

**BEFORE THE PUBLIC UTILITY COMMISSION  
OF OREGON**

**LC 66**

In the Matter of PGE 2016 Integrated  
Resource Plan

Final Comments of  
Renewable Northwest

**I. INTRODUCTION**

Renewable Northwest thanks the Oregon Public Utility Commission (the “Commission” or “OPUC”) for the opportunity to respond to Portland General Electric’s (“PGE’s” or the “Company’s”) Reply Comments on PGE’s 2016 Integrated Resource Plan (“IRP”). Renewable Northwest appreciates and acknowledges the significant work that went into PGE’s Reply Comments in addressing Commission and stakeholder questions and concerns.

Renewable Northwest would particularly like to recognize the work that PGE undertook to explain the opportunities and value associated with potentially pursuing near-term renewable resource procurement. PGE provided a detailed explanation of the opportunity presented by the Production Tax Credit (“PTC”)<sup>1</sup>, and addressed concerns that renewable procurement was being driven by PGE’s preference for a minimum renewable energy certificate (“REC”) bank.<sup>2</sup>

While Renewable Northwest appreciate the effort that went into PGE’s Reply Comments, we still have some concerns that either were not addressed by the Company’s Reply Comments or were raised by PGE’s Reply Comments. In Section III, we discuss that PGE did not satisfactorily address stakeholder concerns regarding portfolio scoring—in particular the durability metric—and that *Wind 2018 Long* should be the preferred portfolio. Section IV shows that PGE’s analysis reveals that 300 average megawatts (“MWh”) of renewables procurement minimizes costs. In light of this, we recommend that if the IRP is acknowledged, and the Company pursues a request for proposal (“RFP”) for renewables, such RFP should be structured to solicit a minimum of 175 MWh and be able to capture the value of renewable acquisitions up to 300 MWh, which would minimize the net present value revenue requirement (“NPVRR”). In Section V, we address PGE’s concern that there are potential integration issues associated with up to 300 MWh of renewable procurement, and note that portfolios with similar amounts of renewable procurement did not have reliability issues. Section VI discusses how while, according to PGE, a strategy that pursues 300 MWh of renewable procurement introduces risks not quantified in the IRP, so would

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<sup>1</sup> LC 66—PGE’s Reply Comments, pp 15–17,23–27, March 31, 2017

<sup>2</sup> “The value of early RPS action [...] is not significantly impacted by the minimum REC bank constraint”, LC 66—PGE’s Reply Comments, pp 15–17, March 31, 2017

the acquisition of an additional fossil fuel resource. In Section VII, we address PGE's carbon emission assumptions with respect to the regional electricity market, and note how they incorrectly infer that by procuring an addition fossil fuel resource, PGE can reduce its carbon emissions. Section VIII discusses Renewable Northwest's support for PGE to seek waivers from the Competitive Bidding Guidelines in order to pursue bilateral contracts with hydro generation to meet some of its capacity needs, and outlines a recommended order of procurement that would maximize NPVRR savings and minimize carbon emissions. In Section IX, Renewable Northwest supports Commission Staff's ("Staff") arguments for distributed resource plans, and highlights the need to move to a different regulatory paradigm. Section X presents our conclusions. PGE staff have indicated to Renewable Northwest that the Company intends to suspend the site certificate amendment for the Carty site. While Renewable Northwest welcomes this development, we still take issue with PGE's characterization of stakeholders' concerns regarding the Company's intent to pursue a gas plant (addressed in Section II).

## **II. STAKEHOLDERS' CONCERNS THAT PGE INTENDED TO PROCURE CARTY 2 RELIED ON STATEMENTS MADE BY PGE**

Stakeholders' concerns that PGE may have been positioning itself to procure a thermal resource relied on Company statements and not on an "undisclosed intent" by the Company. Renewable Northwest observed in our Initial Comments that the 389 MW "efficient capacity" addition in PGE's Preferred Portfolio, *Efficient Capacity 2021*, had interesting temporal parallels with the Amended Request to the Carty Generation site certificate, initially filed in August 2016.<sup>3</sup> PGE's summary of several parties' concerns was that "[t]he heart of the concern seems to be that PGE has an undisclosed intent to develop a new natural gas combined-cycle plant and that PGE has constructed the Action Plan in a way that will allow it to do so."<sup>4</sup> While Renewable Northwest appreciates PGE's efforts in the Reply Comments to address this concern, we wish to clarify what drove our concern.

PGE's own statements signaled an interest in gas resources. A Portland Business Journal article from December 6, 2016, quotes PGE's Chief Executive Officer ("CEO") as saying:

Customers want their lights to turn on when they hit the switch. We're trying to explain to them that gas is the only way to do that. I think the regulators understand it. People who don't understand the electric grid kind of jumped at the natural gas. They're going to take the position they're going to take and we're going to have to educate them [...]<sup>5</sup>

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<sup>3</sup> See [www.oregon.gov/energy/Siting/Pages/CGS.aspx](http://www.oregon.gov/energy/Siting/Pages/CGS.aspx). However, Renewable Northwest understands that PGE has indicated it will suspend the site certificate amendment for the Carty site (May 12, 2017).

<sup>4</sup> LC 66—PGE's Reply Comments, p 19, March 31, 2017

<sup>5</sup> Piro guides PGE into the energy future — carefully

Dec 6, 2016, 4:53pm PST Updated Dec 7, 2016, 9:44am PST

[www.bizjournals.com/portland/news/2016/12/06/piro-guides-pge-into-the-energy-future-carefully.html](http://www.bizjournals.com/portland/news/2016/12/06/piro-guides-pge-into-the-energy-future-carefully.html)

While the 2016 IRP may have displayed flexibility as to how the Company could meet its identified needs, this statement from PGE’s CEO revealed an explicit intent to pursue gas resources.

PGE has recently changed its messaging regarding the Company’s interest in procuring Carty 2. On the Q1 2017 Earnings Call from April 28, 2017, PGE’s CEO was asked by a Goldman Sachs employee, “Do you see the IRP process as delayed and how should investors think about what this means for the timeline of building new gas or plants?”<sup>6</sup> PGE’s CEO replied:

We did delay the IRP a bit [...] In terms of building a gas plant as I mentioned earlier, we’re going to pursue bilateral negotiations first to see if there are any existing resources out there...If we’re unsuccessful there than [sic]. We would issue [a request for proposals (“RFP”)] for capacity [...] Carty 2 and Carty 3 are still backstopped. They would be self-build option but probably would be bid in like we did with Carty 1, which allowed the site to be bid in, by the contractor, but it would be bid against the other options in the market.<sup>[7]</sup>

Investors’ perception of the likelihood that PGE procures Carty 2 decreased from 100% to 50% as a result of PGE’s statements on the Q1 2017 Earnings Call, and a global financial services company, UBS, downgraded the Company’s shares. A May 02, 2017, Global Research paper by UBS gave the following explanation for downgrading PGE’s shares:

Following the 1Q17 update we are downgrading shares to Neutral as we see a less profitable path forward in POR’s [PGE’s] efforts to fill capacity needs. We are cutting our expectations stemming from the Integrated Resource Plan (IRP) and subsequent RFP process following more cautious commentary from mgmt. Our probability weighted capex [“capital expenditure”] estimates for Carty 2 now stand at 50% vs prior 100% as we believe that resource procurement could well include PPAs or asset purchases, rather than an outright build. This likely diminishes the EPS [earnings per share] upside that could stem from the Boardman plant replacement (~400MW’s), a key assumption in our model.<sup>[8]</sup>

This statement shows that, prior to PGE’s April 28, 2017, Earnings Call, UBS estimated the likelihood of capital expenditures on “Carty 2” at 100%. UBS’ estimate may have relied on previous commentary from PGE’s management. Following PGE’s April 28, 2017, Earnings

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<sup>6</sup> [https://seekingalpha.com/article/4066999-portland-general-electrics-por-ceo-jim-piro-q1-2017-results-earnings-call-transcript?auth\\_param=1e3fd0:1cg7ut0:b313715ba412888fb05fa0f70a6800ff&uprof=82&dr=1](https://seekingalpha.com/article/4066999-portland-general-electrics-por-ceo-jim-piro-q1-2017-results-earnings-call-transcript?auth_param=1e3fd0:1cg7ut0:b313715ba412888fb05fa0f70a6800ff&uprof=82&dr=1)

<sup>7</sup> [https://seekingalpha.com/article/4066999-portland-general-electrics-por-ceo-jim-piro-q1-2017-results-earnings-call-transcript?auth\\_param=1e3fd0:1cg7ut0:b313715ba412888fb05fa0f70a6800ff&uprof=82&dr=1](https://seekingalpha.com/article/4066999-portland-general-electrics-por-ceo-jim-piro-q1-2017-results-earnings-call-transcript?auth_param=1e3fd0:1cg7ut0:b313715ba412888fb05fa0f70a6800ff&uprof=82&dr=1)

<sup>8</sup> UBS, “Portland General Electric Company Downgrade to Neutral: PORing Cold Water on Our Expectations”, Global Research, May 02, 2017, <https://neo.ubs.com/shared/d1P3vUCneB/>

call, and owing to “more cautious commentary from management”, UBS reduced the probability of capital expenditures on Carty 2 to 50%.<sup>9</sup>

Prior to April 28, 2017, UBS determined that there was certainty that PGE would build a CCCT to meet the “efficient capacity” procurement identified in its preferred portfolio and that there was certainty that the resource would be “Carty 2”. UBS’ conclusion is not surprising given the statements of PGE’s CEO outlined above. Since a global financial services firm like UBS was sure that Carty 2 was going to be built, it should not have been a surprise to PGE that stakeholders in the 2016 IRP reached the same conclusion. Therefore, PGE’s reply comments incorrectly refer to the “heart”<sup>10</sup> of stakeholders’ concern as being PGE’s “undisclosed intent to develop a new natural gas combined-cycle plant”<sup>11</sup>. While the PGE 2016 IRP may not have an explicit intent to build a gas plant, the Company projected that intent to the public.

Renewable Northwest appreciates the “more cautious commentary from management” in PGE’s 1Q2017 Earnings Call, which does not anticipate either the acknowledgment of the IRP or the results of any potential RFP. This more cautious approach was also reflected in Renewable Northwest’s May 12, 2017 conversation with PGE staff, in which PGE staff indicated that the Company intends to suspend the site certificate amendment for the Carty site.

### **III. PGE DID NOT ADDRESS HOW ITS RISK SCORING METRICS LEAD TO AN INACCURATE SELECTION OF THE PREFERRED PORTFOLIO**

In Initial Comments and at various technical workshops before the IRP was filed, Renewable Northwest and other stakeholders challenged PGE’s 2016 IRP scoring metrics and questioned whether the preferred portfolio selected through the Company’s use of such metrics is indeed the lowest cost, lowest risk portfolio. In Renewable Northwest’s Initial Comments, we thoroughly critiqued the durability metric and scoring weightings used to score PGE’s actionable portfolios.<sup>12</sup> Renewable Northwest showed that PGE presented insufficient justification for the durability metric in the 2016 IRP (or the 2009 IRP, which the company directed Renewable Northwest towards as a basis for using the metric), and recommended that the Commission require PGE to remove durability from the weighted portfolio score.<sup>13</sup> In fact, Renewable Northwest showed that *Wind 2018 Long* is the portfolio with the least cost variability, and that such portfolio would be PGE’s clear preferred portfolio had the company not used the arbitrary durability metric.<sup>14</sup>

PGE’s Reply Comments did not address our concerns in any meaningful way. The Reply Comments merely concluded that PGE found “the durability metric to be helpful and

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<sup>9</sup> UBS, “Portland General Electric Company Downgrade to Neutral: POring Cold Water on Our Expectations”, Global Research, May 02, 2017, <https://neo.ubs.com/shared/d1P3vUCneB/>

<sup>10</sup> LC 66—PGE’s Reply Comments, p 19, March 31, 2017

<sup>11</sup> LC 66—PGE’s Reply Comments, p 19, March 31, 2017

<sup>12</sup> LC 66, Renewable Northwest Comments, pp6–17

<sup>13</sup> LC 66 Comments of Renewable Northwest, p 19, January 24, 2017

<sup>14</sup> LC 66 Comments of Renewable Northwest, Table 4, p 12, January 24, 2017

includes it in the 2016 IRP” and that “PGE looks forward to discussing the use of a durability metric in future IRP cycles.”<sup>15</sup> Renewable Northwest also looks forward to discussing scoring metrics in future IRP cycles. However, we disagree with PGE’s efforts to dismiss the issue in the 2016 IRP because it could lead the company to pursue a procurement strategy that is not the least cost, least risk strategy.

In our Initial Comments, and at various technical workshops before PGE filed its 2016 IRP,<sup>16</sup> Renewable Northwest thoroughly explained our concerns with the scoring metrics,<sup>17</sup> in particular with the durability metric.<sup>18</sup> Commission Staff’s written comments and their interventions at technical workshops mirrored many of our concerns.<sup>19</sup> Renewable Northwest showed that *Efficient Capacity 2021* scored top amongst the actionable portfolios, and became PGE’s preferred portfolio, because of the durability metric.<sup>20</sup>

Without the flawed and arbitrary durability metric, *Wind 2018 Long* is the 2016 IRP’s top scoring portfolio, and hence should be this IRP’s preferred portfolio. This comports with PGE’s finding in its Reply Comments that 300 MWa of renewables would lead to the greatest NPVRR savings (see Section IV).

#### **IV. PGE’S ANALYSIS SHOWS THAT A RENEWABLE RFP SHOULD EXPLORE PROCUREMENT OPPORTUNITIES FROM 175 MWa UP TO 300 MWa.**

PGE’s analysis in its Reply Comments shows that a renewable resource procurement of 300 MWa with a commercial operation date (“COD”) of 2021 is the most economical strategy because it would minimize NPVRR.<sup>21</sup> As part of its Reply Comments, PGE conducted additional RPS size sensitivities “in which the addition size was varied for both COD 2018 and COD 2020 resources (both with 100% PTC eligibility)”.<sup>22</sup> The results are shown in Table 1 of PGE’s Reply Comments (included below). In Table 2, the NPVRRs of RPS addition size sensitivities are shown relative to the “Delay Portfolio”.<sup>23</sup> The additional RPS sensitivity size portfolios are compared to a “Delay Portfolio” with renewable procurement delayed until 2030.<sup>24</sup> For the 2018 COD, the lowest cost procurement size was 150 MWa with a NPVRR cost saving relative to the Delay Portfolio of \$82.4 million.<sup>25</sup> For the 2020 COD, the lowest cost procurement size was 300 MWa with a NPVRR cost saving relative to the Delay Portfolio of \$193.1 million.<sup>26</sup>

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<sup>15</sup> LC 66 Comments of Renewable Northwest, p 11, January 24, 2017

<sup>16</sup> At Technical Workshops held September 21, 2016 and October 19, 2016.

<sup>17</sup> LC 66, Renewable Northwest Comments, pp6–17

<sup>18</sup> LC 66, Renewable Northwest Comments, pp6–12

<sup>19</sup> LC 66, Staff’s Initial Comments, pp28–31

<sup>20</sup> LC 66 Comments of Renewable Northwest, Table 4, p 12, January 24, 2017

<sup>21</sup> LC 66—PGE’s Reply Comments, pp 18-19, March 31, 2017

<sup>22</sup> LC 66—PGE’s Reply Comments, p 18, March 31, 2017

<sup>23</sup> LC 66—PGE’s Reply Comments, p 18, March 31, 2017

<sup>24</sup> LC 66—PGE’s Reply Comments—Attachment B, B.1 Supplemental RPS Portfolios, p 7, March 31, 2017

<sup>25</sup> LC 66—PGE’s Reply Comments, p 18, March 31, 2017

<sup>26</sup> LC 66—PGE’s Reply Comments, p 18, March 31, 2017

PGE selected a lower target of renewable resource procurement notwithstanding that 300 MWh of procurement presented the greatest opportunity for savings. According to PGE, “Procurement of 175 MWh of incremental renewables balances near-term and net present value economic views.”<sup>27</sup> PGE noted that, at the time of portfolio construction, “a 175 MWh addition would achieve an RPS level approximately half way between the 2020 and 2025 RPS obligations” and that “Given uncertainty in both load forecasts and the execution and long-term viability of QF contracts, PGE contented that this was a reasonable target for capturing the value of the PTC”.<sup>28</sup>

| Early Action<br>COD        | Addition Size<br>(MWh) | NPVRR Impact Relative to<br>Delay Portfolio (2016\$, millions) |
|----------------------------|------------------------|--|
| <b>2018 COD Portfolios</b> |                        |  |
| 2018                       | 125                    | -72.2  |
| 2018                       | 150                    | -82.4  |
| 2018                       | 175                    | -72.7  |
| 2018                       | 200                    | -62.7  |
| <b>2020 COD Portfolios</b> |                        |  |
| 2020                       | 175                    | -172.8   |
| 2020                       | 250                    | -185.8   |
| 2020                       | 300                    | -193.1   |
| 2020                       | 350                    | -184.3   |

Table 1—RPS addition size sensitivities with 100% PTC eligibility.<sup>29</sup>

PGE’s justification for selecting a level of renewables procurement below what is most economical focuses on the renewables’ RPS compliance value while seemingly discounting that renewables would also provide PGE with capacity and energy. According to PGE, “the 300 MWh portfolio with COD 2020 is large enough to defer the majority of incremental RPS resources needed by 2040 to a 2040 COD.”<sup>30</sup> While this may be true, the 300 MWh would also provide PGE with both capacity and energy. Renewable resources provide more than RPS compliance value to a utility.

Furthermore, according to PGE, “While compelling on an NPVRR basis, this [300 MWh procurement] strategy may introduce additional risks not quantified in the IRP, including creating a large “cliff” impact where the future procurement requirement is very large due

<sup>27</sup> LC 66—PGE’s Reply Comments, p 17, March 31, 2017.

<sup>28</sup> LC 66—PGE’s Reply Comments, p 18–19, March 31, 2017.

<sup>29</sup> LC 66—PGE’s Reply Comments, p 18, March 31, 2017.

<sup>30</sup> LC 66—PGE’s Reply Comments, p 19, March 31, 2017

to increased deferral volumes.”<sup>31</sup> However, the potential 300 MWa renewable procurement is equivalent to almost 900 MW of wind.<sup>32</sup> This procurement would be lower than the 1084 MW increase in wind between 2020 and 2021 in the portfolio *Wind 2018 Long*.<sup>33</sup> *Wind 2018 Long* then sees an additional 1,475 MW of new wind procured in, presumably, 2040.<sup>34</sup> While this is not an insignificant amount of nameplate capacity added in 2040, it is reasonable to assume that PGE would acquire renewable energy for non-RPS purposes in the 20-year interim period. Any such procurement would erode the potential 2040 RPS-procurement “cliff”.<sup>35</sup>

Furthermore, the firm capacity that nearly 900 MW of new wind would bring to the system is much smaller than the firm capacity that a CCCT would bring. The effective load carrying capacity (“ELCC”) of nearly 900 MW of new wind would be equivalent to about 93 MW of firm capacity if entirely located in the Pacific Northwest, and 176 MW of firm capacity if entirely located in Montana.<sup>36</sup> Such capacity additions to the system do not present a “cliff”, especially not when compared to the potential 389 MW of nearly entirely firm capacity that could be incorporated into PGE’s system should a CCCT be procured to meet the potential “efficient capacity” procurement identified in *Efficient Capacity 2021*.<sup>37</sup> Section VI below discusses “[A]dditional risks not quantified in the IRP”<sup>38</sup>.

Renewable Northwest recommends that the Commission encourage PGE to pursue a Renewables RFP for between 175 and 300 MWa of renewables. This approach would minimize NPVRR and minimize exposure to future carbon risk (see Sections VI & VII). Renewable Northwest also recommends that such potential procurement take place with respect to bilateral contracts in the procurement order outlined at the end of Section VIII.

## **V. PGE’s “INTEGRATION AND OPERATIONAL” CONCERNS REGARDING A POTENTIAL RENEWABLE ACQUISITION OF UP TO 300 MWa ARE IN CONTRAST TO THE COMPANY’S ANALYSIS OF THE PORTFOLIO *WIND 2018 LONG***

PGE appears concerned with the challenges of procuring more than 175 MWa even though the *Wind 2018 Long portfolio* meets the Company’s reliability thresholds with higher levels of renewable procurement. Regarding a potential “NPVRR-minimizing” 300 MWa renewable procurement, compared to a 175 MWa procurement, PGE stated that:

PGE did not explore the operational requirements for adding significantly more renewables. A resource sized at the NPVRR minimizing point

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<sup>31</sup> LC 66—PGE’s Reply Comments, p 19, March 31, 2017

<sup>32</sup> LC 66—PGE’s Reply Comments, p 19, March 31, 2017

<sup>33</sup> PGE 2016 IRP, Appendix O, p 812

<sup>34</sup> PGE 2016 IRP, Appendix O, p 812

<sup>35</sup> C 66—PGE’s Reply Comments, p 19, March 31, 2017

<sup>36</sup> Based on the ELCC values for incremental 100 MW additions in PGE 2016 IRP, Figure 5-11, p127.

<sup>37</sup> PGE 2016 IRP, Appendix O, p 810.

<sup>38</sup> LC 66—PGE’s Reply Comments, p 19, March 31, 2017

(300MWa=882MW) could introduce integration and operational challenges over such period of time.<sup>[39]</sup>

However, PGE never expressed such concerns about the portfolio *Wind 2018 Long*, which would have a similar procurement profile to a portfolio that resulted in a 300 MWa Renewable RFP.

Renewable Northwest is perplexed by PGE's statements since *Wind 2018 Long* meets all of the company's reliability thresholds without a CCCT. As we emphasized in our January 24, 2017, comments,<sup>40</sup> "all of PGE's Action Plan candidate portfolios have sufficient resource capacity to meet reliability thresholds."<sup>41</sup> As can be seen in Table 3, PGE's second best performing actionable portfolio, *Wind 2018 Long*, did not contain any "efficient thermal" capacity (which PGE modeled as a natural gas fueled CCCT), and still met reliability requirements.<sup>42</sup>

The portfolio *Wind 2018 Long* does contain capacity additions that could be met by gas combustion turbines, but the IRP acknowledges that those capacity additions could also be met by non-fossil resources like hydro. *Wind 2018 Long* contains "generic capacity" additions included to achieve resource adequacy, which were modeled using "the cost and heat rate characteristics of a natural gas-fired frame combustion turbine"<sup>43</sup> but could be met by, for example, "seasonal contracts, mid-term/short-term contracts, energy storage, [or] combustion turbines."<sup>44</sup> Clearly, the performance of the actionable portfolio *Wind 2018 Long*—which does not include an "efficient capacity" CCCT, and whose "generic capacity" needs could be met by "seasonal contracts" (i.e. by hydro)—shows that "gas is [not] the only way."<sup>45</sup> Observing the actionable portfolios of PGE's 2016 IRP—all of which have sufficient resource capacity to meet reliability thresholds<sup>46</sup>—shows that gas is not needed to keep the lights on.

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<sup>39</sup> LC 66—PGE's Reply Comments, p 19, March 31, 2017

<sup>40</sup> LC 66 Comments of Renewable Northwest, p 3, January 24, 2017.

<sup>41</sup> PGE 2016 IRP, p 311

<sup>42</sup> PGE 2016 IRP, Appendix O, p 802

<sup>43</sup> PGE 2016 IRP, p 278

<sup>44</sup> PGE 2016 IRP, Appendix O, p 802.

<sup>45</sup> Piro guides PGE into the energy future — carefully

Dec 6, 2016, 4:53pm PST Updated Dec 7, 2016, 9:44am PST

[www.bizjournals.com/portland/news/2016/12/06/piro-guides-pge-into-the-energy-future-carefully.html](http://www.bizjournals.com/portland/news/2016/12/06/piro-guides-pge-into-the-energy-future-carefully.html)

<sup>46</sup> PGE 2016 IRP, p 311



| Resource           | 2017 | 2018 | 2019 | 2020 | 2021  | ... | 2025  | ... | 2030  | ... | 2035  | ... | 2040  |
|--------------------|------|------|------|------|-------|-----|-------|-----|-------|-----|-------|-----|-------|
| Energy Efficiency  | 16   | 61   | 104  | 144  | 180   |     | 297   |     | 404   |     | 490   |     | 571   |
| DSG                | 4    | 9    | 13   | 17   | 22    |     | 30    |     | 39    |     | 48    |     | 57    |
| DR                 | 26   | 29   | 31   | 69   | 77    |     | 162   |     | 187   |     | 198   |     | 198   |
| CVR                | -    | 0.4  | 0.9  | 1.3  | 1.8   |     | 3.7   |     | 6.3   |     | 9.3   |     | 12.5  |
| Wind Gorge         | -    | 515  | 515  | 515  | 1,599 |     | 1,599 |     | 1,599 |     | 1,599 |     | 3,074 |
| Wind Montana       | -    | -    | -    | -    | -     |     | -     |     | -     |     | -     |     | -     |
| Solar              | -    | -    | -    | -    | -     |     | -     |     | -     |     | -     |     | -     |
| Geothermal         | -    | -    | -    | -    | -     |     | -     |     | -     |     | -     |     | -     |
| Biomass            | -    | -    | -    | -    | -     |     | -     |     | -     |     | -     |     | -     |
| Efficient Capacity | -    | -    | -    | -    | -     |     | -     |     | -     |     | -     |     | -     |
| Generic Capacity   | -    | 290  | 318  | 318  | 692   |     | 1,012 |     | 1,203 |     | 1,732 |     | 1,940 |

Table 2—Wind 2018 Long Cumulative Resource Additions, Capacity (MW)<sup>47</sup>

Renewable Northwest recommends that PGE’s new, unspecified, and unfounded integration and operational concerns not be used as a barrier to issuing a Renewables RFP that could maximize NPVRR savings and materialize other benefits by potentially procuring up to 300 MWa.

**VI. “STRATEGIES THAT INTRODUCE RISK NOT QUANTIFIED IN THE IRP” INCLUDE THE POTENTIAL PROCUREMENT OF GAS GENERATION TO MEET THE “EFFICIENT CAPACITY” NEED IDENTIFIED *EFFICIENT CAPACITY 2021***

PGE states that pursuing 300 MWa of renewable generation, “[w]hile compelling on an NPVRR basis . . . may introduce additional risks not quantified in the IRP.”<sup>48</sup> As mentioned above, we are perplexed by PGE’s statements implying that the Company cannot, or should not, consider procuring more than 175 MWa. The top-performing portfolio in this IRP included much greater additions of renewable energy resources. We challenge PGE’s assertion and add that the potential procurement of an additional gas plant could also lead to risks neither identified nor quantified in the IRP.

PGE focuses on “not quantified risks” regarding renewable energy resources while seemingly overlooking “not quantified risks” for potential new fossil fuel acquisitions. The potential acquisition of 389 MW of “efficient capacity” included in PGE’s preferred portfolio *Efficient Capacity 2021* is also a “strategy that may introduce risks not quantified in the IRP.”<sup>49</sup> PGE modeled this “efficient capacity” as a “combined-cycle combustion turbine (CCCT) fueled with natural gas”.<sup>50</sup> Committing to an additional long-term fossil-fuel resource would expose both PGE and its customers to the regulatory risk associated with future state and federal regulations on climate change-inducing greenhouse gases.

<sup>47</sup> PGE 2016 IRP, Appendix O, p 812

<sup>48</sup> LC 66—PGE’s Reply Comments, p 19, March 31, 2017

<sup>49</sup> PGE 2016 IRP, Table 12-16

<sup>50</sup> PGE 2016 IRP, Appendix O, p 802

Additionally, investment in new fossil fuel generation would expose the state, the country, and the world to an increased risk of climate change-induced damages.<sup>51</sup> A January 19, 2017, archived page from the United States Environmental Protection Agency’s website on climate change impacts makes the following observations about the Northwest (Oregon, Washington, Idaho):

- Warming temperatures and declines in snowpack and streamflow have been observed in the Northwest in recent decades.
- Climate change will likely result in continued reductions in snowpack and lower summer streamflows, worsening the existing competition for water.
- Higher temperatures, changing streamflows, and an increase in pests, disease, and wildfire will threaten forests, agriculture, and salmon populations.
- Sea level rise is projected to increase erosion of coastlines, escalating infrastructure and ecosystem risks.<sup>52</sup>

PGE’s 2016 IRP included a report on “Climate Change Projections in Portland General Electric Service Territory”, prepared by the Oregon Climate Change Research Institute.<sup>53</sup> Among other impacts, the report projects increased “flood-producing extreme precipitation events” associated with “atmospheric river events” that are “projected to become stronger and more frequent along the PNW coast”<sup>54</sup> and increased wildfire risk that poses a risk to electric transmission lines.<sup>55</sup>

Evidently, there are significant risks, both physical and regulatory, associated with additional fossil fuel generation that are not fully “quantified in the IRP” and the damage done would not easily mitigated.<sup>56</sup> While there may also be risks associated with a strategy of pursuing 300 MWA of renewable generation, such challenges can be overcome.

## **VII. PGE’S REGIONAL MARKET ASSUMPTIONS LEAD TO AN ARTIFICIALLY HIGH CARBON EMISSIONS INTENSITY, LEADING TO COUNTERINTUITIVE PORTFOLIO EMISSIONS**

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<sup>51</sup> For a report presenting the international scientific consensus on the physical science basis for anthropogenic greenhouse gas emissions leading to climate change, see the Intergovernmental Panel on Climate Change’s Working Group I Report for Assessment Report 5, 2013. <http://www.ipcc.ch/report/ar5/wg1/>

For a report presenting the international scientific consensus on the impacts of climate change caused by anthropogenic greenhouse gas emissions, see the Intergovernmental Panel on Climate Change’s Working Group II Report for Assessment Report 5, 2014. <http://www.ipcc.ch/report/ar5/wg2/>

<sup>52</sup> US EPA, Climate Change, Impacts by Region, Northwest, historical material reflecting the EPA website as it existed on January 19, 2017. [https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-northwest\\_.html](https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-northwest_.html)

<sup>53</sup> PGE 2016 IRP, Appendix E

<sup>54</sup> PGE 2016 IRP, Appendix E, p 20

<sup>55</sup> PGE 2016 IRP, Appendix E, p 21

<sup>56</sup> PGE 2016 IRP, Table 12-16

PGE’s regional market assumptions set the carbon intensity of the market at artificially high levels, and assumed that other utilities would not respond to an additional carbon tax by reducing carbon emissions. These unrealistic regional market assumptions favored portfolios with gas resources. Indeed, these assumptions counter-intuitively led to Portfolios that had renewables and relied upon the market having higher carbon emissions than portfolios that relied upon gas.

PGE’s regional market assumptions favored its *Efficient Capacity 2021* portfolio. Figure 1 shows the projected carbon dioxide (“CO<sub>2</sub>”) emissions for the actionable portfolios under the reference case assumptions. CO<sub>2</sub> emissions per year from all actionable portfolios settles between a range of just approximately 5 to 6 million tons by 2050. *Wind 2018 Long*, which has 1,599 MW of wind by 2021, is shown to have emissions of approximately 5.8 million tons per year by 2050, while *Efficient Capacity 2021*, which instead has 515 MW of wind and 389 MW of “efficient capacity” modeled as a CCCT<sup>57</sup>, has emissions of approximately 5.6 million tons per year. It is counterintuitive that a portfolio with an additional fossil fuel resource should have lower emissions than a portfolio that instead has more renewables, and is a result of PGE’s assumptions about the regional market.<sup>58</sup> Sierra Club observes that in PGE’s 2016 IRP a CCCT “looks attractive even under high carbon and high gas prices because the Company assumed that such a resource will be more efficient and have a lower emissions rate than the market-at large”.<sup>59</sup>

| Resource Added    | Reference     | No CO <sub>2</sub> Tax | High CO <sub>2</sub> Tax |
|-------------------|---------------|------------------------|--------------------------|
| Hydro             | 8.32          | 8.32                   | 8.32                     |
| Gas               | 36.88         | 39.24                  | 41.76                    |
| Coal              | -15.44        | -15.44                 | -15.44                   |
| Nuclear           | 0.00          | 0.00                   | 0.00                     |
| <b>Renewables</b> |               |                        |                          |
| Wind              | 49.37         | 26.72                  | 65.96                    |
| Solar             | 37.28         | 35.84                  | 41.92                    |
| Other             | 0.06          | 0.06                   | 0.06                     |
| Other (F.O. etc.) | 0.09          | 0.09                   | 0.09                     |
| <b>Total</b>      | <b>116.56</b> | <b>94.83</b>           | <b>142.67</b>            |

Table 3—Projected WECC resource additions by 2050 by carbon policy (nameplate capacity, GW)<sup>60</sup>

<sup>57</sup> PGE 2016 IRP, Appendix O, p 802

<sup>58</sup> LC 66, Sierra Club comments, p 8 January 24, 2017

<sup>59</sup> LC 66, Sierra Club comments, p 8 January 24, 2017

<sup>60</sup> PGE 2016 IRP, Appendix N, p 799

PGE’s arguments that an efficient CCCT would have a lower emissions rate than the market appear to have relied on the unlikely assumption that carbon prices would not affect western coal capacity. Table 3 shows the cumulative net resource additions from 2017 to 2050 by CO<sub>2</sub> price future. “No CO<sub>2</sub> Tax” represents a “future in which CO<sub>2</sub> emissions are not explicitly priced [...] but CPP [Clean Power Plan] constraints remain in effect (state and provincial CO<sub>2</sub> regimes remain in place).”<sup>61</sup> “High CO<sub>2</sub> Tax” is representative of “\$28 per short ton of CO<sub>2</sub> emissions (nominal) starting in 2022 and escalating at six percent annually through 2027 and eight percent thereafter through 2050”.<sup>62</sup> The High CO<sub>2</sub> Tax case leads to more gas in the WECC, compared to the No CO<sub>2</sub> Tax case, and also has no effect on coal capacity. According to Sierra Club, PGE modeled the “regional market as having a much higher carbon-intensity outside its territory, as a result of its assumption that western coal capacity will not change with different carbon prices.”<sup>63</sup> The Company therefore assumes that a CCCT “will be more efficient and have a lower emissions rate than the market at-large”<sup>64</sup>.

PGE’s has additional unlikely assumptions that favor portfolios with a CCCT to the detriment of other portfolios. PGE stated that “The difference in emissions intensity from [2040] [...] is attributable to additional (non-cost effective) energy efficiency, efficient capacity generators, and the interaction of those two with the assumed emissions intensity of market purchases.”<sup>65</sup> Given this, it can be inferred that *Wind 2018 Long* produces more emissions in 2050 in PGE’s analysis, compared to *Efficient Capacity 2021*, because of “the assumed emissions intensity of market purchases”.<sup>66</sup> However, as Sierra Club observed, the carbon intensity of the regional market is “based on the notion that other utilities are unlikely to respond to the same price or regulatory signals as PGE.”<sup>67</sup> Furthermore, Sierra Club noted that PGE “assumed a constant carbon intensity for energy procured on the market”<sup>68</sup> set at the “average WECC emission rate in the year 2005”<sup>69</sup>, a level “significantly higher than the average carbon intensity of the market now”<sup>70</sup> and “higher than the average carbon intensity of the electricity purchased by the Company.”<sup>71</sup>

In Reply Comments, PGE merely stated that the Company “makes use of industry standard methodologies and assumptions” and “relies on a reasonable and commonly accepted approximation of the emissions associated with market interactions”.<sup>72</sup> That may be the case, but the assumptions surrounding regional market carbon intensity, which lead to *Wind 2018 Long* producing slightly more emissions in 2050 than *Efficient Capacity 2021*, are artificially high and assume that other utilities do not respond to regulatory signals to

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<sup>61</sup> PGE 2016 IRP, Appendix N, pp 798-799

<sup>62</sup> PGE 2016 IRP, Appendix N, p 799

<sup>63</sup> LC 66, Sierra Club comments, p 9 January 24, 2017

<sup>64</sup> LC 66, Sierra Club comments, p 8 January 24, 2017

<sup>65</sup> PGE 2016 IRP, p 321

<sup>66</sup> PGE 2016 IRP, p 321

<sup>67</sup> LC 66, Sierra Club comments, p 9 January 24, 2017

<sup>68</sup> LC 66, Sierra Club Comments, p 18, January 24, 2017

<sup>69</sup> LC 66, Sierra Club Comments, p 18, January 24, 2017

<sup>70</sup> LC 66, Sierra Club Comments, p 18, January 24, 2017, citing PGE response to Sierra Club DR 16

<sup>71</sup> LC 66, Sierra Club Comments, p 18, January 24, 2017, citing PGE response to Sierra Club DR 17

<sup>72</sup> LC 66—PGE’s Reply Comments, p 107, March 31, 2017

reduce carbon. Because of these flawed assumptions, it is incorrect to conclude that procurement of an additional fossil fuel resource will lead to lower emissions compared to procurement of additional renewable generation.

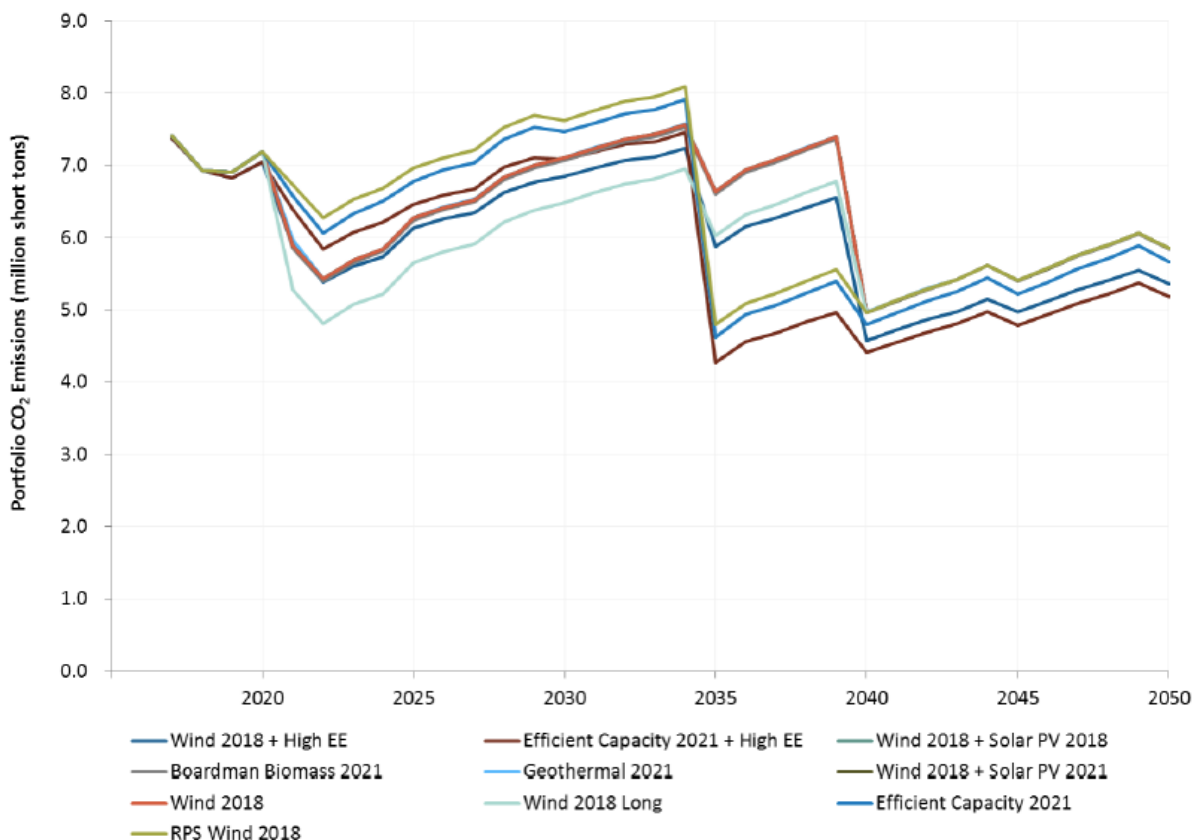


Figure 1—CO<sub>2</sub> emissions (million short tons by portfolio)<sup>73</sup>

**VIII. RENEWABLE NORTHWEST SUPPORTS PGE’S PROPOSED PURSUIT OF BILATERAL HYDRO CONTRACTS TO MEET THE COMPANY’S CAPACITY NEEDS AND PROPOSES A PROCUREMENT ORDER**

PGE proposes to pursue bilateral contracts in order to meet the Company’s capacity needs. Renewable Northwest supports the Company’s requests for waivers from the Competitive Bidding Guidelines to the extent that these are initially bilateral hydro contracts that also leave room for up to 300 MWa of NPVRR-minimizing renewable procurement. As we explain below, such a procurement strategy would allow PGE to capture the most value for its customers while minimizing carbon emissions.

<sup>73</sup> PGE 2016 IRP, Figure 12-7, p 323 (note that emissions intensity in tons/MWh, also known as ‘load normalized’, is shown in PGE 2016 IRP, Figure 12-6, p321)

In PGE's Reply Comments, the Company acknowledged that "Commissioners, Staff and other stakeholders encouraged PGE to explore whether there are any opportunities to acquire capacity in the marketplace from existing resources, in particular hydro generation" through the exploration of bilateral opportunities.<sup>74</sup> The Company stated that "volumes between 100 to 400 MW are available from multiple sellers [...] generally available for five to fifteen years".<sup>75</sup> Given the observed historical "unwillingness of owners of hydro capacity to bid into PGE's competitive solicitations"<sup>76</sup>, the Company intends to "submit executed contracts to the Commission for review along with a request for a waiver of the Commission's Competitive Bidding Guidelines", as any such bilateral transactions would occur outside of an RFP process.<sup>77</sup>

Renewable Northwest supports the pursuit of Competitive Bidding Guideline waivers to enable PGE to meet its remaining capacity needs, as shown in Figure 2. However, PGE's Reply Comments stated that the Company intends to "evaluate potential capacity acquisitions from as many existing resources as possible, including hydro"; this statement implies that thermal resources are also under consideration, likely natural gas.

As discussed in Section IV, 300 MWa of new renewables, if met by wind, could provide firm capacity somewhere between about 93 MW (if entirely in the Pacific Northwest) and about 176 MW (if entirely in Montana). Figure 2 shows that PGE's updated remaining capacity need is 561 MW. To ensure that 300 MWa of NPVRR-minimizing renewable resources could be procured, there would have to be sufficient capacity available after bilateral contracts have been executed. Therefore, Renewable Northwest recommends that PGE undertake procurement in the following order to both minimize NPVRR and minimize carbon dioxide emissions:

- Bilateral hydro contracts between 385 MW and 468 MW;
- Renewable RFP with a minimum procurement of 175 MWa and a maximum procurement of 300 MWa;
- Bilateral hydro contracts to meet remaining capacity need;
- Bilateral thermal contracts with existing resources to meet remaining capacity needs.

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<sup>74</sup> LC 66 Comments of Renewable Northwest, p 11, January 24, 2017

<sup>75</sup> LC 66 Comments of Renewable Northwest, p 12, January 24, 2017

<sup>76</sup> LC 66 Comments of Renewable Northwest, p 12, January 24, 2017

<sup>77</sup> LC 66 Comments of Renewable Northwest, p 12, January 24, 2017

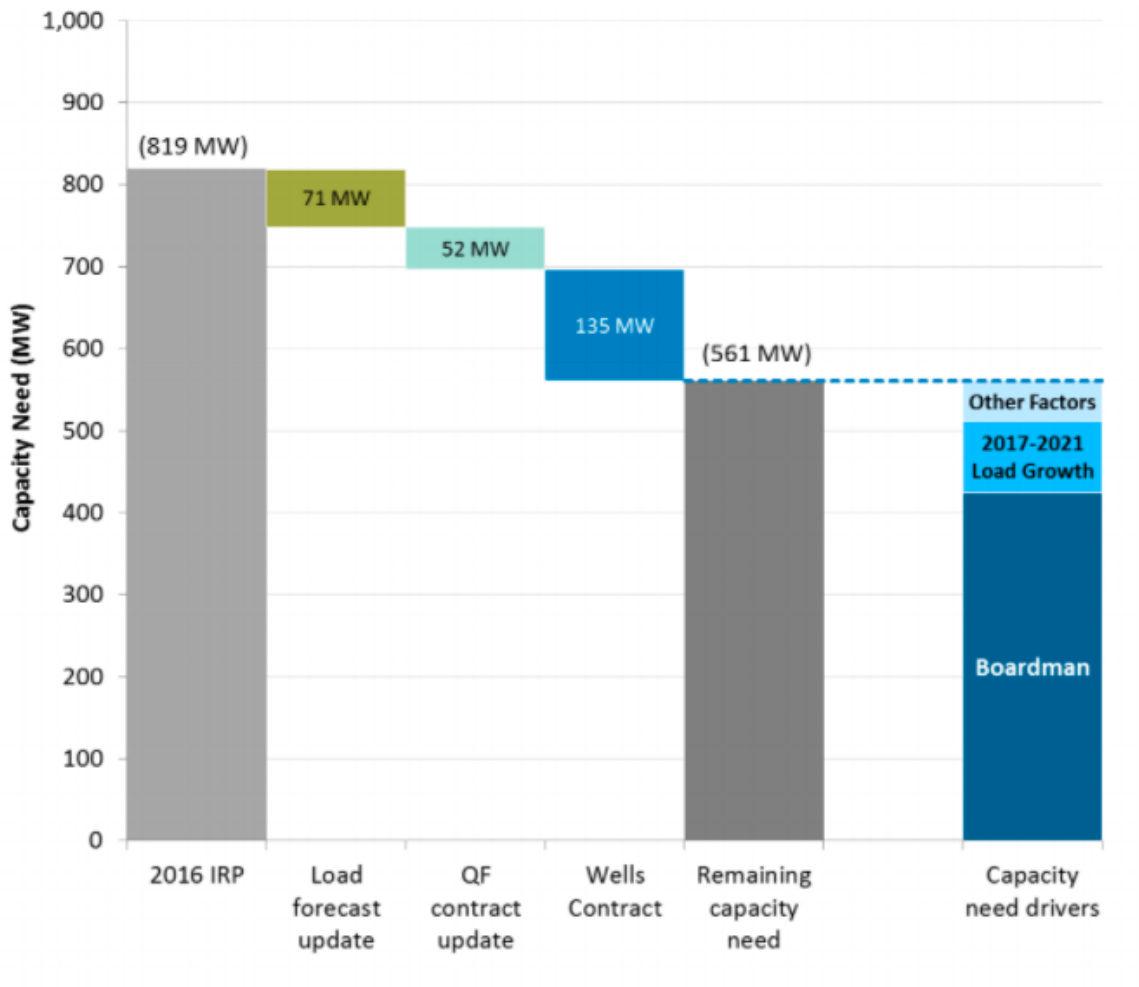


Figure 2—Capacity Need Impact due to Load and Constraints (Updated April 13, 2017)<sup>78</sup>

**IX. PLANNING PROCESSES AND REGULATORY APPROACHES FOR OREGON'S EVOLVING ELECTRICITY SECTOR**

Renewable Northwest commends Staff for highlighting the need to discuss changes to existing planning mechanisms and to the regulatory approach in response to the rapid transformation that Oregon’s electricity sector is undergoing.<sup>79</sup> As evidenced in this IRP, drivers of such rapid transformation include technology advances; the adoption of policies intended to lower the sector’s carbon footprint; and customers that increasingly demand

<sup>78</sup> LC 66—Portland General Electric Company’s 2016 Integrated Resource Plan (IRP) Update to Figure 5 of PGE Reply Comments, April 13, 2017. Note that “PGE assumes that all executed contracts through the contract snapshot date result in successful projects. This assumption potentially overestimates the impact of QF contracts on RPS economics given the risk that some of these projects may not come online.” LC 66—PGE’s Reply Comments, Footnote 49, p 16, March 31, 2017.

<sup>79</sup> LC 66, Staff’s Initial Comments at 33-38 (Jan 24, 2017); AR 600/UM 1776, Competitive Bidding Scoping Memo at 15-16 (May 8, 2017).

access to renewable resources, invest in their own generation or storage systems, and use electricity more efficiently. As a result of these drivers, regulation of Oregon’s electricity sector is becoming increasingly complicated.

### **Oregon Investor-Owned Utilities Need Distribution Resource Plans**

Renewable Northwest enthusiastically supports Staff’s intent to investigate, define, and potentially implement Distribution System Plans (“DSPs”).<sup>80</sup> As Staff points out, existing utility planning processes and initiatives may not be in alignment and appear unable to fully capture the potential impact of distributed energy resources (“DERs”). This gap could potentially lead to unnecessary or inefficient investment decisions.<sup>81</sup> IRP modeling tools were not designed to incorporate DERs and the services they are able to provide.<sup>82</sup> Due in part to the shortcomings of existing IRP modeling tools as they pertain to DERs, it is unclear whether the full potential impact of DERs on PGE’s overall system needs is adequately reflected in this IRP.<sup>83</sup> Yet DERs’ collective impact on utility planning and procurement actions could be significant.<sup>84</sup> That impact, and the importance of DSPs, may become even more significant as DER penetration in PGE’s and other Oregon utilities’ service territories increases.

Renewable Northwest encourages the Commission to consider adopting DSPs in the near future. As DER penetration increases for Oregon utilities, DSPs could help maximize the value of additional DERs owing to their ability to provide greater understanding of the locational values of DERs.<sup>85</sup> As a result, DSPs could enable the design of economic signals to incentivize DER with the greatest system value.<sup>86</sup> As Staff points out, not adopting DSPs may come at a cost.<sup>87</sup> Hence, we commend Staff for its interest in DSPs and recommend that the Commission consider adopting them in the near future.

### **The Regulatory Approach Should Adapt to Changes in Oregon’s Electricity Sector**

PGE’s 2016 IRP shows that Oregon’s electricity sector is changing and illustrates how some factors are driving that change. For example, in this IRP, PGE sought to grapple with technology advances by considering how to begin modeling storage. This IRP also reflects the company’s efforts to respond to SB 1547 (2016), a policy adopted in part to lower the Oregon electricity sector’s carbon footprint. Similarly, PGE’s 2016 IRP provides an example of the new paradigm that Oregon utilities face, whereby customers increasingly demand access to renewable resources and show willingness to invest in their own clean generation. For example, Staff highlighted the need for the Company to forecast load that

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<sup>80</sup> LC 66, Staff’s Initial Comments at 38.

<sup>81</sup> *Id.* at 33, 35.

<sup>82</sup> *Id.* at 38.

<sup>83</sup> *Id.* at 36.

<sup>84</sup> *Id.* at 35.

<sup>85</sup> *Id.*

<sup>86</sup> *Id.*

<sup>87</sup> *Id.*



opts for Direct Access,<sup>88</sup> as well as the need for transitioning to planning mechanisms that can better incorporate DER.<sup>89</sup>

In light of the transition that Oregon's electricity sector is undergoing, as exemplified by this IRP, Renewable Northwest encourages the Commission to consider how the regulatory paradigm should adjust. The many trends influencing that transition create the need not only for changes to existing planning mechanisms but also for a larger discussion on how the regulatory paradigm can or should respond. Renewable Northwest is encouraged by, and supportive of, Staff's recognition of the need for discussing how the regulatory approach may need to adapt to a changing electricity sector. We look forward to contributing to Commission discussions of the undergoing changes in the electricity sector and how the regulatory approach can adapt.

## **X. CONCLUSIONS**

Renewable Northwest appreciates the opportunity to respond to PGE's Reply Comments on the Company's 2016 IRP. We acknowledge the significant work that went into PGE's Reply Comments in addressing Commission and stakeholder questions and concerns.

PGE has not addressed Staff's or Renewable Northwest's concerns regarding the durability metric in its portfolio scoring. We reiterate the recommendation from our Initial Comments that the Commission require PGE to remove durability from the weighted portfolio score.<sup>90</sup> This would lead to *Wind 2018 Long* becoming the IRP's preferred portfolio. *Wind 2018 Long* is characterized by an additional procurement of over 1000 MW of wind in 2021, as compared to *Efficient Capacity 2021*. Analysis in PGE's Reply Comments shows that renewable acquisitions of up to 300 MWA could minimize NPVRR, which is comparable to procurements in *Wind 2018 Long*. *Wind 2018 Long* is an actionable portfolio, and as such, met the Company's reliability thresholds.<sup>91</sup> Renewable Northwest recommends that the Commission encourage PGE to design any Renewable RFP in a way that could potentially capture the value of up to 300 MWA of renewable generation.

In its Reply Comments, PGE outlined its intention to pursue bilateral contracts to meet some portion of its capacity needs, but will need to seek waivers from the Competitive Bidding Guidelines as such transactions would occur outside of an RFP process. Renewable Northwest supports a future request by PGE to seek such waivers to the extent that the bilateral contracts are for hydro. We would support waivers for thermal bilateral contracts only to the extent that they do not inhibit PGE's ability to potentially capture the full value of 300 MWA of renewable generation.

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<sup>88</sup> LC 66, Staff Initial Comments, p 9, January 24, 2017

<sup>89</sup> LC 66, Staff Initial Comments, p 38, January 24, 2017

<sup>90</sup> LC 66, Renewable Northwest Comments, p19, January 24, 2017

<sup>91</sup> PGE 2016 IRP, p 311

Finally, Renewable Northwest encourages the Commission and PGE to recognize that renewables bring both energy and capacity benefits to the utility, benefits that extend beyond RPS and regulatory compliance.

Respectfully submitted this 12<sup>th</sup> day of May, 2017.

Sincerely,

s/ M H O'Brien

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