

**PUBLIC UTILITY COMMISSION OF OREGON  
STAFF REPORT  
PUBLIC MEETING DATE: February 11, 2021**

REGULAR  X  CONSENT \_\_\_\_\_ EFFECTIVE DATE \_\_\_\_\_ N/A \_\_\_\_\_

**DATE:** January 29, 2021

**TO:** Public Utility Commission

**FROM:** Marc Hellman

**THROUGH:** Bryan Conway and JP Batmale **SIGNED**

**SUBJECT:** PORTLAND GENERAL ELECTRIC:  
(Docket No. UM 1912)  
Portland General Electric Resource Value of Solar and Compliance Filing  
in Response to Order No. 19-023.

**STAFF RECOMMENDATION:**

The Public Utility Commission of Oregon (OPUC or Commission) should accept Portland General Electric's July 18, 2019 Compliance Filing inclusive of January 7<sup>th</sup>, 14<sup>th</sup> and 21<sup>st</sup>, December 31, 2020, responses to Staff's data requests as well as responses dated January 8, 2021, and January 12, 2021; and, direct Portland General Electric to annually post on its OASIS website, by July 1 of each year, Oregon substation-level information with respect to overall loadings on a granularity basis no less than low, medium and high utilization as defined by Portland General Electric.

**DISCUSSION:**

Issue

Whether the Commission should accept Portland General Electric's March 18, 2019, July 18, 2019, Compliance Filings as modified by its filing on December 11, 2020, and responses to data requests dated December 31, 2020, January 8, 2021, and January 12, 2021, to Order No. 19-023.

Applicable Rule or Order

In Order No. 19-023, issued January 22, 2019, the Commission stated:

In this order, we complete Phase II of the resource value of solar (RVOS) proceeding, and adopt the final methodologies that Portland General Electric Company (PGE), will use to produce its initial set of RVOS values. We direct PGE to develop revised RVOS calculations consistent with this order, and file them in this docket by March 18, 2019. We also direct PGE to file additional information regarding avoided transmission and distribution, generation capacity, and line loss values no later than July 18, 2019.<sup>1</sup>

## Analysis

### *Executive Summary*

PGE revised its estimates for the Energy, Generation Capacity, T&D Capacity Deferral, and related elements for a number of reasons/corrections.<sup>2</sup> The LOLP 12x24 generation capacity profile also was revised. These corrections were in response to comments offered by OSEIA to PGE, and in part to Idaho Power.

Staff does replace its prior recommended actions by now recommending just two actions: first to have annual updates filed each July; and, second to have substation loadings listing publicly available on OASIS with a classification of low, medium and high.

### *Background*

This docket, along with companion dockets UM 1910 for PacifiCorp and UM 1911 for Idaho Power Company, are designed to analyze the resource value of solar. The Portland General Electric specific RVOS Order No. 19-023 provides a useful background for RVOS as well as a discussion on the framework for analysis.

As noted above, Portland General Electric was directed to make compliance filings to Order No. 19-023 on March 18 and July 18, 2019. Following the utilities compliance filings on July 18, 2019, Staff held a workshop with the utilities and stakeholders to gather input on the compliance filings.

At the October 29, 2019, Special Public Meeting in docket UM 1930, the Commission requested an informational update on the status of the resource value of solar proceedings. On October 31, 2019, the OPUC Hearings Division Administrative Law Judge, Alison Lackey, issued a memorandum requesting that Staff provide a presentation summarizing the compliance filings, addressing the status of the

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<sup>1</sup> Order No. 19-023, p. 1.

<sup>2</sup> Ignoring the change moving from 2020 dollars to 2018 dollars, the changes to Energy and Generation Capacity elements from the February 13, 2020, Public Meeting memo apply to the alternative using the new solar profile alternative. The values remained the same for these two elements when the original solar profile is used.

compliance filings, and outlining any next steps. The presentation was initially scheduled for the January 14, 2020, Public Meeting, but in a communication dated December 23, 2019, was rescheduled to the February 13, 2020, Public Meeting instead.

A subsequent workshop was scheduled November 9, 2020. The purpose of the workshop was to discuss any party's concerns regarding the utility compliance filings with the proviso that decisions/direction reached in prior Commission orders would not be revisited. Also to be discussed was a Staff idea that given the amount of time that has passed from the prior compliance filings, that new RVOS estimates should be developed and reviewed and presented to the Commission for purposes of obtaining compliance filing approval. At the workshop, the viewpoint was raised that instead of developing new RVOS estimates, the utilities should instead address any concerns raised in the November 9, 2020, workshop and modify the prior compliance filings only to the extent necessary to address those concerns. The point being that the goal is to obtain first Commission affirmation on the analytical methods used to achieve compliance. That is to obtain a Commission approval of compliance. After that is achieved next steps could be discussed. Staff agreed with that suggestion.

Therefore, Staff takes a different approach for this memorandum than used in the prior Public Meeting presentation. At that February 13, 2020, Public Meeting, Staff had revised the PGE values to express them in 2020 dollars. For this public meeting, Staff is not making such adjustments but returning to the PGE originally-filed values as a starting point.

At the November 9, 2020, workshop, minor concerns were voiced concerning PGE's prior compliance filings regarding the 12x24 matrix formulation. As discussed below, PGE has addressed the concerns and as such Staff recommends the Commission adopt its filing, as being compliant to its order.

Given the OSEIA concerns raised at the November 9, 2020, workshop, PGE prepared a filing and submitted it on December 11, 2020. That filing included revisions of some tables and discussions on topics raised by OSEIA. Staff issued several data requests after review of the December 11, 2020, filing for which PGE provided responses on December 31, 2020. After further discussions with PGE, the Company submitted revised responses to the data requests on January 8, 2021, and after discussions with staff, filed an amended response on January 12, 2021. This is further discussed below.

For the discussion in the following section, this public meeting memo should be treated as an addendum to the February 13, 2020, staff public meeting memo with respect to the discussion and observations. There are some additional insights offered in this memo as well as a change in "next-steps" recommendations. The additional insights and change in recommendations are the result of additional insights gained since

publication of the February 13, 2020, Public Meeting memo, as well as the ongoing discussion with other parties, and work and research in Docket UM 2011, the capacity investigation.

*Discussion*

With respect to the prior public meeting presentation, Staff had issued several data requests to PGE to both confirm PGE's compliance to Commission Order No. 19-022, as well as better understand the context of PGE's prior March 18 and July 18 Compliance filings.

PGE submitted a refiling on December 11, 2020. In an email dated December 16, 2020, Angela Crowley-Koch of OSEIA provided three observations/questions regarding Idaho Power and PGE's supplemental RVOS filings. A copy of those is provided below along with PGE's response for ease of reference:

*OSEIA has reviewed the recent PGE and IDP RVOS filings and has some questions.*

1. **25-year levelization period for 8,760 generation capacity and T&D values should start in 2018.** *Please check that the 25-year levelization period for the 8760 generation capacity values in the RVOS work papers is the same as for the annual values. It appears there is a cell reference error in the RVOS worksheets that result in the hourly levelization period starting in 2020 rather than 2018 [e.g., see the formula references in cell J140 on the Dashboard tab to cell D83 (2016) rather than D85 (2018) on the General Inputs tab, which affects the starting year offset]. This correction should reduce the 12x24 numbers slightly, but also should result in a solar weighted average value that is exactly the same as the levelized annual value (e.g. 7.19 per MWh for PGE generation capacity).*

PGE Response:

PGE... "corrected for formula adjustments in the ROVS Workbook to include years 2018-2042 in the 25-year levelization period."<sup>3</sup>

2. **Clarify whether 12x24 tables are in standard or prevailing time.** *Please check whether the hour labels in the RVOS models are for standard time or prevailing time. Some of the solar profiles appear to include generation during HE 5 a.m. in June, which may be reasonable if the tables are intended to be in standard time (or further east). If standard time, however, it will be important not to improperly interpret the table as in being in*

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<sup>3</sup> PGE response to Staff Data Request No. 031, dated January 8, 2021.

*prevailing time. We would prefer everything be in prevailing time, to more closely reflect conditions on the ground.*

PGE Response:

In UM 1912\_OPUC DR 033, Staff questioned whether the solar profile underlying PGE's RVOS values accounted for daylight savings. After review, PGE concluded that the solar profile should be adjusted to ensure it reflects the proper time zone and daylight savings. A new profile was incorporated in the workbook and resulted in slightly increased values for some RVOS elements in PGE's December 31st DR response. This profile reflected a double-axis tracking system in Hillsboro, OR.<sup>4</sup> PGE noted in future updates, PGE will incorporate a solar profile that aligns with the most recently acknowledged IRP.

- 3. Consider whether the input for generation peak contribution should agree with the solar coincidence based on hourly LOLPs.** *In PGE's model (and prior versions of the IPC model we've seen), the solar capacity coincidence based on hourly LOLPs (i.e. in row 2 of the Hourly Inputs tab) is different than the input contribution to generation peak value (i.e. in column F of the General Inputs tab). We understand that PGE makes use of a marginal ELCC value from its 2016 IRP. Hourly levelized generation capacity prices include scaling by the ratio of the input generation peak contribution and the solar capacity coincidence based on hourly LOLPs (see cell J140 on the Dashboard tab). This may be the correct way to determine hourly values that comport with the input generation peak contribution value, but it would seem to be inconsistent with the capacity coincidence indicated by the hourly LOLPs. (The PAC RVOS model uses a generation peak value that is very same as the solar capacity coincidence resulting from the hourly LOLPs.) Please consider whether the 12x24 generation capacity values for PGE or IPC are technology neutral, given the use of distinct generation peak contribution and solar LOLP coincidence values (i.e. note that prices have been scaled). Please also consider whether appropriate, transparent, and sufficiently up-to-date or Commission-approved values have been used in these calculations, particularly for the generation peak contribution input assumption to the extent that it is distinct from the solar coincidence based on hourly LOLPs.*

PGE Response:

In discussions with PGE staff, they conveyed that an adjustment factor for solar in

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<sup>4</sup> PGE response to Staff Data Request No. 031, footnote 3, dated January 8, 2021.

PGE’s circumstances is likely to be negative given that PGE does have winter-peaking loads. PGE stated a preference to use ELCC analysis to identify the capacity contribution percentage for solar resources. Somewhat less appealing would be to use 8760 LOLP analysis as the analysis may not be a close approximation to ELCC analysis, depending both on the characteristics of the solar resource and the system. PGE also noted that it uses a seven year history of solar generation to develop statistics in its modelling representation of solar in its ELCC analysis, which increases the reliability of the ELCC value over a single year’s 8760 hours.<sup>5</sup>

The above three questions are primarily targeted at PGE; however, Idaho Power also reviewed these questions and prepared responses. Staff was satisfied with PGE’s responses to the questions by OSEIA.

Revised RVOS Estimates

The table on the following page provides the values for PGE’s revised RVOS estimates.

	[1] Prices from July 18, 2019 and December 11, 2020 Filings	[2] Corrections Reflecting January 2020 DRs	[3] Corrections Reflecting January 2020 DRs and Initial Solar Profile Update ("Current Prices" in initial response)
	Original Solar Profile	Original Solar Profile	Hillsboro OR Solar Profile
<b>Element</b>			
Energy	\$26.78	\$26.78	\$27.24
Generation Capacity	\$7.19	\$7.19	\$8.69
T&D Capacity Deferral	\$7.91	\$6.14 <sup>1</sup>	\$6.67 <sup>1</sup>
Line Losses	\$1.58	\$1.58	\$1.61
Integration	-\$0.83	-\$0.83	-\$0.83
Administration	-\$5.58	-\$5.58	-\$5.58
Market Price Response	\$1.81	-\$0.04 <sup>1</sup>	-\$0.04 <sup>1</sup>
Hedge Value	\$1.34	\$1.34	\$1.36
Environmental Compliance	\$12.23	\$12.23	\$12.44
RPS Compliance	\$3.76	\$3.76	\$3.76
Grid Services	\$0.00	\$0.00	\$0.00
<b>Totals</b>	<b>\$56.19</b>	<b>\$52.58</b>	<b>\$55.33</b>
<b>Utility Scale Solar Project excluding and tax benefits 2018 dollars</b>	<b>\$83.14<sup>6</sup></b>		

<sup>1</sup> Corrected for price adjustments made in PGE responses to UM 1912\_OPUC DR 026\_Supp1 and to UM 1912\_OPUC DR 028 inadvertently excluded from values presented in PGE’s December 11, 2020 filing.

<sup>5</sup> Staff appreciates the collaborative approach PGE staff (Ashleigh Keene) had in working through the issues of this public meeting memo.

<sup>6</sup> Value provided by PGE in email dated January 14, 2021.

The column [1] are the RVOS values as provided in the July 18, 2019 Compliance filing.

The column [2] are the RVOS values corrected subsequently from the July 18, 2019 Compliance filing through working with Staff in the prior early 2020 compliance review for T&D deferral value and Market Price response. The total \$52.58 differs slightly (0.15 \$/MWH) from the 2018 dollars value consistent with the element values Staff presented at the February 13, 2020 Public Meeting. The difference is most likely due to inflation adjustment factors from 2018 dollars to 2020 dollars.

The column [3] corrects the solar profile to reflect proper time zone and daylight savings. The profile reflects a double-axis tracking system in Hillsboro, Oregon.

Column [2] is most consistent with the approach agreed upon at the November 9, 2020, workshop for this compliance review. The RVOS element estimates are expressed in 2018 dollars. Column [3] reflects more precise estimates as it reflects an updated solar profile. While Column [2] is recommended by Staff, PGE notes that it does not support the continued use of the solar profile used to develop Column [2 or even 3] estimates. Staff agrees with PGE's viewpoint.

Given that Staff is recommending the electric utilities update their RVOS element estimates and submit a filing in July, Staff is not overly concerned about the strength and drawbacks of the estimates [2] or [3]. Staff was more focused on having the utilities employ the methods directed by the Commission in developing RVOS element estimates.

On January 12, 2021, PGE submitted the following 12x24 matrix of technology-neutral generation capacity deferral values by month and hour. Values are presented in 2018 \$/MWh and represent the spread of PGE's cost of marginal generation capacity over the Loss of Load Probability (LOLP) heatmap from the Company's 2016 IRP. The values in this matrix do not account for any correlation between hours of projected need and hours of expected generation and thus should not be used as a direct indicator of the capacity value of a solar resource. PGE has communicated that it would not be appropriate to simply overlay solar generation over the 12x24 matrix displayed below because it does not reflect the more granular relationship of the 8760 LOLP and solar generation. PGE would apply an adjustment factor similar in concept as E3 has recommended in the UM 2011 general capacity investigation.





The updated solar profile for Hillsboro Oregon is provided on the following page below.

Hour >	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Month																								
1	-	-	-	-	-	-	-	-	0.3	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.2	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	0.0	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.0	-	-	-	-	-	-
3	-	-	-	-	-	-	0.0	0.2	0.3	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.2	-	-	-	-	-	-
4	-	-	-	-	-	0.0	0.2	0.3	0.4	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.4	0.4	0.1	-	-	-	-	-
5	-	-	-	-	-	0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.2	0.0	-	-	-	-
6	-	-	-	-	-	0.2	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.2	-	-	-	-
7	-	-	-	-	-	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.7	0.6	0.7	0.6	0.6	0.6	0.4	0.2	-	-	-	-
8	-	-	-	-	-	0.1	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.3	-	-	-	-	-
9	-	-	-	-	-	-	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.3	0.0	-	-	-	-	-
10	-	-	-	-	-	-	0.0	0.2	0.3	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.2	0.0	-	-	-	-	-	-
11	-	-	-	-	-	-	-	0.0	0.2	0.3	0.4	0.3	0.3	0.4	0.3	0.2	0.0	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	-	-	-	-	-	-	-	-

In communications with PGE, it does not intend to continue using this profile. Future solar profiles would be consistent with its IRP filings.

Other non-compliance matters

There is one other recommendation Staff offers for Commission consideration. This recommendation is:

- Annually post on its website, by July 1, 2020, Oregon substation-level information with respect to overall loadings on a granularity basis no less than low, medium and high utilization as defined by Portland General Electric.

This recommendation is to consider directing the utilities to provide information on the notional locational cost differences the RVOS studies have illustrated. The RVOS study for PGE shows that transmission and distribution capacity deferral costs are a large component of overall costs of as high as 6.14 \$/MWH. Presumably, areas with surplus substation capacity, along with transmission, would have costs close to 0\$/MWH. Therefore there are substantive cost differences. Consideration should be made on this recommendation with regards to the administrative costs of handling locational prices, but clearly this should be a forward looking goal that will improve economic efficiency.

For Future Consideration by the Commission: An Annual Update to RVOS

It would be useful to have the RVOS estimates updated each year. All elements of RVOS could be updated to reflect the most recent information the company has available. For some element estimates, like administration, the update could simply be to restate the value for inflation if there is no improvement in precision that the company can identify as useful to incorporate. The July 1 date recommendation reflects comments from PacifiCorp that the RVOS filing be coordinated with the standard avoided cost filing. PacifiCorp noted that the QF filing typically occurs around April 30, with rates effective 30 days later. PacifiCorp also noted that it updates its avoided costs

30 days after an IRP is acknowledged. Updating would inform the Commission whether and to what extent RVOS has changed.

Staff plans to host a workshop on this topic. Unless directed otherwise by the Commission, Staff will seek to discuss this prospect of annual RVOS filings with Stakeholders in July or August 2021 after this year's annual PURPA avoided cost updates are completed.

### Conclusion

The Portland General Electric second amended compliance filing, inclusive of responses to OPUC's Data Requests, and with revisions based on OSEIA's input, complies with the Commission Order No. 19-023.

### **PROPOSED COMMISSION MOTION:**

Approve Portland General Electric's July 18, 2019 Compliance Filing inclusive of January 7<sup>th</sup>, 14<sup>th</sup> and 21<sup>st</sup>, December 31, 2020, responses to Staff's data requests as well as responses dated January 8, 2021, and January 12, 2021; and, direct Portland General Electric to annually post on its OASIS website, by July 1 of each year, Oregon substation-level information with respect to overall loadings on a granularity basis no less than low, medium and high utilization as defined by Portland General Electric.