Portland General Electric Company
121 SW Salmon Street • Portland, Oregon 97204
PortlandGeneral.com

July 18, 2019

Public Utility Commission of Oregon
Attn: Filing Center
201 High St. SE, Suite 100
P. O. Box 1088
Salem, OR 97308-1088

RE: UM 1912 – PGE Compliance Filing to Update RVOS Values

As directed by Commission Order No. 19-023 in Docket No. UM 1912, PGE submits this compliance filing to update RVOS values as follows:

1) Corrected Energy Shape values,
2) Generation Capacity values shaped by month and hour (12x24),
3) Distribution Capacity Deferral values shaped by month and hour (12x24),
4) Indicators of relative locational value for deferred Distribution Capacity investment,
5) Line Loss values shaped by month and hour (12x24),
6) A non-zero RPS Compliance value,
7) A Market Price Response value based on methodology proposed by Staff of the Public Utility Commission of Oregon (Staff), and
8) Updated utility-scale proxy values.

PGE has worked with Staff at the Public Utility Commission of Oregon (Staff) to identify appropriate inputs and implement methodologies put forth by the Commission for valuing solar resources within PGE's distribution system. Details for each updated RVOS component are provided below.

In the initial compliance filing, submitted March 18, 2019, PGE provided updated RVOS values for Energy Shape to use the uncapped Energy Imbalance Market (EIM) methodology, an updated levelized Generation Capacity value and an updated levelized Distribution Capacity Deferral Value. For Hedge Value, Integration, Administration, and Environmental Compliance, Order 19-023 adopts the values filed in December 2017. Since the Order, PGE identified a small error that affected Hedge Value and Environmental Compliance. That is discussed next.

Impact of July 18, 2019 Updates on PGE's Initial RVOS Compliance:

RVOS Element	December 2017 $/MWh, real levelized value	March 2019 $/MWh, real levelized value	July 2019 $/MWh, real levelized value
Energy	24.98	25.33	26.78
Generation Capacity	7.30	7.19	7.19
T&D Capacity	8.08	7.91	7.91
Line Loss	1.48	1.50	1.58
Administration	(5.58)	(5.58)	(5.58)
Market Price Response	1.81	1.81	1.81
Integration	(0.83)	(0.83)	(0.83)
Hedge Value	1.25	1.27	1.34
Environmental Compliance	11.41	11.57	12.23
RPS Compliance	0	0	3.76
Grid Services	0	0	0
RVOS Total	**49.88**	**50.16**	**56.19**

- **Corrected Energy Shape using Uncapped EIM Methodology:**

  - PGE corrected a small scaling error identified in the calculation used to shape Energy values that were submitted in the Company's March 18, 2019 compliance filing. Previously updated levelized values for Energy, Line Loss, Hedge Value and Environmental Compliance have been revised to reflect this correction.

- **Generation Capacity values shaped by month and hour (12x24):**

  - Per the instruction of Order No. 19-023, PGE has shaped the levelized Generation Capacity Value, updated in the March 18, 2019 compliance filing to $7.19/MWh, to reflect "when avoided generation capacity is most useful to the system." (Order No. 19-023, page 11).

  - PGE asserts that the Company's Loss of Load Hours (LOLH) heatmap from the 2019 Integrated Resource Plan (IRP), to be filed later this week, on July 19, 2019, is the most current indication of future Generation Capacity needs. PGE reads the Commission's Order not to require the most recently acknowledged IRP for this value. The LOLH heatmap from the 2016 IRP Update reflects forecasted capacity needs that remained in 2021 after PGE took actions to fill the needs identified in the 2016 IRP. Because PGE has growing capacity needs into the mid-2020s, it does not capture the full range of time periods in which capacity will be valuable to the system. The 2019 IRP LOLH heatmap better reflects the timing of future needs, in part because it focuses on needs in 2025. Notwithstanding our concerns that the 2016 IRP Update does not fully reflect the nature of future capacity needs, we provide the shapes associated with both the 2016 IRP Update and the 2019 IRP. Figures 1 and 2 below show the variability in hours of need and price for both the 2019 IRP and the 2016 IRP Update.

- More generally, PGE recognizes the impact of planning horizon on the RVOS price. LOLH heatmaps developed for a 5- or 6-year planning horizon (i.e. the 2019 IRP developed in 2019 for a target year 2025) tend to identify a greater and more dispersed capacity need because the Company has not yet taken steps to fill those gaps. Alternatively, LOLH heatmaps produced for a shorter planning horizon (i.e. the 2016 IRP Update, filed March 8, 2018, for target year 2021) tend to reflect less capacity need overall and more constrained hours of need because the Company has taken steps to resolve many of the capacity gaps. This should be a consideration in the update interval, such that there is some constancy in the planning horizon embedded in the valuation.

Figure 1. Generation Capacity values ($/MWh) based on the 2019 IRP

	1	2	3	4	5	6	7	8	9	10	11	12
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	16.8	5.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	19.6
8	51.3	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	42.0
9	65.4	15.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.8	60.8
10	48.3	10.3	0.0	0.0	0.0	0.0	0.0	0.5	0.1	0.0	1.1	45.9
11	37.7	6.4	0.0	0.0	0.0	0.0	0.1	1.3	0.2	0.0	0.7	37.4
12	25.6	4.3	0.0	0.0	0.0	0.0	0.4	3.5	0.4	0.0	0.5	32.3
13	19.7	2.8	0.0	0.0	0.0	0.0	1.9	9.7	1.1	0.0	0.4	24.2
14	16.9	1.7	0.0	0.0	0.0	0.2	4.8	20.0	2.5	0.0	0.3	18.9
15	15.8	2.1	0.0	0.0	0.0	0.3	10.3	46.4	4.9	0.0	0.3	15.2
16	16.8	2.3	0.0	0.0	0.0	0.4	13.0	24.9	11.1	0.0	0.7	21.6
17	48.3	5.9	0.0	0.0	0.0	0.5	16.3	28.9	6.3	0.0	2.6	70.6
18	53.6	11.2	0.0	0.0	0.0	0.5	15.0	36.6	10.0	0.0	2.9	47.8
19	81.0	21.0	0.0	0.0	0.0	0.5	19.8	46.7	14.7	0.1	5.5	73.9
20	78.9	26.6	0.0	0.0	0.0	0.8	21.8	38.8	10.7	0.0	5.5	64.1
21	57.1	19.4	0.0	0.0	0.0	0.7	16.0	65.3	7.9	0.0	3.7	45.5
22	34.3	12.8	0.0	0.0	0.0	0.2	5.8	31.4	7.4	0.0	2.1	26.9
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Figure 2. Generation Capacity values ($/MWh) based on the 2016 IRP Update

	1	2	3	4	5	6	7	8	9	10	11	12
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4
7	0.4	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.2	2.1
8	3.2	2.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	7.8	24.0
9	17.1	9.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	24.3
10	5.9	2.8	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	8.2	11.5
11	2.3	0.7	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	4.9	6.8
12	1.2	0.4	0.0	0.0	0.0	0.0	0.2	2.3	0.2	0.0	2.5	4.1
13	0.7	0.2	0.0	0.0	0.0	0.1	1.0	10.9	0.6	0.0	1.4	2.5
14	0.3	0.1	0.0	0.0	0.0	0.2	2.8	38.5	2.1	0.0	1.0	1.4
15	0.2	0.2	0.0	0.0	0.0	0.4	8.0	96.3	5.6	0.0	1.0	1.1
16	0.3	0.3	0.0	0.0	0.0	0.7	18.3	161.3	15.2	0.0	1.8	1.6
17	1.8	0.7	0.0	0.0	0.0	1.1	29.5	201.7	22.9	0.1	7.2	7.1
18	5.8	3.7	0.1	0.0	0.0	0.6	24.5	214.7	30.2	0.4	24.8	50.9
19	21.0	7.7	0.3	0.0	0.0	0.3	12.9	183.0	32.0	0.5	53.7	85.7
20	25.0	8.8	0.3	0.0	0.0	0.3	8.8	123.1	18.6	0.4	53.4	61.4
21	14.7	3.9	0.1	0.0	0.0	0.2	4.0	53.0	8.7	0.1	30.0	28.7
22	4.9	1.3	0.0	0.0	0.0	0.0	1.1	25.3	1.3	0.0	9.2	8.5
23	4.1	1.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.3	5.1
24	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3

- **Distribution Capacity Deferral values shaped by month and hour (12x24):**

  - As directed in Order 19-023, PGE has shaped the levelized distribution value of deferred T&D upgrades due to capacity, updated in the March 18, 2019 compliance filing to $7.91/MWh.

  - As a basis for price differentiation by month and hour of day, PGE used hourly net system load data from the past five years to create an "average" hourly system profile over the course of 12 months. From this profile, we developed a 12x24 heatmap of hourly system load as a proportion of average system load for the highest 10 percent of month-hours.

  - System load variation is a more appropriate indicator of relative Distribution Capacity values, as compared to LOLH heatmaps because it does not reflect changes in generation cost, to which Distribution Capacity is agnostic.

Figure 3. Distribution Capacity Deferral values ($/MWh)

	1	2	3	4	5	6	7	8	9	10	11	12
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	76.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.0
10	76.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.9
11	76.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.9
12	75.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76.1
13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.2	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	77.5	79.2	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	79.2	81.0	0.0	0.0	0.0	78.1
18	80.6	0.0	0.0	0.0	0.0	0.0	80.4	81.9	0.0	0.0	0.0	82.1
19	81.1	0.0	0.0	0.0	0.0	0.0	79.7	80.9	0.0	0.0	0.0	81.4
20	79.4	0.0	0.0	0.0	0.0	0.0	77.6	78.3	0.0	0.0	0.0	79.7
21	76.9	0.0	0.0	0.0	0.0	0.0	0.0	76.6	0.0	0.0	0.0	77.4
22	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

- **Locational Information on Relative Capacity Deferral Values:**

  - Recognizing the two concurrent distribution-related dockets currently underway, UM-2005 (Distribution System Planning) and UM-2011 (Capacity Investigation), where the locational differentiation of deferred capacity value will be examined, Order 19-023 required utilities to provide only 'rudimentary information' on relative locational values. To this end, PGE is providing a list of transformers within its distribution system and for each, an indication of low, average or high Capacity Deferral value based on transformer loading level.

  - Loading is defined as the non-coincident peak load divided by transformer capacity. PGE selects the higher of two calculated loading values for each transformer, one in winter and one in summer.

  - The threshold between low and medium Capacity Deferral value is 80%, as PGE uses this threshold for consideration of capacity-based investments. The threshold between medium and high Deferral value is 90%, as capacity-based investment projects are likely identified for transformers loaded above this value.

Figure 4. Distribution Transformers by Relative Distribution Capacity Deferral value

Higher Value	Medium Value	Lower Value		
BETHANY - WR2	BETHANY - WR1	ABERNETHY - WR1	HILLSBORO - BR1	PORTSMOUTH - WR1
CENTENNIAL - WR2	BOONES FERRY - WR2	ALDER - WR1	HILLSBORO - BR2	PROGRESS - WR1
FAIRVIEW - WR1	BORING - BR1	ARLETA - BR2	HOGAN NORTH - WR1	PROGRESS - WR2
KING CITY - WR1	CANBY - BR3	ARLETA - BR3	HOGAN NORTH - WR2	RALEIGH HILLS - WR1
MT PLEASANT - WR2	FARGO - WR1	BARNES - WR1	HOGAN SOUTH - WR4	RAMAPO - WR1
PLEASANT VALLEY - WR2	FARGO - WR1	BARNES - WR2	HOGAN SOUTH - WR5	REDLAND - WR1
	HUBER - WR1	BEAVERTON - WR1	HOLGATE - BR4	REEDVILLE - WR1
	HUBER - WR2	BEAVERTON - WR2	HOLGATE - BR5	REEDVILLE - WR3
	INDIAN - WR2	BELL - WR1	INDIAN - WR1	RIVERVIEW - WR1
	NORTH MARION - BR1	BELL - WR3	ISLAND - WR1	ROCKWOOD - WR2
	OAK HILLS - WR2	BETHEL - WR5	ISLAND - WR2	ROSEMONT - WR1
	OSWEGO - WR1	BLUE LAKE - WR1	JENNINGS LODGE - WR1	ROSEWAY - WR1
	SANDY - BR1	BOONES FERRY - WR1	KELLY BUTTE - WR1	SCOTTS MILLS - BR1
	SIX CORNERS - WR2	BORING - BR2	KELLY BUTTE - WR2	SELLWOOD - WR2
	SYLVAN - WR1	BROOKWOOD - BR1	KING CITY - WR2	SHERIDAN - BR1
	TABOR - WR6	CANBY - BR4	LELAND - BR1	SILVERTON - BR2
		CARVER - WR2	LENTS - WR3	SIX CORNERS - WR1
		CARVER - WR3	LIBERAL - BR1	ST LOUIS - BR1
		CEDAR HILLS - WR2	LIBERTY - WR1	ST LOUIS - BR4
		CLACKAMAS - WR1	LIBERTY - WR2	ST MARYS EAST - WR8
		CLACKAMAS - WR2	MAIN - BR1	SULLIVAN - WR8
		CLAXTAR - BR1	MAIN - BR3	SULLIVAN - WR9
		COLTON - BR1	MARKET - WR1	SUNSET - WR2
		CORNELIUS - BR1	MCCLAIN - BR3	SUNSET - WR5
		CORNELL - WR1	MERIDIAN - WR1	SUNSET - WR6
		CURTIS - WR1	MERIDIAN - WR2	SUNSET - WR7
		DAYTON - BR1	MIDDLE GROVE - WR1	SUNSET - WR8
		DAYTON - BR3	MIDDLE GROVE - WR2	TEKTRONIX - WR2
		DELAWARE - WR2	MIDWAY - WR1	TIGARD - WR2
		DILLEY - BR1	MIDWAY - WR2	TOWN CENTER - WR1
		DUNNS CORNER - BR1	MILL CREEK - WR1	TOWN CENTER - WR2
		DURHAM - WR3	MOLALLA - BR1	TUALATIN - WR1
		DURHAM - WR4	MOLALLA - BR2	TUALATIN - WR2
		EAGLE CREEK - BR1	MULINO - BR1	TURNER - WR1
		EASTPORT - WR1	MULTNOMAH - WR1	UNIONVALE - BR1
		ELMA - BR2	MULTNOMAH - WR2	URBAN - WR1
		ESTACADA - BR1	MURRAYHILL - WR1	URBAN - WR2
		FAIRMOUNT - WR1	MURRAYHILL - WR2	URBAN - WR3
		FAIRVIEW - WR2	NEWBERG - WR1	WACONDA - BR2
		GALES CREEK - BR1	NEWBERG - WR2	WEST PORTLAND - WR1
		GARDEN HOME - WR1	NORTH MARION - BR2	WEST UNION - WR1
		GLENCOE - WR1	NORTH MARION - BR3	WILLAMINA - BR2
		GLENDOVEER - WR2	NORTH PLAINS - BR1	WILSONVILLE - WR1
		GLENDOVEER - WR4	OAK HILLS - WR1	WILSONVILLE - WR2
		HARMONY - WR1	ORENCO - WR3	WILSONVILLE - WR3
		HARMONY - WR2	ORENCO - WR4	WOODBURN - BR1
		HARRISON - WR1	ORENCO - WR5	WOODBURN - BR2
		HAYDEN ISLAND - WR1	OSWEGO - WR3	YAMHILL - BR1
		HEMLOCK - WR1		YAMHILL - BR2

- **Line Loss values shaped by month and hour (12x24):**

  - Per Order 19-023, PGE conducted a line loss analysis to estimate power losses per month and hour of day. Those values were used to shape PGE's levelized Line Loss value, updated in this compliance filing to $1.58/MWh.

Figure 5. Line Loss values ($/MWh)

	1	2	3	4	5	6	7	8	9	10	11	12
1	1.6	1.5	1.5	1.4	1.3	1.4	1.9	1.8	1.3	1.3	1.4	1.7
2	1.4	1.3	1.3	1.2	1.1	1.2	1.6	1.5	1.1	1.1	1.3	1.5
3	1.3	1.2	1.2	1.0	1.0	1.0	1.3	1.3	1.0	1.0	1.1	1.3
4	1.2	1.2	1.1	1.0	0.9	0.9	1.1	1.2	0.9	0.9	1.1	1.3
5	1.2	1.1	1.1	1.0	0.9	0.9	1.1	1.1	0.9	0.9	1.0	1.2
6	1.2	1.2	1.1	0.9	0.9	0.9	1.0	1.0	0.8	0.9	1.0	1.2
7	1.3	1.2	1.2	1.0	0.9	0.9	1.0	1.1	0.9	1.0	1.1	1.3
8	1.5	1.4	1.4	1.2	1.0	1.0	1.1	1.1	1.0	1.1	1.3	1.5
9	1.8	1.7	1.7	1.4	1.2	1.1	1.2	1.3	1.2	1.4	1.5	1.8
10	2.0	1.9	1.9	1.6	1.4	1.3	1.4	1.4	1.3	1.5	1.7	2.0
11	2.0	1.9	2.0	1.6	1.4	1.3	1.5	1.5	1.3	1.5	1.8	2.1
12	2.1	1.9	1.9	1.6	1.4	1.4	1.6	1.6	1.4	1.6	1.8	2.0
13	2.0	1.8	1.9	1.6	1.4	1.4	1.8	1.6	1.4	1.5	1.8	2.1
14	2.0	1.9	1.8	1.6	1.5	1.5	1.9	1.8	1.4	1.5	1.7	2.1
15	2.0	1.8	1.8	1.5	1.5	1.5	2.0	1.9	1.5	1.5	1.7	2.0
16	2.0	1.8	1.7	1.5	1.5	1.6	2.2	2.0	1.5	1.5	1.7	2.0
17	2.0	1.8	1.7	1.5	1.5	1.6	2.4	2.2	1.5	1.5	1.7	2.0
18	2.0	1.8	1.7	1.5	1.6	1.7	2.5	2.4	1.6	1.5	1.7	2.0
19	2.1	1.8	1.7	1.5	1.6	1.7	2.7	2.5	1.7	1.6	1.8	2.2
20	2.3	2.0	1.8	1.6	1.7	1.8	2.8	2.6	1.7	1.6	2.0	2.4
21	2.3	2.1	1.9	1.6	1.7	1.8	2.7	2.6	1.7	1.7	2.0	2.4
22	2.2	2.1	1.9	1.6	1.6	1.7	2.6	2.4	1.7	1.7	1.9	2.3
23	2.1	2.0	1.9	1.7	1.6	1.6	2.4	2.3	1.7	1.6	1.8	2.2
24	1.9	1.8	1.8	1.6	1.6	1.5	2.3	2.1	1.5	1.5	1.6	2.0

- **RPS Compliance value:**

  - PGE has applied Staff's recommended calculation for RPS Compliance value. This calculation applies the incremental cost of RPS compliance from PGE's 2017 RPS Compliance Report to the avoided RPS obligation in each year. This results in a levelized value of $3.76.

  - PGE maintains that this methodology does not capture the cost premium associated with RPS-eligibility for marginal resources. PGE's most recent Renewables RFP applied a cost containment screen to ensure that the levelized cost of procured resources would not exceed the levelized forecasted energy and capacity value of the resources, resulting in a levelized forecasted premium of $0 for RPS eligibility.

- **Market Price Response value:**

    - PGE was directed to adopt E3's proxy method for calculating market price response per Order No. 17-357 and Staff's Reply Brief in Docket Nos. 1910-12 (page 9). This methodology requires an estimate of net annual market purchases (sales) during solar hours (MWh), which PGE cannot provide at the time of this filing. As such, we have retained the levelized value for Market Price Response that was filed on March 18, 2019.

    - In recent conversations with Staff, PGE learned that E3 has made some revisions to their methodology, but Staff have yet to share it formally with parties involved in Docket No. 1912. Once the revised approach has been disseminated and vetted with stakeholders and the companies, PGE will adjust its Market Price Response value as appropriate.

- **Updated Utility-Scale Proxy:**

    - PGE provided an update to solar resource costs in the 2016 IRP Update to reflect the continued cost decline of solar photovoltaics. This update results in a utility-scale proxy price of $76.91/MWh for a solar resource that comes online in 2021.

Workpapers associated with this update are attached.

Should you have any questions or comments regarding this filing, please contact Ashleigh Keene at (503) 464-8096.

Please direct all formal correspondence and requests to the following email address: pge.opuc.filings@pgn.com

Sincerely,

Karla Wenzel
Manager, Pricing & Tariffs

cc: UM 1912 Service List