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February 16, 2016

Via Electronic Filing

Public Utility Commission of Oregon
Attn: Filing Center
201 High St. SE, Suite 100
Salem OR 97301

Re: PORTLAND GENERAL ELECTRIC COMPANY
2017-2021 Renewable Portfolio Standard Implementation Plan
Docket No. UM 1755

Dear Filing Center:

Enclosed for filing in the above-referenced docket, please find the Comments of the Industrial Customers of Northwest Utilities.

Thank you for your assistance. If you have any questions, please do not hesitate to call.

Sincerely,

/s/ Jesse O. Gorsuch
Jesse O. Gorsuch

Enclosure

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON
UM 1755**

In the Matter of)	
)	COMMENTS OF THE
PORTLAND GENERAL ELECTRIC)	INDUSTRIAL CUSTOMERS OF
COMPANY)	NORTHWEST UTILITIES
)	
2016 Renewable Portfolio Implementation)	
Plan.)	
_____)	

I. INTRODUCTION

1 The Industrial Customers of Northwest Utilities (“ICNU”) submits these
Comments regarding the 2016 Renewable Portfolio Standard (“RPS”) Implementation Plan
2017-2021 (the “Implementation Plan”) of Portland General Electric Company (the “Company”)
filed on December 31, 2015, with the Public Utility Commission of Oregon (the “Commission”).
ICNU is a non-profit trade association representing large electric consumers located throughout
the Northwest, including customers of the Company. Accordingly, ICNU is directly interested in
the compliance strategy outlined in the Implementation Plan, and specifically, is interested in
ensuring that the Implementation Plan does not result in any unnecessary costs to consumers.

2 In sum, ICNU recommends the Commission approve the Implementation Plan.
Notwithstanding, the Implementation Plan demonstrates that the Company has effectively
reached the 4% incremental cost cap, per ORS 469A.100(1) (the “4% Cap”). Accordingly, the
Company would be unjustified in acquiring any new RPS resources in the study period. Because
the Company does not need to acquire any new RPS resources in the study period, however, it is

unnecessary for the Commission to take any remedial action with respect to the 4% Cap in this docket.

3 ICNU has also identified several technical issues with the Implementation Plan, which, if addressed, will further demonstrate that the Company has reached or exceeded the 4% Cap, as follows:

- 1) *The Company should use Port Westward II, or another flexible resource, as the firming resource in its incremental cost calculations;*
- 2) *The Company should present a low gas price scenario;*
- 3) *The Company should make a minor correction to its levelization calculations; and,*
- 4) *The Company should develop more robust workpapers in future filings.*

4 The resolution of these issues, which will be discussed below, should not have an immediate impact on the compliance strategy outlined in the Implementation Plan, as it does not call for any new RPS resources in the 2017-2021 study period. Accordingly, ICNU requests that the Commission require the Company to implement the changes discussed in these Comments in future filings.

II. COMMENTS

A. The Company Has Effectively Reached the 4% Cap

5 The data presented in the Implementation Plan demonstrates that the Company has reached the 4% Cap, or at the very least, is very near to reaching it. The Base Case scenario, excluding a CO₂ tax, showed the incremental cost of compliance was, on average, 4.1% over the

study period, escalating to 4.6% in 2021.^{1/} Including a CO₂ tax assumption, the Base Case scenario showed the incremental cost of compliance was, on average, 3.5% over the study period, escalating to 3.8% in 2021.^{2/} In both scenarios, the Company either exceeded, or came very close to exceeding, the 4% Cap.

6 For purposes of this docket, however, a finding that the Company has exceeded the 4% Cap will not require any remedial action by the Commission because the Implementation Plan does not forecast a need for any new RPS resources in the study period.^{3/} For this reason, ICNU recommends that the Commission approve the compliance strategy outlined in the Implementation Plan.

7 In addition, ICNU also requests that the Commission acknowledge that the Company has effectively reached the 4% Cap, in order to inform the Company's planning process. Acknowledgement that the Company has effectively reached, or at least is very near to reaching, the 4% Cap is important, because any new RPS resource additions will likely increase the incremental cost of compliance well above the 4% Cap. The Company states in the Implementation Plan that it may, through its 2016 IRP, update its assessment that there is no need for an RPS resource in the 2017-2021 study period.^{4/} Thus, it is important in this docket for the Commission and all interested parties to have a common understanding that the Company is currently at the 4% Cap, and that a new RPS resource addition will most likely cause the Company to exceed the 4% Cap.

^{1/} Implementation Plan, Attachment A at 1.

^{2/} Id.

^{3/} Implementation Plan at 4.

^{4/} Id.

8 Irrespective of what the Company determines in its 2016 IRP, it is critical that any proposals to deviate from the current Implementation Plan be supported by a demonstration that the change will not result in the Company exceeding the 4% Cap, based on updated incremental cost calculations. If the Company were to proceed with a strategy to acquire a new RPS resource, without demonstrating that the new RPS resource will not result in it exceeding the 4% Cap, then consumers should not bear any costs in excess of the 4% cap. A strategy to acquire resources that will result in an incremental cost of compliance exceeding 4% of revenue requirement would be inconsistent with ORS 469A.100(1), and therefore, the costs of such a resource decision would not be appropriately borne by consumers.

B. The Company Should Use a Flexible Capacity Resource as the Firming Resource^{5/}

9 To calculate the firming cost associated with intermittent renewable resources, the incremental cost calculations proposed by the Company use a Frame Simple Cycle Combustion Turbine (“SCCT”). A Frame SCCT, however, is a poor choice of firming resource because it is a relatively inflexible resource that would not be very effective, in actual operations, in firming the energy output of an intermittent resource. Instead of a Frame SCCT, the Company should use a flexible capacity resource, such as Port Westward II.

10 A key concept in the incremental cost calculations is to produce both energy and capacity equivalence between the qualified renewable resource and the proxy resource, a Combined Cycle Combustion Turbine (“CCCT”). This capacity and energy equivalence concept was evaluated by parties in Docket No. UM 1616, where parties stipulated to the current

^{5/} ICNU provided a similar comment in Docket No. UM 1754 on February 12, 2016, in regard to PacifiCorp’s Implementation Plan.

construct for performing incremental cost calculations.^{6/} As an extension of the capacity equivalence concept discussed in that docket, it follows that the *type* of capacity provided by the renewable resource, in combination with a firming resource, must be equivalent to the *type* of capacity provided by the proxy resource. That is, the firming resource must have the characteristics that will enable it to convert the output of an intermittent wind or solar resource to be the equivalent to that of a CCCT. A Frame SCCT does not have these characteristics.

11 To maintain this capacity equivalence between an RPS resource and a CCCT requires a firming resource that is capable of instantaneously responding to the dynamic output of an intermittent qualified resource: as the intermittent output falls, the firming resource must be capable of quickly ramping up to replace the lost output. Similarly, as the intermittent output increases, the firming resource must be capable of ramping down to avoid oversupply. This type of firming action—where the firming resource is basically dispatched inversely to the dynamic output of wind and solar resources—favors the use of a resource that is more flexible, with higher ramping rates and greater operating range than the bare-bones Frame SCCT used by the Company. This type of firming action favors a flexible capacity resource, such as a Wärtsilä reciprocating facility, an LMS100 Hybrid SCCT, or an LM6000 Aero-derivative SCCT.

12 The need for more flexible resources in firming renewable output is supported by the type and cost of resource that the Company has actually built to manage the variability of its intermittent RPS resources on its system. For example, the Company recently constructed Port Westward II, the twelve Wärtsilä reciprocating units in Clatskanie, Oregon, for the purpose of responding to system variability, such as the output from intermittent RPS resources.

^{6/} In re Public Utility Commission of Oregon Investigation into RPS Implementation Plans, Docket No. UM 1616, Stipulation at 3-4 (Oct. 11, 2013).

13 Similarly, there are other, more-flexible SCCT technologies that have been built in the region to manage variability of renewable output, which should also be considered as a firming resource in the event that Port Westward II is not used. These flexible SCCT technologies include Hybrid technologies such as an LMS100. They also include the Aero-derivative technologies, based on the type of turbine used in aviation, such as an LM6000. Northwestern Energy, for example, recently installed four Pratt & Whitney FT-8 Aero-derivative turbines to follow load and wind deviations in its balancing authority.^{7/} Northwestern Energy also specifically recognized that a Frame SCCT was unsuitable to perform this task.^{8/}

14 In addition, recently, in Docket No. UE 294, the Commission approved a stipulation that used Port Westward II as a firming resource in the Company's marginal cost of service studies.^{9/} In that case, Staff argued that the capacity cost associated with Port Westward II should be included as a marginal cost of RPS compliance and, therefore, a component of the marginal cost of energy. Staff noted, "[t]o effectively incorporate wind power in the marginal generation cost model, Staff considers Port Westward 2 (PW2) as a flexible generating resource to offset random fluctuations associated with wind generation."^{10/}

15 Finally, in addition to its inflexibility, a Frame SCCT also has a very poor fuel efficiency and low heat rate relative to other types of peaking resources. A Frame SCCT

^{7/} See Northwestern Energy, Northwestern Energy 2013 Electric Supply Resource Procurement Plan, Chapter 5 at 5-26 (Dec. 23, 2013). Available at <http://www.northwesternenergy.com/docs/default-source/documents/defaultsupply/plan13/2013-Elec-Plan-Vol-1-Chap-5-Modeling-Inputs.pdf>
^{8/} Id. at 5-24, 5-26.
^{9/} Docket No. UE 294, Order No. 15-356 at 6-7 (Nov. 3, 2015).
^{10/} In Re Portland General Electric Company Request for a General Rate Revision, Docket No. UE 294, Staff/400, Opening Testimony of Suparna Bhattacharya at 4:3-6 (Jun. 12, 2015).

operates at a heat rate in excess of 11,000 Btu/kWh,^{11/} compared to heat rates of around 8,000 to 9,000 Btu/kWh for Aero-derivative and Hybrid technologies.^{12/} Because of this high heat rate, wholesale market prices rarely reach the level that justifies running Frame SCCT units, and accordingly, a Frame SCCT may go months or years without being dispatched economically. Thus, notwithstanding its inflexibility, in order to provide firming capacity, a Frame SCCT would be required to be committed uneconomically for the majority of the time if it were used in actual operation to firm the output of a renewable resource. This incremental cost of uneconomic commitment, however, is not reflected in the incremental cost calculations, which is a further reason why a more fuel efficient peaking resource, such as a Wärtsilä or LMS100, ought to be used in the incremental cost calculations.

16 In summary, ICNU recommends that the Commission require the Company to use Port Westward II as the flexible capacity resource in its incremental cost calculations. Doing so would be consistent with the way firming costs are evaluated within the context of the Company's marginal cost of service studies. If Port Westward II is not selected, an LMS100 SCCT or an LM6000 SCCT would also be better candidates for a firming resource, as those resources are more flexible and operate at a lower heat rate than a Frame SCCT.

C. **The Company Should Run a Low Gas Price Sensitivity**

17 Unlike PacifiCorp's Implementation Plan filing, the Company did not prepare incremental cost calculations under a low gas price sensitivity. This is a change from the Company's 2014 RPS Implementation Plan, where the Company presented a low gas price

^{11/} See Northwestern Energy, Northwestern Energy 2013 Electric Supply Resource Procurement Plan, Chapter 5 at 5-25.

^{12/} See Northwest Power and Conservation Council, Preliminary Assumptions for Natural Gas Peaking Technologies (Revisited) at 5 (Dec. 18, 2014). Available at: http://www.nwcouncil.org/media/7148619/preliminary-assumptions-for-natural-gas-peaking-technologies_121814.pdf

sensitivity.^{13/} ICNU believes that a low gas price scenario is important to understanding the incremental cost of compliance for the Company and recommends that the Commission require the Company to present a low gas price scenario in its next implementation plan.

18 While natural gas prices are currently low, the Company's price forecast builds in an expectation that prices will increase over time. If prices do not increase as expected, the Company's forecast will be too high, causing actual incremental cost of compliance to be understated. Recent experience has been that natural gas prices have not increased as expected in prior forward price forecasts. Over the past few years, natural gas prices have remained relatively flat, and have even declined.

19 At a minimum, the possibility that prices will not increase as expected in the price forecast is reason enough to evaluate a low gas price scenario within the context of the incremental cost calculations. Irrespective of whether actual prices end up being higher or lower than the current forecast, both sides of the forecast ought to be analyzed. Certainly, if prices are ultimately lower than what the Company forecasts, the Company's actual incremental cost of compliance will be higher than presented in the Implementation Plan, likely causing the Company to exceed the 4% Cap.

D. The Company Should Make a Minor Correction to its Levelization Calculations

20 ICNU has identified what appears to be a minor error in the Company's levelization calculation. It appears that the Company inadvertently excluded firming costs in the last few years of the levelization period for all resources. ICNU recommends that the Company

^{13/} In re Portland General Electric Company 2015-2019 Renewable Portfolio Standard Implementation Plan, Docket No. UM 1683, Initial Filing (Dec. 31, 2013).

correct this error, which will result in slight upward pressure on the incremental cost calculations.

E. The Company Should Improve its Workpapers

21 The Company's workpapers contained several linking errors and hard coded values, which made it difficult for ICNU to perform a detailed review of the Company's Implementation Plan. The workpapers provided by the Company contained links between a large number of different Excel worksheets, and opening more than one worksheet at the same time caused nearly all of the formulas to break. Consequently, ICNU recommends that the Commission encourage the Company to provide more transparent and more robust workpapers in future filings. At a minimum, the Excel workpapers provided to parties ought not to contain reference errors or hard coded values, except where the source of the hardcoded value is clearly identified in the workpaper.

III. CONCLUSION

22 ICNU appreciates the opportunity to provide these Comments to the Commission on the Implementation Plan. In summary, ICNU does not oppose the compliance strategy outlined in the Company's Implementation Plan, which would not require any new resource acquisitions in the study period. Notwithstanding, ICNU believes that the Company has effectively reached the 4% Cap of ORS 469A.100(1), or at a minimum, is very close to reaching it. In fact, after conforming the Company's firming cost calculations with the marginal cost of service calculations used to establish the Company's current rates, the Company's incremental costs likely far exceed the 4% Cap. While no action is required of the Commission at this time due to the lack of resource need in the study period, any new RPS resources must be carefully

reviewed with the understanding that acquiring the resource will likely result in the Company exceeding the 4% Cap.

Dated this 16th day of February, 2016.

Respectfully submitted,

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