



**Portland General Electric Company**  
121 SW Salmon Street • Portland, Oregon 97204  
PortlandGeneral.com

August 3, 2016

**Email / FedEx**

Public Utility Commission of Oregon  
Filing Center  
201 SE High Street  
P.O. Box 1088  
Salem, OR 97308-1088

**RE: UM 1788 – Supplemental PGE 2016 Revised Renewable Portfolio Implementation Plan**

Enclosed please find Portland General Electric Company's ("PGE") Supplemental 2016 Revised Renewable Portfolio Implementation Plan ("RPIP"). In PGE's original RPIP filing, we mentioned we would supplement this filing with additional sensitivities in each case. This filing revises Attachments C, E, and F. These revised attachments are submitted pursuant to Oregon Public Utility Commission (OPUC) Order No. 16-157 and OARs 860-083-0400 and 860-083-0100. These revised attachments provide information about how PGE will meet its future RPS requirements in light of the newly enacted SB 1547.

The Work Papers, sent under separate cover, contain protected information and are subject to treatment under the General Protective Order No. 16-262 due to their commercially sensitive nature.

If you have any questions or require further information, please call Rebecca Brown at (503) 464-8545 or Richard George at (503) 464-7611. Please direct all formal correspondence and requests to the following email addresses: [richard.george@pgn.com](mailto:richard.george@pgn.com) and [pge.opuc.filings@pgn.com](mailto:pge.opuc.filings@pgn.com)

Sincerely,

A handwritten signature in purple ink that reads "Patrick G. Hager".

Patrick G. Hager  
Manager, Regulatory Affairs

PGH/sp  
Enclosures

**Tab 1 - Incremental Cost Summary**  
Utilized REC Bank - Diverse Resources (No Unbundled RECs)

Base Case (RefGas-RefCO2)	Total Incremental Cost to Comply																								
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Biglow Canyon I	8,910,168	2,743,821	7,884,320	10,628,142	10,628,142	17,337,955	14,675,588	-	10,628,142	10,627,260	10,628,142	10,628,142	10,628,142	10,627,260	21,256,283	10,628,142	10,627,260	10,628,142	10,628,142	-	10,628,142	10,627,260	13,881,102	18,003,323	10,627,260
Biglow Canyon II	10,993,964	13,101,787	13,101,787	13,101,787	13,137,682	13,101,787	13,101,787	1,867,315	11,234,472	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682	26,203,574	13,101,787	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682
Biglow Canyon III	10,165,474	12,125,484	7,329,328	5,163,649	20,450,564	19,591,614	-	-	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	24,250,968	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	9,333,949	9,699,935	13,946,911	15,565,190	12,125,484	
Tucumson River	2,022,324	2,412,249	2,412,249	2,412,249	2,418,858	2,412,249	2,412,249	2,412,249	2,412,249	2,418,858	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	3,065,172	3,076,409	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,418,858
Generic RPS Resource 2018	-	-	-	-	-	-	-	(665,677)	(194,473)	(688,635)	(591,532)	(614,164)	(647,206)	(661,148)	(565,677)	(565,677)	(1,248,227)	(1,428,618)	(1,489,130)	(565,677)	(565,677)	(565,677)	(565,677)	(606,687)	(567,227)
Generic RPS Resource 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,469,182	3,469,182	3,469,182	3,469,182	3,469,182	3,469,182	3,469,182	3,469,182	3,469,182	3,469,182	3,478,687
Generic RPS Resource 2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(3,535,895)	(3,535,895)	(3,535,895)	(3,535,895)	(3,535,895)	(3,535,895)	(3,535,895)	(3,535,895)	(3,535,895)	(3,535,895)	(3,535,895)
Generic RPS Resource 2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Incremental Cost</b>	<b>\$ 32,091,930</b>	<b>\$ 30,383,341</b>	<b>\$ 30,727,695</b>	<b>\$ 31,305,826</b>	<b>\$ 46,635,246</b>	<b>\$ 48,443,604</b>	<b>\$ 42,215,108</b>	<b>\$ 3,713,896</b>	<b>\$ 36,212,483</b>	<b>\$ 37,677,261</b>	<b>\$ 41,145,307</b>	<b>\$ 41,122,680</b>	<b>\$ 41,096,246</b>	<b>\$ 42,006,635</b>	<b>\$ 76,136,666</b>	<b>\$ 38,288,195</b>	<b>\$ 37,714,933</b>	<b>\$ 36,772,330</b>	<b>\$ 36,711,618</b>	<b>\$ 27,809,192</b>	<b>\$ 38,843,937</b>	<b>\$ 43,078,594</b>	<b>\$ 47,921,525</b>	<b>\$ 48,563,040</b>	<b>\$ 21,055,508</b>
Revenue Requirement (\$000)	\$ 1,839,632	\$ 1,886,948	\$ 2,018,865	\$ 2,050,947	\$ 2,084,809	\$ 2,147,267	\$ 2,184,452	\$ 2,241,327	\$ 2,307,664	\$ 2,402,053	\$ 2,470,236	\$ 2,540,165	\$ 2,687,479	\$ 2,765,455	\$ 2,878,134	\$ 2,956,190	\$ 3,042,951	\$ 3,125,315	\$ 3,220,531	\$ 3,722,347	\$ 3,777,428	\$ 3,799,340	\$ 3,859,115	\$ 3,910,250	\$ 4,113,066
<b>Percentage of Rev Requirement</b>	<b>1.7%</b>	<b>1.6%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>2.2%</b>	<b>2.3%</b>	<b>1.9%</b>	<b>0.2%</b>	<b>1.6%</b>	<b>1.7%</b>	<b>1.6%</b>	<b>1.7%</b>	<b>1.5%</b>	<b>1.5%</b>	<b>2.6%</b>	<b>1.3%</b>	<b>1.2%</b>	<b>1.2%</b>	<b>1.1%</b>	<b>0.7%</b>	<b>1.0%</b>	<b>1.1%</b>	<b>1.2%</b>	<b>0.9%</b>	
<b>Case 2 (RefGas-NoCO2)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>
Biglow Canyon I	9,747,453	3,001,657	8,625,207	11,626,864	11,626,864	18,967,196	15,945,251	-	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	23,253,728	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864
Biglow Canyon II	11,877,309	14,167,378	14,167,378	14,167,378	14,206,193	14,167,378	14,167,378	2,019,187	12,148,192	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193	28,334,757	14,167,378	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193
Biglow Canyon III	10,453,127	13,661,410	8,257,729	5,817,725	23,041,022	17,566,592	-	-	13,661,410	13,668,839	13,661,410	13,661,410	13,661,410	13,661,410	27,322,820	13,661,410	13,668,839	13,661,410	13,661,410	10,516,273	10,917,352	15,712,633	17,536,810	13,661,410	13,668,839
Tucumson River	7,560,137	9,017,811	9,017,811	9,017,811	9,042,517	9,017,811	9,017,811	9,017,811	9,042,517	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	11,458,563	11,500,668	9,017,811	9,017,811	9,042,517	9,017,811	9,017,811	9,017,811	9,017,811	9,042,517
Generic RPS Resource 2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Incremental Cost</b>	<b>\$ 40,638,027</b>	<b>\$ 39,848,256</b>	<b>\$ 40,068,125</b>	<b>\$ 40,629,778</b>	<b>\$ 57,916,597</b>	<b>\$ 59,718,977</b>	<b>\$ 52,791,850</b>	<b>\$ 28,398,222</b>	<b>\$ 52,447,563</b>	<b>\$ 69,716,485</b>	<b>\$ 77,948,356</b>	<b>\$ 78,642,805</b>	<b>\$ 79,681,629</b>	<b>\$ 82,910,023</b>	<b>\$ 134,137,659</b>	<b>\$ 88,488,967</b>	<b>\$ 109,642,628</b>	<b>\$ 112,532,699</b>	<b>\$ 114,389,863</b>	<b>\$ 306,866,275</b>	<b>\$ 319,706,136</b>	<b>\$ 323,721,353</b>	<b>\$ 329,072,315</b>	<b>\$ 330,965,145</b>	<b>\$ 394,965,514</b>
Revenue Requirement (\$000)	\$ 1,839,632	\$ 1,886,948	\$ 2,018,865	\$ 2,050,947	\$ 2,084,809	\$ 2,147,267	\$ 2,184,452	\$ 2,241,327	\$ 2,307,664	\$ 2,402,053	\$ 2,470,236	\$ 2,540,165	\$ 2,687,479	\$ 2,765,455	\$ 2,878,134	\$ 2,956,190	\$ 3,042,951	\$ 3,125,315	\$ 3,220,531	\$ 3,722,347	\$ 3,777,428	\$ 3,799,340	\$ 3,859,115	\$ 3,910,250	\$ 4,113,066
<b>Percentage of Rev Requirement</b>	<b>2.2%</b>	<b>2.1%</b>	<b>2.0%</b>	<b>2.0%</b>	<b>2.8%</b>	<b>2.8%</b>	<b>2.4%</b>	<b>1.3%</b>	<b>2.3%</b>	<b>2.9%</b>	<b>3.2%</b>	<b>3.1%</b>	<b>3.0%</b>	<b>3.0%</b>	<b>4.7%</b>	<b>3.0%</b>	<b>3.6%</b>	<b>3.6%</b>	<b>3.6%</b>	<b>8.2%</b>	<b>8.5%</b>	<b>8.5%</b>	<b>8.5%</b>	<b>9.6%</b>	
<b>Case 3 (HighGas-RefCO2)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>
Biglow Canyon I	7,089,901	2,182,975	6,272,740	8,455,715	8,455,715	13,794,021	11,596,291	-	8,455,715	8,478,882	8,455,715	8,455,715	8,455,715	8,478,882	16,911,430	8,455,715	8,478,882	8,455,715	8,455,715	8,455,715	8,455,715	8,478,882	11,043,760	14,323,386	8,478,882
Biglow Canyon II	6,882,176	7,970,569	7,970,569	7,970,569	7,992,406	7,970,569	7,970,569	1,135,995	6,834,574	7,992,406	7,970,569	7,970,569	7,992,406	7,970,569	15,941,138	7,970,569	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406
Biglow Canyon III	6,043,262	7,208,466	4,357,205	3,068,732	12,157,635	9,269,462	-	-	7,208,466	7,208,466	7,208,466	7,208,466	7,208,466	7,208,466	14,416,932	7,208,466	7,208,466	7,208,466	7,208,466	5,548,930	5,760,559	8,209,797	9,258,328	7,208,466	7,228,215
Tucumson River	(8,255,451)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(12,512,529)	(12,598,397)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)
Generic RPS Resource 2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Incremental Cost</b>	<b>\$ 11,558,887</b>	<b>\$ 7,514,822</b>	<b>\$ 8,753,325</b>	<b>\$ 9,648,828</b>	<b>\$ 18,731,589</b>	<b>\$ 21,186,443</b>	<b>\$ 16,928,138</b>	<b>\$ (29,317,780)</b>	<b>\$ 5,540,293</b>	<b>\$ (11,233,394)</b>	<b>\$ (10,774,999)</b>	<b>\$ (11,599,262)</b>	<b>\$ (12,829,930)</b>	<b>\$ (13,969,488)</b>	<b>\$ (638,915)</b>	<b>\$ (24,640,227)</b>	<b>\$ (49,526,921)</b>	<b>\$ (53,410,276)</b>	<b>\$ (55,614,603)</b>	<b>\$ (168,982,098)</b>	<b>\$ (160,792,920)</b>	<b>\$ (157,761,349)</b>	<b>\$ (154,233,940)</b>	<b>\$ (154,493,100)</b>	<b>\$ (232,156,944)</b>
Revenue Requirement (\$000)	\$ 1,839,632	\$ 1,886,948	\$ 2,018,865	\$ 2,050,947	\$ 2,084,809	\$ 2,147,267	\$ 2,184,452	\$ 2,241,327	\$ 2,307,664	\$ 2,402,053	\$ 2,470,236	\$ 2,540,165	\$ 2,687,479	\$ 2,765,455	\$ 2,878,134	\$ 2,956,190	\$ 3,042,951	\$ 3,125,315	\$ 3,220,531	\$ 3,722,347	\$ 3,777,428	\$ 3,799,340	\$ 3,859,115	\$ 3,910,250	\$ 4,113,066
<b>Percentage of Rev Requirement</b>	<b>0.6%</b>	<b>0.4%</b>	<b>0.4%</b>	<b>0.5%</b>	<b>0.9%</b>	<b>1.0%</b>	<b>0.8%</b>	<b>-1.3%</b>	<b>0.2%</b>	<b>-0.5%</b>	<b>-0.4%</b>	<b>-0.5%</b>	<b>-0.5%</b>	<b>-0.5%</b>	<b>0.0%</b>	<b>-0.8%</b>	<b>-1.7%</b>	<b>-1.7%</b>	<b>-1.7%</b>	<b>-4.5%</b>	<b>-4.3%</b>	<b>-4.2%</b>	<b>-4.0%</b>	<b>-4.0%</b>	<b>-5.6%</b>
<b>Case 4 (HighGas-NoCO2)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>
Biglow Canyon I	8,397,731	2,586,020	7,430,881	10,016,902	10,016,902	16,340,823	13,737,325	-	10,016,902	10,044,345	10,016,902	10,016,902	10,016,902	10,044,345	20,										

Tab 2 - Incremental Cost for RECs Generated

Base Case (RefGas-RefCO2)	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	
Biglow Canyon I	10,657,260	10,628,142	10,628,142	10,628,142	10,657,260	10,628,142	10,628,142	10,628,142	10,657,260	10,628,142	10,628,142	10,628,142	10,657,260	10,628,142	10,628,142	10,628,142	10,657,260	10,628,142	10,628,142	10,628,142	10,657,260	10,628,142	10,628,142	10,628,142	10,628,142	10,657,260
Biglow Canyon II	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682	13,101,787	13,101,787	13,101,787	13,101,787	13,137,682
Biglow Canyon III	12,158,704	12,125,484	12,125,484	12,125,484	12,158,704	12,125,484	12,125,484	12,125,484	12,158,704	12,125,484	12,125,484	12,125,484	12,158,704	12,125,484	12,125,484	12,125,484	12,158,704	12,125,484	12,125,484	12,125,484	12,158,704	12,125,484	12,125,484	12,125,484	12,125,484	12,158,704
Tucannon River	2,418,858	2,412,249	2,412,249	2,412,249	2,418,858	2,412,249	2,412,249	2,412,249	2,418,858	2,412,249	2,412,249	2,412,249	2,418,858	2,412,249	2,412,249	2,412,249	2,418,858	2,412,249	2,412,249	2,412,249	2,418,858	2,412,249	2,412,249	2,412,249	2,412,249	2,418,858
Generic RPS Resource 2018	-	-	(565,677)	(565,677)	(567,227)	(565,677)	(565,677)	(565,677)	(567,227)	(565,677)	(565,677)	(565,677)	(567,227)	(565,677)	(565,677)	(565,677)	(567,227)	(565,677)	(565,677)	(565,677)	(567,227)	(565,677)	(565,677)	(565,677)	(565,677)	(567,227)
Generic RPS Resource 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic RPS Resource 2040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Incremental Cost</b>	<b>38,372,504</b>	<b>38,267,661</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,805,277</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,805,277</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,805,277</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,805,277</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,805,277</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,805,277</b>
<b>Case 2 (RefGas-NoCO2)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>	
Biglow Canyon I	11,658,719	11,626,864	11,626,864	11,626,864	11,658,719	11,626,864	11,626,864	11,626,864	11,658,719	11,626,864	11,626,864	11,626,864	11,658,719	11,626,864	11,626,864	11,626,864	11,658,719	11,626,864	11,626,864	11,626,864	11,658,719	11,626,864	11,626,864	11,626,864	11,658,719	
Biglow Canyon II	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193	14,167,378	14,167,378	14,167,378	14,206,193	
Biglow Canyon III	13,698,839	13,661,410	13,661,410	13,661,410	13,698,839	13,661,410	13,661,410	13,661,410	13,698,839	13,661,410	13,661,410	13,661,410	13,698,839	13,661,410	13,661,410	13,661,410	13,698,839	13,661,410	13,661,410	13,661,410	13,698,839	13,661,410	13,661,410	13,661,410	13,698,839	
Tucannon River	9,042,517	9,017,811	9,017,811	9,017,811	9,042,517	9,017,811	9,017,811	9,017,811	9,042,517	9,017,811	9,017,811	9,017,811	9,042,517	9,017,811	9,017,811	9,017,811	9,042,517	9,017,811	9,017,811	9,017,811	9,042,517	9,017,811	9,017,811	9,017,811	9,042,517	
Generic RPS Resource 2018	-	-	17,361,225	17,361,225	17,408,790	17,361,225	17,361,225	17,361,225	17,408,790	17,361,225	17,361,225	17,361,225	17,408,790	17,361,225	17,361,225	17,361,225	17,408,790	17,361,225	17,361,225	17,361,225	17,408,790	17,361,225	17,361,225	17,361,225	17,408,790	
Generic RPS Resource 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Generic RPS Resource 2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Generic RPS Resource 2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Generic RPS Resource 2040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Total Incremental Cost</b>	<b>48,606,267</b>	<b>48,473,463</b>	<b>65,834,688</b>	<b>65,834,688</b>	<b>66,015,057</b>	<b>65,834,688</b>	<b>65,834,688</b>	<b>65,834,688</b>	<b>66,015,057</b>	<b>77,154,700</b>	<b>77,154,700</b>	<b>77,154,700</b>	<b>77,366,083</b>	<b>77,154,700</b>	<b>77,154,700</b>	<b>77,154,700</b>	<b>77,366,083</b>	<b>77,154,700</b>	<b>77,154,700</b>	<b>77,154,700</b>	<b>77,366,083</b>	<b>77,154,700</b>	<b>77,154,700</b>	<b>77,154,700</b>	<b>77,366,083</b>	
<b>Case 3 (HighGas-RefCO2)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>	
Biglow Canyon I	8,478,882	8,455,715	8,455,715	8,455,715	8,478,882	8,455,715	8,455,715	8,455,715	8,478,882	8,455,715	8,455,715	8,455,715	8,478,882	8,455,715	8,455,715	8,455,715	8,478,882	8,455,715	8,455,715	8,455,715	8,478,882	8,455,715	8,455,715	8,455,715	8,478,882	
Biglow Canyon II	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406	
Biglow Canyon III	7,228,215	7,208,466	7,208,466	7,208,466	7,228,215	7,208,466	7,208,466	7,208,466	7,228,215	7,208,466	7,208,466	7,208,466	7,228,215	7,208,466	7,208,466	7,208,466	7,228,215	7,208,466	7,208,466	7,208,466	7,228,215	7,208,466	7,208,466	7,208,466	7,228,215	
Tucannon River	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	
Generic RPS Resource 2018	-	-	(20,606,586)	(20,606,586)	(20,663,042)	(20,606,586)	(20,606,586)	(20,606,586)	(20,663,042)	(20,606,586)	(20,606,586)	(20,606,586)	(20,663,042)	(20,606,586)	(20,606,586)	(20,606,586)	(20,663,042)	(20,606,586)	(20,606,586)	(20,606,586)	(20,663,042)	(20,606,586)	(20,606,586)	(20,606,586)	(20,663,042)	
Generic RPS Resource 2025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Generic RPS Resource 2030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Generic RPS Resource 2035	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Generic RPS Resource 2040	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Total Incremental Cost</b>	<b>13,825,336</b>	<b>13,787,562</b>	<b>(6,819,024)</b>	<b>(6,819,024)</b>	<b>(6,837,707)</b>	<b>(6,819,024)</b>	<b>(6,819,024)</b>	<b>(6,819,024)</b>	<b>(6,837,707)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	<b>(6,832,984)</b>	
<b>Case 2 (RefGas-NoCO2)</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>	<b>2034</b>	<b>2035</b>	<b>2036</b>	<b>2037</b>	<b>2038</b>	<b>2039</b>	<b>2040</b>	
Biglow Canyon I	10,044,345	10,016,902	10,016,902	10,016,902	10,044,345	10,016,902	10,016,902	10,016,902	10,044,345	10,016,902	10,016,902	10,016,902	10,044,345	10,016,902	10,016,902	10,016,902	10,044,345	10,016,902	10,016,902	10,016,902	10,044,345	10,016,902	10,016,902	10,016,902	10,044,345	
Biglow Canyon II	11,008,695	10,978,617	10,978,617	10,978,617	11,008,695	10,978,617	10,978,617	10,978,617	11,008,695	10,978,617	10,978,617	10,978,617	11,008,695	10,978,617	10,978,617	10,978,617	11,008,695	10,978,617	10,978,617	10,978,617	11,008,695	10,978,617	10,978,617	10,978,617	11,008,695	
Biglow Canyon III	10,447,884	10,419,338	10,419,338	10,419,338	10,447,884	10,419,338	10,419,338	10,419,338	10,447,884	10,419,338	10,419,338	10,419,338	10,447,884	10,419,338	10,419,338	10,419,338	10,447,884</									



**Tab 4 - Incremental Cost by Resource**  
Utilized Bank - Diverse Resources

		Expected Incremental Cost of Qualifying Electricity									
		\$/MWh				2017 Busbar Energy (MWh)	\$000's				
With Government Incentives:	Capacity	Base Case RefGas- RefCO2	Case 2 RefGas- NoCO2	Case 3 HighGas- RefCO2	Case 4 HighGas- NoCO2		Base Case RefGas- RefCO2	Case 2 RefGas- NoCO2	Case 3 HighGas- RefCO2	Case 4 HighGas- NoCO2	
	Biglow Canyon I	125	31.159	34.087	24.790	29.367	341,094	\$ 10,628	\$ 11,627	\$ 8,456	\$ 10,017
	Biglow Canyon II	150	29.435	31.829	17.907	24.665	445,109	\$ 13,102	\$ 14,167	\$ 7,971	\$ 10,979
	Biglow Canyon III	175	30.702	34.591	18.252	26.382	394,941	\$ 12,125	\$ 13,661	\$ 7,208	\$ 10,419
	Tucannon River	267	2.702	10.101	(11.030)	(0.380)	892,764	\$ 2,412	\$ 9,018	\$ (9,847)	\$ (339)
	Generic RPS Resource 2018	515	(0.369)	11.325	(13.442)	(0.352)					
	Generic RPS Resource 2025	113	10.311	33.645	(8.958)	15.650					
	Generic RPS Resource 2030	172	(9.387)	23.610	(32.234)	2.074					
	Generic RPS Resource 2035	2392	0.686	44.973	(26.132)	19.471					
	Generic RPS Resource 2040	763	(12.110)	43.247	(43.491)	13.420					



**Tab 6 - Energy Growth Rates**

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Growth Rate	0.43%	0.56%	0.48%	0.35%	0.42%	1.58%	1.23%	1.23%	1.27%	1.21%	1.25%	1.26%	1.29%	1.24%	1.27%	1.28%	1.31%	1.26%	1.30%	1.31%	1.33%	1.29%	1.32%	1.33%	1.36%

Streams of Revenue Requirement for New Resources

R5-UtilzBank-Diverse	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
2018	84,851	71,432	57,191	46,323	15,204	1,494	(5,899)	(14,898)	(22,006)	(28,914)	37,198	31,235	26,221	16,915	12,636	2,879	(1,466)	(8,933)	(14,026)	(24,359)	(30,791)	(41,694)	(49,152)
2025								28,514	25,625	21,478	18,266	16,307	13,552	11,725	10,593	8,520	7,550	5,378	4,395	2,726	1,579	(718)	(2,158)
2030													30,829	27,216	22,607	18,255	15,926	12,252	10,499	8,569	7,224	4,591	2,917
2035																	408,530	360,350	282,879	233,398	177,937	135,812	
2040																							127,741
	84,851	71,432	57,191	46,323	15,204	1,494	(5,899)	13,616	3,619	(7,435)	55,464	47,542	70,601	55,857	45,836	29,653	22,010	417,227	361,218	269,815	211,410	140,115	215,159



**Tab 1 - Incremental Cost Summary**  
Staged Build - All Wind Resources - No Unbundled RECs

		Total Incremental Cost to Comply																									
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	
<b>Base Case (RefGas-RefCO2)</b>																											
Unbundled RECS																											
Blow Canyon I		8,910,168	2,743,821	7,884,320	10,628,142	10,628,142	17,337,956	14,575,588	-	10,628,142	10,627,260	10,628,142	10,628,142	10,628,142	10,627,260	10,628,142	10,628,142	10,628,142	10,628,142	21,217,169	10,628,142	10,627,260	10,628,142	10,628,142	10,627,260	10,628,142	10,627,260
Blow Canyon II		10,983,964	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787	13,101,787
Blow Canyon III		10,185,474	12,125,484	7,320,428	5,183,849	20,450,564	15,591,614	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484	12,125,484
Tucannon River		2,029,324	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249	2,412,249
Generic Wind Resource 2018		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Wind Resource 2025		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2030		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2035		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2040		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Incremental Cost</b>		<b>\$ 32,081,930</b>	<b>\$ 30,383,341</b>	<b>\$ 30,727,685</b>	<b>\$ 31,305,826</b>	<b>\$ 46,635,246</b>	<b>\$ 48,443,604</b>	<b>\$ 42,215,108</b>	<b>\$ 3,713,898</b>	<b>\$ 36,212,483</b>	<b>\$ 37,877,261</b>	<b>\$ 41,145,267</b>	<b>\$ 41,122,680</b>	<b>\$ 41,096,246</b>	<b>\$ 42,006,635</b>	<b>\$ 45,814,971</b>	<b>\$ 46,820,988</b>	<b>\$ 58,801,080</b>	<b>\$ 67,259,047</b>	<b>\$ 45,128,113</b>	<b>\$ 30,687,603</b>	<b>\$ 30,209,863</b>	<b>\$ 29,364,174</b>	<b>\$ 29,366,536</b>	<b>\$ 29,258,049</b>	<b>\$ 29,258,049</b>	<b>\$ (27,446,220)</b>
Revenue Requirement (\$000)		\$ 1,839,632	\$ 1,886,948	\$ 2,018,865	\$ 2,050,947	\$ 2,084,809	\$ 2,147,267	\$ 2,184,452	\$ 2,241,327	\$ 2,307,664	\$ 2,402,053	\$ 2,470,236	\$ 2,540,165	\$ 2,687,478	\$ 2,765,455	\$ 3,010,736	\$ 3,073,252	\$ 3,140,186	\$ 3,203,833	\$ 3,289,034	\$ 3,522,280	\$ 3,599,630	\$ 3,661,176	\$ 3,745,778	\$ 3,819,902	\$ 4,165,496	
Percentage of Rev Requirement		1.7%	1.6%	1.5%	1.5%	2.2%	2.3%	1.9%	0.2%	1.8%	1.8%	1.7%	1.6%	1.5%	1.5%	1.5%	1.9%	2.1%	1.4%	0.9%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	-0.7%
<b>Case 2 (RefGas-NoCO2)</b>																											
Unbundled RECS																											
Blow Canyon I		8,747,453	3,001,657	8,625,207	11,626,864	11,626,864	16,967,196	15,945,251	-	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	23,210,927	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	11,626,864	
Blow Canyon II		11,877,309	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378	14,167,378
Blow Canyon III		11,453,127	13,661,410	8,257,729	5,817,225	23,041,022	17,566,592	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410	13,661,410
Tucannon River		7,560,137	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811	9,017,811
Generic Wind Resource 2018		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Wind Resource 2025		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2030		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2035		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2040		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Incremental Cost</b>		<b>\$ 40,638,027</b>	<b>\$ 39,848,256</b>	<b>\$ 40,068,125</b>	<b>\$ 40,629,778</b>	<b>\$ 57,916,597</b>	<b>\$ 59,718,977</b>	<b>\$ 52,791,850</b>	<b>\$ 28,398,222</b>	<b>\$ 52,447,563</b>	<b>\$ 69,716,485</b>	<b>\$ 77,948,356</b>	<b>\$ 78,642,805</b>	<b>\$ 79,681,629</b>	<b>\$ 82,910,023</b>	<b>\$ 149,449,507</b>	<b>\$ 153,058,463</b>	<b>\$ 162,201,548</b>	<b>\$ 171,650,474</b>	<b>\$ 147,060,256</b>	<b>\$ 222,917,714</b>	<b>\$ 238,165,597</b>	<b>\$ 239,399,113</b>	<b>\$ 241,168,077</b>	<b>\$ 242,656,182</b>	<b>\$ 243,075,200</b>	<b>\$ 243,075,200</b>
Revenue Requirement (\$000)		\$ 1,839,632	\$ 1,886,948	\$ 2,018,865	\$ 2,050,947	\$ 2,084,809	\$ 2,147,267	\$ 2,184,452	\$ 2,241,327	\$ 2,307,664	\$ 2,402,053	\$ 2,470,236	\$ 2,540,165	\$ 2,687,478	\$ 2,765,455	\$ 3,010,736	\$ 3,073,252	\$ 3,140,186	\$ 3,203,833	\$ 3,289,034	\$ 3,522,280	\$ 3,599,630	\$ 3,661,176	\$ 3,745,778	\$ 3,819,902	\$ 4,165,496	
Percentage of Rev Requirement		2.2%	2.1%	2.0%	2.0%	2.8%	2.8%	2.4%	0.8%	2.3%	2.9%	3.2%	3.1%	3.0%	3.0%	5.0%	5.2%	5.4%	4.5%	3.2%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
<b>Case 3 (HighGas-RefCO2)</b>																											
Unbundled RECS																											
Blow Canyon I		7,088,901	2,182,975	6,272,740	8,455,715	8,455,715	13,794,021	11,596,291	-	8,455,715	8,478,882	8,455,715	8,455,715	8,478,882	8,455,715	8,455,715	8,455,715	8,455,715	8,455,715	16,880,303	8,455,715	8,455,715	8,455,715	8,455,715	8,455,715	8,455,715	
Blow Canyon II		6,682,176	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569	7,970,569
Blow Canyon III		6,943,263	7,205,466	4,357,205	3,059,732	12,157,635	9,269,042	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466	7,205,466
Tucannon River		(8,255,451)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	(9,847,189)	
Generic Wind Resource 2018		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Wind Resource 2025		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2030		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2035		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Generic Solar Resource 2040		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Incremental Cost</b>		<b>\$ 11,558,887</b>	<b>\$ 7,514,822</b>	<b>\$ 8,753,325</b>	<b>\$ 9,648,828</b>	<b>\$ 16,731,589</b>	<b>\$ 21,186,443</b>	<b>\$ 16,928,138</b>	<b>\$ (29,317,780)</b>	<b>\$ 5,540,293</b>	<b>\$ (11,233,394)</b>	<b>\$ (10,774,999)</b>	<b>\$ (11,599,262)</b>	<b>\$ (12,829,930)</b>	<b>\$ (13,969,488)</b>	<b>\$ (52,194,204)</b>	<b>\$ (53,155,090)</b>	<b>\$ (43,451,490)</b>	<b>\$ (36,211,488)</b>	<b>\$ (51,483,894)</b>	<b>\$ (122,965,653)</b>	<b>\$ (140,696,360)</b>	<b>\$ (142,770,480)</b>	<b>\$ (144,870,118)</b>	<b>\$ (146,636,397)</b>	<b>\$ (146,636,397)</b>	<b>\$ (181,076,680)</b>
Revenue Requirement (\$000)		\$ 1,839,632	\$ 1,886,948	\$ 2,018,865	\$ 2,050,947	\$ 2,084,809	\$ 2,147,267	\$ 2,184,452	\$ 2,241,327	\$ 2,307,664	\$ 2,402,053	\$ 2,470,236	\$ 2,540,165	\$ 2,687,478	\$ 2,765,455	\$ 3,010,736	\$ 3,073,252	\$ 3,140,186	\$ 3,203,833	\$ 3,289,034	\$ 3,522,280	\$ 3,599,630	\$ 3,661,176	\$ 3,745,778	\$ 3,819,902	\$ 4,165,496	
Percentage of Rev Requirement		0.6%	0.4%	0.4%	0.5%	0.9%	1.0%	0.8%	-1.3%	0.2%	-0.5%	-0.4%	-0.5%	-0.5%	-0.5%	-1.7%	-1.7%	-1.4%	-1.1%	-1.6%	-3.5%	-3.9%	-3.9%	-3.9%	-3.9%	-6.8%	
<b>Case 4 (HighGas-NoCO2)</b>																											
Unbundled RECS																											
Blow Canyon I		8,402,592	2,587,517	7,435,183	10,022,700	10,022,700	16,350,283	13,745,277	-	10,022,700	10,050,180	10,022,700	10,022,700	10,022,700	10,050,180	10,022,700	10,022,700	10,022,700	10,022,700	20,088,505	10,087,955	10,022,700	10,050,180	10,022,700	10		

Tab 2 - Incremental Cost for RECs Generated

Base Case (RefGas-RefCO2)	2016	2017	2018	2019	2020	2021
Biglow Canyon I	10,657,260	10,628,142	10,628,142	10,628,142	10,657,260	10,628,142
Biglow Canyon II	13,137,682	13,101,787	13,101,787	13,101,787	13,137,682	13,101,787
Biglow Canyon III	12,158,704	12,125,484	12,125,484	12,125,484	12,158,704	12,125,484
Tucannon River	2,418,858	2,412,249	2,412,249	2,412,249	2,418,858	2,412,249
Generic Wind Resource 2018	-	-	(565,677)	(565,677)	(567,227)	(565,677)
Generic Wind Resource 2025	-	-	-	-	-	-
Generic Solar Resource 2030	-	-	-	-	-	-
Generic Solar Resource 2035	-	-	-	-	-	-
Generic Solar Resource 2040	-	-	-	-	-	-
<b>Total Incremental Cost</b>	<b>38,372,504</b>	<b>38,267,661</b>	<b>37,701,984</b>	<b>37,701,984</b>	<b>37,805,277</b>	<b>37,701,984</b>

  

Case 2 (RefGas-NoCO2)	2016	2017	2018	2019	2020	2021
Unbundled RECS	-	-	-	-	-	-
Biglow Canyon I	11,658,719	11,626,864	11,626,864	11,626,864	11,658,719	11,626,864
Biglow Canyon II	13,843,706	14,167,378	14,167,378	14,167,378	14,206,103	14,167,378
Biglow Canyon III	16,529,556	13,661,410	13,661,410	13,661,410	13,698,839	13,661,410
Tucannon River	7,678,299	9,017,811	9,017,811	9,017,811	9,042,517	9,017,811
Generic Wind Resource 2018	-	-	17,361,225	17,361,225	17,408,790	17,361,225
Generic Wind Resource 2025	-	-	-	-	-	-
Generic Solar Resource 2030	-	-	-	-	-	-
Generic Solar Resource 2035	-	-	-	-	-	-
Generic Solar Resource 2040	-	-	-	-	-	-
<b>Total Incremental Cost</b>	<b>49,810,279</b>	<b>48,473,463</b>	<b>65,834,688</b>	<b>65,834,688</b>	<b>66,015,057</b>	<b>65,834,688</b>

  

Case 3 (HighGas-RefCO2)	2016	2017	2018	2019	2020	2021
Biglow Canyon I	8,478,882	8,455,715	8,455,715	8,455,715	8,478,882	8,455,715
Biglow Canyon II	7,992,406	7,970,569	7,970,569	7,970,569	7,992,406	7,970,569
Biglow Canyon III	7,228,215	7,208,466	7,208,466	7,208,466	7,228,215	7,208,466
Tucannon River	(9,874,167)	(9,847,189)	(9,847,189)	(9,847,189)	(9,874,167)	(9,847,189)
Generic Wind Resource 2018	-	-	(20,606,586)	(20,606,586)	(20,663,042)	(20,606,586)
Generic Wind Resource 2025	-	-	-	-	-	-
Generic Solar Resource 2030	-	-	-	-	-	-
Generic Solar Resource 2035	-	-	-	-	-	-
Generic Solar Resource 2040	-	-	-	-	-	-
<b>Total Incremental Cost</b>	<b>13,825,336</b>	<b>13,787,562</b>	<b>(6,819,024)</b>	<b>(6,819,024)</b>	<b>(6,837,707)</b>	<b>(6,819,024)</b>

  

Case 2 (RefGas-NoCO2)	2016	2017	2018	2019	2020	2021
Biglow Canyon I	10,050,160	10,022,700	10,022,700	10,022,700	10,050,160	10,022,700
Biglow Canyon II	11,027,887	10,997,756	10,997,756	10,997,756	11,027,887	10,997,756
Biglow Canyon III	10,464,913	10,436,320	10,436,320	10,436,320	10,464,913	10,436,320
Tucannon River	(311,533)	(310,682)	(310,682)	(310,682)	(311,533)	(310,682)
Generic Wind Resource 2018	-	-	(617,799)	(617,799)	(619,492)	(617,799)
Generic Wind Resource 2025	-	-	-	-	-	-
Generic Solar Resource 2030	-	-	-	-	-	-
Generic Solar Resource 2035	-	-	-	-	-	-
Generic Solar Resource 2040	-	-	-	-	-	-
<b>Total Incremental Cost</b>	<b>31,231,427</b>	<b>31,146,095</b>	<b>30,528,296</b>	<b>30,528,296</b>	<b>30,611,935</b>	<b>30,528,296</b>

**Notes:**  
 Although the ETO and other solar projects produce RECs that PGE uses for compliance, until the sum of these projects is 50 MW, and included in a Compliance Report, they are not included in the incremental cost calculation (pursuant to OAR 860-063-0100(13)(a)).  
 In addition, the following RPS resources are deemed to be zero incremental cost because they are either low-impact hydro or had an in-service date prior to June 6, 2007 (pursuant to OAR 860-063-0100(1)(i)):  
 North Fork Upgrade  
 Faraday Upgrade  
 Round Butte Upgrade  
 Pelton-Round Butte Low-Impact Hydro  
 PNM Klamath II  
 Vansycle Ridge

Tab 3 - Annual Compliance by Resource

Resource	2016		2017		2018		2019		2020	
	MWh	Vintage	MWh	Vintage	MWh	Vintage	MWh	Vintage	MWh	Vintage
Low Impact Hydro	-	2007	-	2007	-	2007	-	2007	-	2007
Biogas	-	2007	-	2007	-	2007	-	2007	-	2007
Biglow Canyon I	-	2007	-	2007	-	2007	-	2007	-	2007
Biglow Canyon II	-	2007	-	2007	-	2007	-	2007	-	2007
Biglow Canyon III	-	2007	-	2007	-	2007	-	2007	-	2007
Tusamnon River	-	2007	-	2007	-	2007	-	2007	-	2007
Vansycle Ridge	-	2007	-	2007	-	2007	-	2007	-	2007
PPM Klondike II	-	2007	-	2007	-	2007	-	2007	-	2007
Hydro Upgrades	-	2007	-	2007	-	2007	-	2007	-	2007
enXco Solar	-	2007	-	2007	-	2007	-	2007	-	2007
SPO Solar	-	2007	-	2007	-	2007	-	2007	-	2007
Outback Solar	-	2007	-	2007	-	2007	-	2007	-	2007
ETO and Other Solar	-	2007	-	2007	-	2007	-	2007	-	2007
2018 Addition	-	2007	-	2007	-	2007	-	2007	-	2007
2025 Addition	-	2007	-	2007	-	2007	-	2007	-	2007
2030 Addition	-	2007	-	2007	-	2007	-	2007	-	2007
2035 Addition	-	2007	-	2007	-	2007	-	2007	-	2007
2040 Addition	-	2007	-	2007	-	2007	-	2007	-	2007
Purchased Bundled	-	2007	-	2007	-	2007	-	2007	-	2007
Unbundled RECs	-	2007	-	2007	-	2007	-	2007	-	2007
Low Impact Hydro	-	2008	-	2008	-	2008	-	2008	-	2008
Biogas	-	2008	-	2008	-	2008	-	2008	-	2008
Biglow Canyon I	-	2008	-	2008	-	2008	-	2008	-	2008
Biglow Canyon II	-	2008	-	2008	-	2008	-	2008	-	2008
Biglow Canyon III	-	2008	-	2008	-	2008	-	2008	-	2008
Tusamnon River	-	2008	-	2008	-	2008	-	2008	-	2008
Vansycle Ridge	-	2008	-	2008	-	2008	-	2008	-	2008
PPM Klondike II	-	2008	-	2008	-	2008	-	2008	-	2008
Hydro Upgrades	-	2008	-	2008	-	2008	-	2008	-	2008
enXco Solar	-	2008	-	2008	-	2008	-	2008	-	2008
SPO Solar	-	2008	-	2008	-	2008	-	2008	-	2008
Outback Solar	-	2008	-	2008	-	2008	-	2008	-	2008
ETO and Other Solar	-	2008	-	2008	-	2008	-	2008	-	2008
2018 Addition	-	2008	-	2008	-	2008	-	2008	-	2008
2025 Addition	-	2008	-	2008	-	2008	-	2008	-	2008
2030 Addition	-	2008	-	2008	-	2008	-	2008	-	2008
2035 Addition	-	2008	-	2008	-	2008	-	2008	-	2008
2040 Addition	-	2008	-	2008	-	2008	-	2008	-	2008
Purchased Bundled	-	2008	-	2008	-	2008	-	2008	-	2008
Unbundled RECs	-	2008	-	2008	-	2008	-	2008	-	2008
Low Impact Hydro	-	2009	-	2009	-	2009	-	2009	-	2009
Biogas	-	2009	-	2009	-	2009	-	2009	-	2009
Biglow Canyon I	-	2009	-	2009	-	2009	-	2009	-	2009
Biglow Canyon II	-	2009	-	2009	-	2009	-	2009	-	2009
Biglow Canyon III	-	2009	-	2009	-	2009	-	2009	-	2009
Tusamnon River	-	2009	-	2009	-	2009	-	2009	-	2009
Vansycle Ridge	-	2009	-	2009	-	2009	-	2009	-	2009
PPM Klondike II	-	2009	-	2009	-	2009	-	2009	-	2009
Hydro Upgrades	-	2009	-	2009	-	2009	-	2009	-	2009
enXco Solar	-	2009	-	2009	-	2009	-	2009	-	2009
SPO Solar	-	2009	-	2009	-	2009	-	2009	-	2009
Outback Solar	-	2009	-	2009	-	2009	-	2009	-	2009
ETO and Other Solar	-	2009	-	2009	-	2009	-	2009	-	2009
2018 Addition	-	2009	-	2009	-	2009	-	2009	-	2009
2025 Addition	-	2009	-	2009	-	2009	-	2009	-	2009
2030 Addition	-	2009	-	2009	-	2009	-	2009	-	2009

**Tab 4 - Incremental Cost by Resource**  
 Staged Build - All Wind Resources

		Expected Incremental Cost of Qualifying Electricity								
		\$/MWh					\$/000's			
Base Case	Case 2	Case 3	Case 4		Base Case	Case 2	Case 3	Case 4		
RefGas- RefCO2	RefGas- NoCO2	HighGas- RefCO2	HighGas- NoCO2	2017 Busbar Energy (MWh)	RefGas- RefCO2	RefGas- NoCO2	HighGas- RefCO2	HighGas- NoCO2		
<b>Staged Build</b>	<b>Capacity</b>									
Biglow Canyon I	125	31.159	34.087	24.790	29.384					
Biglow Canyon II	150	29.435	31.829	17.907	24.708	341,094	\$ 10,628	\$ 11,627	\$ 8,456	\$ 10,023
Biglow Canyon III	175	30.702	34.591	18.252	26.425	445,109	\$ 13,102	\$ 14,167	\$ 7,971	\$ 10,998
Tucannon River	267	2.702	10.101	(11.030)	(0.348)	394,941	\$ 12,125	\$ 13,861	\$ 7,208	\$ 10,436
Generic RPS Resource 2018 (W)	515	(0.369)	11.325	(13.442)	(0.403)	892,764	\$ 2,412	\$ 9,018	\$ (9,847)	\$ (311)
Generic RPS Resource 2025 (W)	113	10.311	33.645	(8.958)	15.591					
Generic RPS Resource 2030 (W)	671	1.947	34.963	(20.881)	13.362					
Generic RPS Resource 2035 (W)	674	(7.548)	36.739	(34.366)	11.165					
Generic RPS Resource 2040 (W)	1105	(17.427)	37.000	(48.806)	8.024					





Tab 6 - Energy Growth Rates

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Growth Rate	0.43%	0.56%	0.48%	0.35%	0.42%	1.58%	1.23%	1.23%	1.27%	1.21%	1.25%	1.26%	1.29%	1.24%	1.27%	1.28%	1.31%	1.26%	1.30%	1.31%	1.33%	1.29%	1.32%	1.33%	1.36%

|



Streams of Revenue Requirement for New Resources		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	
RR-Standard-Wind																									
2018	84851.24	71432.19	57190.68	46323.11	15203.68	1493.733	-5899.41	(14,898)	-22005.9	-28913.5	37198.24	31235.46	26220.8	16915.01	12635.52	2878.634	-1466.44	-8933.16	-14025.6	-24359.1	-30791.4	-41693.9	-49151.8		
2025								28,514	25624.78	21478.25	18266.1	16306.89	13551.51	11725.31	10593.46	8519.839	7550.042	5378.047	4394.533	2726.033	1579.157	-718	-2158.27		
2030												163430.8	144278.9	119841.5	96772.6	84428.8	64950.54	55656.18	45427.61	38294.62	24335.27	15461.15			
2035																	155765.6	137395.3	107656.9	88990.7	67844.13	51732.79			
2040																								251655.1	
	84,851	71,432	57,191	46,323	15,204	1,494	(5,899)	13,616	3,619	(7,435)	55,464	47,542	203,203	172,919	143,071	108,171	90,512	217,161	183,420	131,651	98,073	49,768	267,589		





<b>2040</b>
10,657,260
13,137,682
12,158,704
2,418,858
(567,227)
3,478,687
588,853
(40,399,531)
(29,591,889)
<b>(28,118,603)</b>

<b>2040</b>
11,658,719
14,206,193
13,698,839
9,042,517
17,408,790
11,351,025
13,059,392
192,232,640
63,140,531
<b>345,798,646</b>

<b>2040</b>
8,478,882
7,992,406
13,698,839
9,042,517
17,408,790
11,351,025
13,059,392
192,232,640
63,140,531
<b>336,405,022</b>

<b>2040</b>
10,044,345
11,008,695
10,447,884
(94,018)
(541,094)
5,279,939
4,924,987
58,274,916
13,176,892
<b>112,582,548</b>



**Tab 4 - Incremental Cost by Resource**  
 Utilized Bank - All Wind

		Expected Incremental Cost of Qualifying Electricity								
		\$/MWh				2017 Busbar Energy (MWh)	\$/000's			
Base Case RefGas- RefCO2	Case 2 RefGas- NoCO2	Case 3 HighGas- RefCO2	Case 4 HighGas- NoCO2		Base Case RefGas- RefCO2		Case 2 RefGas- NoCO2	Case 3 HighGas- RefCO2	Case 4 HighGas- NoCO2	
<b>With Government Incentives:</b>	<b>Capacity</b>									
Biglow Canyon I	125	31.159	34.087	24.790	29.367	341,094	10,628	11,627	8,456	10,017
Biglow Canyon II	150	29.435	31.829	17.907	24.665	445,109	13,102	14,167	7,971	10,979
Biglow Canyon III	175	30.702	34.591	18.252	26.382	394,941	12,125	13,661	7,208	10,419
Tucaronon River	267	2.702	10.101	(11.030)	(0.038)	892,764	2,412	9,018	(9,847)	(34)
Generic RPS Resource 2018	515	(0.369)	11.325	(13.442)	(0.352)					
Generic RPS Resource 2025	113	10.311	33.645	(8.958)	15.650					
Generic RPS Resource 2030	671	1.559	34.575	(21.269)	13.039					
Generic RPS Resource 2035	371	(7.691)	36.596	(34.510)	11.094					
Generic RPS Resource 2040	1105	(17.665)	37.692	(49.046)	7.866					







Tab 6 - Energy Growth Rates

Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Growth Rate	0.43%	0.56%	0.48%	0.35%	0.42%	1.58%	1.23%	1.23%	1.27%	1.21%	1.25%	1.26%	1.29%	1.24%	1.27%	1.28%	1.31%	1.26%	1.30%	1.31%	1.33%	1.29%	1.32%	1.33%	1.36%

Streams of Revenue Requirement for New Resources																								
RS-Unit/Ba	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	
2016	84,851	71,432	57,191	46,323	15,204	1,494	(5,899)	(14,898)	(22,006)	(28,914)	37,198	31,235	26,221	16,915	12,636	2,879	(1,466)	(6,333)	(14,026)	(24,359)	(30,791)	(41,694)	(49,152)	
2025							28,514	26,625	21,478	18,266	16,307	13,552	11,725	10,593	8,520	7,550	5,378	4,395	2,726	1,579	(718)	(2,158)		
2030													30,829	27,216	22,607	18,255	15,926	12,252	10,499	8,569	7,224	4,591	2,917	
2035																	408,530	360,350	282,879	233,398	177,937	135,812	127,741	
2040																								
	84,851	71,432	57,191	46,323	15,204	1,494	(5,899)	13,616	3,619	(7,435)	55,464	47,542	70,601	55,857	45,836	29,653	22,010	417,227	361,218	269,815	211,410	140,115	215,159	