Exh. JLB-4C
Dockets UE-170033/UG-170034
Witness: Jason L. Ball
REDACTED VERSION

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**DOCKETS UE-170033 and UG-170034 (*Consolidated*)**

EXHIBIT TO
TESTIMONY OF

Jason L. Ball

STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

Seasonal Rate Technical Appendix

June 30, 2017

CONFIDENTIAL PER PROTECTIVE ORDER
REDACTED VERSION

Seasonal Rate and Minimum Bill Technical Appendix

I. SUMMARY

The fundamental goal of a cost of service study, and ultimately rate design, is to align the price of consuming energy with the cost of providing that energy to the consumer. In rate design, the final rate often reflects policy preferences rather than each customer classes' identified cost of service. This technical appendix outlines Staff's proposed methodology for calculating rates that reflects the seasonal changes that influence the cost of service.

Staff's proposed residential rate structure is summarized in the table below:

	Summer Season	Winter Season
Basic Charge	$7.87	
Minimum Charge	$3.01	
Block 1 (First 600 kWh's)	$.086107	$.086107
Block 2 (All over 600 kWh's)	$.100917	$.109528

The following sections discuss each component of Staff's proposed rate design structure.

II. SEASONS

Staff defines each season as follows:

- Winter – October, November, December, January, February, March
- Summer – April, May, June, July, August, September

Staff's proposed seasons are consistent with the current definitions of seasons in PSE's various rate schedules.

III. BLOCK STRUCTURE

The rate "blocks" establish different rates for different levels of electricity usage. Historically, the first block has been set at 600 kWh, which was based on an equal sharing of the hydro system across all customers.[1]

Staff analyzed customer billing data to determine if 600 kWh remains appropriate. Using every residential customer's billed kWh usage by month, Staff performed a histogram analysis:

Bin	*Frequency*	*Cumulative %*
0	67989	0.57%
10	24828	0.78%
20	16740	0.93%
30	17078	1.07%
35	**8811**	**1.14%**
40	9565	1.22%
50	19874	1.39%
60	21996	1.58%
70	24333	1.78%
80	26123	2.00%
90	28307	2.24%
100	29862	2.50%
200	419461	6.04%
300	750608	12.38%
400	1058159	21.31%
500	1214762	31.57%
600	1214875	41.83%
700	1107582	51.19%
800	956565	59.27%
900	800635	66.03%
1000	663722	71.63%
1100	545370	76.24%
1200	447609	80.02%

Bin	*Frequency*	*Cumulative %*
1300	366252	83.11%
1400	302322	85.67%
1500	250483	87.78%
1600	209082	89.55%
1700	175193	91.03%
1800	146558	92.26%
1900	125015	93.32%
2000	105539	94.21%
2100	89635	94.97%
2200	76274	95.61%
2300	65360	96.16%
2400	56777	96.64%
2500	48974	97.06%
2600	42309	97.42%
2700	36465	97.72%
2800	31311	97.99%
2900	27220	98.22%
3000	23739	98.42%
3100	20876	98.59%
3200	18040	98.75%
3300	15521	98.88%
3400	13730	98.99%
3500	12042	99.10%

The 600 – 699 kWh block in the above bill analysis represents the largest concentration of bills throughout the year—about 10%. Moreover, approximately 42% of bills had usage lower than 600 kWh while approximately 48% of bills had usage higher than 600 kWh. Accordingly, the 600 kWh block appears to be a good demarcation point for setting a second tier price.

[1] As discussed in my direct testimony, the 600 kWh usage level is principally based on the equal sharing of the hydro system and its low cost benefits. This is a result of a rate design collaborative in 1992. *Final Report, Rate Design Task Force* at 14 (Feb. 20, 1992).

IV. SEASONAL RATES

The $/kWh seasonal rates result from a formula that increases the level of costs in the second block by a certain percentage. These percentages are calculated based on the difference in peak and average $/MWh costs. The chart below summarizes the $/MWh costs and highlights the percentage differences between them.

	Hourly Production Costs ($/MWh)	Difference From Average
Average	[redacted]	
Peak Summer	[redacted]	17.2%
Peak Winter	[redacted]	54.6%

Although the data suggests a significant spike in $/MWh generation costs during peak winter generation, the 54.6% jump would have significant impact on rate design. Such a large impact is inconsistent with one of the principle goals of residential design—to minimize rate shock to individual customers. Therefore, Staff cut the difference in hourly production costs in half, resulting in 27.2%, for the second block differential.

Based on this information, the following formulas were used to calculate the actual season rate.

	Summer Season	Winter Season
Block 1 (First 600 kWh's)	*solved for final revenue requirement/adjusted for residual costs*	Equal to Summer
Block 2 (All over 600 kWh's)	Summer Block 1 Rate * 17.2%	Winter Block 1 Rate * 27.2%

V. MINIMUM BILL

The minimum bill is a function of both the basic charge and the impacts of Staff's proposed rate design:

Minimum Bill = Block 1 (Summer & Winter) Rate * 35 kWh

Basic Charge = COSS Customer Cost Result – Minimum Bill

This results in a calculated basic charge of $7.87.

Staff chose the 35 kWh level to minimize the bill impact of this rate structure change. Only approximately 1.25% of customer bills currently use 35 kWh's, and therefore, would be subject to the minimum charge.

Basic Charge	**Billing Determinants**	**COSS Results**	**Staff Proposed Rate**	**Total Revenue**	**Source**
Single Phase	11,996,380	$10.88	$7.98	$94,366,584	Adjusted so that minimum bill impacts ~ 1.25% of customer bills
Three Phase	2,918	$26.10	$18.90	$55,150	Based on current relationship between single and three phase basic charge.
Minimum Bill	11,999,298	*N/A*	$3.50	$36,162,824	Difference between Basic Charge (above) and customer costs shown in cost of service
Subtotal	11,999,298			$130,584,558	