

**Exh. JL-2C  
Docket UE-200115  
Witness: Jing Liu  
REDACTED VERSION**

**BEFORE THE WASHINGTON  
UTILITIES AND TRANSPORTATION COMMISSION**

**In the Matter of the Application of**

**DOCKET UE-200115**

**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**

**EXHIBIT TO  
TESTIMONY OF**

**Jing Liu**

**STAFF OF  
WASHINGTON UTILITIES AND  
TRANSPORTATION COMMISSION**

*PSE's Cost-Benefit Analysis with the Assumption of High Market Prices*

**October 2, 2020**

**CONFIDENTIAL PER PROTECTIVE ORDER – REDACTED VERSION**

**BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**Docket UE-200115  
Puget Sound Energy  
Application Authorizing Sale of PSE Interest in Colstrip Unit 4**

**WUTC STAFF DATA REQUEST NO. 021**

**“CONFIDENTIAL” Table of Contents**

<b>DR NO.</b>	<b>“CONFIDENTIAL” Material</b>
<b>021</b>	Shaded information in Puget Sound Energy’s Second Revised Response to WUTC Staff Data Request No. 021 is designated as CONFIDENTIAL per Protective Order in Docket UE-200115.
<b>021</b>	Shaded information in each of Attachment A to Puget Sound Energy’s Second Revised Response to WUTC Staff Data Request No. 021 is designated as CONFIDENTIAL per Protective Order in Docket UE-200115.
<b>021</b>	Shaded information in each of Attachment B to Puget Sound Energy’s Second Revised Response to WUTC Staff Data Request No. 021 is designated as HIGHLY CONFIDENTIAL per Protective Order in Docket UE-200115.

**BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**Docket UE-200115  
Puget Sound Energy  
Application Authorizing Sale of PSE Interest in Colstrip Unit 4**

**WUTC STAFF DATA REQUEST NO. 021:**

**Re: Cost Benefit Analysis – Uncertainty of Inputs**

- a. Has PSE performed a risk analysis (such as Monte Carlo simulation) to evaluate the uncertainty (or probability distribution) of net benefits of the transaction? If yes, please provide the analysis for both the “Business as Usual” scenario and the “Proposed Sale” scenario.
- b. Other than the analysis PSE describes in its response to (a), above, has PSE in any way assessed how the uncertainty of its inputs or variables affects the results of its cost-benefit analysis? If yes, please provide the analysis for both the “Business as Usual” scenario and the “Proposed Sale” scenario.

**Second Revised Response:**

Puget Sound Energy (“PSE”) has updated the analysis to include the following changes:

- (i) PSE updated the timing of the power purchase agreements to reflect the projected closing date. The timing changed from PSE’s First Revised Response to WUTC Staff Data Request No. 021 (a term beginning January 1, 2021, and ending December 31, 2025) to PSE’s Second Revised Response to WUTC Staff Data Request No. 021 (a term beginning December 17, 2020, and ending December 2, 2025).
- (ii) PSE updated the cost of capital from 6.97 percent to 6.80 percent to reflect the approved costs of capital from the final order in PSE’s recently concluded general rate case in Docket UE-190529. This update had minimal impact on the results.
- (iii) The updated analysis assumes the replacement cost for the lost energy and peak capacity with the expiration of the power purchase agreements on December 2, 2025, for the remainder of that month.

The updates did not change the results from the PSE’s First Revised Response to WUTC Staff Data Request No. 021. The benefits remain in a range between \$(3) million and \$23 million for the higher price scenario. As described in the Prefiled Supplemental

Testimony of Cindy L. Song, Exh. CLS-8CT, the benefits remain in a range from \$6 million to \$33 million for the base scenario.

- a. Yes. PSE has performed an additional stress testing analysis on how the PPA performs in a higher price scenario, see response to part b. below.
- b. PSE has performed an additional analysis with a higher price scenario. The high pricing scenario was derived from work from the 2019 Integrated Resource Plan, which did not include the recently passed legislation in Washington and California for renewable targets mandates and higher gas prices. Please see the table below for the price comparison between the base forecast used in PSE’s First Revised Response to WUTC Staff Data Request No. 020 and the higher price scenario used in PSE’s First Revised Response to WUTC Staff Data Request No. 021.

	<b>Mid-C Price \$/MWh</b>				
	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2024</b>
High	\$XX.X	\$XX.X	\$XX.X	\$XX.X	\$XX.X
Base	\$XX.X	\$XX.X	\$XX.X	\$XX.X	\$XX.X
% Difference	XX.X%	XX.X%	XX.X%	XX.X%	XX.X%

Attached as Attachment A to PSE’s Second Revised Response to WUTC Staff Data Request No. 021 for an MS Excel worksheet that provides details of the results of higher market prices.

Attached as Attachment B to PSE’s Second Revised Response to WUTC Staff Data Request No. 021 is an underlying work paper that supports the analysis in Attachment A to PSE’s Second Revised Response to WUTC Staff Data Request No. 021. Cell H6-H11 in tab “PPA Calculation (HC)” provides the summary of the hourly calculation by year, which is the source for line 6 in the “Hedging” and “No Hedging” tabs in Attachment A to PSE’s Second Revised Response to WUTC Staff Data Request No. 021.

Shaded information in each of PSE’s Second Revised Response to WUTC Staff Data Request No. 021 and Attachment A is designated as CONFIDENTIAL per Protective Order in Docket UE-200115.

Shaded information in Attachment B to PSE’s Second Revised Response to WUTC Staff Data Request No. 021 is designated as HIGHLY CONFIDENTIAL per Protective Order in Docket UE-200115.

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**ATTACHMENT A to  
PSE's First Revised Response to  
WUTC Staff Data Request No. 021**

**ATTACHMENT B to  
PSE's First Revised Response to  
WUTC Staff Data Request No. 021  
is provided in electronic format only.**

**BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**Docket UE-200115  
Puget Sound Energy  
Application Authorizing Sale of PSE Interest in Colstrip Unit 4**

**WUTC STAFF DATA REQUEST NO. 021**

**“CONFIDENTIAL” Table of Contents**

<b>DR NO.</b>	<b>“CONFIDENTIAL” Material</b>
<b>021</b>	Shaded information in Puget Sound Energy’s Second Revised Response to WUTC Staff Data Request No. 021 is designated as CONFIDENTIAL per Protective Order in Docket UE-200115.
<b>021</b>	Shaded information in each of Attachment A to Puget Sound Energy’s Second Revised Response to WUTC Staff Data Request No. 021 is designated as CONFIDENTIAL per Protective Order in Docket UE-200115.
<b>021</b>	Shaded information in each of Attachment B to Puget Sound Energy’s Second Revised Response to WUTC Staff Data Request No. 021 is designated as HIGHLY CONFIDENTIAL per Protective Order in Docket UE-200115.

**ATTACHMENT A to  
PSE's First Revised Response to  
WUTC Staff Data Request No. 021**

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

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<u>Line</u>	(A)	(B) Scenario 1 No hedging	(C) Scenario 2 Hedge 95MW
1	<b>Operational cost (\$ in millions)</b>		
2		\$XXX M	\$XXX M
3		\$XXX M	\$XXX M
4		\$XXX M	\$XXX M
5			
6	<b>Operational cost (\$/MWh)</b>		
7		\$XX.XX/MWh	\$XX.XX/MWh
8		\$XX.XX/MWh	\$XX.XX/MWh
9		\$XX.XX/MWh	\$XX.XX/MWh

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

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VERSION

(A) (B) (C) (D) (E) (F) (G)

**Scenario 1 - No hedging**

Line		12/17/2020 -					
		12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024	12/31/2025
1	<b>Operational cost (\$ in millions)</b>	<b>Present Value</b>					
2	Colstrip unit 4 continuing operations	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
3	90MW 5-year PPA + 95MW replacement	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
4	PPA savings	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
5							
6	<b>Operational cost (\$/MWh)</b>	<b>Average</b>					
7	Colstrip unit 4 continuing operations	\$XX.XX/MWh	\$XX.XX/MV	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
8	90MW 5-year PPA + 95MW replacement	\$XX.XX/MWh	\$XX.XX/MV	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
9	Savings \$/MWh	\$XX.XX/MWh	\$XX.XX/MV	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh

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

REDACTED  
VERSION

(A)  
**Scenario 2 - Hedge 95MW**

(B) (C) (D) (E) (F) (G)

		12/17/2020 -					
		12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024	12/31/2025
1	<i>\$ in millions</i>						
2	<b>Operational cost</b>	<b>Present Value</b>					
3	Colstrip unit 4 continuing operations	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
4	90MW 5-year PPA + 95MW replacement	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
5	PPA savings	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
6							
7	<b>Operational cost (\$/MWh)</b>	<b>Average</b>					
8	Colstrip unit 4 continuing operations	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
9	90MW 5-year PPA + 95MW replacement	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
10	Savings \$/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh

**Colstrip Unit 4 - Continuing Operations**

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Line	<i>\$ in millions</i>	12/17/2020- 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)	59,856	1,120,036	1,148,895	1,229,045	1,209,007	1,354,798	1,212,357
3								
4	Net capacity factor	79%	69%	71%	76%	75%	84%	75%
5								
6	<b>Colstrip unit 4 operating cost</b>							
7	Fixed operating expenses	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
8	Overhaul	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
9	Capital	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
10	Dispatch cost	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
11	<b>Colstrip unit 4 operating cost</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>
12								
13	<b>Property Tax</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>
14								
15	<b>Total cost (line 11 +13)</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>
16								
17	Dispatch cost (line 10 / 2)	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
18	Cost \$/MWh (line 15 / 2)	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
19								
20	<b>Total cost NPV (line 15)</b>		<b>\$XXX M</b>					
21	<b>Cost \$/MWh (5-year average)</b>		<b>\$XX.XX/MWh</b>					

**Scenario 1 - No Hedging**

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

**Scenario 1 - No Hedging**

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							12/3/2020- 12/31/2020
21	<b>90 MW Replacement after PPA Ends</b>						
22	Replacement energy post PPA						
23	Replacement energy (MWh)	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX
24	Mid-C price (\$/MWh)	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
25	<b>Energy replacement</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>
26							
27	Replacement capacity winter only						
28	Capacity (MW)						90 MW
29	Capacity charge \$/KW-yr						\$XX.XX/KW-yr
30	<b>Capacity replacement cost</b>						<b>\$XXX M</b>
31							
32	<b>Total cost (line 8+14+19+25+30)</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>
33							
34	Total capacity	185 MW	185 MW	185 MW	185 MW	185 MW	185 MW
35	Total energy MWh	59,856	1,120,036	1,148,895	1,229,045	1,209,007	1,298,279
36	Cost \$/MWh (line 32 / 35)	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
37							
38	<b>Total cost NPV (line 32)</b>	<b>\$XXX M</b>					
39	<b>Cost \$/MWh (5-year average)</b>	<b>\$XX.XX/MWh</b>					

**Scenario 2 - Hedging**

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

**Scenario 2 - Hedging**

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						12/3/2020-
						12/31/2020
21	<b>90 MW Replacement after PPA Ends</b>					
22	Replacement energy post PPA					
23	Replacement energy (MWh)	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX
24	Mid-C price (\$/MWh)	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
25	<b>Energy replacement</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>
26						
27	Replacement capacity winter only					
28	Capacity (MW)					90 MW
29	Capacity charge \$/KW-yr					\$XX.XX/KW-yr
30	<b>Capacity replacement cost</b>					<b>\$XXX M</b>
31						
32	<b>Total cost (line 8+14+19+25+30)</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>	<b>\$XXX M</b>
33						
34	Total capacity	185 MW	185 MW	185 MW	185 MW	185 MW
35	Total energy MWh	59,856	1,120,036	1,148,895	1,229,045	1,209,007
36	Cost \$/MWh (line 32 / 35)	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
37						
38	<b>Total cost NPV (line 32)</b>	<b>\$XXX M</b>				
39	<b>Cost \$/MWh (5-year average)</b>	<b>\$XX.XX/MWh</b>				

**Proposed 2020 Budget**

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Line Total	2020	2021	2022	2023	2024	2025
1 <b>Output</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
2						
3 <b>O&amp;M Costs</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
4 <b>High Calcuim</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
5 <b>Startup Fuel</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
6 <b>Pollution Control Fees</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
7 <b>Mercury Control Fees</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
8 <b>Water Treatment Chemicals</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
9 <b>O&amp;M Maintenance</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
10 <b>Overhaul</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
11 <b>Reserves</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
12 <b>Total</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
13						
14 <b>Capital</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
15						-
16 <b>Total</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
17 <b>PSE Unit 4 Share</b>						

**Proposed 2020 Budget**

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	2020	2021	2022	2023	2024	2025
18						
19 <b>Output</b>						
20						
21 <b>O&amp;M Costs</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
22 <b>High Calcuim</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
23 <b>Startup Fuel</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
24 <b>Pollution Control Fees</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
25 <b>Mercury Control Fees</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
26 <b>Water Treatment Chemicals</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
27 <b>O&amp;M Maintenance</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
28 <b>Overhaul</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
29 <b>Reserves</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
30 <b>Total</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
31						
32 <b>Capital</b>	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX

**Colstrip Unit 4 Dispatch Assumptions**

Assumption Coal Contract

REDACTED  
VERSION

Line										PPA		Replacment
		12/17/2020-12/31/2020	2020	2021	2022	2023	2024	2025	1/1/2025-12/2/2025	1/1/2025-12/2/2025	2025	Power
1	Energy (MWh)	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	
2	Revenue (\$'000)	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	
3	Cost (\$'000)	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	XXX,XXX	
4												
5	Market Rate (\$/MWh)	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	
6	Dispatch costs (\$/MWh)	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	\$XX.XX	

O&M Adder	O&M Base Equivalent			Time Frame	MWH	PPA MWH	PPA Costs
	Rate	O&M Base	MWH				
2020	XXX,XXX	XXX,XXX	XXX,XXX	12/15/2020-12/31/2020	XXX,XXX	XXX,XXX	XXX,XXX
2021	XXX,XXX	XXX,XXX	XXX,XXX	2021	XXX,XXX	XXX,XXX	XXX,XXX
2022	XXX,XXX	XXX,XXX	XXX,XXX	2022	XXX,XXX	XXX,XXX	XXX,XXX
2023	XXX,XXX	XXX,XXX	XXX,XXX	2023	XXX,XXX	XXX,XXX	XXX,XXX
2024	XXX,XXX	XXX,XXX	XXX,XXX	2024	XXX,XXX	XXX,XXX	XXX,XXX
2025	XXX,XXX	XXX,XXX	XXX,XXX	1/1/2025-12/2/2025	XXX,XXX	XXX,XXX	XXX,XXX

**No Hedging**

REDACTED  
VERSION

	Present Value	12/17/2020- 12/31/2020	12/31/2021	12/31/2022	12/31/2023	12/31/2024	1/1/2025- 12/2/2025
1 <b>Cost</b>							
2 90 MW PPA	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
3 Market Replacement	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
4 Total	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
5							
6 <b>\$/MWh</b>							
	<b>Average</b>						
7 90 MW PPA	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
8 Market Replacement	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
9 Total	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
10							
11 <b>100% Market Replacement</b>							
	<b>Present Value</b>						
12 Energy MWh		XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
13 Rate		\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
14 Market Value	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
15							
16 Capacity MW		95	185	185	185	185	185
17 Capacity charge \$/KW-yr		\$XX.XX/KW-yr	\$XX.XX/KW-yr	\$XX.XX/KW-yr	\$XX.XX/KW-yr	\$XX.XX/KW-yr	\$XX.XX/KW-yr
18 Capacity Cost	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
19							
20 Total	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
21							
22							
23 <b>\$/MWh</b>							
	<b>Average</b>						
23 \$/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
24							

**Hedging**

REDACTED  
VERSION

	<b>Present Value</b>	<b>12/17/2020- 12/31/2020</b>	<b>12/31/2021</b>	<b>12/31/2022</b>	<b>12/31/2023</b>	<b>12/31/2024</b>	<b>1/1/2025- 12/2/2025</b>
26							
27 <b>Cost</b>							
28 90 MW PPA	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
29 Market Replacement	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
30 Total	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
31							
32 <b>\$/MWh</b>	<b>Average</b>						
33 90 MW PPA	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
34 Market Replacement	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
35 Total	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
36							
37 <b>100% Market Replacement</b>	<b>Present Value</b>						
38 Energy MWh		XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX	XX,XXX,XXX
39 Rate		\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh
40 Market Value	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
41							
42 Capacity MW			185	185	185	185	185
43 Capacity charge \$/KW-yr		\$XX.XX/KW-yr	\$XX.XX/KW-yr	\$XX.XX/KW-yr	\$XX.XX/KW-yr	\$XX.XX/KW-yr	\$XX.XX/KW-yr
44 Capacity Cost	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
45							
46 Total	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M	\$XXX M
47							
48	<b>Average</b>						
49 \$/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh	\$XX.XX/MWh

### 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	<b>Total</b>	<b>100.0%</b>		<b>7.39%</b>		<b>6.80%</b>