



e-FILING REPORT COVER SHEET

COMPANY NAME: Pacific Power

DOES REPORT CONTAIN CONFIDENTIAL INFORMATION? No Yes If yes, submit a redacted public version (or a cover letter) by email. Submit the confidential information as directed in OAR 860-001-0070 or the terms of an applicable protective order.

Select report type: RE (Electric) RG (Gas) RW (Water) RT (Telecommunications)
 RO (Other, for example, industry safety information)

Did you previously file a similar report? No Yes, report docket number: RE 84

Report is required by: OAR 860-085-0050

Statute

Order

Note: A one-time submission required by an order is a compliance filing and not a report (file compliance in the applicable docket)

Other

(For example, federal regulations, or requested by Staff)

Is this report associated with a specific docket/case? No Yes, docket number: RE 84

List Key Words for this report. We use these to improve search results.

Biennial Greenhouse Gas Emissions Rate Impact Report; Greenhouse Gas Emissions Rate Impact Report

Send the completed Cover Sheet and the Report in an email addressed to PUC.FilingCenter@state.or.us

Send confidential information, voluminous reports, or energy utility Results of Operations Reports to PUC Filing Center, PO Box 1088, Salem, OR 97308-1088 or by delivery service to 201 High Street SE Suite 100, Salem, OR 97301.



825 NE Multnomah, Suite 2000
Portland, Oregon 97232

June 29, 2018

***VIA ELECTRONIC FILING
AND OVERNIGHT DELIVERY***

Public Utility Commission of Oregon
201 High Street SE, Suite 100
Salem, OR 97301-1166

Attention: Filing Center

Re: RE 84 – Biennial Greenhouse Gas Emissions Rate Impact Report

Pursuant to OAR 860-085-0050, PacifiCorp d/b/a Pacific Power hereby submits the attached Biennial Greenhouse Gas Emissions Rate Impact Report.

The confidential information in this report is provided under separate cover per OAR 860-001-0070.

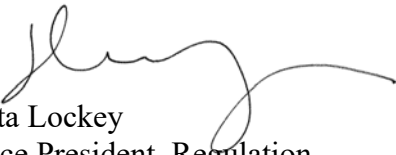
It is respectfully requested that all formal data requests regarding this filing be addressed to:

By e-mail (preferred): datarequest@pacificorp.com

By regular mail: Data Request Response Center
PacifiCorp
825 NE Multnomah, Suite 2000
Portland, Oregon 97232

Informal inquiries regarding this filing may be directed to Natasha Siores at (503) 813-6583.

Sincerely,



Etta Lockey
Vice President, Regulation

Enclosure

Rate Impacts of Meeting Oregon Senate Bill 101 Carbon Dioxide Emission Goals

June 29, 2018

STUDY DESIGN

PacifiCorp conducted its analysis of Oregon Senate Bill (SB) 101 using its capacity expansion optimization model, System Optimizer (SO), to develop a base resource portfolio. To develop the base resource portfolio, PacifiCorp re-optimized its' 2017 IRP Update preferred portfolio to account for the impact of updated market prices using the most recent official forward price curve dated March 31, 2018. The base resource portfolio reports reductions of CO₂ emissions that are at least 10 percent below 1990 levels by 2020 and 15 percent below 2005 levels by 2020. Since the base resource portfolio meets the emission goals without needing to add further emission constraints, the estimated rate impacts associated with achieving the targeted CO₂ emission reductions is zero, and thus no further studies are required.

Potential expansion resource options available in the current study are the same as those used in the development of the 2017 IRP Update. No retirements and/or conversions of coal units to operate as natural gas facilities beyond those assumed in the 2017 IRP Update are included in the analysis. Consistent with the approach in PacifiCorp's 2016 filing, resources that are not currently commercially available or financially viable are not included in the resource portfolio during the 2018 through 2020 study period covered by this analysis.

ASSUMPTIONS

Table 1 - Study Assumptions

Assumption	Base Case	Hard Cap Scenarios	Comments
Revenue requirement forecast	[Confidential Begins]	[Confidential Ends]	Fall 2017 ten-year business plan ¹ forecast of multi-state process base line revenue requirement (millions of dollars).
Oregon customer forecast		2018 584,875 2019 588,524 2020 591,514	2017 IRP Update forecast of Oregon customers.
CO ₂ : 1990 baseline emissions	N/A	<ul style="list-style-type: none"> Emissions from owned generation per actual 1990 CO₂ emissions from fossil units. Emissions from 1990 market purchases are estimated assuming a CO₂ emission rate of 900 lbs/MWh. 	The 1990 CO ₂ emissions baseline accounts for the sale of Centralia and changes in other ownership positions. The emission rate for market purchases reflects study preparation guidelines from the Oregon Commission staff.
CO ₂ : 2005 baseline emissions	N/A	<ul style="list-style-type: none"> Emissions for owned generation and purchases per 2005 California Climate Action Registry (CCAR) filing. CO₂ emissions from market purchases are estimated assuming a CO₂ emission rate of 900 lbs/MWh. 	The emission rate for market purchases reflects study preparation guidelines from the Oregon Commission staff.

¹ The 2017 ten-year business plan, which covers the 2018 to 2027 planning horizon, was finalized in the fall of 2017.

Assumption	Base Case	Hard Cap Scenarios	Comments												
CO ₂ : yearly emissions targets	N/A	Annual emission limits starting 2018. Annual Emission Limits (thousands of tons) <table border="1" data-bbox="968 358 1398 542"> <thead> <tr> <th data-bbox="968 358 1052 418">Year</th> <th data-bbox="1052 358 1251 418">Scenario 1 (1990)</th> <th data-bbox="1251 358 1398 418">Scenario 2 (2005)</th> </tr> </thead> <tbody> <tr> <td data-bbox="968 418 1052 456">2018</td> <td data-bbox="1052 418 1251 456">49,283</td> <td data-bbox="1251 418 1398 456">52,354</td> </tr> <tr> <td data-bbox="968 456 1052 493">2019</td> <td data-bbox="1052 456 1251 493">45,661</td> <td data-bbox="1251 456 1398 493">51,803</td> </tr> <tr> <td data-bbox="968 493 1052 542">2020</td> <td data-bbox="1052 493 1251 542">44,890</td> <td data-bbox="1251 493 1398 542">51,800</td> </tr> </tbody> </table>	Year	Scenario 1 (1990)	Scenario 2 (2005)	2018	49,283	52,354	2019	45,661	51,803	2020	44,890	51,800	Yearly targets represent a linear reduction from 2017 historical values (adjusted for purchases and sales) to the 2020 target. <ul style="list-style-type: none"> • Scenario 1 is based on Oregon HB 3543 emission level targets (10 percent below 1990 levels). • Scenario 2 reflects Western Climate Initiative (WCI) emission targets (15 percent below 2005 levels).
Year	Scenario 1 (1990)	Scenario 2 (2005)													
2018	49,283	52,354													
2019	45,661	51,803													
2020	44,890	51,800													
Existing and expansion resources	Existing and expansion resources have CO ₂ emission assumptions specific to the particular technology of each resource.														
Market sales and purchases	Market purchases have a CO ₂ emission rate of 900 lbs/MWh.														

STUDY RESULTS

Estimated Revenue Requirement Impacts

Table 2 presents the estimated customer impact for the study period of 2018 through 2020, on a total and average annual basis for the two scenarios: Scenario 1 (10 percent below 1990 levels by 2020), and Scenario 2 (15 percent below 2005 levels by 2020). The baseline revenue requirement forecast is based on the Company’s 2017 ten-year business plan. The determination of customer impact assumes that all costs incurred to reach the Oregon goals set in Scenario 1 and Scenario 2 would be recovered from customers in Oregon. Appendix A provides a line item breakdown of resource portfolio costs from the SO model. Note that these rate impacts do not include potential costs associated with failing to meet applicable minimum-take provisions in the Company’s coal supply contracts when coal generation is potentially reduced beyond the minimum-take levels.

Table 2 – Customer Impact of Scenarios 1 and 2

		Scenario 1 (1990)	Scenario 2 (2005)
Customer Impact (%)	2018-2020	0.00%	0.00%
	Average Annual	0.00%	0.00%
Customer Impact (\$/customer)	2018-2020	\$0.00	\$0.00
	Average Annual	\$0.00	\$0.00

Portfolio Resource Selection and Utilization

Tables 3 reports the resources in the base resource portfolio over the three-year study period. Model results show that the CO₂ emission reduction goals for Scenarios 1 and 2 are met largely through the dispatch of existing and expansion resources along with incremental acquisition of demand-side management (DSM) resources. Table 4 shows simple average annual capacity factors for coal resources and Combined Cycle Combustion (CCCT) resources.

Table 3 - Base Resource Portfolio (MW)

		2018	2019	2020	Resource Totals 1/ 3-year
East	Resource				
	Existing Plant Retirements/Conversions				
	Cholla 4 (Coal Early Retirement/Conversions)	-	-	-	-
	Naughton 3 (Coal Early Retirement/Conversions)	-	(280)	-	(280)
	Gadsby 1-6	-	-	-	-
	Expansion Resources				
	251C-Cedar Springs WD - 2	-	-	-	-
	100B-Ekola Flats WD - 1 (P)	-	-	250	250
	102B-TB Flats WD - 3 (P)	-	-	500	500
	245B-Uinta WD Energy Center - 2	-	-	161	161
	Total Wind	-	-	911	911
	DSM, Class 2, ID	6	6	5	17
	DSM, Class 2, UT	51	58	56	165
	DSM, Class 2, WY	10	10	10	30
	DSM, Class 2 Total	67	74	71	212
Battery Storage - East	-	1.0	-	1	
West	Expansion Resources				
	DSM, Class 2, CA	1	1	2	4
	DSM, Class 2, OR	44	40	41	125
	DSM, Class 2, WA	7	11	8	26
	DSM, Class 2 Total	52	52	51	155
	FOT MidColumbia - SMR	315	400	392	369
	FOT MidColumbia - SMR - 2	-	124	-	41
	FOT NOB - SMR	4	100	71	58
	FOT MidColumbia - WTR	308	303	296	302
	Existing Plant Retirements/Conversions	-	(280)	-	
	Annual Additions, Long Term Resources	119	127	1,033	
	Annual Additions, Short Term Resources	627	927	759	
	Total Annual Additions	746	1,054	1,792	

^{1/} Front office transaction amounts reflect one-year transaction periods, are not additive, and are reported as a 10/20-year annual average.

Table 4 - Average Annual Capacity Factors for Coal and Gas Resources (%)

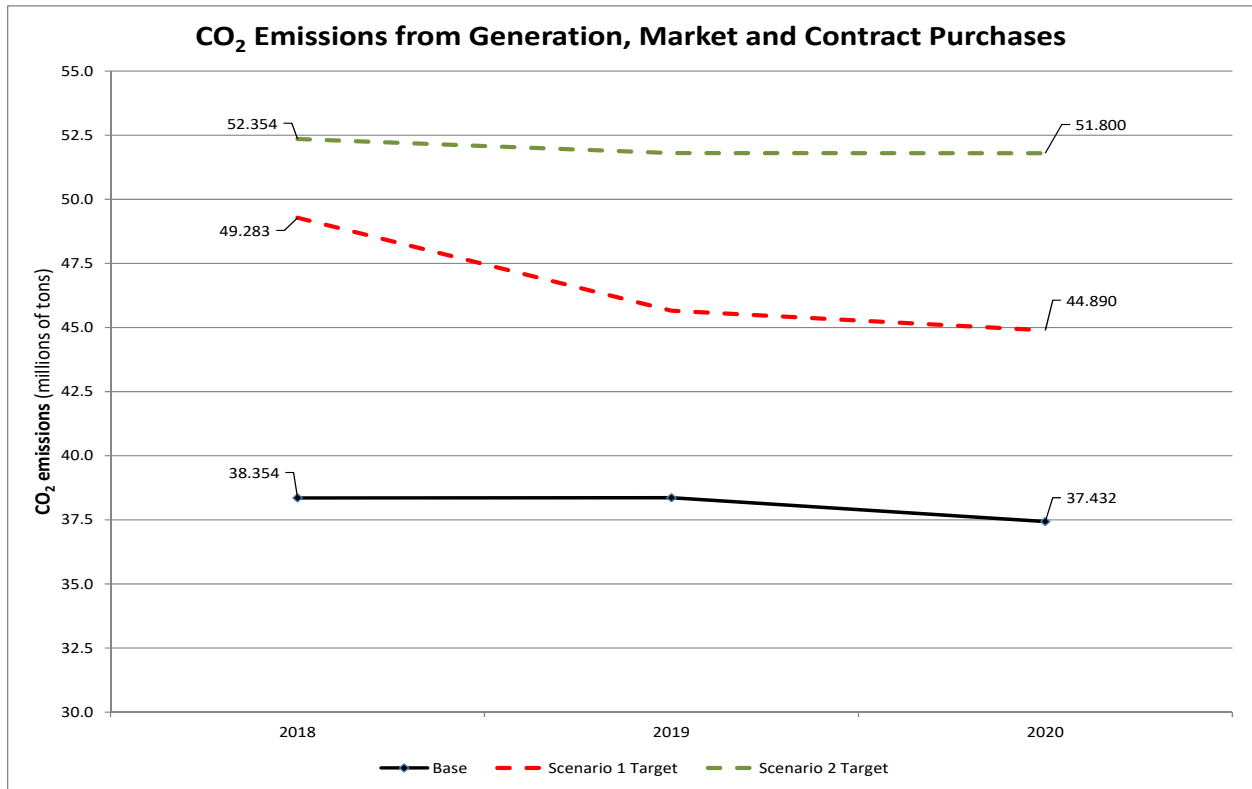
Coal Resources	2018	2019	2020
Base	51.8	52.2	51.9
Scenario 1	n/a	n/a	n/a
Scenario 2	n/a	n/a	n/a

CCCT resources	2018	2019	2020
Base	85.2	90.7	93.5
Scenario 1	n/a	n/a	n/a
Scenario 2	n/a	n/a	n/a

Carbon Dioxide Emissions

For the base resource portfolio, annual emission levels serve as the upper-bound on the sum of emissions from owned generation and purchased power, and the forecasted emission levels are below the CO₂ emissions target levels by 2020. Figure 1 shows the CO₂ emission levels for the base resource portfolio and the CO₂ emissions target scenarios; credits from wholesale sales are not included.

Figure 1 - CO₂ Emissions



Appendix A

Scenario PVRR Costs (System Optimizer Model Output)

3-year PVRR @ 6.91%

Cost Components (millions)	Base
Existing Station Fuel Costs	\$ 1,670
Existing Station Variable O&M Costs	\$ 715
Existing Station Emission Costs	\$ -
Existing Station Dispatch Adder Costs	\$ -
Existing Price Station Contract Costs	\$ 5
Existing Station Fixed Costs	\$ 1,191
Existing Station Demand Charges	\$ -
Existing Station Decomm. Costs	\$ 35
Proposed Station Fuel Costs	\$ 25
Proposed Station Variable O&M Costs	\$ 1
Proposed Station Emission Costs	\$ -
Proposed Station Dispatch Adder Costs	\$ -
Proposed Price Station Contract Costs	\$ -
Proposed Station Fixed Costs	\$ (36)
Proposed Station Demand Charges	\$ -
Proposed Station Capital Costs	\$ 1
Station Total Costs	\$ 3,608
Existing Transmission Variable Costs	\$ -
Existing Transmission Fixed Costs	\$ 5
Proposed Transmission Variable Costs	\$ -
Proposed Transmission Fixed Costs	\$ -
Proposed Transmission Capital Costs	\$ -
Transmission Total Costs	\$ 5
Existing DSM Program Energy Costs	\$ -
Existing DSM Program Payback Energy Costs	\$ 1
Existing DSM Program Capacity Costs	\$ -
Proposed DSM Program Energy Costs	\$ 44
Proposed DSM Program Payback Energy Costs	\$ -
Proposed DSM Program Capacity Costs	\$ -
Proposed DSM Program Capital Costs	\$ -
DSM Program Total Costs	\$ 44
Existing Contract Energy Costs	\$ 214
Existing Contract Capacity Costs	\$ -
Existing Contract Premium Costs	\$ -
Proposed Contract Energy Costs	\$ -
Proposed Contract Capacity Costs	\$ -
Proposed Contract Premium Costs	\$ -
Contract Total Costs	\$ 214
Spot Mkt Purchase Costs	\$ 236
Spot Mkt Sale Revenues	\$ 478
Spot Net Purchase Costs	\$ (242)
Unserviced Energy Costs	\$ -
Unserviced Capacity Costs	\$ -
Unserviced Total Costs	\$ -
Total Costs	\$ 3,865