

**EXH. CLS-6
DOCKET UE-191037
COLSTRIP UNIT 4 SALE
WITNESS: CINDY L. SONG**

**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-191037

**FIFTH EXHIBIT (NONCONFIDENTIAL) TO THE
PREFILED DIRECT TESTIMONY OF**

CINDY L. SONG

ON BEHALF OF PUGET SOUND ENERGY

FEBRUARY 19, 2020

**PSE Quantitative Analysis Comparing "Business
as Usual" Scenario and the "Proposed Sale" Scenario
(September 11, 2019)**

Line	(A)	(B)	(C)
		Scenario 1 No hedging	Scenario 2 Hedge 95MW
1	Cost (\$ in millions)		
2	Colstrip unit 4 continuing operations	\$168 M	\$168 M
3	90MW 5-year PPA + 95MW replacement	\$110 M	\$131 M
4	Proposed Sale Benefit	\$58 M	\$37 M
5			
6	Cost (\$/MWh)		
7	Colstrip unit 4 continuing operations	\$43.1/MWh	\$43.1/MWh
8	90MW 5-year PPA + 95MW replacement	\$28.2/MWh	\$33.4/MWh
9	Proposed Sale Benefit (\$/MWh)	\$14.9/MWh	\$9.7/MWh

**PSE Quantitative Analysis Comparing "Business
as Usual" Scenario and the "Proposed Sale" Scenario
Five-Year Comparison**

Line	(A)	(B)	(C)	(D)	(E)	(F)	(G)
	Scenario 1 - no hedging						
			12-month ending				
			May 2021	May 2022	May 2023	May 2024	May 2025
1	Cost (\$ in millions)	Present Value					
2	Colstrip unit 4 continuing operations	\$168 M	\$43 M	\$39 M	\$36 M	\$41 M	\$46 M
3	90MW 5-year PPA + 95MW replacement	\$110 M	\$28 M	\$26 M	\$25 M	\$26 M	\$28 M
4	Proposed Sale Benefit	\$58 M	\$15 M	\$13 M	\$11 M	\$15 M	\$18 M
5							
6	Cost (\$/MWh)	Average					
7	Colstrip unit 4 continuing operations	\$43.1/MWh	\$43.2/MWh	\$41.2/MWh	\$38.3/MWh	\$44.0/MWh	\$48.9/MWh
8	90MW 5-year PPA + 95MW replacement	\$28.2/MWh	\$28.3/MWh	\$27.6/MWh	\$26.8/MWh	\$28.1/MWh	\$30.1/MWh
9	Proposed Sale Benefit (\$/MWh)	\$14.9/MWh	\$14.9/MWh	\$13.5/MWh	\$11.5/MWh	\$15.8/MWh	\$18.9/MWh
10							
11	Scenario 2 - hedge 95MW						
			12-month ending				
			May 2021	May 2022	May 2023	May 2024	May 2025
14	Cost (\$ in millions)	Present Value					
15	Colstrip unit 4 continuing operations	\$168 M	\$43 M	\$39 M	\$36 M	\$41 M	\$46 M
16	90MW 5-year PPA + 95MW replacement	\$131 M	\$33 M	\$31 M	\$31 M	\$31 M	\$32 M
17	Proposed Sale Benefit	\$37 M	\$10 M	\$8 M	\$5 M	\$10 M	\$14 M
18							
19	Cost (\$/MWh)	Average					
20	Colstrip unit 4 continuing operations	\$43.1/MWh	\$43.2/MWh	\$41.2/MWh	\$38.3/MWh	\$44.0/MWh	\$48.9/MWh
21	90MW 5-year PPA + 95MW replacement	\$33.4/MWh	\$33.3/MWh	\$32.9/MWh	\$33.2/MWh	\$33.5/MWh	\$34.3/MWh
22	Proposed Sale Benefit (\$/MWh)	\$9.7/MWh	\$9.9/MWh	\$8.3/MWh	\$5.1/MWh	\$10.5/MWh	\$14.6/MWh

Colstrip Unit 4 - Continuing Operations

September 11

Line	\$ in millions	12-month ending				5-year Average
		May 2021	May 2022	May 2023	May 2024	
1	PSE's share of unit 4 capacity	185 MW	185 MW	185 MW	185 MW	185 MW
2	PSE's take (MWh)	994,256	947,548	939,818	932,400	940,072
3	Net capacity factor	61%	58%	58%	58%	59%
4						
5	Colstrip unit 4 operating cost					
6	Fixed operating expenses	\$14 M	\$13 M	\$12 M	\$14 M	\$16 M
7	Capital	\$6 M	\$4 M	\$1 M	\$4 M	\$7 M
8	Dispatch cost	\$21 M	\$20 M	\$20 M	\$20 M	\$20 M
9	Colstrip unit 4 operating cost	\$40 M	\$36 M	\$33 M	\$38 M	\$44 M
10						
11	PSE Expense					
12	Property Tax	\$3 M	\$3 M	\$3 M	\$3 M	\$3 M
13	Total PSE Expense	\$3 M	\$3 M	\$3 M	\$3 M	\$3 M
14						
15	Total cost (line 10 + 14)	\$43 M	\$39 M	\$36 M	\$41 M	\$46 M
16						
17	Dispatch cost (line 9 / 2)	\$20.7/MWh	\$21.2/MWh	\$21.0/MWh	\$21.2/MWh	\$21.5/MWh
18	Cost \$/MWh (line 16 / 2)	\$43.2/MWh	\$41.2/MWh	\$38.3/MWh	\$44.0/MWh	\$48.9/MWh
19						
20	Total cost NPV (line 16)	\$168 M				
21	Cost \$/MWh (5-year average)	\$43.1/MWh				

Scenario 1 - No Hedging

Line	\$ in millions	12-month ending				
		May 2021	May 2022	May 2023	May 2024	May 2025
1	90 MW NWE PPA					
2	NWE PPA capacity	90 MW	90 MW	90 MW	90 MW	90 MW
3						
4	Energy (MWh)	483,692	460,969	457,209	453,600	457,332
5	Market price (\$/MWh)	\$26.7/MWh	\$26.5/MWh	\$25.6/MWh	\$26.4/MWh	\$28.1/MWh
6	PPA cost	\$13 M	\$12 M	\$12 M	\$12 M	\$13 M
7						
8	95 MW Replacement					
9	Energy replacement					
10	Replacement energy (MWh)	510,564	486,579	482,609	478,800	482,739
11	Mid-C price (\$/MWh)	\$26.7/MWh	\$26.5/MWh	\$25.6/MWh	\$26.4/MWh	\$28.1/MWh
12	Energy replacement	\$14 M	\$13 M	\$12 M	\$13 M	\$14 M
13						
14	Replacement capacity winter only					
15	Capacity (MW)	95 MW	95 MW	95 MW	95 MW	95 MW
16	Capacity charge	\$12.0/kw-yr	\$12.3/kw-yr	\$12.6/kw-yr	\$12.9/kw-yr	\$13.2/kw-yr
17	Capacity replacement cost	\$1 M	\$1 M	\$1 M	\$1 M	\$1 M
18						
19	Total cost (line 6+12+17)	\$28 M	\$26 M	\$25 M	\$26 M	\$28 M
20						
21	Total capacity	185 MW	185 MW	185 MW	185 MW	185 MW
22	Total energy MWh	994,256	947,548	939,818	932,400	940,072
23	Cost \$/MWh (line 19 / 22)	\$28.3/MWh	\$27.6/MWh	\$26.8/MWh	\$28.1/MWh	\$30.1/MWh
24						
25	Total cost NPV (line 19)	\$110 M				
26	Cost \$/MWh (5-year average)	\$28.2/MWh				

Scenario 2 - Hedge 95 MW

Line	\$ in millions	12-month ending				
		May 2021	May 2022	May 2023	May 2024	May 2025
1	90 MW NWE PPA					
2	NWE PPA capacity	90 MW	90 MW	90 MW	90 MW	90 MW
3						
4	Energy (MWh)	483,692	460,969	457,209	453,600	457,332
5	Market price (\$/MWh)	\$26.7/MWh	\$26.5/MWh	\$25.6/MWh	\$26.4/MWh	\$28.1/MWh
6	PPA cost	\$13 M	\$12 M	\$12 M	\$12 M	\$13 M
7						
8	95 MW Replacement					
9	Energy replacement					
10	Replacement energy (MWh)	510,564	486,579	482,609	478,800	482,739
11	Fixed hedging price (\$/MWh)	\$37.5/MWh	\$37.5/MWh	\$37.5/MWh	\$37.5/MWh	\$37.5/MWh
12	Energy replacement	\$19 M	\$18 M	\$18 M	\$18 M	\$18 M
13						
14	Replacement capacity winter only					
15	Capacity (MW)	95 MW	95 MW	95 MW	95 MW	95 MW
16	Capacity charge	\$12.0/kw-yr	\$12.3/kw-yr	\$12.6/kw-yr	\$12.9/kw-yr	\$13.2/kw-yr
17	Capacity replacement cost	\$1 M	\$1 M	\$1 M	\$1 M	\$1 M
18						
19	Total cost (line 6+12+17)	\$33 M	\$31 M	\$31 M	\$31 M	\$32 M
20						
21	Total capacity	185 MW	185 MW	185 MW	185 MW	185 MW
22	Total energy MWh	994,256	947,548	939,818	932,400	940,072
23	Cost \$/MWh (line 19 / 22)	\$33.3/MWh	\$32.9/MWh	\$33.2/MWh	\$33.5/MWh	\$34.3/MWh
24						
25	Total cost NPV (line 19)	\$131 M				
26	Cost \$/MWh (5-year average)	\$33.4/MWh				