

**EXHIBIT NO. ___(RJR-17)
DOCKETS UE-17___/UG-17___
2017 PSE GENERAL RATE CASE
WITNESS: RONALD J. ROBERTS**

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

**WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,**

Complainant,

v.

PUGET SOUND ENERGY,

Respondent.

Docket UE-17___

Docket UG-17___

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

RONALD J. ROBERTS

ON BEHALF OF PUGET SOUND ENERGY

JANUARY 13, 2017

Forecast of Possible Cost Impacts of I-732
Applying Carbon Tax Without Reoptimizing Dispatch



I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2017	2018
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	1,713,521	1,724,021
<i>PSE Fleet emissions - from N:\Current\Federal &</i>		
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	5,331,083	5,397,450
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,323,826	1,327,174
<i>PSE Gas LDC emissions - N:\Current\Federal &</i>		
I-732 Carbon Tax (\$/Metric Ton) Without Inflation		
I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 15.00	\$ 25.00
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation		
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation	\$ 15.00	\$ 25.00

**Inflation Adder: <http://www.sightline.org/2014/10/30/the-1-question-from-progressives-about-reve>

Cost Without Inflation (\$/Year)

Added Cost to Electric Generation	\$ 25,702,818	\$ 43,100,522
Added Cost to Firm Load Gas LDC Delivery	\$ 79,966,245	\$ 134,936,242
Added Cost to Transport Gas LDC Delivery	\$ 19,857,384	\$ 33,179,354
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 99,823,630	\$ 168,115,596
Total Electric + Gas (\$/Year)	\$ 125,526,448	\$ 211,216,117

Cost With Inflation (\$/Year)

Added Cost to Electric Generation	\$ 25,702,818	\$ 43,100,522
Added Cost to Firm Load Gas LDC Delivery	\$ 79,966,245	\$ 134,936,242
Added Cost to Transport Gas LDC Delivery	\$ 19,857,384	\$ 33,179,354
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 99,823,630	\$ 168,115,596
Total Electric + Gas (\$/Year)	\$ 125,526,448	\$ 211,216,117

	2017	2018
Electric portfolio		
Net Market Purchases/(Sales) MWh	3,943,231	4,530,616
WECC Average CO2 (Tons/MWh)	0.422445291	0.414389902
Net Market Purchases/(Sales) Short Tons CO2	1,665,799	1,877,441
Net Market Purchases/(Sales) Metric Tons CO2		

	2017	2018
PSE Gas LDC Sales + Transport	\$ 99,823,630	\$ 168,115,596
PSE Electric Direct Emission Cost	\$ 25,702,818	\$ 43,100,522
PSE Electric Market Purchase Cost	\$ 59,148,467	\$ 113,265,397

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2019	2020
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	1,761,295	1,793,270
<i>State 2016\Sept 2016 Work - Final Rule\Aurora C</i>		
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	5,436,690	5,471,774
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,315,649	1,303,880
<i>State 2016\Sept 2016 Work - Final Rule\LDC Elec</i>		
I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 25.88	\$ 26.78
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 26.38	\$ 27.83

**Inflation Adder: <http://www.sightline.org/2014/10/30/the-nue-neutral-carbon-taxes/>

Cost Without Inflation (\$/Year)		
Added Cost to Electric Generation	\$ 45,573,516	\$ 48,024,901
Added Cost to Firm Load Gas LDC Delivery	\$ 140,674,363	\$ 146,537,522
Added Cost to Transport Gas LDC Delivery	\$ 34,042,417	\$ 34,918,714
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 174,716,780	\$ 181,456,237
Total Electric + Gas (\$/Year)	\$ 220,290,296	\$ 229,481,138
Cost With Inflation (\$/Year)		
Added Cost to Electric Generation	\$ 46,454,163	\$ 49,898,869
Added Cost to Firm Load Gas LDC Delivery	\$ 143,392,708	\$ 152,255,526
Added Cost to Transport Gas LDC Delivery	\$ 34,700,242	\$ 36,281,269
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 178,092,950	\$ 188,536,795
Total Electric + Gas (\$/Year)	\$ 224,547,113	\$ 238,435,663

Electric portfolio	2019	2020
Net Market Purchases/(Sales) MWh	4,349,160	4,086,349
WECC Average CO2 (Tons/MWh)	0.412320596	0.411068877
Net Market Purchases/(Sales) Short Tons CO2	1,793,248	1,679,771
Net Market Purchases/(Sales) Metric Tons CO2		

	2019	2020
PSE Gas LDC Sales + Transport	\$ 178,092,950	\$ 188,536,795
PSE Electric Direct Emission Cost	\$ 45,573,516	\$ 48,024,901
PSE Electric Market Purchase Cost	\$ 114,709,095	\$ 113,705,228

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2021	2022
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	1,895,376	1,786,263
<i>Input for CO2 price on WA plants - June 2016 final</i>		
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	5,522,861	5,579,093
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,294,091	1,283,042
<i>Electric ERU Need Washington vPJP4.xlsx</i>		
I-732 Carbon Tax (\$/Metric Ton) Without Inflation		
I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 27.72	\$ 28.69
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**		
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 29.36	\$ 30.97

**Inflation Adder: <http://www.sightline.org/2014/10/30/the->

Cost Without Inflation (\$/Year)		
Added Cost to Electric Generation	\$ 52,535,925	\$ 51,244,438
Added Cost to Firm Load Gas LDC Delivery	\$ 153,082,361	\$ 160,053,445
Added Cost to Transport Gas LDC Delivery	\$ 35,869,545	\$ 36,808,017
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 188,951,905	\$ 196,861,461
Total Electric + Gas (\$/Year)	\$ 241,487,830	\$ 248,105,899
Cost With Inflation (\$/Year)		
Added Cost to Electric Generation	\$ 55,640,716	\$ 55,321,656
Added Cost to Firm Load Gas LDC Delivery	\$ 162,129,290	\$ 172,787,955
Added Cost to Transport Gas LDC Delivery	\$ 37,989,379	\$ 39,736,614
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 200,118,669	\$ 212,524,569
Total Electric + Gas (\$/Year)	\$ 255,759,385	\$ 267,846,225

	2021	2022
Electric portfolio		
Net Market Purchases/(Sales) MWh	4,238,635	4,925,955
WECC Average CO2 (Tons/MWh)	0.405069426	0.399663793
Net Market Purchases/(Sales) Short Tons CO2	1,716,941	1,968,726
Net Market Purchases/(Sales) Metric Tons CO2		

	2021	2022
PSE Gas LDC Sales + Transport	\$ 200,118,669	\$ 212,524,569
PSE Electric Direct Emission Cost	\$ 52,535,925	\$ 51,244,438
PSE Electric Market Purchase Cost	\$ 124,429,504	\$ 152,559,876

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2023	2024
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	1,728,747	1,762,131
<i>il rule updates v2-2.xlsx</i>		
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	5,606,343	5,627,823
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,266,434	1,251,859
I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 29.69	\$ 30.73
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 32.67	\$ 34.47

**Inflation Adder: <http://www.sightline.org/2014/10/30/the->

Cost Without Inflation (\$/Year)		
Added Cost to Electric Generation	\$ 51,330,241	\$ 54,152,709
Added Cost to Firm Load Gas LDC Delivery	\$ 166,464,415	\$ 172,950,781
Added Cost to Transport Gas LDC Delivery	\$ 37,603,167	\$ 38,471,373
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 204,067,582	\$ 211,422,154
Total Electric + Gas (\$/Year)	\$ 255,397,823	\$ 265,574,863
Cost With Inflation (\$/Year)		
Added Cost to Electric Generation	\$ 56,485,093	\$ 60,742,526
Added Cost to Firm Load Gas LDC Delivery	\$ 183,181,646	\$ 193,997,077
Added Cost to Transport Gas LDC Delivery	\$ 41,379,475	\$ 43,152,935
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 224,561,121	\$ 237,150,012
Total Electric + Gas (\$/Year)	\$ 281,046,214	\$ 297,892,539

	2023	2024
Electric portfolio		
Net Market Purchases/(Sales) MWh	4,928,417	4,976,345
WECC Average CO2 (Tons/MWh)	0.400240507	0.400099303
Net Market Purchases/(Sales) Short Tons CO2	1,972,552	1,991,032
Net Market Purchases/(Sales) Metric Tons CO2		

	2023	2024
PSE Gas LDC Sales + Transport	\$ 224,561,121	\$ 237,150,012
PSE Electric Direct Emission Cost	\$ 51,330,241	\$ 54,152,709
PSE Electric Market Purchase Cost	\$ 161,031,108	\$ 171,539,938

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2025	2026
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	1,927,589	1,985,716
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	5,706,759	5,777,417
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,250,639	1,244,064
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I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 31.81	\$ 32.92
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 36.37	\$ 38.37

**Inflation Adder: <http://www.sightline.org/2014/10/30/the->

<i>Cost Without Inflation (\$/Year)</i>		
Added Cost to Electric Generation	\$ 61,310,777	\$ 65,370,207
Added Cost to Firm Load Gas LDC Delivery	\$ 181,514,785	\$ 190,193,882
Added Cost to Transport Gas LDC Delivery	\$ 39,779,063	\$ 40,954,859
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 221,293,848	\$ 231,148,741
Total Electric + Gas (\$/Year)	\$ 282,604,625	\$ 296,518,948
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<i>Cost With Inflation (\$/Year)</i>		
Added Cost to Electric Generation	\$ 70,100,576	\$ 76,186,275
Added Cost to Firm Load Gas LDC Delivery	\$ 207,537,593	\$ 221,663,110
Added Cost to Transport Gas LDC Delivery	\$ 45,481,975	\$ 47,731,196
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 253,019,568	\$ 269,394,306
Total Electric + Gas (\$/Year)	\$ 323,120,144	\$ 345,580,580

Electric portfolio	2025	2026
Net Market Purchases/(Sales) MWh	5,295,922	8,471,173
WECC Average CO2 (Tons/MWh)	0.395968788	0.389815976
Net Market Purchases/(Sales) Short Tons CO2	2,097,020	3,302,199
Net Market Purchases/(Sales) Metric Tons CO2		

	2025	2026
PSE Gas LDC Sales + Transport	\$ 253,019,568	\$ 269,394,306
PSE Electric Direct Emission Cost	\$ 61,310,777	\$ 65,370,207
PSE Electric Market Purchase Cost	\$ 192,596,701	\$ 325,014,889

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2027	2028
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	2,092,992	2,189,724
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	5,836,292	5,929,033
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,234,821	1,233,923
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I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 34.07	\$ 35.26
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 40.48	\$ 42.70

**Inflation Adder: <http://www.sightline.org/2014/10/30/the->

<i>Cost Without Inflation (\$/Year)</i>		
Added Cost to Electric Generation	\$ 71,313,331	\$ 77,220,558
Added Cost to Firm Load Gas LDC Delivery	\$ 198,856,668	\$ 209,087,182
Added Cost to Transport Gas LDC Delivery	\$ 42,073,341	\$ 43,514,239
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 240,930,009	\$ 252,601,420
Total Electric + Gas (\$/Year)	\$ 312,243,339	\$ 329,821,978
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<i>Cost With Inflation (\$/Year)</i>		
Added Cost to Electric Generation	\$ 84,718,783	\$ 93,509,134
Added Cost to Firm Load Gas LDC Delivery	\$ 236,237,668	\$ 253,191,142
Added Cost to Transport Gas LDC Delivery	\$ 49,982,271	\$ 52,692,947
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 286,219,939	\$ 305,884,089
Total Electric + Gas (\$/Year)	\$ 370,938,722	\$ 399,393,222

Electric portfolio	2027	2028
Net Market Purchases/(Sales) MWh	8,408,296	8,124,329
WECC Average CO2 (Tons/MWh)	0.390228666	0.389692367
Net Market Purchases/(Sales) Short Tons CO2	3,281,158	3,165,989
Net Market Purchases/(Sales) Metric Tons CO2		

	2027	2028
PSE Gas LDC Sales + Transport	\$ 286,219,939	\$ 305,884,089
PSE Electric Direct Emission Cost	\$ 71,313,331	\$ 77,220,558
PSE Electric Market Purchase Cost	\$ 340,345,580	\$ 346,938,187

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2029	2030
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	2,290,858	2,241,313
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	6,031,439	6,105,209
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,233,457	1,226,851
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I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 36.50	\$ 37.78
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 45.05	\$ 47.53

**Inflation Adder: <http://www.sightline.org/2014/10/30/the->

<i>Cost Without Inflation (\$/Year)</i>		
Added Cost to Electric Generation	\$ 83,614,594	\$ 84,669,447
Added Cost to Firm Load Gas LDC Delivery	\$ 220,142,963	\$ 230,634,732
Added Cost to Transport Gas LDC Delivery	\$ 45,020,261	\$ 46,346,405
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 265,163,224	\$ 276,981,138
Total Electric + Gas (\$/Year)	\$ 348,777,818	\$ 361,650,584
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<i>Cost With Inflation (\$/Year)</i>		
Added Cost to Electric Generation	\$ 103,208,459	\$ 106,530,027
Added Cost to Firm Load Gas LDC Delivery	\$ 271,730,267	\$ 290,181,705
Added Cost to Transport Gas LDC Delivery	\$ 55,570,105	\$ 58,312,462
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 327,300,372	\$ 348,494,167
Total Electric + Gas (\$/Year)	\$ 430,508,831	\$ 455,024,194

Electric portfolio	2029	2030
Net Market Purchases/(Sales) MWh	5,911,905	6,683,531
WECC Average CO2 (Tons/MWh)	0.390787144	0.390345842
Net Market Purchases/(Sales) Short Tons CO2	2,310,296	2,608,888
Net Market Purchases/(Sales) Metric Tons CO2		

	2029	2030
PSE Gas LDC Sales + Transport	\$ 327,300,372	\$ 348,494,167
PSE Electric Direct Emission Cost	\$ 83,614,594	\$ 84,669,447
PSE Electric Market Purchase Cost	\$ 266,344,957	\$ 317,669,470

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2031	2032
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	2,264,227	2,285,341
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	6,190,912	6,302,720
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,224,123	1,227,028
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I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 39.10	\$ 40.47
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 50.14	\$ 52.90

**Inflation Adder: <http://www.sightline.org/2014/10/30/the->

<i>Cost Without Inflation (\$/Year)</i>		
Added Cost to Electric Generation	\$ 88,528,785	\$ 92,481,733
Added Cost to Firm Load Gas LDC Delivery	\$ 242,057,859	\$ 255,054,442
Added Cost to Transport Gas LDC Delivery	\$ 47,861,867	\$ 49,654,575
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 289,919,726	\$ 304,709,017
Total Electric + Gas (\$/Year)	\$ 378,448,511	\$ 397,190,750
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<i>Cost With Inflation (\$/Year)</i>		
Added Cost to Electric Generation	\$ 113,538,181	\$ 120,899,777
Added Cost to Firm Load Gas LDC Delivery	\$ 310,439,242	\$ 333,428,278
Added Cost to Transport Gas LDC Delivery	\$ 61,382,852	\$ 64,912,570
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 371,822,095	\$ 398,340,848
Total Electric + Gas (\$/Year)	\$ 485,360,275	\$ 519,240,625

Electric portfolio	2031	2032
Net Market Purchases/(Sales) MWh	6,923,951	7,196,913
WECC Average CO2 (Tons/MWh)	0.389306076	0.379210432
Net Market Purchases/(Sales) Short Tons CO2	2,695,536	2,729,144
Net Market Purchases/(Sales) Metric Tons CO2		

	2031	2032
PSE Gas LDC Sales + Transport	\$ 371,822,095	\$ 398,340,848
PSE Electric Direct Emission Cost	\$ 88,528,785	\$ 92,481,733
PSE Electric Market Purchase Cost	\$ 347,196,990	\$ 380,733,153

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

	2033	2034
Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	2,384,512	2,426,531
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	6,411,988	6,500,039
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,228,074	1,224,175
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I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 41.88	\$ 43.35
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 55.81	\$ 58.88

**Inflation Adder: <http://www.sightline.org/2014/10/30/the->

Cost Without Inflation (\$/Year)		
Added Cost to Electric Generation	\$ 99,872,238	\$ 105,189,291
Added Cost to Firm Load Gas LDC Delivery	\$ 268,557,919	\$ 281,774,418
Added Cost to Transport Gas LDC Delivery	\$ 51,436,329	\$ 53,067,580
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 319,994,248	\$ 334,841,998
Total Electric + Gas (\$/Year)	\$ 419,866,486	\$ 440,031,289
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Cost With Inflation (\$/Year)		
Added Cost to Electric Generation	\$ 133,084,178	\$ 142,877,974
Added Cost to Firm Load Gas LDC Delivery	\$ 357,865,318	\$ 382,732,479
Added Cost to Transport Gas LDC Delivery	\$ 68,541,185	\$ 72,081,371
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 426,406,503	\$ 454,813,851
Total Electric + Gas (\$/Year)	\$ 559,490,682	\$ 597,691,825

Electric portfolio	2033	2034
Net Market Purchases/(Sales) MWh	7,072,158	7,195,470
WECC Average CO2 (Tons/MWh)	0.377825708	0.377287605
Net Market Purchases/(Sales) Short Tons CO2	2,672,043	2,714,762
Net Market Purchases/(Sales) Metric Tons CO2		

	2033	2034
PSE Gas LDC Sales + Transport	\$ 426,406,503	\$ 454,813,851
PSE Electric Direct Emission Cost	\$ 99,872,238	\$ 105,189,291
PSE Electric Market Purchase Cost	\$ 394,710,640	\$ 423,680,550

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).

I-732 Carbon Tax Cost Impacts to PSE Electric Gas Operations

2035

Electric Generation PSE Fleet, 2015 IRP Base + No CO2 w/NG Update (Metric Tons)	2,488,414
Gas LDC Forecasted PSE Firm Load Emissions (Metric Tons)	6,618,241
Gas LDC Forecasted Transport Emissions (Metric Tons)	1,217,277
I-732 Carbon Tax (\$/Metric Ton) Without Inflation	\$ 44.87
I-732 Carbon Tax (\$/Metric Ton) With 2% Inflation Adder**	\$ 62.12

**Inflation Adder: <http://www.sightline.org/2014/10/30/the->

Cost Without Inflation (\$/Year)	
Added Cost to Electric Generation	\$ 111,647,387
Added Cost to Firm Load Gas LDC Delivery	\$ 296,939,902
Added Cost to Transport Gas LDC Delivery	\$ 54,615,411
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 351,555,313
Total Electric + Gas (\$/Year)	\$ 463,202,700
Cost With Inflation (\$/Year)	
Added Cost to Electric Generation	\$ 154,580,401
Added Cost to Firm Load Gas LDC Delivery	\$ 411,125,513
Added Cost to Transport Gas LDC Delivery	\$ 75,617,284
Total Added Cost to Gas LDC Delivery (Firm + Transport) \$/year	\$ 486,742,797
Total Electric + Gas (\$/Year)	\$ 641,323,198

Electric portfolio	2035
Net Market Purchases/(Sales) MWh	7,441,003
WECC Average CO2 (Tons/MWh)	0.377711387
Net Market Purchases/(Sales) Short Tons CO2	2,810,552
Net Market Purchases/(Sales) Metric Tons CO2	

	2035
PSE Gas LDC Sales + Transport	\$ 486,742,797
PSE Electric Direct Emission Cost	\$ 111,647,387
PSE Electric Market Purchase Cost	\$ 462,235,498

Notes: Compliance in proposal begins July 1, 2017, tax adjustments made July 1 of each year (July 1 - June 30 schedule).

PSE Estimates based on operating year (January 1 - December 31).