

July 18, 2019

VIA ELECTRONIC FILING

 Public Utility Commission of Oregon
 201 High Street SE, Suite 100
 Salem, OR 97301-3398

Attn: Filing Center

RE: UM 1910—Updated Values for Resource Value of Solar Calculation

PacifiCorp d/b/a Pacific Power submits to the Public Utility Commission of Oregon (Commission) its July 18, 2019 updated set of Resource Value of Solar (RVOS) values and 12 x 24 block shapes.¹ PacifiCorp calculated each element consistent with the Commission's directives for finalizing the specific elements that comprise the RVOS values in accordance with Order No. 19-021. PacifiCorp provides a brief summary of its calculation of each element below, and the accompanying supporting materials will be provided electronically to puc.workpapers@state.or.us and served on the parties in this docket.

The following table shows the July 18, 2019 values for each RVOS element, as calculated consistent with Order No. 19-021. Note that consistent with Order No. 19-021 the only change relative to the March 18, 2019 compliance filing is to the T&D Capacity Deferral element.

Element	July 18, 2019 Compliance Filing		Change from Prior Filing	
	Real Value (\$/MWh)	Nominal Value (\$/MWh)	Real Value (\$/MWh)	Nominal Value (\$/MWh)
Energy	20.18	24.77	-	-
Generation Capacity	24.23	29.75	-	-
T&D Capacity Deferral	2.89	3.55	0.95	1.16
Line Losses	1.40	1.72	-	-
Integration	-0.63	-0.77	-	-
Administration	-1.98	-2.43	-	-
Market Price Response	0.60	0.73	-	-
Hedge Value	1.01	1.24	-	-
Environmental Compliance	4.14	5.09	-	-
RPS Compliance	-0.04	-0.05	-	-
Grid Services	0.00	0.00	-	-
RVOS Total Value	51.81	63.60	0.95	1.16
Utility Scale Proxy (2017 IRP OR Solar Resource)	44.56	54.70	0.95	1.16

¹ PacifiCorp filed its initial update on March 18, 2019, in accordance with Order No. 19-021.

Generation Capacity

Order No. 19-021 specified that a 12 x 24 block of values for Generation Capacity should be provided by July 18, 2019. PacifiCorp's March 18, 2019 compliance filing included a 12 x 24 block for Generation Capacity, spread based on the 12 x 24 profile of loss of load probability from the 2017 Integrated Resource Plan (IRP). These values have not been modified.

Transmission and Distribution Capacity Deferral

Order No. 19-021 specified that a 12 x 24 block of values for Transmission and Distribution Capacity Deferral should be provided by July 18, 2019, along with an update and rudimentary locational values. For the July 18, 2019 compliance filing, PacifiCorp made the following changes to transmission and distribution inputs to the RVOS model:

1. **Correction**

The transmission and distribution cost inputs in the March 18, 2019 compliance filing were inadvertently switched. This correction has minimal impact as the input values are similar.

2. **Hourly Transmission Allocation Factors**

These inputs were updated to reflect a 12 x 24 shape based on Oregon actual loads from 2015-2018 and the extent hourly loads exceeded 95 percent of the peak load for each year. The selection of four years of history is intended to balance a reasonable range of peak load weather conditions with the latest retail load profiles, as impacted by evolving customer demand and deployments of energy efficiency and private generation. The use of a 95% exceedance level spreads transmission allocation across a limited set of hours that could potentially trigger transmission requirements and should allow for relatively gradual changes as loads evolve over time. In contrast, the use of a single peak hour could result in significant shifts in values if that hour shifts over time.

3. **Hourly Distribution Allocation Factors**

These inputs were updated to reflect a 12 x 24 shape based on several inputs. First, distribution system capacity is dependent on ambient temperature and thus varies between summer and winter, with lower maximum capability in the summer when temperatures are high. PacifiCorp calculated the month with the highest distribution requirements for its Oregon distribution substations based on 2018 monthly peak load data, accounting for lower capability during the summer. The result is a monthly weighting which is used to spread the distribution allocation across the year. Because 2018 was somewhat abnormal, with a peak in February, the winter distribution weightings were normalized to reflect a more typical range of winter weather conditions using the four-year history used in the transmission allocation. The summer distribution data appears to reflect diversity in peak distribution loads on PacifiCorp's Oregon substations, relative to the coincident values in the peak transmission load data. In addition, the summer 2018 distribution peaks are reasonably consistent with the four-year history of transmission peaks. In light of these two factors, the summer distribution weightings were not adjusted based on the four-year history at this time.

The hourly distribution shape is calculated separately for summer and winter, based on the load profiles of substations with planned upgrades in the next few years due to either summer or winter constraints, respectively. The hourly distribution allocation is spread across those hours that exceeded 95 percent of the peak substation loading. Combining the monthly and hourly distribution shapes results in a 12 x 24 shape for distribution allocation factors.

Collectively, these changes increase the RVOS transmission and distribution capacity deferral value for the proxy solar generation profile by \$0.95/megawatt-hour (MWh) on a real-levelized basis.

Locational Distribution Capacity Deferral Values

In Order No. 19-021, the Commission directed PacifiCorp to work with Staff of the Public Utility Commission and develop a proposal to distinguish areas with heightened, average, or lower transmission and distribution capacity deferral values.² On June 17, 2019, PacifiCorp had a call with Staff to discuss the company’s upcoming filing and the proposed approach for developing this value. The proposal in this filing is based on the company’s discussion with staff. PacifiCorp has estimated the time until an upgrade would be required at each of its distribution substations based on current loading and expected growth. The net present value (NPV) of the upgrade costs is calculated using the timing of the upgrade and the distribution capacity costs from the marginal cost of service study (MCOSS) informing the current inputs to the RVOS model. For those substations with planned upgrades anticipated in the near term for which more specific cost data is available, that information is substituted.

Using this methodology, distribution upgrade costs for each substation range from \$0 to \$58/kW-yr³, with an average value of \$10.02/kW-yr, which is very similar to the \$9.94/kW-yr generic value for distribution deferral currently being used in the RVOS model. The table below provides a summary of the high, average, and low cost substation-level results. Substations with costs that are at least 50 percent higher than the \$9.94/kW-yr generic RVOS value are considered high cost. Substations with costs that are at least 50 percent lower than the \$9.94/kW-yr generic RVOS value are considered low cost, with the remainder considered average. The results indicate the majority of locations are in the Low category, on the basis of both load and substation count.

Cost by Substation				
	>=150%	50% - 150%	<=50%	
	High	Average	Low	
Wtd Avg Cost	28.06	9.62	0.34	NPV (\$/kw-yr)
Planning Peak	915	397	1690	MW
MW %	30%	13%	56%	
Substation Count	39	18	125	

² Order No. 19-021 at 14.

³ “kW-yr” refers to the cost or price of 1 kilowatt (kW) of peak capability over the course of one year.

While substation-level data is more accurate, targeting individual substations may be challenging and administratively burdensome if locational value is ultimately used in a tariff or program. As an alternative, the table below provides a summary of the high, average, and low distribution upgrade costs when aggregated by county, using the same plus or minus 50 percent assumptions described previously. A list of the specific counties in each cost category is also provided. PacifiCorp has added a switch to the July 18, 2019 version of its RVOS template to allow a user to select the MCOSS version of distribution costs consistent with the Commission’s order, or the high, average, or low costs by county provided below.

Cost by County				
	>=150%	50% - 150%	<=50%	
	High	Average	Low	
Wtd Avg Cost	19.14	10.03	0.42	NPV (\$/kw-yr)
Planning Peak	647	1739	617	MW
MW %	22%	58%	21%	
County Count	6	8	12	

County List by Cost Category

High	Average	Low
Polk	Multnomah	Wallowa
Crook	Jackson	Klamath
Linn	Marion	Umatilla
Hood River	Coos	Clatsop
Deschutes	Jefferson	Morrow
Wasco	Douglas	Lane
	Josephine	Yamhill
	Benton	Lincoln
		Lake
		Tillamook
		Gilliam
		Sherman

Line Losses

Order No. 19-021 specified that a 12 x 24 block of values for Line Losses should be provided by July 18, 2019. PacifiCorp’s March 18, 2019 compliance filing included a 12 x 24 block for Line Losses, spread based on the 12 x 24 profile of energy prices and marginal losses as a function of load level. These values have not been modified.

Utility-Scale Proxy

The Commission adopted a utility-scale proxy based on the most recently acknowledged IRP or IRP Update, and using the earliest year of capacity deficiency as the start year for capacity value. PacifiCorp has produced results for a utility-scale proxy based on its 2017 IRP costs and characteristics for an Oregon solar resource with an online date in 2021. The changes to

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transmission and distribution inputs impact the utility-scale proxy values by the same amount as the standard RVOS result.

Inquiries regarding this filing may be directed to Cathie Allen at (503) 813-5934.

Sincerely,



Etta Lockey
Vice President, Regulation

Enclosures

CERTIFICATE OF SERVICE

I certify that I served a true and correct copy of PacifiCorp's **Updated Values for Resource Value of Solar Calculation** on the parties listed below via electronic mail in compliance with OAR 860-001-0180.

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Dated July 18, 2018.



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