BEFORE THE PUBLIC UTILITY COMMISSION

OF OREGON

LC 67

In the Matter of	)	
PACIFICORP dba PACIFIC POWER	)	COMMENTS OF THE
2017 Integrated Resource Plan	)	NW ENERGY COALITION
	)	

I. INTRODUCTION

NW Energy Coalition ("Coalition") appreciates the opportunity to comment on PacifiCorp's 2017 Integrated Resource Plan ("IRP"). The Coalition participated in the pre-IRP workshop phase conducted by the Company for almost a full year before filing the IRP.

In developing the 2017 IRP, considerable improvements were made in system modeling and the development of scenarios and sensitivities. In certain areas, for example, the assessment of the capacity value of solar and wind resources, the Company made important new technical advances.

The 2017 IRP proposes a major shift in direction for PacifiCorp's short-term resource acquisition strategy. Most notably, the Preferred Portfolio includes repowering of 905 MW of wind resources at existing sites and the addition of 1100 MW of new wind in Wyoming by the end of 2020. Alongside the combined wind investment, the Company requests acknowledgment of sub-segment D2 of the Energy Gateway transmission package, a 140-mile 500 KV line in central Wyoming. At the same time, the Company also proposes reduced investments in demand side management resources.

In the following comments, the Coalition presents three main concerns with the 2017 IRP. First, the late timing of information related to significant portions of the IRP action plan presented during the 2017 IRP public process raise significant concerns and a need for process improvements. Second, the proposed reductions in planned energy efficiency acquisition in the face of considerable supply side procurement are troubling. And, lastly, while the economic case presented by PacifiCorp regarding the benefits of repowering and new wind procurement is convincing, the three major elements of the 2017 IRP – new wind, new transmission, and the phase-out of the coal fleet – are not effectively aligned.

There is relatively little proposed change in coal fleet deployment and retirement for the next 20 years compared to the 2015 IRP (see Table 3 below). At the same time, the addition of well over 1000 MW of repowered and new wind in the same area as a large part of the coal fleet raises questions about duplication of generation resources and the actual need for new transmission. What is missing from the 2017 IRP is an assessment of whether alternative approaches to supply, transmission and demand side opportunities could provide a truly least cost, least risk outcome.

II. PUBLIC PROCESS

PacifiCorp, in general, has made good progress in recent IRP processes to improve the public involvement in the development of its IRPs. This is why we find the 2017 process particularly puzzling and concerning. Major resource acquisition elements proposed by the Company in the 2017 IRP, including significant investments in wind repowering, transmission and new Wyoming wind, were not presented nor discussed until the final IRP workshop on March 2, 2017. Presenting such substantial new resource options and analysis at the final meeting does not provide stakeholders with enough time or process to fully consider these substantial elements. In the future, the Company should endeavor to provide information to stakeholders earlier in the process; this will ensure robust opportunity for meaningful input and participation.

III. CLASS 2 DEMAND-SIDE MANAGEMENT – ENERGY EFFICIENCY

The foundation of the preferred portfolio in the IRP should be the acquisition of all cost-effective energy efficiency. Energy efficiency is still the least cost resource. Additionally, the significant capacity value of energy efficiency has become clearer in recent years, for example, in recent analysis by the NW Power and Conservation Council[1].

PacifiCorp proposes to reduce its energy efficiency goals in this 2017 IRP relative to the 2015 IRP. The Company states that this reduction is "driven by reduced loads and reduced costs for wholesale market purchases and renewable resources." We find this justification unsatisfying and completely unsubstantiated in the IRP materials. This reduction in identified cost-effective energy efficiency is not a trend we see in any other utility that we work with throughout the region. Indeed, the Northwest Power and Conservation Council's 7th Plan shows cost-effective energy efficiency opportunities growing, rather than receding.

The load reduction argument fails to convince us and falls apart on closer examination of what is happening on a state-by-state basis. In fact, PacifiCorp is planning to dramatically reduce energy efficiency procurement in almost all states except Oregon, where it plans to increase energy efficiency goals by 10% over the 20-year time frame. Over the 10 year planning horizon, PacifiCorp will increase Oregon energy efficiency acquisition by 24% relative to the 2015 IRP, despite the fact that loads are dropping 2.6% in the state, while in dramatically dropping goals in Wyoming (-11% reduction), California (-30%) over this same time frame despite the fact that loads are expected to ***grow*** by 1.2% in Wyoming and 6.5% in California. Table 1 illustrates the change in DSM Class 2 goals from 2015 to 2017 by state, along with the expected change in the load forecast.

Table 1. Percent Change from 2015 IRP to 2017 IRP (10 year planning horizon 2017-2026)

[1] Seventh Northwest Conservation and Electric Power Plan, NW Power and Conservation Council, February 25,

State	Class 2 DSM	Load Forecast[2]
Oregon	+24%	-2.6%
Idaho	+8%	+3%
Wyoming	-11%	+1.2%
Washington	-16%	-1.3%
Utah	-27%	-6.7%
California	-30%	+6.5%
Total	-13%	-5.3%

The rationale related to falling prices for market purchases has some limited validity over the short term, but effective weighting of long term price risk and market volatility should balance out that short term trend and still lead to a conclusion that procurement of low-cost resources is the least-cost/least risk approach. Additionally, market purchases do not change costs for Oregon, and Oregon Class 2 DSM goals are increasing as other state goals fall. That the price of renewable resources has any diminishing effect on energy efficiency procurement seems doubtful and is certainly unsubstantiated in the IRP.

The Coalition has expressed concerns in previous IRP cycles regarding this trend of PacifiCorp acquiring significantly more energy efficiency in Oregon compared to other states[3]. Oregon ratepayers are funding higher levels of cost effective conservation relative to energy efficiency achieved in other states. This is especially concerning because the 2017 IRP relies heavily on front office transactions (FOT). Class 2 DSM left unachieved will result in an increased reliance on FOT – and the market risks that are associated with those purchases. If Oregon ratepayers are funding an abundance of cost effective conservation and other states are not achieving their share, Oregon ratepayers are subsidizing ratepayers in all other states throughout PacifiCorp. This effectively raises rates in Oregon, requiring more expensive alternatives.

It is important that energy efficiency be acquired in a consistent manner across all parts of the Company's service territory, recognizing differences, for example, in building stock and climate zone, so that shortfalls in acquiring all cost effective energy efficiency do not occur, resulting in higher system costs that must be paid for by all PacifiCorp customers.

[2] PacifiCorp 2017 IRP, Vol. I pg. 3 and Vol 2 pp 5-10.
[3] LC 52, NW Energy Coalition Final Comments 2011, LC 57 NW Energy Coalition Final Comments 2013

We encourage PacifiCorp to reexamine its energy efficiency analysis, with an emphasis on the technical aspects such as avoided cost calculations, ramp rates and other factors that could be erroneously influencing the energy efficiency analysis. We believe opportunities for energy efficiency across all of PacifiCorp's service territory should be growing rather than diminishing.

PacifiCorp should be held accountable to acquire the maximum feasible cost effective conservation available in all states throughout its service territory (IRP Guideline 6.b.). We recommend not acknowledging Action Item 4a. Class 2 DSM.

IV. RENEWABLE RESOURCES AND TRANSMISSION

The action items contemplated by PacifiCorp in this IRP would be the largest new resource acquisitions by the PacifiCorp in many years. The Company's request for acknowledgment of the wind repowering, new wind and D2 transmission sub-segment must accordingly be given very close scrutiny to insure that together they truly achieve the least-cost, least-risk outcome.

The Coalition estimates, using very simplified assumptions, the following costs for these proposed resource acquisitions. These estimates are intended only to provide a very general "back of the envelope" sense of potential costs and the scale of the anticipated financial commitment, and we recognize that Company estimates could be significantly different.

Our simplified capital-cost estimates are: (1) wind repowering (905 MW to 1079 MW), $1.4 billion; (2) new wind (1100 MW), $1.8 billion; and (3) Segment D2, $620 million. This results in $3.8 billion total for facilities projected to be in service by the end of 2020.[4]

Table 2. Simplified Estimate: New Wind Resources

Wind Resources	Repowered	New	Total

[4]See Table 2 for wind cost estimates. Energy Gateway sub-segment D2 estimate based on $4 million per mile x 140 miles, plus $60 million for substation cost.

Nameplate MW	1079 [5]	1100	
Plant capacity factor	32.2% [6]	41.2%	
Annual MWh	3,100,000	3,970,032	
Annual PTC value – 2016 rate, $23/MWh ($million)	78.3	91.3	
10-Year PTC value ($million)	783	913	1696
PTC net tax value - $34/MWh ($million) [7]	1157	1350	2507
Capital cost ($/kW)	1637	1637	
Capital cost %	80% [8]	100%	
Total cost ($million)	1413	1801	3214

Wind resource acquisition is strongly driven by the availability and projected phase-out of the federal Production Tax Credits (PTC) for wind energy. Assuming the repowering and new wind fully qualifies, we estimate that the PTC will provide $1.7 billion of tax credits over the 10-year duration at a $23/MWh rate for the 2016 PTC. The Company has indicated the net tax effect of the PTC is equivalent to $34/MWh, so the total PTC effect is about $2.5 billion, leaving an anticipated net capital expenditure for the overall wind acquisition of about $700 million. Combined with the estimated cost of Gateway sub-segment D2 at $620 million, the total is about a net $1.3 billion capital outlay. We emphasize again that these estimates are very simplified and a more precise summarized accounting of potential resource costs would be useful.

The Coalition recognizes the importance of these proposed acquisitions, and believes the Company has made a strong case for a major new clean energy investment. But we continue to have questions that the Company has not yet fully addressed, as explained below.

The economic case presented by PacifiCorp regarding the benefits of repowering and new wind procurement is convincing. The Coalition's concern is that three major elements of the 2017 IRP – new wind, new transmission, and management of the coal fleet – are not effectively aligned.

[5] NWEC estimate: 905 MW repowered to 1079 MW (ratio of 3100 GWh annual production and 500 GWh increase over existing wind; 2017 IRP, p. 205); assumes same capacity factor while increasing blade length, sweep diameter and energy capture. *See* Wind Power Project Repowering, NREL/TP-6A20-60535, December 2013.
[6] NWEC estimate for existing wind sites.
[7] PacifiCorp estimate.
[8] Assumes repowering is 80% of cost of new wind.

There is relatively little proposed change in coal fleet deployment and retirement for the next 20 years in the 2017 IRP (Table 3).

Table 3. PacifiCorp Coal-Fueled Plants

Plant	State	PacifiCorp %	Summer Capacity (MW)	Assumed End of Life	Preferred Portfolio (if different)
Cholla 4	AZ	100	387	2042	2020
Colstrip 3	MT	10	74	2046	
Colstrip 4	MT	10	74	2046	
Craig 1	CO	19	82	2034	2025
Craig 2	CO	19	82	2034	
Dave Johnston 1	WY	100	106	2027	
Dave Johnston 2	WY	100	106	2027	
Dave Johnston 3	WY	100	220	2027	
Dave Johnston 4	WY	100	330	2027	
Hayden 1	CO	24	45	2030	
Hayden 2	CO	13	33	2030	
Hunter 1	UT	94	418	2042	
Hunter 2	UT	60	269	2042	
Hunter 3	UT	100	471	2042	
Huntington 1	UT	100	459	2036	
Huntington 2	UT	100	450	2036	
Jim Bridger 1	WY	67	354	2037	2028
Jim Bridger 2	WY	67	359	2037	2032
Jim Bridger 3	WY	67	345	2037	
Jim Bridger 4	WY	67	350	2037	
Naughton 1	WY	100	156	2029	
Naughton 2	WY	100	201	2029	
Naughton 3	WY	100	280	2029	2018
Wyodak	WY	80	268	2039	

Source: 2017 IRP Table 5.3 and p. 195.

At the same time, the repowering of 905 MW of existing wind, and addition of 1100 MW of new wind in the same area as a large part of the coal fleet, raises questions about duplication of generation resources and the actual need for new transmission, in a context where demand growth is diminishing and energy efficiency is covering most of the increase. Finally, as we

explain below, the role of other new clean resources such as solar, storage and demand response also should be considered.

Therefore, our major concern is whether the construction of the Gateway D2 sub-segment, as proposed, is required at this time. In favor of moving forward, PacifiCorp has shown that there are existing transmission constraints in central Wyoming. For example, the Company states that during maintenance periods at the Dave Johnston coal facility, there have been voltage stability issues in the transmission network when nearby wind generation exceeded 375 MW.[9]

Furthermore, PacifiCorp states that the repowered and new wind resources anticipated in the Preferred Portfolio require additional available transmission capacity, and that the addition of sub-segment D2 would permit the addition of up to 1270 MW of additional wind, depending on redispatch, east of the TOT 4A cut plane, as well as reinforcing the overall reliability of the existing network.[10]

However, PacifiCorp has not fully explored other alternatives to sub-segment D2. OPUC Staff asked whether PacifiCorp compared sub-segment D2 with an alternative approach such as the early retirement of coal plants to free up available transmission capacity. The Company stated that it first developed the least-cost-least-risk Western Haze compliance alternatives and associated early coal unit retirement assumptions. Only later did it select the 1100 MW of new wind and the D2 transmission sub-segment in order to complete the preferred portfolio.

PacifiCorp then explained that it "did not evaluate alternative coal unit retirement assumptions beyond those evaluated as part of its regional haze analysis. The 762 MW Dave Johnston plant in eastern Wyoming is the only coal-fueled generating asset on PacifiCorp's system that, if retired by the end of 2020, could relieve transmission congestion and enable incremental wind that is comparable to what can be achieved with the 750 MW of incremental transfer capability associated with the Aeolus to Bridger / Anticline transmission project."

The Company went on to note, "The Dave Johnston plant is one of the lowest variable operating cost assets on PacifiCorp's system, and operationally, provides flexibility that facilitates PacifiCorp's ability to import low cost renewable energy from California through the California

[9] PacifiCorp Response to OPUC Staff Data Request 13(e).
[10] 2017 IRP, p. 62-63.

Independent System Operator (CAISO) energy imbalance market (EIM). Moreover, this asset provides significant system capacity needed to satisfy PacifiCorp's 13 percent target planning reserve margin (PRM). If this unit were retired at the end of 2020 (approximately three years out), there would be limited time to procure potential replacement resource alternatives capable of delivering energy and capacity benefits comparable to those provided by the Dave Johnston plant."[11]

The Company's response does not completely address the question of whether sub-segment D2 is necessary, as proposed, in order to support the addition of 1100 MW of new wind resources in central Wyoming, for three reasons.

First, the response to the Staff data request provides a narrative of the value the Dave Johnston plant now provides to the system, without quantifying that value or referring to relevant studies. This is not to challenge those assertions but to point out that no study has been provided to assess how much of the value lost from accelerated retirement could instead be provided through redispatch and other adjustments to the existing system along any additional system changes required. Even if replacing the value of Dave Johnston would increase total system cost, the relevant question is whether that would be less than or greater than the cost of the new D2 sub-segment which would provide for full continued operation of Dave Johnston while accommodating new wind.

Second, the Company response only addresses retirement of the Dave Johnston plant. Other alternatives could be explored, such as continuing to operate some or all of the Dave Johnston units until their projected retirement in 2027, but doing so in tandem with the new wind resources and therefore at a lower annual capacity factor. A further refinement would be to assess a different dispatch pattern across the entire system, perhaps diminishing output or accelerating retirement of other parts of the coal fleet and thus reducing fuel and operating costs and net emissions.

Third, given the rapid development and decreasing costs of other clean energy resources, including solar, storage and demand response, a full assessment of whether sub-segment D2 should be built or nearby coal facilities undergo accelerated retirement should also include the

[11] PacifiCorp Response to OPUC Staff Data Request 51.

role that those potential clean resources can play in balancing new wind and providing resource adequacy and ancillary services.

For example, while the 2017 IRP proposes a significant increase in Class 1 DSM (dispatchable demand response) during the 20-year planning period, the starting point for a major increase only comes in 2028 after the four Dave Johnston coal units are proposed to retire.[12]

In addition, although the PAC-E control area is summer peaking, the Preferred Portfolio shows no eastside solar acquisition until 2031, despite the fact that solar prices have plummeted in recent years, will continue to decline, and the solar resource in the PAC-E area is widely available and high quality.[13]

Finally, the oncoming availability and pricing of storage resources including batteries for time-shifting new renewable resources to align better with daily load shapes is an important consideration.

The modeling approach chosen by PacifiCorp, while providing clearer results than in previous IRPs, is predicated on a static approach to the coal fleet which pushes aside full consideration of alternative resource strategies that could bring in a wider range of new clean energy resources, not just wind, while retaining system adequacy and reliability.

We recognize the time constraint for new wind deployment resulting from the current expiration schedule of the federal PTC, and support taking advantage of that opportunity. However, because of the very substantial investments contemplated by PacifiCorp during the Action Plan period – multiple billions of dollars for new wind generation and a new transmission line – the status quo operation of the coal fleet must be re-examined alongside accelerated deployment of demand response, solar and storage resources to determine the true least cost, least risk path forward.

We do not expect that assessing decreased use of the coal fleet or earlier retirement of coal units is a simple matter. But the Coalition believes this is a necessity given the substantial capital expenditures at stake and the path dependence of future resource development and system management based on those choices. It will be much harder to achieve our reliability, clean

[12] 2017 IRP, Table 1.1 and Figure 1.4.

[13] 2017 IRP, Table 8.17.

energy, climate and system cost goals over time if the full range of possibilities for transitioning away from coal dependence is not considered now.

In conclusion, the Coalition supports acknowledgement of the proposed wind repowering (Action Item 1) and new wind resources (Action Item 1b) in the PacifiCorp 2017 IRP.

However, the Coalition does not recommend acknowledgement of Action Item 2a – Aeolus to Bridger Transmission line and requests the Commission to defer acknowledgment of the proposed Energy Gateway sub-segment D2 pending further analysis by PacifiCorp of a full range of potential alternatives, including consideration of accelerated retirement and/or modified dispatch of the Dave Johnston units in conjunction with the new wind; differing dispatch patterns across the PacifiCorp system; and the accelerated acquisition of new clean resources to provide capacity and ancillary services to support the increase in wind resources and reduction of coal while maintaining resource adequacy and system security.

V. CONCLUSION

The Coalition supports what appears to be a recognition in the 2017 IRP of the value that renewable resources can provide to the PacifiCorp system. We also support PacifiCorp's decision not to make further SCR emission control investments for their aging coal fleet. We are disappointed, however, in the Company's decision to reduce its energy efficiency goals and in the lack of movement toward early closure for additional coal units. While the 2017 IRP does show reduced carbon emissions over the 20 year time frame in comparison to the 2015 IRP, the Coalition is concerned that the continued reliance on coal and failure to maximize energy efficiency will not result in the level of carbon emissions needed to achieve Oregon's greenhouse gas emissions goals. The path charted by PacifiCorp in its 2017 IRP may also not be the most cost- effective least-risk strategy.

In summary, the NW Energy Coalition makes the following recommendations in the matter of PacifiCorp's 2017 Integrated Resource Plan:

Acknowledgement of:

Action Item 1a. – Wind Repowering

Action Item 1b. – Request for Proposals for Wyoming Wind Resources

Non-acknowledgement of:

Action Item 2a. Aeolus to Bridger Transmission Line

Action Item 4a. Class 2 DSM

Respectfully submitted this 23RD day of June 2017,

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