

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

**LC 67**

In the Matter of PACIFICORP, dba  
PACIFIC POWER's 2017 IRP

Comments of  
Renewable Northwest

**I. INTRODUCTION**

Renewable Northwest thanks the Oregon Public Utility Commission (the "Commission" or "OPUC") for the opportunity to comment on PacifiCorp's 2017 Integrated Resource Plan ("IRP"). PacifiCorp's preferred portfolio ("FS-GW4") adds 1,100 MW of new Wyoming wind resources by the end of 2020.<sup>1</sup> Those resources would be connected to a new 140-mile, 500 kV transmission line from the Aeolus substation near Medicine Bow, Wyoming, to the Jim Bridger power plant.<sup>2</sup> The Company also seeks to repower 905 MW of existing wind resources by the end of 2020, including Leaning Juniper in Oregon. The preferred portfolio also envisions no further select catalytic reduction ("SCR") emission control investments in the Company's coal fleet,<sup>3</sup> and does not anticipate a new gas plant until 2029.<sup>4</sup> As discussed further in these comments, Renewable Northwest welcomes the Company's transition toward a clean energy future, and recommends that the Commission acknowledge the 2017 IRP.

Renewable Northwest congratulated PacifiCorp on the high degree of stakeholder involvement and communication during the 2015 IRP public input process.<sup>5</sup> While this was still generally the case throughout the development of the 2017 IRP, the Company fell short of the high standard of communication stakeholders have come to expect. The Company "successfully executed WTG [wind turbine generation] equipment purchases in December 2016";<sup>6</sup> however, the Company did not make IRP stakeholders aware of this purchase, and its impact on the 2017 IRP, until Public Input Meeting 8 on March 2-3, 2017.<sup>7</sup> Renewable Northwest understands the nature and magnitude of the time-limited opportunity that capturing 100% of the

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<sup>1</sup> PacifiCorp 2017 IRP, p.2.

<sup>2</sup> *Id.*

<sup>3</sup> *Id.* at 195.

<sup>4</sup> *Id.* at 218.

<sup>5</sup> UE-140546, PacifiCorp 2015 IRP, May 18, 2015.

<sup>6</sup> PacifiCorp 2017 IRP, p.204.

<sup>7</sup> PacifiCorp, 2017 IRP, Public Input Meeting 8, March 2-3, 2017, slide 5, [www.pacificorp.com/content/dam/pacificorp/doc/Energy\\_Sources/Integrated\\_Resource\\_Plan/2017\\_IRP/PacifiCorp\\_2017\\_IRP\\_PIM08\\_03-01-17\\_Final\\_Presentation.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2017_IRP/PacifiCorp_2017_IRP_PIM08_03-01-17_Final_Presentation.pdf).

federal production tax credit (“PTC”) represents, and we appreciate the Company’s efforts to capture this value. Nonetheless, we are disappointed that stakeholders were not kept abreast of the Company’s procurement plans and activities to the extent that was possible closer to when the activities were occurring.

Renewable Northwest’s comments begin by cataloging the nature of the time-limited PTC opportunity that the Company is pursuing (Section III). We then summarize and explain PacifiCorp’s three-phase portfolio selection process and the Company’s justification for selecting the preferred portfolio (Sections IV and V). The next section discusses the IRP in the context of national climate policy uncertainty, while highlighting certainty at the state-level (Section VI). The final section observes the emissions reductions that would be achieved if the preferred portfolio were pursued, while noting that the Company still has a long way to go on its transition away from coal and fossil fuels (Section VII).

These comments are exclusively for the purposes of describing Renewable Northwest’s position on PacifiCorp’s IRP, filed under LC 67, and do not constitute legal or tax advice. Utilities should consult with their own tax advisor or attorney with regard to their company’s tax situation.

## **II. THE COMPANY DID NOT INFORM IRP STAKEHOLDERS OF ITS WIND TURBINE EQUIPMENT PURCHASE IN A TIMELY FASHION**

The Company purchased wind turbine equipment in December 2016, but did not inform IRP stakeholders of its purchase until March 2017. As explained below, Renewable Northwest agrees that safe-harboring wind turbine equipment appears to be a sound economic decision for PacifiCorp. However, we share other stakeholders’ discomfort with the Company’s choice to not to share this important and relevant information with IRP stakeholders for several months.

In its 2017 IRP, published April 4, 2017, PacifiCorp indicated that it had “executed wind-turbine-generator (WTG) equipment purchases in December 2016 to preserve the option to repower existing wind generation facilities and obtain PTC benefits for customers.”<sup>8</sup> The Company added:

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 percent of PTCs. Repowering of other projects in PacifiCorp’s fleet may be feasible (i.e., Foote Creek and Goodnoe Hills).<sup>[9]</sup>

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<sup>8</sup> PacifiCorp 2017 IRP, Executive Summary, p.3.

<sup>9</sup> *Id.* at 205.

Repowering typically involves installing a newer nacelle and rotor on a wind turbine's existing tower and foundation.<sup>10</sup> Purchasing the equipment by the end of 2016 ensured that any wind projects that utilized the equipment would be eligible for the PTC at the 100% level (\$23/MWh) for 10 years.<sup>11</sup>

PacifiCorp held a 2017 IRP stakeholder call before the WTG purchases on November 17, 2016. PacifiCorp held its next IRP stakeholder meeting on January 26–27, 2017, followed by the final stakeholder meeting on March 2–3, 2017. The 2017 IRP was ultimately filed on April 4, 2017. However, PacifiCorp did not discuss “repowering” or PTCs at the November 17, 2016, stakeholder call<sup>12</sup> or at the January 26–27, 2017, stakeholder meeting.<sup>13</sup>

PacifiCorp presented draft preferred portfolio highlights at the stakeholder meeting on March 6–7, 2017. Only then did PacifiCorp indicate to stakeholders that it was considering repowering 905 MW of existing wind resources, as well as procuring “[a]n additional 428 MW of incremental low-cost wind resources”, by the end of 2020.<sup>14</sup> The Company also indicated at the March meeting that it would be further exploring “a time limited opportunity to align development of Energy Gateway sub-segment D2 with wind projects that can qualify for the full value of the PTCs.”<sup>15</sup>

The Company's 10-K annual tax filing, accepted by the Securities and Exchange Commission (“SEC”) on February 24, 2017, included the following historical and forecasted capital expenditures:

Wind investments totaling \$110 million in 2016 for the purposes of repowering certain existing wind-powered generating facilities and the construction of a new wind-powered generating facility. The repowering projects entail the replacement of significant components of older turbines. Planned spending for the repowering and new wind-powered generating facilities totals \$31 million in 2017, \$181 million in 2018 and \$740 million in 2019. The energy production from the repowered and new wind-powered generating facilities is expected to qualify for 100% of the federal renewable electricity

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<sup>10</sup> Vestas, PTC Renewal—Does it pencil out for you assets?, p. 4, [www.vestas.com/ptcrenewal](http://www.vestas.com/ptcrenewal).

<sup>11</sup> *Id.*

<sup>12</sup> PacifiCorp, 2017 IRP, Public Input Meeting 6, Nov. 17, 2016, [http://www.pacificorp.com/content/dam/pacificorp/doc/Energy\\_Sources/Integrated\\_Resource\\_Plan/2017\\_IRP/PacifiCorp\\_2017\\_IRP\\_PIM05\\_11-17-2016.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2017_IRP/PacifiCorp_2017_IRP_PIM05_11-17-2016.pdf).

<sup>13</sup> PacifiCorp, 2017 IRP, Public Input Meeting 7, Jan. 26–27, 2017, [www.pacificorp.com/content/dam/pacificorp/doc/Energy\\_Sources/Integrated\\_Resource\\_Plan/2017\\_IRP/PacifiCorp\\_2017\\_IRP\\_PIM07\\_1-26-17\\_Presentation.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2017_IRP/PacifiCorp_2017_IRP_PIM07_1-26-17_Presentation.pdf).

<sup>14</sup> PacifiCorp, 2017 IRP, Public Input Meeting 8, March 2–3, 2017, slide 5. [www.pacificorp.com/content/dam/pacificorp/doc/Energy\\_Sources/Integrated\\_Resource\\_Plan/2017\\_IRP/PacifiCorp\\_2017\\_IRP\\_PIM08\\_03-01-17\\_Final\\_Presentation.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2017_IRP/PacifiCorp_2017_IRP_PIM08_03-01-17_Final_Presentation.pdf).

<sup>15</sup> *Id.* at slide 43.

production tax credit available for 10 years once the equipment is placed in-service.<sup>[16]</sup>

Our understanding is that the Company's 10-K filing was the first publicly available opportunity to learn about PacifiCorp's plans. Renewable Northwest is disappointed that PacifiCorp did not inform IRP stakeholders of the WTG equipment purchases before its March IRP stakeholder meeting. However, as we explain below, we understand that the Company made its December 2016 purchases to respond quickly to a time-limited opportunity that arose on December 15, 2016.<sup>17</sup>

### **III. THE COMPANY BECAME AWARE OF, AND ACTED UPON, A TIME-LIMITED OPPORTUNITY**

IRS Notice 2017-04, released on December 15, 2016, afforded PacifiCorp a time-limited opportunity to capture 100% of the PTC for wind resources that could meet the IRS's "start of construction" requirements. This notice was released after the IRP stakeholder call of November 17, 2016, but before the next scheduled IRP meeting on January 26-27. In Notice 2017-04, the IRS clarified that wind facilities would have four years after construction began—whether significant physical work or the five percent safe harbor—to come into service in order to be eligible for the PTC at a level based on the year in which construction began. Specifically, Notice 2017-04 modified and clarified three key issues for wind energy facilities electing the PTC:

- 1) the continuity safe harbor provision;
- 2) the ability to select the start of construction method; and
- 3) application of the safe harbor provision when retrofitting facilities.

#### **1) Safe harbor provision**

The IRS provided revised continuity safe harbor provisions, indicating that safe harbor could be achieved for facilities that came into service up to four years after construction began:

[...] if a taxpayer places a facility in service by the later of (1) a calendar year that is no more than four calendar years after the calendar year during which construction of the facility began or (2) December 31, 2018, the facility will be considered to satisfy the Continuity Safe Harbor.<sup>[18]</sup>

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<sup>16</sup> U.S. Securities and Exchange Commission, Form 10-K, Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Commission Act of 1934, For the fiscal year ended December 31, 2016, PACIFICORP (with BERKSHIRE HATHAWAY ENERGY COMPANY), [www.berkshirehathawayenergyco.com/assets/upload/financial-filing/BHE%2012.31.16%20Form%2010-K\\_FINAL.pdf](http://www.berkshirehathawayenergyco.com/assets/upload/financial-filing/BHE%2012.31.16%20Form%2010-K_FINAL.pdf).

<sup>17</sup> On December 15, 2016, the U.S. Department of the Treasury issued Notice 2017-04 offering guidance on the use of the PTC in retrofitted facilities as well as expanding the continuity safe harbor.

<sup>18</sup> IRS Notice 2017-04, Section 3, Extension and Modification of the Continuity Safe Harbor, [www.irs.gov/irb/2017-04\\_IRB/ar10.html](http://www.irs.gov/irb/2017-04_IRB/ar10.html).

### 2) Selecting the activity that indicates start of construction

In terms of defining when construction begins, a facility can elect one of two options: either the “Physical Work Test” or the “Five Percent Safe Harbor.”<sup>19</sup> The “Physical Work Test” requires that “physical work of a significant nature” is begun, which for a wind facility could include “excavation for the foundation, the setting of anchor bolts into the ground, or the pouring of the concrete pads of the foundation.”<sup>20</sup> The “Five Percent Safe Harbor” requires “five percent or more of the total cost of the facility” be incurred and, thereafter, “continuous efforts to advance towards completion of the facility.”<sup>21</sup> Notice 2017-04 clarifies that construction starts according to which of these two options occurs first after June 6, 2016.<sup>22</sup>

### 3) Application of safe harbor provision to retrofitting

In terms of how the five percent safe harbor would apply to retrofitted or repowered facilities, prior IRS guidance provided that a facility could qualify as “originally placed in service”, and hence be eligible for the PTC at a given level, even though “it contains some used property, provided the fair market value of the used property is not more than 20 percent of the facility’s total value (the cost of the new property plus the value of the used property) (80/20 Rule).”<sup>23</sup> Notice 2017-04 clarified that “all costs properly included in the depreciable basis of the facility are taken into account,”<sup>24</sup> thereby “including indirect costs that may be capitalized into the tax basis of the new facility.”<sup>25</sup>

In summary, Notice 2017-04 created a time-limited opportunity for PacifiCorp to meet start of construction requirements for wind resources in 2016, in order to ensure that those resources could capture 100% of the PTC.

## **IV. SUMMARY AND EXPLANATION OF PACIFICORP’S THREE-PHASE PORTFOLIO SELECTION PROCESS**

This section describes the Company’s portfolio selection process. PacifiCorp’s preferred portfolio selection process had three phases: (1) “Regional Haze case screening”; (2) “eligible case screening”; and (3) “final screening for preferred portfolio selection.”<sup>26</sup> For each phase, the Company evaluated portfolio performance, including a determination of the present value revenue requirement

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<sup>19</sup> IRS Notice 2016-31, Section 4, Additional Issues Regarding the Continuity Requirement, June 6, 2016, [https://www.irs.gov/irb/2016-23\\_IRB/ar07.html#d0e709](https://www.irs.gov/irb/2016-23_IRB/ar07.html#d0e709).

<sup>20</sup> *Id.* at Section 5.

<sup>21</sup> IRS Notice 2013-20, Section 5, Safe Harbor, May 13, 2013, [www.irs.gov/irb/2013-20\\_IRB/ar09.html#d0e2324](http://www.irs.gov/irb/2013-20_IRB/ar09.html#d0e2324).

<sup>22</sup> IRS Notice 2017-04, Section 4, Prohibition Against Combining Methods by which to Satisfy the Beginning of Construction Requirement [www.irs.gov/irb/2017-04\\_IRB/ar10.html](http://www.irs.gov/irb/2017-04_IRB/ar10.html).

<sup>23</sup> IRS Notice 2013-20.

<sup>24</sup> IRS Notice 2017-04, Section 4, Prohibition Against Combining Methods by which to Satisfy the Beginning of Construction Requirement [www.irs.gov/irb/2017-04\\_IRB/ar10.html](http://www.irs.gov/irb/2017-04_IRB/ar10.html).

<sup>25</sup> Baker Botts, IRS Clarifies Earlier Guidance on Production Tax Credit Safe Harbors, Jan. 5, 2017.

<sup>26</sup> PacifiCorp 2017 IRP, p.180.

("PVR")", both using System Optimizer ("SO") and, stochastically, through Planning and Risk ("PaR") studies.<sup>27</sup>

### Phase 1

Phase 1 screened Regional Haze ("RH") scenarios in order to select a coal fleet portfolio upon which all other portfolios would be constructed. PacifiCorp described how each RH scenario "considers the timing and magnitude of run-rate capital and operations and maintenance costs for individual coal units"<sup>28</sup> in order to comply with the Environmental Protection Agency ("EPA") rule that "requires states to develop and implement plans to improve visibility in certain national park and wilderness areas."<sup>29</sup> Table 1 shows the risk-adjusted PVR among the RH scenarios.

Case	Risk Adjusted <sup>1</sup>			ENS Scenario Average			ENS Upper Tail Average			CO <sub>2</sub> Emissions		
	PVR (\$m)	Change from Lowest Cost Portfolio (\$m)	Rank	Average Annual ENS, 2017-2036 (GWh)	Change from Lowest ENS Portfolio	Rank	Average Annual ENS, 2017-2036 (GWh)	Change from Lowest ENS Portfolio	Rank	Total CO <sub>2</sub> Emissions, 2017-2036 (Thousand Tons)	Change from Lowest Emission Portfolio	Rank
Ref	26,395	\$1,146	7	14.1	2.6	7	33.7	3.3	6	786,334	27,895	4
RH1	25,249	\$0	1	11.9	0.4	4	31.5	1.1	5	789,172	30,732	6
RH2	25,544	\$295	4	12.2	0.7	5	34.7	4.2	7	758,440	0	1
RH3	25,414	\$165	3	11.5	0.0	1	30.6	0.1	2	778,734	20,294	3
RH4	25,757	\$508	5	11.9	0.4	3	30.6	0.2	3	790,896	32,456	7
RH5	25,307	\$58	2	11.7	0.3	2	30.4	0.0	1	773,115	14,676	2
RH6	26,111	\$862	6	12.4	1.0	6	31.1	0.7	4	787,410	28,971	5

<sup>1</sup> Based on average of 6 price-emissions scenarios

**Table 1—Risk-adjusted PVR among Top Performing Portfolios, Phase One (Regional Haze portfolio screening)** <sup>30</sup>

The Company identified RH-5 as the top-performing Phase 1 portfolio based on a variety of SO and PaR observations, including its consistently high ranking among the RH scenarios (as can be seen in Table 1).<sup>31</sup> At stakeholders' request, the Company performed an additional sensitivity "to examine the impact of a Naughton Unit 3 retirement at year-end 2017 and a Craig 1 retirement at year end 2025."<sup>32</sup> This sensitivity analysis highlighted the benefits of such a scenario, and led to case RH-5a, which was a variant of RH-5, in which Naughton Unit 3 ceases operation at the end of 2018 (under the original RH-5, Naughton Unit 3 was "assumed to cease coal-fired operation in 2017, convert to natural gas in 2019, and retire at the end of 2029"<sup>33</sup>). PacifiCorp observed that case RH-5a "yields lower costs relative to case RH-5 in all price emissions scenarios" with cost reductions "most significant with high natural gas price assumptions."<sup>34</sup>

<sup>27</sup> *Id.* at 179–80.

<sup>28</sup> *Id.* at 180.

<sup>29</sup> *Id.* at 35.

<sup>30</sup> *Id.* at Table 8.1, p.193.

<sup>31</sup> *Id.* at 193.

<sup>32</sup> *Id.* at 194.

<sup>33</sup> *Id.*

<sup>34</sup> *Id.* at 195.

RH-5a was selected from Phase 1 to form the foundational case upon which subsequent portfolios would be constructed.<sup>35</sup> The Company summarizes the RH compliance assumptions in this case as follows:

- No incremental selective catalytic reduction (SCR) emission control installations.
- Assumed coal unit retirements (there are no natural gas conversions):
- Naughton Unit 3 (Retired 2018)
- Cholla Unit 4 (Retired 2020)
- Craig Unit 1 (Retired 2025)
- Dave Johnston Plant (Retired 2027, end-of-life)
- Jim Bridger Unit 1 (Retired 2028)
- Naughton Units 1 & 2 (Retired 2029, end-of-life)
- Hayden Units 1 & 2 (Retired 2030, end-of-life)
- Jim Bridger Unit 2 (Retired 2032)
- Craig Unit 2 (Retired 2034, end-of-life)
- Huntington Plant (Retired 2036, end-of-life).<sup>[36]</sup>

### Phase 2

Phase 2, or “Eligible Portfolio Screening”, built portfolios “deemed eligible to be considered for preferred portfolio selection” using RH-5a’s RH compliance assumptions (referred to as case optimized portfolio “OP-NT3” during Phase 2).<sup>37</sup> In OP-NT3, the availability of the PTC drives the addition of approximately 300 MW of wind in Wyoming.<sup>38</sup> Table 2 shows the risk-adjusted PVRR among portfolios in Phase 2, with the core cases summarized in Table 3.

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<sup>35</sup> *Id.*

<sup>36</sup> *Id.*

<sup>37</sup> *Id.* at 196.

<sup>38</sup> *Id.* at 197.

Case	Risk Adjusted <sup>1</sup>			ENS Scenario Average			ENS Upper Tail Average			CO <sub>2</sub> Emissions		
	PVRR (\$m)	Change from Lowest Cost Portfolio (\$m)	Rank	Average Annual ENS, 2017-2036 (GWh)	Change from Lowest ENS Portfolio	Rank	Average Annual ENS, 2017-2036 (GWh)	Change from Lowest ENS Portfolio	Rank	Total CO <sub>2</sub> Emissions, 2017-2036 (Thousand Tons)	Change from Lowest Emission Portfolio	Rank
OP-NT3	25,167	\$461	4	12.5	9.5	10	31.4	23.1	10	770,651	13,323	10
OP-REP	24,706	\$0	1	11.3	8.4	2	31.0	22.7	8	771,283	13,956	11
OP-GW4	24,857	\$150	2	11.5	8.5	5	30.5	22.2	3	757,327	0	1
FR-1	25,695	\$988	9	12.7	9.7	11	31.5	23.2	11	766,344	9,017	6
FR-2	26,358	\$1,652	11	3.0	0.0	1	8.3	0.0	1	774,577	17,250	12
RE-1c	25,189	\$483	5	11.5	8.5	6	30.5	22.3	6	766,154	8,827	5
RE-2	25,148	\$441	3	11.5	8.5	7	30.3	22.0	2	769,738	12,411	9
DLC1	25,215	\$509	6	13.2	10.2	12	32.1	23.9	12	761,095	3,768	4
GW1	25,575	\$869	8	11.6	8.6	8	30.5	22.2	4	766,789	9,461	7
GW2	25,941	\$1,234	10	12.0	9.0	9	30.9	22.6	7	767,825	10,498	8
GW3	26,388	\$1,681	12	11.4	8.4	3	30.5	22.2	5	757,806	479	2
GW4	25,259	\$553	7	11.4	8.4	4	31.2	22.9	9	759,964	2,636	3

<sup>1</sup>Based on average of 6 emissions/price scenarios

**Table 2—Risk-adjusted PVRR among Top Performing Portfolios, Phase Two (Eligible Portfolio Screening) <sup>39</sup>**

Resource Class	Case 1 OP-NT3	Case 2 FR-1	Case 3 FR-2	Case 4 RE-1a	Case 4 RE-1b	Case 4 RE-1c	Case 5 RE-2	Case 6 DLC-1
Flexible Resources	Optimized	10% of Incremental L&R balance	20% of Incremental L&R balance	Optimized	Optimized	Optimized	Optimized	Optimized
Renewable Resources	Optimized	Optimized	Optimized	Just-in-Time Physical RPS Compliance (OR)	Just-in-Time Physical RPS Compliance (WA)	Just-in-Time Physical RPS Compliance (OR and WA)	Early Physical Compliance	Just-in-Time Physical RPS Compliance (OR and WA)
Class 1 DSM Resources	Optimized	Optimized	Optimized	Optimized	Optimized	5% of Incremental L&R balance	Optimized	5% of Incremental L&R balance
All other Resources	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized	Optimized

**Table 3—Phase 2 Core Cases<sup>40</sup>**

In Phase 2, the Company also explored a variety of Energy Gateway Transmission sensitivity cases, the various segments of which can be seen in Figure 1. The following list describes the Gateway sensitivities and catalogues the Wyoming wind they enable in addition to the 300 MW in OP-NT3:

- Gateway 1 (“GW1”) assumes the addition of transmission segment D, between Windstar and Anticline, with an assumed in-service date of 2022, and enables an additional 440 MW.<sup>41</sup>
- Gateway 2 (“GW2”) assumes the addition of transmission segment F, between Windstar and Mona/Clover, with an assumed in-service date of 2023, and enables an additional 440 MW.<sup>42</sup>

<sup>39</sup> *Id.* at Table 8.13, p.218.

<sup>40</sup> *Id.* at Table 8.4, p.196.

<sup>41</sup> *Id.* at 206.

<sup>42</sup> *Id.* at 207.



- Gateway 3 (“GW3”) assumes the addition of transmission segments D and F, with an additional 440 MW in 2022, and 760 MW in 2023.<sup>43</sup>
- Gateway 4 (“GW4”) assumes the addition of transmission segment D2, between Aeolus and Bridger/Anticline, with an in-service date year-end 2020), and enables an additional 900 MW in 2021.<sup>44</sup>

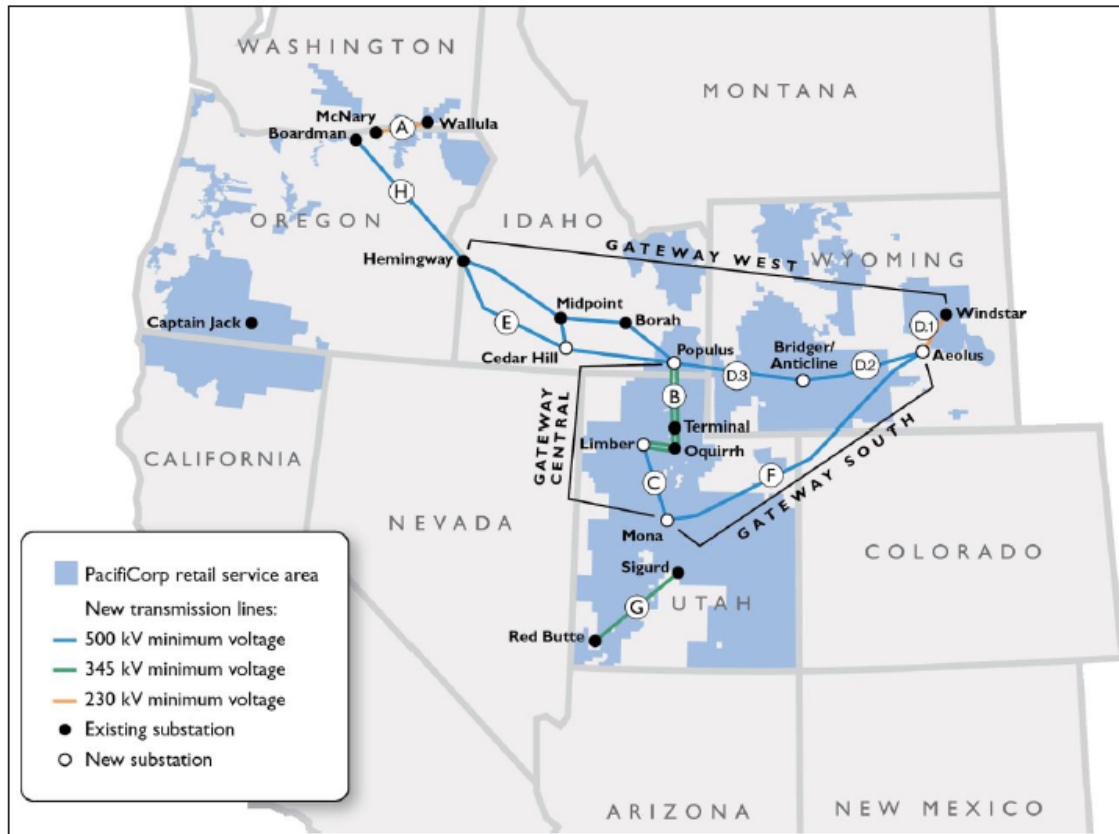


Figure 1—Energy Gateway Transmission Expansion Map<sup>45</sup>

Phase 2 also explored “Just-in-Time Compliance” cases in which “additional renewables are added to physically comply with Oregon and Washington RPS”:<sup>46</sup>

- RE1a—Oregon RPS
- RE1b—Washington RPS (West Control Area [“WCA”] renewable resources only)
- RE1c—Oregon and Washington RPSs (WCA renewable resources for Washington).

<sup>43</sup> *Id.* at 208

<sup>44</sup> *Id.*

<sup>45</sup> *Id.* at 204.

<sup>46</sup> *Id.* at 201.

In these cases, renewable resources are added in the year in which there is a projected RPS shortfall, after the 300 MW of Wyoming wind in OP-NT3 has been accounted for.<sup>47</sup>

PacifiCorp also explored early Oregon RPS compliance in case RE-2.<sup>48</sup> In this case, “additional renewables are added to physically comply with projected Oregon RPS beginning 2021 [...] to meet requirements throughout the planning period.”<sup>49</sup>

### Phase 2 – Portfolio Selection

The Company identified OP-REP as the top-performing portfolio of Phase 2.<sup>50</sup> The OP-REP sensitivity builds upon OP-NT3, but “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).”<sup>51</sup> Table 2 shows that all the portfolios produced low levels of energy not served (“ENS”) and had similar levels of CO2 emissions. PacifiCorp observed that case OP-REP “produces the lowest risk-adjusted PVRR in four out of six price scenarios” and “produces a low PVRR relative to other eligible cases based on the PVRR from SO.”<sup>52</sup>

Having explored the Energy Gateway sensitivity cases, the Company found that applying the sensitivity GW4 had a positive impact on portfolio economics. Indeed, PacifiCorp noted that cases “OP-REP and OP-GW4 are very close when evaluating the PVRR from SO, but case OP-GW4 only exhibits the lowest risk-adjusted PVRR in the high natural gas price scenarios when evaluated in PaR.”<sup>53</sup> The OP-GW4 case was initially added as a sensitivity to “study the cumulative impacts of layering the most favorable Energy Gateway scenario on top of the Wind Repower case.”<sup>54</sup> The case OP-GW4 combined the “most favorable” Energy Gateway Scenario with the wind repower case OP-REP.<sup>55</sup> The high performance of OP-GW4 led PacifiCorp to undertake additional studies in Phase 3.

### Phase 3

During Phase 3, “Final Portfolio Screening”, PacifiCorp “conducted additional studies informed by the analysis performed during the prior screening stage.”<sup>56</sup> For example, the Company “quantified additional benefits reasonably expected from the new transmission line [Gateway West segment D2], assessed how more current near-term assumptions for project capital costs and wind capacity factors affect the

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<sup>47</sup> *Id.*

<sup>48</sup> *Id.* at 203.

<sup>49</sup> *Id.*

<sup>50</sup> *Id.* at 218.

<sup>51</sup> *Id.* at 205.

<sup>52</sup> *Id.* at 218.

<sup>53</sup> *Id.*

<sup>54</sup> *Id.* at 204.

<sup>55</sup> *Id.*

<sup>56</sup> *Id.* at 219.

analysis, and completed power flow and dynamic stability analysis to refine transmission assumptions.”<sup>57</sup>

Table 4 lists the risk-adjusted PVRR among the final four portfolios in Phase 3. The Company observed that “FS-R2 ranks first in the risk adjusted PVRR metric, while FS-R1c ranks first in average ENS, and FS-GW4 ranks first in upper tail ENS” while noting “[t]he rankings, while indicative of order, tend to obscure how close some of the outcomes are in terms of raw measures.”<sup>58</sup>

Case	Risk Adjusted <sup>1</sup>			ENS Scenario Average			ENS Upper Tail Average			CO <sub>2</sub> Emissions		
	PVRR (\$m)	Change from Lowest Cost Portfolio (\$m)	Rank	Average Annual ENS, 2017-2036 (GWh)	Change from Lowest ENS Portfolio	Rank	Average Annual ENS, 2017-2036 (GWh)	Change from Lowest ENS Portfolio	Rank	Total CO <sub>2</sub> Emissions, 2017-2036 (Thousand Tons)	Change from Lowest Emission Portfolio	Rank
FS_REP	23,939	\$150	4	11.8	0.4	4	30.6	0.3	4	770,886	12,720	4
FS_GW4	23,808	\$18	2	11.7	0.3	3	30.3	0.0	1	758,774	607	3
FS_R1c	23,810	\$20	3	11.4	0.0	1	30.3	0.0	2	758,167	0	1
FS_R2	23,790	\$0	1	11.6	0.2	2	30.4	0.2	3	758,361	194	2

<sup>1</sup> Based on average of 6 emissions/price scenarios

**Table 4—Risk-adjusted PVRR among Top Performing Portfolios, Phase Three (Final Portfolio Screening)<sup>59</sup>**

The top performing portfolios in Phase 2 have very similar resource additions. Figure 2 shows a comparison of the cumulative capacity of resources in the Phase 3 portfolios. PacifiCorp explained that the “difference in new wind additions in 2021 in the FS-R1c case (57 MW of additional west-side wind) is driven by the Washington RPS program [footnote: under FS-R1c and FS-R2, system renewable resources in the portfolio eliminate any need for incremental renewable resources in the front ten years of the planning period].” In the FS-R2 case “an additional 61 MW of Idaho wind is added to the portfolio to offset a potential Oregon RPS shortfall that would otherwise occur beyond 2034.”<sup>60</sup>

<sup>57</sup> *Id.*

<sup>58</sup> *Id.* at 231.

<sup>59</sup> *Id.*

<sup>60</sup> *Id.* at 232.

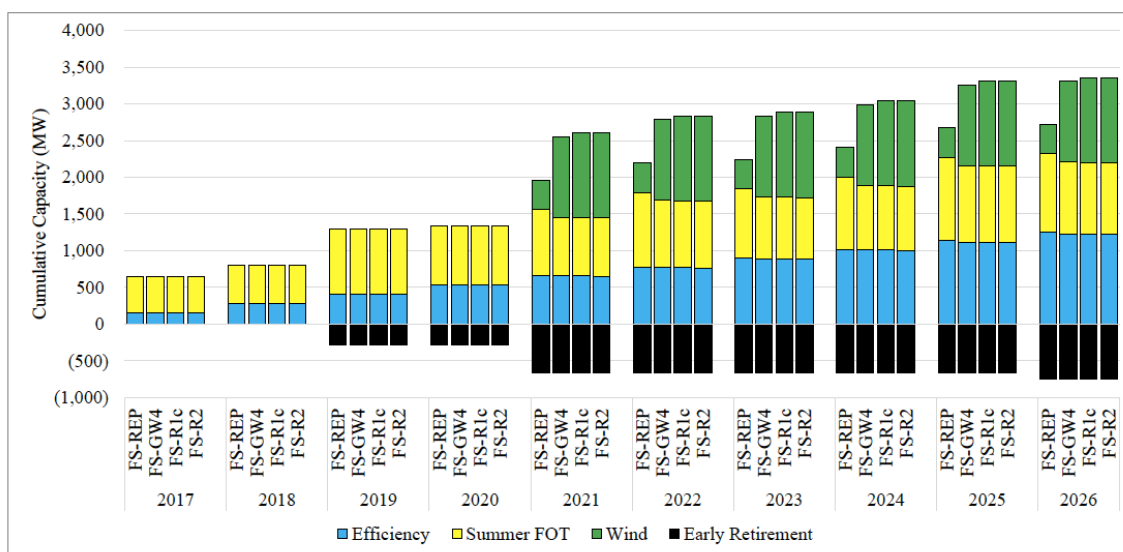


Figure 2—Comparison of Resources in the Eligible Resource Portfolios<sup>61</sup>

### Final Portfolio Selection

Renewable Northwest welcomes the preferred portfolio selection in the 2017 IRP as an indication of the economic benefits of the Company’s transition toward a clean energy future. The Company’s preferred portfolio, FS-GW4, seeks to add “1,100 MW of new Wyoming wind resources by the end of 2020 [...] connect[ed] to a new 140-mile, 500 kV transmission line from the Aeolus substation near Medicine Bow, Wyoming, to the Jim Bridger power plant.”<sup>62</sup> Importantly, this preferred portfolio envisions no incremental SCR emission control systems,<sup>63</sup> and does not anticipate a new gas plant until 2029.<sup>64</sup> Based on the cumulative analysis of portfolio selection Phases 1 through 3, PacifiCorp selected case FS-GW4 as the preferred portfolio for its 2017 IRP.<sup>65</sup> All of the Phase 3 final screening portfolios include repowering, but only FS\_REP does not include Gateway 4.<sup>66</sup> As Table 4 shows, the addition of Gateway 4 reduces a portfolio’s risk-adjusted PVRR. Indeed, the addition of segment D2 of Gateway West allows the utility “to fully achieve the benefits of federal wind production tax credits [...] providing significant economic benefits for PacifiCorp’s customers.”<sup>67</sup>

This time-sensitive opportunity requires that the new wind and transmission assets achieve commercial operation by the end of 2020 to maximize PTC benefits.<sup>68</sup> However, the Company noted that “[c]ompletion of the new transmission segment will allow the addition of up to 1,270 MWs of additional wind resources (depending

<sup>61</sup> *Id.* at Figure 8.61, p. 243.

<sup>62</sup> *Id.* at 2.

<sup>63</sup> *Id.* at 195.

<sup>64</sup> *Id.* at 218.

<sup>65</sup> *Id.* at 232.

<sup>66</sup> *Id.* at Table 8.13, p 219.

<sup>67</sup> *Id.* at 2.

<sup>68</sup> *Id.* at 234.

on re-dispatch).”<sup>69</sup> This comports with PacifiCorp’s proposed request for proposals (“RFP”) seeking “1,270 MW of wind resources that can achieve a commercial operation date of no later than December 31, 2020.”<sup>70</sup>

The Company’s responses to data requests indicate that building segment D2 of Gateway is currently a more viable and economically optimal solution to relieve some of its transmission congestion. Staff inquired as to whether the Company had compared “the new Wyoming wind and transmission project” (ultimately selected in the preferred portfolio FS-GW4) with “one in which one or more coal plants are retired early to free-up transmission for the new wind, reducing or eliminating the need for new transmission.”<sup>71</sup> PacifiCorp responded that these resources were included in FS-GW4, as the preferred portfolio itself was built upon the “least cost, least-risk regional haze compliance” portfolio RH-5 (selected in Phase 1, as described on page 6), and its associated “early coal unit retirement assumptions.”<sup>72</sup> More specifically, the Company observed that the only coal asset on its system that, if retired by the end of 2020, could “relieve transmission congestion and enable incremental wind” that is comparable to what could be achieved by Gateway West segment D2, is the 762 MW Dave Johnston plant in eastern Wyoming.<sup>73</sup> However, the Company states that the Dave Johnston plant is “one of the lowest variable operating cost assets” on its system, providing flexibility that facilitates PacifiCorp’s participation in the California Independent System Operator (“CAISO”) energy imbalance market (“EIM”).<sup>74</sup>

## **V. THE PREFERRED PORTFOLIO PROVIDES ECONOMIC BENEFITS IN ADDITION TO ITS RPS COMPLIANCE VALUE**

Although the Company’s preferred portfolio offers RPS compliance value, the portfolio was selected based on economic benefits to customers in Oregon and elsewhere, and is not driven by RPS compliance value. According to PacifiCorp, its analysis demonstrates that the Company can add 905 MW of repowered wind resources, 1,100 MW of new wind resources, and Gateway segment D2 by 2020 “with all-in economic savings for customers.”<sup>75</sup> Staff inquired if the 1,100 MW wind acquisition outlined in the IRP is “justified by PacifiCorp in part through compliance with Oregon’s Renewable Portfolio Standard.”<sup>76</sup> PacifiCorp responded that this was not the case.<sup>77</sup> Indeed, the Company pointed out that while the new wind accompanying the transmission project will “also contribute to the Company’s

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<sup>69</sup> *Id.* at 62.

<sup>70</sup> PacifiCorp 2017R Request for Proposals, Pre-Issuance Bidder’s Conference, May 31, 2017, [www.pacificorp.com/content/dam/pacificorp/doc/Suppliers/RFPs/2017R\\_RFP/2017R\\_RFP\\_Pre-Issuance\\_Bidders\\_Conference\\_May\\_31\\_2017.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Suppliers/RFPs/2017R_RFP/2017R_RFP_Pre-Issuance_Bidders_Conference_May_31_2017.pdf).

<sup>71</sup> OPUC Data Request 51.

<sup>72</sup> PacifiCorp Response to OPUC Data Request 51.

<sup>73</sup> *Id.*

<sup>74</sup> *Id.*

<sup>75</sup> PacifiCorp 2017 IRP, Executive Summary, p.2.

<sup>76</sup> OPUC Data Request 52.

<sup>77</sup> PacifiCorp Response to OPUC Data Request 52.

ability to meet state renewable energy targets in Utah, Oregon, Washington, and California,” it is justified “based on all-in economic savings for customers across all state jurisdictions.”<sup>78</sup>

In fact, the renewables in the preferred portfolio may provide an even higher economic benefit than what the Company’s analysis reflects. PacifiCorp assumed “no incremental renewable energy credit (REC) value for energy produced from the 1,100 megawatts of incremental wind,” a conservative assumption that suggests the PVRR of the preferred portfolio is too high.<sup>79</sup> The Company calculated that system net PVRR “would be reduced by \$30 million for each \$1 value assigned to the RECs” produced from the 1,100 MW of new wind.<sup>80</sup> Again, PacifiCorp went on to explicitly state that FS-GW4 “provides economic benefits to customers in all state jurisdictions...[and] would be pursued regardless of current RPS requirements.”<sup>81</sup>

Indeed, the preferred portfolio selection in this IRP was not driven by an RPS compliance strategy. Staff asked the Company to confirm that “the expected cost of environmental compliance in Oregon is less with proposed wind and transmission project than the Company’s previous plan of market REC purchases.”<sup>82</sup> PacifiCorp confirmed this statement, explaining that the Wyoming Wind and Gateway Segment D2 “would also allow the Company to “deliver Oregon renewable portfolio standards (RPS) compliance benefits.”<sup>83</sup> Thus, although the preferred portfolio provides an additional RPS compliance value, the selection of this portfolio is not driven by its RPS compliance value, but rather, by the broader economic benefits to customers.

## **VI. NATIONAL CLIMATE POLICY IS IN FLUX, BUT OREGON HAS INDICATED ITS COMMITMENT TO THE PARIS AGREEMENT AND RELATED POLICIES**

National climate policy is currently highly uncertain, with the Clean Power Plan (“CPP”) under review by the EPA and the U.S. extracting itself from the Paris Agreement, but there is a tremendous amount of certainty at the state level and a strong resolve to minimize the damage from climate change. Staff submitted at least sixteen data requests to the Company seeking information about how PacifiCorp’s CPP assumptions had impacted the IRP.<sup>84</sup> Many of Staff’s data requests seem to be seeking to determine the customer benefit of “wind repowering [and] Energy Gateway sub-segment D2 and new wind [...] in the case that there is no Clean Power Plan.”<sup>85</sup> Staff even asked PacifiCorp whether the Company thought the CPP “will

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<sup>78</sup> *Id.*

<sup>79</sup> PacifiCorp Response to OPUC Data Request 53.

<sup>80</sup> *Id.*

<sup>81</sup> PacifiCorp Response to OPUC Data Request 54.

<sup>82</sup> OPUC Data Request 51.

<sup>83</sup> PacifiCorp Response to OPUC Data Request 51.

<sup>84</sup> OPUC Data Requests 5, 26, 28–37, 41, 44–46.

<sup>85</sup> OPUC Data Request 26.

survive legal challenges currently being reviewed by the D.C. Circuit Court of Appeals.”<sup>86</sup> PacifiCorp responded that the IRP CPP assumptions were finalized on October 20, 2016, and “[a]s of that date, the Clean Power Plan was a final rule of the United States (U.S.) Environmental Protection Agency (EPA) and PacifiCorp included assumptions in the IRP that the final rule would be implemented.”<sup>87</sup>

Uncertainty around the future of the CPP has increased beyond the review by the D.C. Circuit Court of Appeals, referenced by Staff.<sup>88</sup> A Presidential Executive Order was issued on March 28, 2017, requiring the EPA to “review, and if appropriate, as soon as practicable, take lawful action to suspend, revise, or rescind, as appropriate” the CPP.<sup>89</sup> The EPA initiated the review of the CPP on April 4, 2017.<sup>90</sup>

Withdrawal from the Paris Accord adds additional uncertainty to the fate of the CPP. The CPP final rules were initially released August 3, 2015, and were said to continue “momentum towards international climate talks in Paris in December [2015].”<sup>91</sup> The Paris Accord is an agreement within the United Nations Framework Convention on Climate Change (“UNFCCC”) dealing with greenhouse gas emissions mitigation, adaptation, and finance starting in the year 2020.<sup>92</sup> The U.S. formally joined the Paris Agreement in September 2016, with the Agreement coming into effect a month later in October 2016.<sup>93</sup> On June 1, 2017, the U.S. announced that it would withdraw from the Paris Climate Accord, creating further uncertainty over the future of the CPP and the outcome of the EPA review.<sup>94</sup>

The Governor of the State of Oregon has signaled her commitment to climate action. Despite the recent increase in uncertainty over the immediate future of federal climate policies, like the CPP, sub-national jurisdictions, including the State of Oregon, have declared their resolve to continue with the commitments of the Paris Agreement and the intent of policies that, like the CPP, were part of the momentum behind the Accord. On June 13, 2017, Governor Kate Brown was among the first U.S. state leaders to announce that they would be participating in the Climate Change Conference (“COP23”) in Bonn, Germany, in November 2017, to “represent

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<sup>86</sup> OPUC Data Request 28.

<sup>87</sup> PacifiCorp Response to OPUC Data Request 28.

<sup>88</sup> OPUC Data Request 28.

<sup>89</sup> The White House, Office of the Press Secretary, “Presidential Executive Order on Promoting Energy Independence and Economic Growth”, March 28, 2017.

<sup>90</sup> Federal Register, Review of the Clean Power Plan, A Proposed Rule by the EPA, April 4, 2017, [www.federalregister.gov/documents/2017/04/04/2017-06522/review-of-the-clean-power-plan](http://www.federalregister.gov/documents/2017/04/04/2017-06522/review-of-the-clean-power-plan)

<sup>91</sup> The White House, Office of the Press Secretary, Aug. 03, 2015, <https://obamawhitehouse.archives.gov/the-press-office/2015/08/03/fact-sheet-president-obama-announce-historic-carbon-pollution-standards>.

<sup>92</sup> UNFCCC, The Paris Agreement, [http://unfccc.int/paris\\_agreement/items/9485.php](http://unfccc.int/paris_agreement/items/9485.php).

<sup>93</sup> The White House, Office of the Press Secretary, “Remarks by the President on the Paris Agreement”, Oct. 5, 2016.

<sup>94</sup> The White House, Office of the Press Secretary, “Statement by President Trump on the Paris Climate Accord”, June 1, 2017, [www.whitehouse.gov/the-press-office/2017/06/01/statement-president-trump-paris-climate-accord](http://www.whitehouse.gov/the-press-office/2017/06/01/statement-president-trump-paris-climate-accord).

subnational jurisdictions committed to climate action.”<sup>95</sup> Oregon will participate in COP23 “as part of a delegation of U.S. Governors that have joined the U.S. Climate Alliance.”<sup>96</sup>

PacifiCorp’s consideration of the CPP in the 2017 IRP was, and remains, appropriate. First, PacifiCorp locked in its CPP assumptions before the recent changes in federal policy on climate. Additionally, given the clear state and regional commitments to minimizing the damage from climate change and reduce reliance on fossil fuels, it remains reasonable for PacifiCorp to have considered the CPP as a basis for its IRP. PacifiCorp acknowledges that it has not yet filed analysis that will include scenarios without the CPP, but the Company plans to “make these filings at the end of June 2017.”<sup>97</sup> Renewable Northwest looks forward to reviewing that analysis.

## **VII. THE PREFERRED PORTFOLIO REDUCES EMISSIONS, BUT PACIFICORP STILL HAS A LONG WAY TO GO**

Renewable Northwest is encouraged by PacifiCorp’s preferred portfolio as a positive step toward a clean energy future. The selection of FS-GW4 signals PacifiCorp’s cost-effective transition to a resource mix with more renewables energy and lower forecasted CO<sub>2</sub> emissions. However, fossil-fueled resources continue to dominate the Company’s resource mix throughout the planning period. As a result, we look forward to continue working with the Company to facilitate the transition to a cleaner resource mix over its future resource planning cycles.

PacifiCorp’s 2017 IRP preferred portfolio minimizes cost and risks while representing a significant improvement in the Company’s expected CO<sub>2</sub>-emissions trajectory. As Figure 3 shows, the Company’s CO<sub>2</sub>-emissions forecast under the 2017 IRP preferred portfolio is lower than under the 2015 IRP preferred portfolio, particularly in the first eight years of the planning period.<sup>98</sup> Indeed, by the end of the planning period, the FS-GW4 would lead to 24.5% less average annual CO<sub>2</sub> emissions than the 2015 IRP preferred portfolio.<sup>99</sup> Renewable Northwest celebrates this downward shift in the Company’s CO<sub>2</sub> emissions trajectory.

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<sup>95</sup> Oregon Governor’s Office, Newsroom, “Governor Kate Brown Joins Pacific Leaders Committed to Participating in International Climate Change Conference”, June 13, 2017, [www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=2103](http://www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=2103).

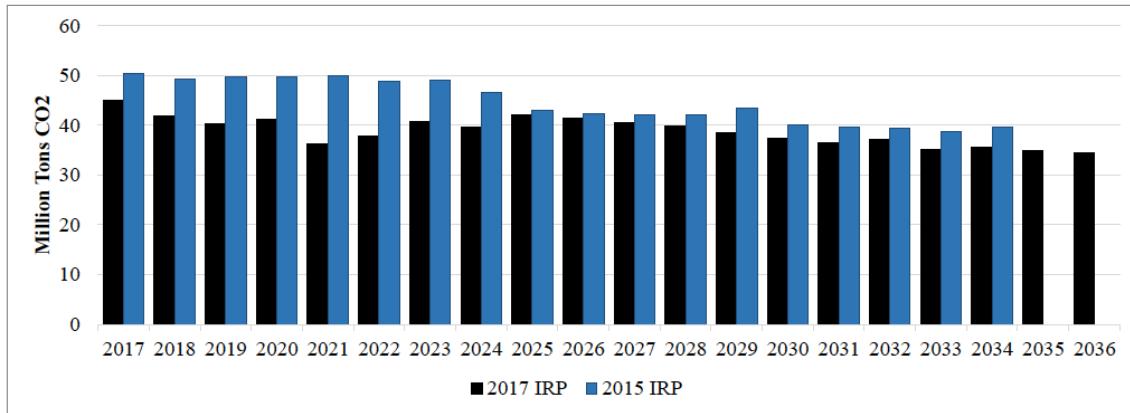
<sup>96</sup> *Id.*

<sup>97</sup> PacifiCorp Response to OPUC Data Request 26.

<sup>98</sup> PacifiCorp 2017 IRP, p.242.

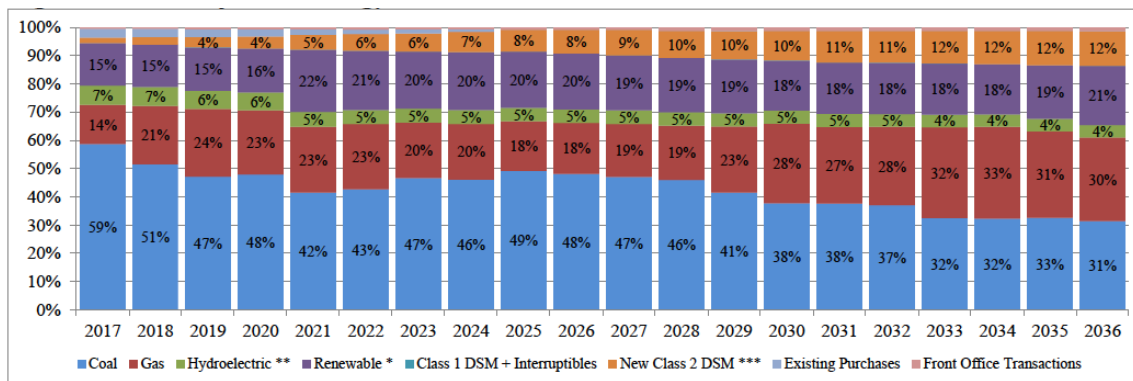
<sup>99</sup> *Id.*





**Figure 3—Comparison of CO<sub>2</sub> Emission Forecasts between the 2017 IRP Preferred Portfolio and the 2015 IRP Preferred Portfolio<sup>100</sup>**

However, the dominant role of fossil-fueled resources in PacifiCorp’s resource mix shows that the Company’s transition toward cleaner resources still has some way to go. As Figure 4 shows, fossil-fueled generation would represent over 60% of the Company’s projected energy mix throughout the planning period, with coal representing between 40% and 50% during the first 12 years.<sup>101</sup>



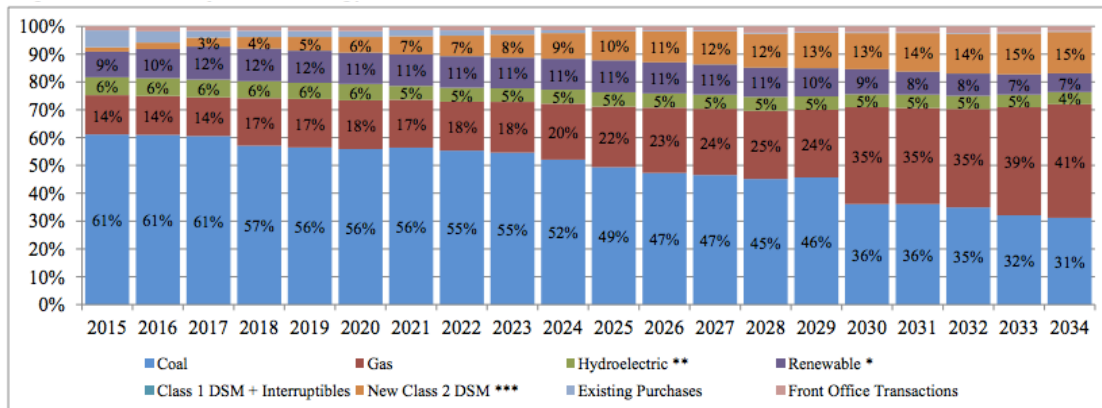
**Figure 4—Projected Energy Mix with Preferred Portfolio Resources (2017 IRP)<sup>102</sup>**

However, it is worth comparing PacifiCorp’s projected energy mix from this IRP, shown in Figure 4, with the projected energy mix from the 2015 IRP, shown in Figure 5. It can be seen how the 2017 IRP preferred portfolio has significantly less coal energy than was the case in the 2015 IRP (blue bar), with the difference being made up primarily by renewable energy (purple bar) and gas (red bar). Renewable Northwest welcomes this shift to cleaner and less carbon intensive energy production.

<sup>100</sup> *Id.* at 243.

<sup>101</sup> *Id.* at 240.

<sup>102</sup> *Id.*



\*Renewable resources include wind, solar, and geothermal.

\*\*Hydroelectric resources included owned and contracted.

\*\*\*Class 2 DSM resources represent cumulative acquisition of new DSM resources over time.

Figure 5—Projected Energy Mix with Preferred Portfolio Resources (2015 IRP)<sup>103</sup>

Fossil-fueled resources also play a significant role in the Company’s projected capacity mix. As Figure 6 shows, coal-fueled resources represent over 30% of the Company’s projected capacity mix for the first 10 years of the planning period.<sup>104</sup> However, when compared to the projected capacity mix from the 2015 IRP, as can be seen in Figure 7, both coal (blue bar) and gas (red bar) have decreased in PacifiCorp’s 2017 IRP capacity mix, while renewable energy (purple bar) and new class 2 demand side management (“DSM”)/energy efficiency have increased. Renewable Northwest welcomes this shift to cleaner capacity and more energy efficiency.

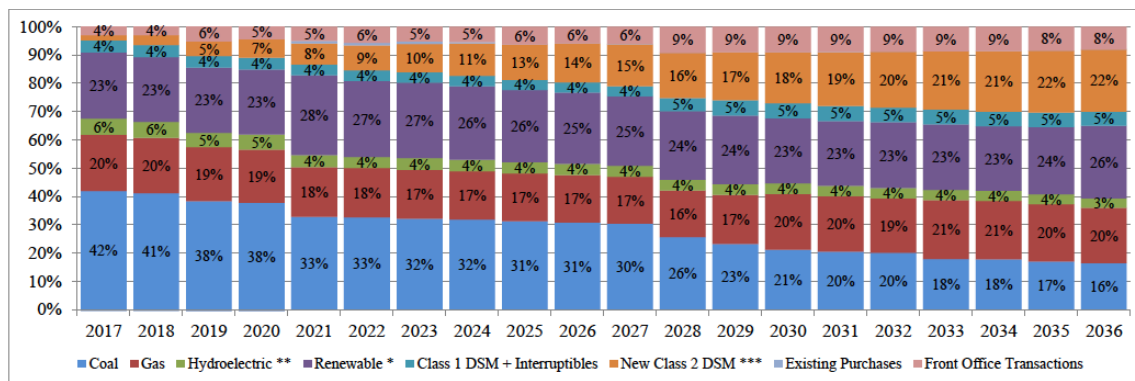


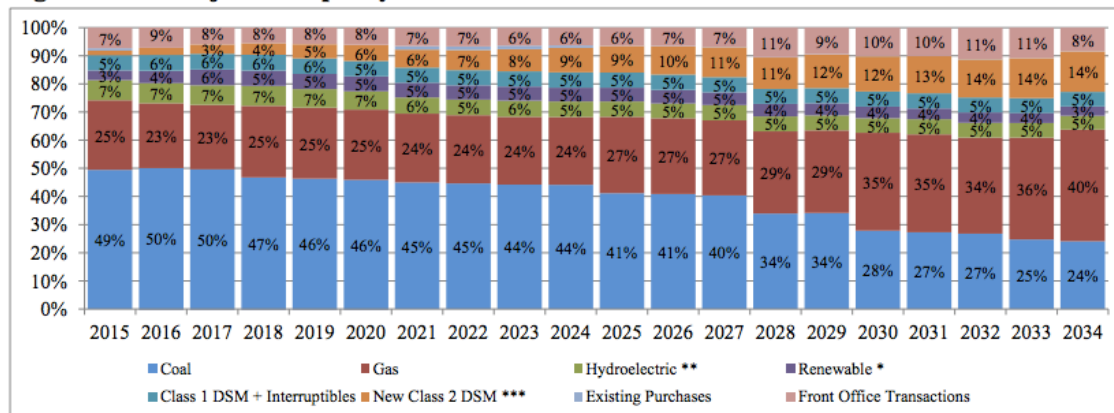
Figure 6—Projected Capacity Mix with Preferred Portfolio Resources (2017 IRP)<sup>105</sup>

<sup>103</sup> *Id.* at Figure 8.25, p193.

<sup>104</sup> *Id.* at 240.

<sup>105</sup> *Id.*

**Figure 8.26 – Projected Capacity Mix with Preferred Portfolio Resources**



\*Renewable resources include wind, solar, and geothermal.

\*\*Hydroelectric resources included owned and contracted.

\*\*\*Class 2 DSM resources represent cumulative acquisition of new DSM resources over time.

**Figure 7—Projected Capacity Mix with Preferred Portfolio Resources (2015 IRP)<sup>106</sup>**

Renewable Northwest looks forward to seeing a continued decline in the role of fossil-fueled resources, and an increase in energy efficiency and renewable resources, in the Company's resource mix in future planning cycles.

## VIII. CONCLUSION

Renewable Northwest is encouraged by the 2017 IRP selection of a portfolio that hopefully marks the beginning of a substantial transition towards more energy efficiency and cleaner resources. The Company seeks to add 1,100 MW of new Wyoming wind resources by the end of 2020,<sup>107</sup> and has indicated that its RFP will be seeking up 1,270 MW of wind resources.<sup>108</sup> These resources are expected to connect to a new 140-mile, 500 kV transmission line from the Aeolus substation near Medicine Bow, Wyoming, to the Jim Bridger plant.<sup>109</sup> In addition, the Company is seeking to repower 905 MW of existing wind resources by the end of 2020, including the Leaning Juniper project in Oregon.<sup>110</sup>

Stakeholders were not aware that the Company was pursuing such a significant procurement until Public Input Meeting 8 on March 2–3, 2017.<sup>111</sup> While Renewable Northwest is disappointed that stakeholders were not kept abreast of equipment purchases closer to when they occurred, we understand the nature and magnitude

<sup>106</sup> *Id.* at 193.

<sup>107</sup> *Id.* at 2.

<sup>108</sup> PacifiCorp 2017R Request for Proposals, Pre-Issuance Bidder's Conference, May 31, 2017 [www.pacificorp.com/content/dam/pacificorp/doc/Suppliers/RFPs/2017R\\_RFP/2017R\\_RFP\\_Pre-Issuance\\_Bidders\\_Conference\\_May\\_31\\_2017.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Suppliers/RFPs/2017R_RFP/2017R_RFP_Pre-Issuance_Bidders_Conference_May_31_2017.pdf).

<sup>109</sup> PacifiCorp 2017 IRP, p.2.

<sup>110</sup> *Id.* at 205.

<sup>111</sup> PacifiCorp, 2017 IRP, Public Input Meeting 8, March 2–3, 2017, slide 5, [www.pacificorp.com/content/dam/pacificorp/doc/Energy\\_Sources/Integrated\\_Resource\\_Plan/2017\\_IRP/PacifiCorp\\_2017\\_IRP\\_PIM08\\_03-01-17\\_Final\\_Presentation.pdf](http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Integrated_Resource_Plan/2017_IRP/PacifiCorp_2017_IRP_PIM08_03-01-17_Final_Presentation.pdf)

of the time-limited opportunity that the Company was pursuing in order to secure the PTC at the 100% level, and we appreciate the Company's efforts to capture this value.

The final portfolio was selected after a rigorous three-phase selection process. In addition to supporting the benefits afforded by the renewable and transmission components, we also appreciate that the preferred portfolio envisions no further SCR emission control investments in the Company's coal fleet,<sup>112</sup> and does not anticipate a new gas plant until 2029.<sup>113</sup> While the resources will also provide RPS compliance benefits, the preferred portfolio was selected primarily for the economic benefits it brings to customers.<sup>114</sup> Overall, the selection of the preferred portfolio reflects a positive step in the transition toward a clean energy future.

This IRP is being undertaken during a period of climate policy uncertainty at the national level, but the State of Oregon has declared its resolve to pursue the Commitments behind the Paris Agreement.<sup>115</sup> PacifiCorp's CO<sub>2</sub> emissions under its 2017 IRP portfolio are lower than under the 2015 IRP,<sup>116</sup> but coal is still anticipated to represent between 40% and 50% of the Company's energy mix during the next 12 years.<sup>117</sup> Renewable Northwest welcomes the Company's transition towards cleaner resources and reduced CO<sub>2</sub> emissions, and looks forward to working with and encouraging PacifiCorp on this trajectory.

We appreciate the opportunity to comment on PacifiCorp's 2017 IRP and we recommend that the Commission acknowledge this IRP.

Sincerely,

/s/ Michael H O'Brien

Michael H O'Brien

([michael@renewablenw.org](mailto:michael@renewablenw.org))

Research Director

Renewable Northwest

421 SW 6th Avenue, Suite 975

Portland, OR 97204

503-223-4544

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<sup>112</sup> PacifiCorp 2017 IRP, p.195.

<sup>113</sup> *Id.* at 218.

<sup>114</sup> PacifiCorp Response to OPUC Data Request 52.

<sup>115</sup> Oregon Governor's Office, Newsroom, "Governor Kate Brown Joins Pacific Leaders Committed to Participating in International Climate Change Conference", June 13, 2017, [www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=2103](http://www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=2103).

<sup>116</sup> PacifiCorp 2017 IRP, p.242.

<sup>117</sup> *Id.* at 240.

**OPUC Data Request 5**

Page 151 of the IRP chapter 7 states that PacifiCorp assumes it doesn't receive any Clean Energy Incentive Program renewable or output based set asides. Has the Company received any in past years?

**Response to OPUC Data Request 5**

No. The Clean Energy Incentive Program was proposed by the United States Environmental Protection Agency as part of the Clean Power Plan. The program has not been implemented.

## **OPUC Data Request 26**

Regarding the materials presented to Commission Staff during an April 27, 2017 meeting:

- (a) Please provide the customer benefit analysis PVRR(d) tables for the “wind repowering” benefit in the case that there is no Clean Power Plan or similar regulation over the life of the plants.
- (b) Please provide the customer benefit analysis PVRR(d) tables for the “Energy Gateway sub-segment D2 and new wind” benefit in the case that there is no Clean Power Plan (CPP) or similar regulation over the life of the plants.
- (c) Please provide the expected impacts to Oregon’s rates by customer class by year expected from the “wind repowering” project under the three regulatory assumptions (CPP(a), CPP(b), no similar such regulation over the life of the plants).
- (d) Please provide the expected impacts to Oregon’s rates by customer class by year expected from the “Energy Gateway sub-segment D2 and new wind” project under the three regulatory assumptions (CPP(a), CPP(b), no similar such regulation over the life of the plants).
- (e) Please provide the expected impacts to Oregon’s rates by customer class by year expected from the “Energy Gateway sub-segment D2 and new wind” project under the three regulatory assumptions (CPP(a), CPP(b), no similar such regulation).

## **Response to OPUC Data Request 26**

PacifiCorp objects to this request as unduly burdensome, not reasonably calculated to lead to the discovery of admissible evidence, and as requiring disclosure of information not prepared or maintained in the ordinary course of business or development of a special study. Without waiving the foregoing objections, PacifiCorp responds as follows:

- (a) The 2017 Integrated Resource Plan (IRP) does not include a wind repowering customer benefit study in the absence of the Clean Power Plan or other federal carbon dioxide (CO<sub>2</sub>) policy. PacifiCorp is currently updating its customer benefit analysis of the wind repowering project to support regulatory filings in Idaho, Utah, and Wyoming. This updated analysis will include scenarios without the Clean Power Plan or other federal CO<sub>2</sub> policy assumptions. PacifiCorp plans to make these filings at the end of June 2017, and will supplement its response to this data request at that time.
- (b) The 2017 IRP does not include an Energy Gateway Sub-Segment D2 and new wind customer benefit study in the absence of the Clean Power Plan or other federal CO<sub>2</sub>

Despite PacifiCorp's diligent efforts, certain information protected from disclosure by the attorney-client privilege or other applicable privileges or law may have been included in its responses to these data requests. PacifiCorp did not intend to waive any applicable privileges or rights by the inadvertent disclosure of protected information, and PacifiCorp reserves its right to request the return or destruction of any privileged or protected materials that may have been inadvertently disclosed. Please inform PacifiCorp immediately if you become aware of any inadvertently disclosed information.

- policy. PacifiCorp is currently updating its customer benefit analysis of the Energy Gateway Sub-Segment D2 and new wind project to support regulatory filings in Idaho, Utah, and Wyoming. This updated analysis will include scenarios without the Clean Power Plan or other federal CO<sub>2</sub> policy assumptions. PacifiCorp plans to make these filings at the end of June 2017, and will supplement its response to this data request at that time.
- (c) The 2017 IRP does not include a forecast of customer rate impacts associated with the wind repowering project by class and year for any scenario. PacifiCorp is currently updating its customer benefit analysis of the wind repowering project to support regulatory filings in Idaho, Utah, and Wyoming. This updated analysis will include scenarios with CO<sub>2</sub> policy assumptions not explicitly tied to the Clean Power Plan and scenarios without the Clean Power Plan or other federal CO<sub>2</sub> policy assumptions. The analysis will include a forecast of annual nominal revenue requirement impacts from the wind repowering project. PacifiCorp plans to make these filings at the end of June 2017, and will supplement its response to this data request at that time.
- (d) The 2017 IRP does not include a forecast of customer rate impacts associated with the Energy Gateway Sub-Segment D2 and new wind project by class and year for any scenario. PacifiCorp is currently updating its customer benefit analysis of Energy Gateway Sub-Segment D2 and new wind project to support regulatory filings in Idaho, Utah, and Wyoming. This updated analysis will include scenarios with CO<sub>2</sub> policy assumptions not explicitly tied to the Clean Power Plan and scenarios without the Clean Power Plan or other federal CO<sub>2</sub> policy assumptions. The analysis will include a forecast of annual nominal revenue requirement impacts from the wind repowering project. PacifiCorp plans to make these filings at the end of June 2017, and will supplement its response to this data request at that time.
- (e) Please refer to the Company's response to subpart (d) above.

**OPUC Data Request 28**

Does PacifiCorp's IRP assume the Clean Power Plan (CPP) will survive legal challenges currently being reviewed by the D.C Circuit Court of Appeals?

**Response to OPUC Data Request 28**

PacifiCorp objects to this request as requiring a legal opinion or speculation regarding the outcome of legal proceedings. Without waiving the foregoing objections, PacifiCorp responds as follows:

Clean Power Plan assumptions for the 2017 Integrated Resource Plan (IRP) were finalized on October 20, 2016. As of that date, the Clean Power Plan was a final rule of the United States (U.S.) Environmental Protection Agency (EPA) and PacifiCorp included assumptions in the IRP that the final rule would be implemented.



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OPUC Data Request 29

**OPUC Data Request 29**

Does PacifiCorp assume that if the Court of Appeals upholds the Clean Power Plan that EPA and the federal government will implement the Clean Power Plan?

**Response to OPUC Data Request 29**

This request has been withdrawn by Public Utility Commission of Oregon Staff.

Despite PacifiCorp's diligent efforts, certain information protected from disclosure by the attorney-client privilege or other applicable privileges or law may have been included in its responses to these data requests. PacifiCorp did not intend to waive any applicable privileges or rights by the inadvertent disclosure of protected information, and PacifiCorp reserves its right to request the return or destruction of any privileged or protected materials that may have been inadvertently disclosed. Please inform PacifiCorp immediately if you become aware of any inadvertently disclosed information.

**OPUC Data Request 30**

Is PacifiCorp's preferred portfolio investment in 1,100MW of wind assumed to be eligible for renewable and out-put based set asides under the CPP?

- (a) If so how is this valued by PacifiCorp in its preferred portfolio and in its modeling generally?

**Response to OPUC Data Request 30**

PacifiCorp did not make an assumption as to whether additional renewable generation in the preferred portfolio would be eligible for set-asides under the Clean Power Plan.

- (a) PacifiCorp did not include a specific value associated with Clean Power Plan set-asides in the preferred portfolio or modeling.

## **OPUC Data Request 31**

Please state and define all the assumptions made by PacifiCorp when modeling CPP compliance (i.e. CPP(a), CPP(b), CPP(c) and CPP(d)).

### **Response to OPUC Data Request 31**

For all mass cap scenarios and for each state (except where noted), state allocations were assumed to be made to PacifiCorp pro-rata based on historical generation. For Oregon, no allocation was assumed for Boardman, which retires in 2020. For Utah, no allocation was assumed for Carbon, which retired in 2015. For Washington, the mass cap in each scenario was assumed to be set based on Clean Air Rule requirements. For Arizona, allocated allowances in each scenario were assumed to be used by the early retirement option under the Clean Power Plan for Cholla Unit 4.

CPP(a): Assumes no new source complement. Clean Energy Incentive Program (CEIP), renewable, and output-based set-asides are not subtracted assuming either: (1) PacifiCorp receives a pro-rata allocation of set-asides; or (2) no set-aside program is adopted.

CPP(b): Assumes the new source complement is included and that new source complement allowances are allocated to PacifiCorp on a pro-rata basis. CEIP, renewable, and output-based set-asides are subtracted assuming PacifiCorp does not receive an allocation of the set-asides.

CPP(c): Assumes no new source complement. CEIP, renewable, and output-based set-asides are subtracted assuming PacifiCorp does not receive an allocation of the set-asides.

CPP(d): Assumes the new source complement is included and that new source complement allowances are allocated to PacifiCorp on a pro-rata basis. CEIP, renewable, and output-based set-asides are not subtracted assuming either: (1) PacifiCorp receives a pro-rata allocation of set-asides; or (2) no set-aside program is adopted.

### **OPUC Data Request 32**

Does PacifiCorp assume that all WECC states (except California) reach either an interstate compact or agreement to pool compliance obligations and compliance tools or assets such as set-asides or additional EPA granted allocations for early action? If no, please explain the assumptions and the framework PAC constructed and utilized when modeling CPP compliance within the IRP.

### **Response to OPUC Data Request 32**

With the exception of Washington-allocated and Arizona-allocated allowances, PacifiCorp assumed that the mass cap constraint covered its system resources and that allowances could be applied where needed across PacifiCorp's system. Washington-allocated and Arizona-allocated allowances were assumed to be only available within those states. For Washington, this was assumed due to the more stringent Clean Air Rule requirements adopted in Washington. For Arizona, allowances were assumed to be used by the early retirement option under the Clean Power Plan for Cholla Unit 4.

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OPUC Data Request 33

**OPUC Data Request 33**

Does PacifiCorp assume that all WECC states (except CA) opt for EPA's new source compliment in PacifiCorp's CPP(b) model?

**Response to OPUC Data Request 33**

Yes, PacifiCorp assumed that all Western Electricity Coordinating Council states (except California) opt for the United States Environmental Protection Agency's new source compliment in PacifiCorp's CPP(b) model.

### **OPUC Data Request 34**

On page 151 of PacifiCorp's IRP, the Company states, "Mass-based compliance with pro-rata allowance allocation to PacifiCorp based on historical generation with new source complement allowances allocated on a pro-rata basis, *less* the Clean Energy Incentive Program (CEIP), renewable and output-based set asides. It is assumed that PacifiCorp does not receive any of these set-asides".

- (a) Please explain the clause, "less the Clean Energy Incentive Program (CEIP) renewable and output-based set-aside. It is assumed that PacifiCorp does not receive any of these set-asides":
- i. In particular, please share the assumed number of allowances granted to the WECC states for CEIP renewable and output based set asides used by PacifiCorp in its models. Please separate the assumed allocations granted by EPA to the states for renewables and energy efficiency measures.
  - ii. Please also explain the value assigned to CEIP investment actions and whether such value was assigned by PacifiCorp to any of its investments in renewable generation in its preferred portfolio.
    1. If a value was assigned, what is this value and does it affect the model's choice of new resource acquisition?
  - iii. Because PacifiCorp states that the Company does not receive any of set-asides, does this mean that PacifiCorp is modeling physical compliance with the CPP?
    1. If PacifiCorp is modeling physical compliance with the CPP, what are PacifiCorp's assumptions or treatment of REC developed from resources also used for compliance with the CPP?

### **Response to OPUC Data Request 34**

- (a) Under the Clean Power Plan draft model trading rules, a portion of the allowances granted to each state may be set-aside (i.e., subtracted from a state's total allocation) and allocated to the Clean Energy Incentive Program (CEIP), renewable energy, or output-based set-asides used to encourage the operation of combined cycle natural gas units. The model trading rules give significant latitude to states in terms of how to allocate the set-aside allowances. The set-aside allowances may be allocated to third parties who are not otherwise subject to the Clean Power Plan.

Four mass cap scenarios were developed. For mass cap scenarios CPP(b) and CPP(c), PacifiCorp assumed the states utilized the set-aside programs. The set-aside allowances were subtracted from the initial allowance allocation received by each

state. The remaining allowance pool was then distributed to the affected sources within the state using the historical load method described in the draft model trading rule. Where applicable, the output based set-asides were distributed to the affected combined cycle gas units within the state based on the assumption that they would operate at increased capacity factors and meet the requirements to receive the distribution. The CEIP and renewable energy set-asides were not distributed to the affected sources.

- i. Please refer to Attachment OPUC 34 -1, which provides the allowances granted to each of the Western Electricity Coordinating Council (WECC) states under the Clean Power Plan as well as set-aside and new source complement assumptions under each mass cap scenario on a state-wide basis for each state. Please refer to Attachment OPUC 34 -2, which provides the assumptions for PacifiCorp-specific allowance allocations under each mass cap scenario.
- ii. No specific value was assigned to the CEIP investment actions, and no CEIP value was assigned to PacifiCorp's renewable generation in its preferred portfolio.
- iii. For mass caps CPP(b) and CPP(c), PacifiCorp assumed it does not receive an allocation of set-asides. The impact of this is to lower the overall number of allowances PacifiCorp assumed would be available for its system resources. It does not affect the basic assumption that allowances may be used across PacifiCorp's system.

**OPUC Data Request 35**

Staff understands PacifiCorp to have developed Figure 7.3 on page 151 to show assumed CO<sub>2</sub> mass cap scenarios applicable to emissions for affected units on PacifiCorp's system.

- (a) How was this scenario developed?
- (b) What assumptions were made regarding the application of a mass cap on the affected units in the PacifiCorp system?
- (c) Please provide the work papers used to develop Figure 7.3.
- (d) How is this scenario affected by investment in early wind that would be applicable for renewable set-asides under the CPP?

**Response to OPUC Data Request 35**

- (a) Please refer to the Company's response to OPUC Data Request 31.
- (b) Please refer to the Company's response to OPUC Data Request 32.
- (c) Please refer to the Company's response to OPUC Data Request 34; specifically Attachment OPUC 34 -2.
- (d) Please refer to the Company's response to OPUC Data Request 34, specifically subpart (a)(ii).



### **OPUC Data Request 36**

On page 151 of the IRP, the Company states, “Aurora is also configured with CPP assumptions that align with scenarios developed for the 2017 IRP (CPP(a) and CPP(b)). The end result yields a unique and consistent set of natural gas price and wholesale power price scenarios for alternative CPP and natural gas price assumptions”.

- (a) Does this mean that PacifiCorp’s CPP modeling affects PacifiCorp modeling of natural gas and wholesale electricity prices?
- (b) If so what is the additive value by year?
- (c) In what portfolios or scenarios developed by PacifiCorp did the CPP not affect natural gas and wholesale electricity prices?
- (d) If PacifiCorp’s modeling of CPP compliance did affect natural gas and wholesale electricity prices, what weight did such a factor have on how PacifiCorp’s model’s choices regarding the timing and types of resource acquisition?

### **Response to OPUC Data Request 36**

- (a) Please refer to Volume I, Chapter 7, page 152 through 154, of PacifiCorp’s 2017 Integrated Resource Plan (IRP) regarding discussion of its modeling of the Clean Power Plan under Mass Cap A (CPP(a)) and Mass Cap B (CPP(b)). As explained, the Company’s October 2016 official forward price curve (OFPC) and all Clean Power Plan based scenarios were developed using one of three (low, base, high) underlying expert third-party natural gas price forecasts. For modeling in Aurora, each of the three natural gas price forecasts was separately paired with CPP(b) and CPP(a) emission targets– yielding six unique assumption “sets”. The gas price forecasts were input as static curves, without demand response, unaffected by Aurora’s Clean Power Plan assumptions.

For each of the six assumption sets, Aurora produced a wholesale power price forecast for key hubs across the Western Electricity Coordinating Council (WECC) – namely the OFPC and five scenarios. As shown in Volume I, Chapter 7, Figure 7.6, pages 154 and 155, of the 2017 IRP, CPP(a) and CPP(b) emission constraints were not binding when coupled with low-gas and base-gas price forecasts. Thus, all other conditions remaining the same, Clean Power Plan emission targets were met absent either CPP(a) or CPP(b) emission constraints. As such, PacifiCorp’s modeling of the Clean Power Plan did not impact wholesale power prices in its low-gas and base-gas

price scenarios.<sup>1</sup>

However, as shown in Volume I, Chapter 7, Figure 7.8, of the 2017 IRP, CPP(a) and CPP(b) emission targets are constraining in the high-gas price scenarios. Thus, the Company's modeling of CPP(a) and CPP(b) did impact wholesale power prices produced using the high-gas price forecast.

- (b) As explained in the Company's response to subpart (a) above, the Company's modeling of CPP(a) and CPP(b) only affected wholesale power prices in the high-gas price scenarios. The additive value, by year, of the Clean Power Plan is not available since no high-gas price scenarios were developed without either CPP(a) or CPP(b) assumptions.
- (c) Natural gas price forecasts were not impacted by modeling of the Clean Power Plan, nor were low-gas or base-gas wholesale power price forecasts. Please refer to the Company's response to subpart (a) above for a more detailed discussion regarding the influence of CPP(a) and CPP(b) emission targets on natural gas and wholesale power price forecasts.
- (d) PacifiCorp's portfolio selection modeling was based on CPP(b) medium price curve for each study. All price curve iterations were then applied in PacifiCorp's Planning and Risk (PaR) model to evaluate the pricing impact on the portfolio which was used to inform the portfolio's ranking on a present value of revenue requirements (PVRR) basis against other portfolios.

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<sup>1</sup> When modeling low-gas price scenarios in conjunction with CPP(a) and CPP(b) assumptions, short-term differences arise from capping CPP(b) low-gas values to not exceed official forward price curve (OFPC) (i.e., base-gas) prices. This happens during the market forward portion of the OFPC when forwards dip below the low-gas price forecast. These short-term differences in gas prices, and as a corollary power prices, are unrelated to Clean Power Plan assumptions and are due solely to the capping of CPP(b) low-gas prices to preserve a low-price envelope scenario. High-gas price scenarios were not affected by OFPC market behavior. The base-gas price scenario, used for the CPP(a) run, and the OFPC gas price will differ during the market period since the OFPC, unlike the base-gas scenario, reflects market forwards the first 84 months.

### **OPUC Data Request 37**

On page 153 of the IRP, PacifiCorp states, "...when developing WECC-wide price forecasts, PacifiCorp did not subtract set-asides, assuming, they would be allocated somewhere in the region." Is PacifiCorp assigning a value to these set-asides to the assumed WECC compliance agreement? Within this assumption does PacifiCorp assign set-aside to the state where the measure takes place, renewable generation is sited or some other assignment?

### **Response to OPUC Data Request 37**

For purposes of developing the official forward price curve, PacifiCorp assumed two mass cap scenarios: (1) Mass Cap A; and (2) Mass Cap B. For both scenarios, PacifiCorp assumed a Western Electricity Coordinating Council-wide (excluding California) yearly cap. Given that the cap covers the entire market (excluding California), PacifiCorp did not assume where or how the set-aside allowances would be allocated but that they would be allocated somewhere in the region.

### **OPUC Data Request 41**

Please see Appendix L, page 239 of the IRP:

- (a) Please explain why the Company only chose to calculate PVRR using the medium-level gas prices for scenario NO-CO<sub>2</sub>. Why did the Company not also use high and low gas prices?
- (b) Did the Company use the same gas cost inputs for all portfolios in Table L.31? That is, are they consistent inputs throughout all portfolios? If they are consistent, does this mean that the Clean Power Plan does not impact the gas costs? If the Clean Power Plan impacts the gas cost assumptions, please explain why the Company used the same medium gas assumption for portfolio sensitivities CO<sub>2</sub>-1 and NO-CO<sub>2</sub>.

### **Response to OPUC Data Request 41**

- (a) A sensitivity is an indicator of plausible impacts, and not a review of all possible impacts. For sensitivities not eligible for preferred portfolio selection, the Company typically does not model all price-emissions scenarios, but rather models the “expected” case. As a non-eligible sensitivity, the case is intended to indicate the relative “sensitivity” of the model to the presence or absence of a single factor, such as a carbon dioxide (CO<sub>2</sub>) price (as opposed to a cap) or no CO<sub>2</sub> policy.

Model sensitivity to the entire range of price-emissions scenarios is examined in detail over the course of the regional haze and preferred-portfolio eligible cases.

- (b) “Mass Cap B” (CPP B medium gas) is the expected price-emissions scenario in the 2017 Integrated Resource Plan. Please refer to the Company’s response to subpart (a) above with reference to the purpose and design of sensitivities that are not eligible for preferred portfolio selection.

**OPUC Data Request 44**

How does the CO<sub>2</sub> shadow price and CPP compliance scenario CPP(b) affect unit dispatch?

**Response to OPUC Data Request 44**

Please refer to the Company's response to OPUC Data Request 43. The shadow price drives dispatch associated with emissions to comply with the relevant Clean Power Plan emissions limit.

**OPUC Data Request 45**

Regarding the loads simulated in Figures 7.14- 7.18:

- (a) Do they incorporate additional CPP driven EE investment through the CEIP?
- (b) Do they include any research and assessment of how climate change will affect loads in PacifiCorp service territory?

**Response to OPUC Data Request 45**

- (a) No. The loads simulated in Figure 7.14 through Figure 7.18 do not incorporate additional Clean Power Plan driven energy efficiency (EE) investment through the Clean Energy Incentive Program (CEIP).
- (b) The Company has reviewed the appropriateness of using the average weather from a shorter time period as its “normal” peak weather in the 2017 Integrated Resource Plan (IRP), Volume II, Appendix A – Load Forecast Details. Please refer to Figure A.10, which indicates that peak producing weather does not change significantly when comparing five-year, 10-year, or 20-year average weather. The 20-year average weather is used in the load forecast.

## **OPUC Data Request 46**

How does CPP compliance affect unit retirement dates?

### **Response to OPUC Data Request 46**

Clean Power Plan compliance does not affect the unit retirement dates that are modeled in each regional haze case. However, Clean Power Plan compliance does affect the present value of revenue requirement (PVRR) outcome of each regional haze case, as the optimal portfolio selection for each case must adhere to the relevant compliance cap.

In the 2017 Integrated Resource Plan, Case RH5a produced the least-cost, least-risk regional haze portfolio. This means that the Case RH5a retirement assumptions allowed for a selection of resource additions that produced the lowest PVRR among all regional haze cases, all of which adhere to the Clean Power Plan emissions cap.

## **OPUC Data Request 51**

Regarding the new Wyoming wind and transmission project:

- (a) Did the Company compare this project to one in which one or more coal plants are retired early to free-up transmission for the new wind, reducing or eliminating need for new transmission? If so, what were the results? If not, why not?
- (b) Please confirm that the expected cost of environmental compliance in Oregon is less with the proposed wind and transmission project than the Company's previous plan of market REC purchases.

## **Response to OPUC Data Request 51**

- (a) PacifiCorp modeled and evaluated a number of regional haze case scenarios that assumed a range of coal unit retirement assumptions. Early in the 2017 Integrated Resource Plan (IRP) portfolio development process, PacifiCorp identified least-cost, least-risk regional haze case adopted for further portfolio analysis. The 1,100 megawatts (MW) of new Wyoming wind and Aeolus to Bridger / Anticline transmission line (Energy Gateway sub-segment D2) included in the 2017 IRP preferred portfolio was selected as part of the least-cost, least-risk preferred portfolio reflecting the least-cost, least-risk regional haze compliance alternatives and associated early coal unit retirement assumptions. PacifiCorp 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 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 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.

- (b) Confirmed. The proposed 1,100 MW of new wind and Aeolus to Bridger / Anticline transmission line (Energy Gateway sub-segment D2) included in the 2017 IRP preferred portfolio by the end of 2020 is beneficial to customers based on all-in



economics of the projects. The new wind and transmission project will also allow PacifiCorp to deliver Oregon renewable portfolio standards (RPS) compliance benefits, extending the period in which PacifiCorp has an incremental compliance need from 2028 out to 2034, while lowering customer costs.

**OPUC Data Request 52**

Is PacifiCorp's 1,100 MW wind acquisition outlined in the IRP justified by PacifiCorp in part through compliance with Oregon's Renewable Portfolio Standard, and if so, how?

**Response to OPUC Data Request 52**

No. The 1,100 megawatts of new wind with the accompanying new Aeolus to Bridger/Anticline transmission project included in the 2017 Integrated Resource Plan preferred portfolio is justified based on all-in economic savings for customers across all state jurisdictions. These resources will, however, also contribute to the Company's ability to meet state renewable energy targets in Utah, Oregon, Washington, and California.

**OPUC Data Request 53**

In its portfolio analysis for the proposed 1,100 MW wind acquisition outlined in the IRP, does PacifiCorp assign an economic value to the Renewable Energy Credits associated with the 1,100 MW wind acquisition for the purposes of compliance with Oregon's Renewable Portfolio Standard?

**Response to OPUC Data Request 53**

No. The 2017 Integrated Resource Plan modeling conservatively assumed no incremental renewable energy credit (REC) value for energy produced from the 1,100 megawatts of incremental wind. System net present value revenue requirement costs would be reduced by \$30 million for each \$1 of value assigned to the RECs produced from these resources.

### **OPUC Data Request 54**

In numerous forums, PacifiCorp has stated that the 1,100 MW wind acquisition is “economic” as opposed to driven by need for energy, capacity, or a regulatory requirement. Please explain how Oregon’s Renewable Energy Portfolio Standard impacts PacifiCorp’s determination that the 1,100 MW wind acquisition is “economic;” if Oregon’s Renewable Energy Portfolio Standard does not impact that determination, please explain why it does not.

### **Response to OPUC Data Request 54**

Please refer to the Company’s response to OPUC Data Request 52. The 1,100 megawatts (MW) of wind with the associated Aeolus to Bridger / Anticline transmission project provides economic benefits to customers in all state jurisdictions. The combined wind and transmission project lowers projected net system costs regardless of Oregon’s renewable portfolio standards (RPS) requirements and, for this reason, would be pursued regardless of current Oregon RPS requirements.