Exh. JL-4C Docket UE-200115 Witness: Jing Liu REDACTED VERSION

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Application of

PUGET SOUND ENERGY

For an Order Authorizing the Sale of All of Puget Sound Energy's Interests in Colstrip Unit 4 and Certain of Puget Sound Energy's Interests in the Colstrip Transmission System **DOCKET UE-200115**

EXHIBIT TO TESTIMONY OF

Jing Liu

STAFF OF WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Cost-Benefit Analysis with Staff's Alternative Cost Assumptions

October 2, 2020

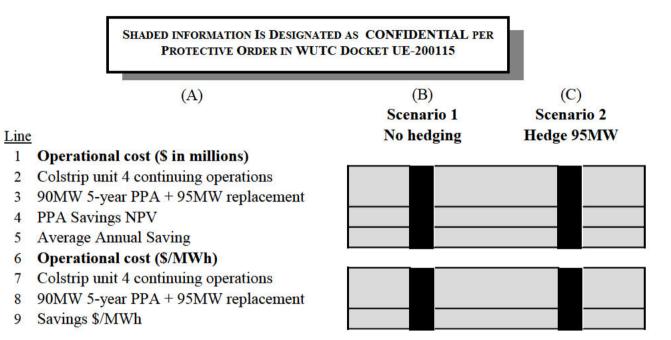
CONFIDENTIAL PER PROTECTIVE ORDER - REDACTED VERSION

Exh. JL-4C Docket UE-200115 Page 1 of 14 REDACTED VERSION

Shaded information Is Designated as CONFIDENTIAL per Protective Order in WUTC Docket UE-200115

as Usual" Scenario and the "Proposed Sale" Scenario

with UTC Staff Alternative Cost Assumptions

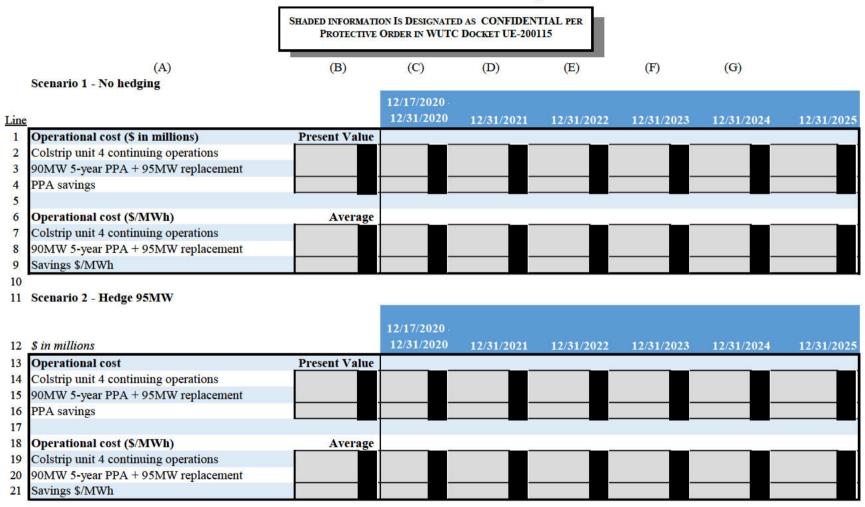


Exh. JL-4C Docket UE-200115 Page 3 of 14 REDACTED VERSION

Quantitative Analysis Comparing "Business as Usual" Scenario and the "Proposed Sale" Scenario

Five-Year Comparison

with UTC Staff Alternative Cost Assumptions



Exh. JL-4C Docket UE-200115 Page 4 of 14 REDACTED VERSION

Colstrip Unit 4 - Continuing Operations

with UTC Staff Alternative Cost Assumptions

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		12/17/2020-						
Line	\$ in millions	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024	12/31/2025	Average
1	PSE's share of unit 4 capacity	185 MW	185 MW	185 MW	185 MW	185 MW	185 MW	185 MW
2	PSE's take (MWh)							
3								
4	Net capacity factor							
5			/					
6	Colstrip unit 4 operating cost	10 V 21		<u> </u>	142			
7	Fixed operating expenses							
8	Overhaul				1			
9	Capital							
10	Dispatch cost				-			
11	Colstrip unit 4 operating cost							
12			4			100 - 100 100 - 100		
13	Property Tax							
14		sit ka						
15	Total cost (line 11 +13)							
16								
17	Dispatch cost (line 10 / 2)							
18	Cost \$/MWh (line 15 / 2)							
19								
20	Total cost NPV (line 15)							
21	Cost \$/MWh (5-year average)							

Scenario 1 - No Hedging

with UTC Staff Alternative Cost Assumptions

SHADED INFORMATION IS DESIGNATED AS CONFIDENTIAL PER PROTECTIVE ORDER IN WUTC DOCKET UE-200115 12/17/2020-1/1/2025-12/31/2020 12/2/2025 Line \$ in millions 12/31/2024 12/31/2021 12/31/2022 12/31/2023 90 MW NEW PPA 1 NW + Talen PPA capacity 2 90 MW 90 MW 90 MW 90 MW 90 MW 90 MW 3 Energy (MWh) 4 PPA price (\$/MWh) 5 PPA cost 6 7 Base O&M 8 Total PPA (line 6+7) 9 12/17/2020-95 MW Replacement 12/31/2020 10 12/31/2021 12/31/2022 12/31/2023 12/31/2024 12/31/2025 Replacement energy post PPA 11 Replacement energy (MWh) 12 Mid-C price (\$/MWh) 13 Energy replacement 14 15 Replacement capacity winter only 16 Capacity (MW) 95 MW 95 MW 95 MW 95 MW 17 95 MW 95 MW Capacity charge \$/KW-yr 18 Capacity replacement cost 19 20

Scenario 1 - No Hedging

with UTC Staff Alternative Cost Assumptions

SHADED INFORMATION IS DESIGNATED AS CONFIDENTIAL PER PROTECTIVE ORDER IN WUTC DOCKET UE-200115

							12/3/2020-
21	90 MW Replacement after PPA Ends						12/31/2020
22	Replacement energy post PPA						
23	Replacement energy (MWh)						
24	Mid-C price (\$/MWh)						
25	Energy replacement						
26							
27	Replacement capacity winter only						
28	Capacity (MW)						90 MW
29	Capacity charge \$/KW-yr						
30	Capacity replacement cost						
31							
32	Total cost (line 8+14+19+25+30)						
33		·					
34	Total capacity	185 MW					
35	Total energy MWh					100	
36	Cost \$/MWh (line 32 / 35)		1977			-11	
37						0.5	
38	Total cost NPV (line 32)						
39	Cost \$/MWh (5-year average)						

Scenario 2 - Hedge 95MW

with UTC Staff Alternative Cost Assumptions

SHADED INFORMATION IS DESIGNATED AS CONFIDENTIAL PER PROTECTIVE ORDER IN WUTC DOCKET UE-200115

		12/17/2020-					1/1/2025-
Line	\$ in millions	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024	12/2/2025
1	90 MW NEW PPA						
2	NW + Talen PPA capacity	90 MW	90 MW	90 MW	90 MW	90 MW	90 MW
3							
4	Energy (MWh)						÷-
5	PPA price (\$/MWh)						
6	PPA cost						
7	Base O&M			10	10		
8	Total PPA (line 6+7)						
9		2			20 - 10	11 C	
		12/17/2020-					
10	95 MW Replacement	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024	12/31/2025
11	Replacement energy post PPA						<u> </u>
12	Replacement energy (MWh)					2	
13	Mid-C price (\$/MWh)						
14	Energy replacement						
15							
16	Replacement capacity winter only						
17	Capacity (MW)	95 MW	95 MW	95 MW	95 MW	95 MW	95 MW
18	Capacity charge \$/KW-yr						
19	Capacity replacement cost						
20							

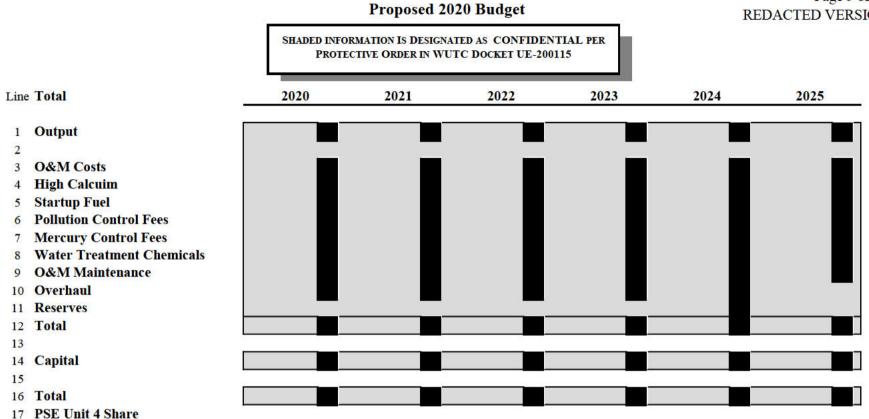
Scenario 2 - Hedge 95MW

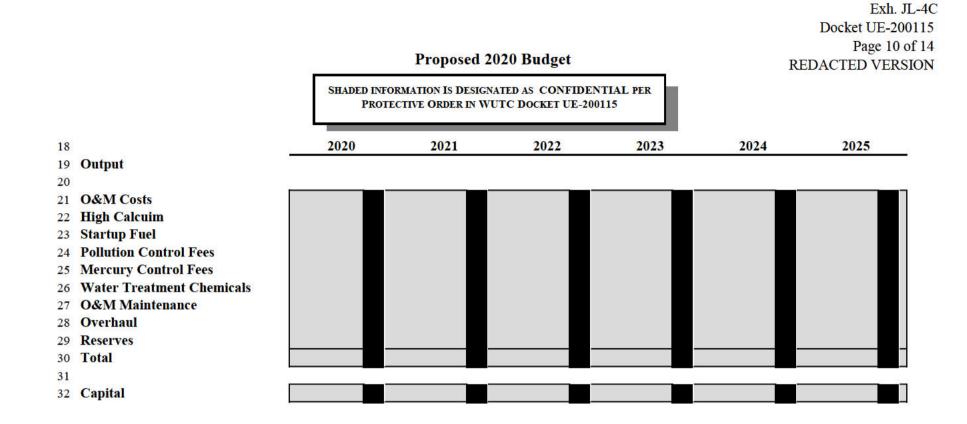
with UTC Staff Alternative Cost Assumptions

SHADED INFORMATION IS DESIGNATED AS CONFIDENTIAL PER PROTECTIVE ORDER IN WUTC DOCKET UE-200115

		12/17/2020-					1/1/2025-
Line	\$ in millions	12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024	12/2/2025
							12/3/2020-
21	90 MW Replacement after PPA Ends						12/31/2020
22	Replacement energy post PPA						
23	Replacement energy (MWh)						
24	Mid-C price (\$/MWh)						
25	Energy replacement						
26							77
27	Replacement capacity winter only						
28	Capacity (MW)						90 MW
29	Capacity charge \$/KW-yr						
30	Capacity replacement cost						
31							
32	Total cost (line 8+14+19+25+30)						
33							
34	Total capacity	185 MW	185 MW	185 MW	185 MW	185 MW	185 MW
35	Total energy MWh						
36	Cost \$/MWh (line 32 / 35)						
37			192 · · · ·				
38	Total cost NPV (line 32)						
39	Cost \$/MWh (5-year average)						

Exh. JL-4C Docket UE-200115 Page 9 of 14 REDACTED VERSION

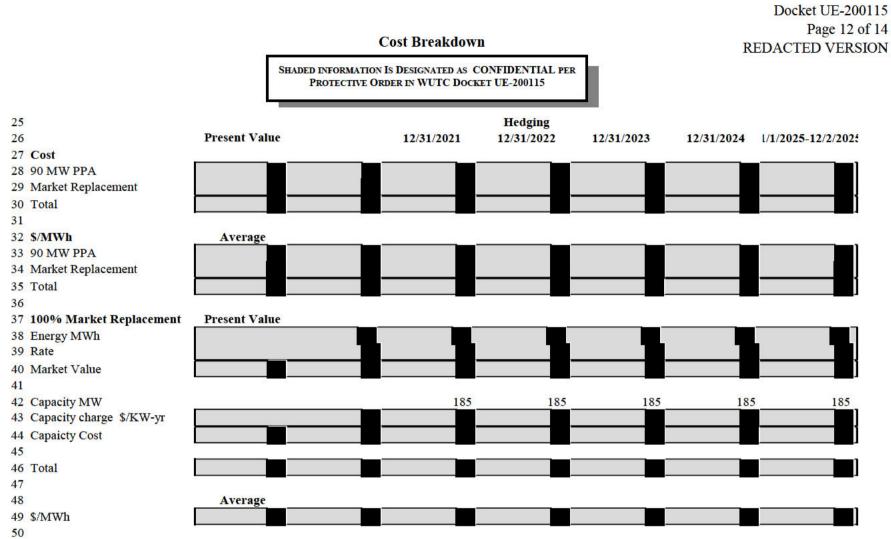




Docket UE-200115 Page 11 of 14 **Cost Breakdown** REDACTED VERSION SHADED INFORMATION IS DESIGNATED AS CONFIDENTIAL PER PROTECTIVE ORDER IN WUTC DOCKET UE-200115 No Hedging 12/17/2020-1/1/2025-Present Value 12/31/2020 12/31/2021 12/31/2022 12/31/2023 12/31/2024 12/2/2025 1 Cost 2 90 MW PPA 3 Market Replacement 4 Total 5 6 \$/MWh Average 7 90 MW PPA 8 Market Replacement 9 Total 10 11 100% Market Replacement Present Value 12 Energy MWh 13 Rate 14 Market Value 15 16 Capacity MW 95 185 185 185 185 185 17 Capacity charge \$/KW-yr 18 Capaicty Cost 19 20 Total 21 22 Average 23 \$/MWh 24

Based on Exh. CLS-9R

Exh. JL-4C



Exh. JL-4C

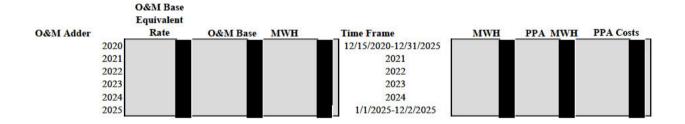
Exh. JL-4C Docket UE-200115 Page 13 of 14 REDACTED VERSION

Colstrip Unit 4 Dispatch Assumptions with UTC Staff Alternative Cost Assumptions

SHADED INFORMATION IS DESIGNATED AS CONFIDENTIAL PER PROTECTIVE ORDER IN WUTC DOCKET UE-200115

Assumption Coal Contract

Line	insumption com contract									PPA	Replacment Power
		12/17/2020-			2	4 A	2,	5	1/1/2025-	1/1/2025-	
	2	12/31/2020	2020	2021	2022	2023	2024	2025	12/2/2025	12/2/2025	2025
1	Energy (MWh)										
2	Revenue (\$'000)										
3	Cost (\$'000)										
4		1.0 <u></u>	1	(a <u>. 78</u>) 1997 - 1997	200 <u>0</u>					1	
5	Market Rate (\$/MWh)										l l
6	Dispatch costs (\$/MWh)										



Based on Exh. CLS-9R

Exh. JL-4C Docket UE-200115 Page 14 of 14 REDACTED VERSION

PSE's Weighted Average Cost of Capital

Line

1

2	Capital Structure	Ratio	Cost	Weighted Cost	Tax Rate	After-tax Weighted Cost
3	Debt	51.5%	5.50%	2.83%	21.00%	2.24%
4	Equity	48.5%	9.40%	4.56%		4.56%
5	Total	100.0%		7.39%		6.80%