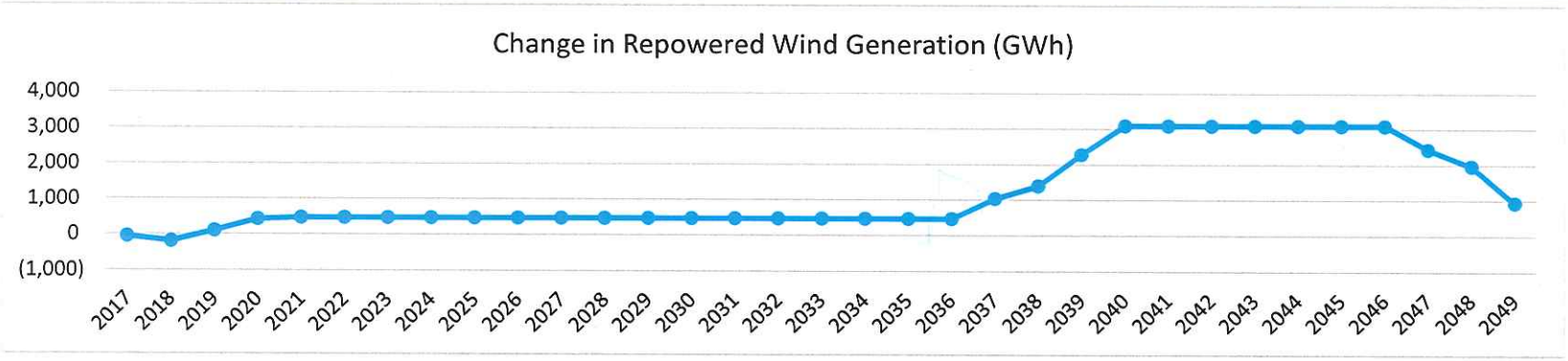
# Wind Repowering Customer Benefit Analysis

**PaR PVRR(d): 2017-2036**

| (Benefit)/Cost ($m) | CPP(A) – Low | CPP(A) – Med | CPP(A) – High | CPP(B) – Low | CPP(B) – Med | CPP(B) - High |
|---|---|---|---|---|---|---|
| Expected Value | ($20) | ($35) | ($99) | ($20) | ($35) | ($94) |
| Risk Adjusted | ($21) | ($37) | ($106) | ($21) | ($37) | ($100) |

**PaR PVRR(d): 2017-2049**

| (Benefit)/Cost ($m) | CPP(A) – Low | CPP(A) – Med | CPP(A) – High | CPP(B) – Low | CPP(B) – Med | CPP(B) – High |
|---|---|---|---|---|---|---|
| Expected Value | ($304) | ($351) | ($557) | ($302) | ($350) | ($539) |



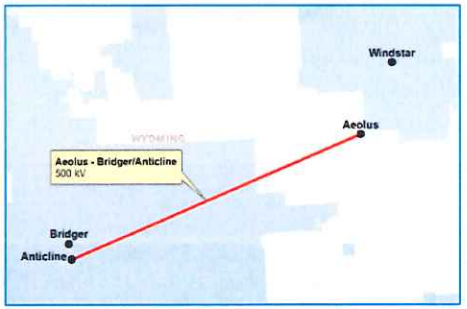

- Assumes 905 MW of existing wind resources are repowered by the end of 2020 (Glenrock, Rolling Hills, Seven Mile Hill, High Plains, McFadden Ridge, Dunlap, Marengo, and Leaning Juniper)
- Customer benefits among all policy-price scenarios—benefits increase significantly when considering incremental wind generation that will occur beyond the 20-year IRP planning horizon

# Energy Gateway Sub-Segment D2 and New Wind Customer Benefit Analysis

**PaR PVRR(d): 2017-2036**

| (Benefit)/Cost ($m) | CPP(A) – Low | CPP(A) – Med | CPP(A) – High | CPP(B) – Low | CPP(B) – Med | CPP(B) - High |
|---|---|---|---|---|---|---|
| Expected Value | $80 | ($17) | ($475) | $81 | ($21) | ($478) |
| Risk Adjusted | $84 | ($18) | ($497) | $85 | ($23) | ($500) |

- Assumes Energy Gateway sub-segment D2 comes on-line by the end of 2020 (approximately 140 miles, 500 kV)
- Assumes 1,100 MW of new wind (incremental to the wind repowering project) achieve commercial operation by the end of 2020 to qualify for the full value of production tax credits (PTCs)
- PacifiCorp's final analysis of this scenario incorporates the following updates implemented following the March 2017 public input meeting:
  - Capital costs for sub-segment D2 (net benefit)
  - New Wyoming wind costs (net benefit)
  - New Wyoming wind capacity factors (net cost)
  - QF PPA pricing impacts (net cost)
  - Reduced line losses and de-rates (net benefit)
  - Incremental EIM impacts (net benefit)
- PacifiCorp will seek to procure at least 1,100 MW of wind via the 2017R request for proposals




# 2017R RFP Overview

- PacifiCorp will implement the 2017R RFP consistent with competitive bidding guidelines and requirements in Oregon and Utah—benchmark projects will be offered

- The 2017R RFP will solicit bids for wind resources that will interconnect with and/or utilize PacifiCorp's transmission system in Wyoming

- Projects must demonstrate the ability to qualify for the full value of PTCs and achieve commercial operation no later than December 2020

- The draft schedule (next slide) reflects the need to deliver the transmission and wind projects by December 2020
  - Wyoming Certificate of Public Convenience and Necessity (CPCN) is required for transmission and any new wind procured by PacifiCorp through the RFP
  - PacifiCorp plans to initiate the CPCN proceeding June 30, 2017
  - If the 2017R RFP final shortlist includes PacifiCorp-owned wind projects, RFP selections and cost and performance information from shortlisted projects will support the Wyoming CPCN proceeding—needed by January 2018 to support conditional approval by March 2018 (pending acquisition of transmission rights of way)

# 2017R RFP Schedule

| Milestone | Target Date |
|---|---|
| File RFP Application/Initiate IE Process | June 1, 2017 |
| Receive IE Bids | June 16, 2017 |
| IE Approval at Open Public Meeting | July 11, 2017 |
| File Draft RFP with Oregon Commission | July 17, 2017 |
| IE Files Report on Draft RFP | July 25, 2017 |
| Party Comments on Draft RFP | August 8, 2017 |
| RFP Approval at Open Public Meeting | August 22, 2017 |
| RFP Issued to Market | August 25, 2017 |
| RFP Bids Due | October 13, 2017 |
| RFP Final Shortlist Filed with Oregon Commission | January 16, 2018 |
| IE Closing Report on RFP | February 15, 2018 |
| Party Comments on IE Closing Report | February 22, 2018 |
| Final Shortlist Acknowledgement | March 13, 2018 |
| Execute Agreements | April 16, 2018 |