Appendix A
PacifiCorp
Avoided Cost (Partial Displacement Differential Revenue Requirement)
Model Updates through May 2016
Docket No. 03-035-14
Docket No. 15-035-56

Assumptions that have changed since the 2015.Q4 compliance filing are in bold.

GRID Scenario Study Period

January 1, 2017 through December 31, 2031 - 15-year study
Avoided cost prices starting in January 2017

Official Forward Price Curve (Gas and Electric Market Prices)

Updated to PacifiCorp's March 2016 Official Forward Price Curve (1603 OFPC)
OFPC reflecting the changes in forecasted prices inclusive of the impact of the Environmental Protection Agency's Clean Power Plan final rule

Fuel Prices (Coal)

Average and incremental coal costs based on forecast dated August 2015
Coal burn expense reflects incremental coal costs and coal take or pay minimum burn levels

Integrated Resource Plan (IRP) Resources

2015 IRP Update filed with the Commission on March 31, 2016
Resource additions, including generating resources, and front office transactions (FOT)**,** consistent with **2015 IRP Update Table 5.3**
Existing plant retirement consistent with **2015 IRP Update Table 5.3**
No transmission additions consistent with **2015 IRP Update**

Hydro Resources

2015 hydro forecast prepared June 2015
2015 hydro levels extended thereafter with known and measurable changes
Adjust Klamath dispatch to reflect current operating patterns
Update Mid-Columbia generation forecast

Discount Rate

6.66% discount rate - **2015 IRP Update page 39 (unchanged from 2015 IRP)**
Discount rate is consistent with the Commission's order in Docket No. 11-035-T06

Inflation Rates

Company's inflation rate forecast dated **March 2016**

Levelized Prices (Nominal) @ 6.66% Discount Rate

15 years 2017 through 2031
Calculated annually
Levelized prices are for illustrative purposes only

Load Forecast (Retail)

20-Year load forecast dated December 2015

Long-Term Contracts

Long-term contracts which have prices that are indexed to market are consistent with the **1603 OFPC**
Contracts are modeled based on 48 months ended June 2015
QF contracts are assumed to terminate and not renew at the end of their contracts
Sweetwater Solar, an 80MW solar QF in Wyoming, was added as a signed contract.

Market Capacity

Capacity set at 48 month average of all STF sales ended **December 2015**
Mid-Columbia and Palo Verde markets uncapped
Additional heavy load hour (HLH) and light load hour (LLH) sales limited to historical 48 month average less monthly executed STF contracts as of **March 2016**

Potential Environmental Costs

Potential environmental costs are excluded from fuel cost for net power costs and plant commitment and dispatch decisions.

Regulating Margin

Consistent with the 2014 Wind Integration Study
Regulation reserves starting at 432 aMW and increasing as necessary to provide wind integration
Increasing at 7.0 MW of regulation reserve per 100 MW of incremental east side wind
Reserve modeling reflects reliability Standard BAL-003-1 related to frequency response

Contingency Reserve Calculation

Reserve modeling reflects reliability standard BAL-002-WECC-2 – contingency reserves set to 3% of retail load plus 3% of generating resources

Hourly retail load reserve calculation through **2019**

Typical week retail load reserve calculation thereafter

Short-Term Firm (STF) Transactions

Executed STF contracts as of **March 2016**

Size of the Avoided Cost Resource

The avoided cost thermal resource is a 100 MW and 85% capacity factor thermal resource located in the Utah North transmission bubble

Thermal Resources

Thermal resource operating characteristics updated to be consistent with current Company official characteristics

Forced outage, planned outage, and heat rate levels based on 48 months ended **December 2015**

Wind and Solar Resources

Existing wind generation profiles modeled using **2015** actual generation shape

New wind and solar generation modeled using 12x24 profiles

Integration cost methodology pursuant to Commission orders in Docket No. 12-035-100 (issued August 16, 2013, and October 4, 2013)

Wind integration costs set at $2.09/MWh (2016-2035) on a 20-year nominal levelized basis

Solar integration costs set at $2.83 per megawatt hour for fixed solar resources and $2.18 per megawatt hour for tracking solar resources

Capacity contribution applied to renewable resources consistent with June 26, 2015, Commission order in Docket No. 14-035-140 (see table below)

Renewable Type	Capacity Contribution Percent of Nameplate	
	East	West
Wind	14.5%	25.4%
Solar – Fixed Mount	34.1%	32.2%
Solar –Tracking	39.1%	36.7%

Transmission

Short term transmission modeled based on 48 months ended **Dec 2015**
Energy Gateway transmission rights - 2015 IRP Scenario EG 1
Wyoming Central -> Wyoming Northeast transmission link included

IRP Partial Displacements (This Filing)

Thermal partial displacement is 314.09 MW in the base case and 414.09 MW in the avoided cost case. Listed below are the QFs that have executed a power purchase agreement or are actively negotiating for a power purchase agreement. Signed resources are new and were not included in the **2015 IRP Update**.

QF Queue						
No.	**QF**	**Partial Displacement**	**Name plate**	**CF**	**Capacity Contribution**	**Start Date**
1	Pavant Solar III	7.82	20.00	29.5%	39.1%	2016 12 31
2	Sweetwater Solar	31.28	80.00	26.6%	39.1%	2018 11 01
Total Signed MW		39.10	100.00			
1	QF - 101 - OR - Geoth	3.50	3.50	85.0%	100.0%	2016 01 01
2	QF - 182 - OR - Solar	16.22	44.20	24.0%	36.7%	2017 01 01
3	QF - 183 - OR - Solar	16.52	45.00	27.5%	36.7%	2016 12 31
4	QF - 224 - OR - Solar	3.67	10.00	27.2%	36.7%	2016 12 31
5	QF - 177 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
6	QF - 180 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
7	QF - 194 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
8	QF - 195 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
9	QF - 241 - OR - Solar	20.19	55.00	23.5%	36.7%	2016 12 01
10	QF - 242 - OR - Solar	16.74	52.00	23.8%	32.2%	2016 12 31
11	QF - 243 - WY - Wind	2.39	16.50	29.5%	14.5%	2016 07 01
12	QF - 245 - WY - Wind	11.60	80.00	44.9%	14.5%	2018 11 01
13	QF - 246 - WY - Wind	11.60	80.00	42.0%	14.5%	2018 11 01
14	QF - 247 - WY - Wind	11.60	80.00	37.4%	14.5%	2018 11 01
15	QF - 248 - UT - Solar	31.28	80.00	31.6%	39.1%	2017 12 01
16	QF - 249 - OR - Solar	14.68	40.00	29.1%	36.7%	2017 12 01
17	QF - 250 - OR - Wind	10.16	40.00	36.0%	25.4%	2019 07 01
18	QF - 251 - UT - Solar	31.28	80.00	32.1%	39.1%	2019 07 01
19	QF - 252 - UT - Solar	5.87	80.00	32.1%	7.3%	2019 07 01
20	QF - 253 - UT - Solar	0.00	80.00	32.1%	0.0%	2019 07 01
21	QF - 254 - OR - Solar	21.29	58.00	24.6%	36.7%	2017 12 31
Total Potential MW		274.99	1244.20			
Total Partial Displacement		**314.09**	**1344.20**			

Pavant Solar III is a Utah non-QF solar resource added for the Utah Subscriber Solar Program.

Projects “QF - 251 - UT - Solar”, “QF - 252 - UT - Solar”, and “QF - 253 - UT - Solar” are located in an area that PacifiCorp Energy Supply Management (ESM), in its merchant capacity, is aware has significant transmission constraints. The existing transmission constraint conditions could lead to curtailment of these potential projects under certain circumstances, in accordance with the amended Network Operating Agreement between PacifiCorp ESM and PacifiCorp Transmission approved by the Federal Energy Regulatory Commission on May 21, 2015.[1] As a result of the transmission constraint conditions, PacifiCorp provided these potential projects indicative avoided cost pricing that reflected certain transmission constraint-related adjustments. For example, the pricing reflected only projected delivered output from the potential projects, as well as a preliminary projected level of potential curtailment of that output, subject to further analysis. The projects’ capacity deferral was also restricted based on the constraint conditions.

Partial displacement, adjusted for solar degradation, is shown below.

Partial Displacement Adjusted for Solar Degradation
MW Capacity (July)

	a	b	c	d	e	f	g	h	i	j	k
Year	Signed & Potential QFs Adjusted For Solar Degradation			Cummulative 2015 IRP		Base Case Displacement		Avoided Cost Case			
								Nameplate		Displacement	
	Signed	Potential	Total	CCCT MW	FOT	CCCT	FOT	New QF	Total	CCCT	FOT
			a + b			MIN(c,d)	MIN(e,c - f)		c + h	MIN(d,i)	MIN(e,i - j)
2016	-	5.9	5.9	-	902.8	-	5.9	-	5.9	-	5.9
2017	7.8	122.0	129.8	-	747.7	-	129.8	100.0	229.8	-	229.8
2018	7.8	192.4	200.2	-	1,093.9	-	200.2	100.0	300.2	-	300.2
2019	39.0	273.7	312.7	-	1,245.7	-	312.7	100.0	412.7	-	412.7
2020	38.7	272.7	311.4	-	1,203.0	-	311.4	100.0	411.4	-	411.4
2021	38.4	269.3	307.7	-	970.2	-	307.7	100.0	407.7	-	407.7
2022	38.2	268.3	306.5	-	1,060.0	-	306.5	100.0	406.5	-	406.5
2023	37.9	267.3	305.2	-	965.3	-	305.2	100.0	405.2	-	405.2
2024	37.6	266.3	303.9	-	993.0	-	303.9	100.0	403.9	-	403.9
2025	37.3	265.4	302.7	-	1,440.3	-	302.7	100.0	402.7	-	402.7
2026	37.0	264.4	301.4	-	1,440.1	-	301.4	100.0	401.4	-	401.4
2027	36.8	263.4	300.2	-	1,442.9	-	300.2	100.0	400.2	-	400.2
2028	36.5	262.4	298.9	1,112.0	1,177.3	298.9	-	100.0	398.9	398.9	-
2029	36.2	261.5	297.7	1,112.0	1,222.8	298.9	-	100.0	397.7	398.9	-
2030	35.9	260.5	296.5	1,747.0	1,442.9	298.9	-	100.0	396.5	398.9	-
2031	35.7	259.6	295.2	2,201.0	1,106.6	298.9	-	100.0	395.2	398.9	-
2032	35.4	258.6	294.0	2,201.0	1,174.0	298.9	-	100.0	394.0	398.9	-
2033	35.1	215.1	250.2	2,624.0	1,442.9	298.9	-	100.0	350.2	398.9	-
2034	34.9	179.9	214.8	2,624.0	1,442.9	298.9	-	100.0	314.8	398.9	-
2035	34.6	179.4	214.0	2,624.0	1,442.9	298.9	-	100.0	314.0	398.9	-
2036	34.4	175.3	209.7	2,624.0	1,442.9	298.9	-	100.0	309.7	398.9	-
2037	27.1	67.3	94.4	2,624.0	1,442.9	298.9	-	100.0	194.4	398.9	-
2038	26.9	45.0	71.8	2,624.0	1,442.9	298.9	-	100.0	171.8	398.9	-
2039	-	-	-	2,624.0	1,442.9	298.9	-	100.0	100.0	398.9	-
2040	-	-	-	2,624.0	1,442.9	298.9	-	100.0	100.0	398.9	-
2041	-	-	-	2,624.0	1,442.9	298.9	-	100.0	100.0	398.9	-

CCCT Partial Displacement in 2030	Base Case	AC Case
Before Solar Degradation	314.09	414.09
After Solar Degradation	298.93	398.93

[1] *PacifiCorp*, 151 FERC ¶ 61,170 (2015).

IRP Partial Displacements (Previous Filing)

Thermal partial displacement is 393.85 MW in the base case and 493.85 MW in the avoided cost case. Listed below are the QFs that have executed a power purchase agreement or are actively negotiating for a power purchase agreement. Signed resources are new and were not included in the 2015 IRP.

QF Queue						
No.	Resource	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Pavant Solar II	19.55	50.00	29.6%	39.1%	2016 12 01
2	Granite Mtn Solar West	19.71	50.40	31.4%	39.1%	2016 08 01
3	Iron Springs Solar	31.28	80.00	31.1%	39.1%	2016 09 01
4	Granite Mtn Solar East	31.28	80.00	31.4%	39.1%	2016 08 01
5	Oregon Sch 37 Solar QF - COD before 7/2017	54.92	152.59	26.3%	35.99%	2017 07 01
6	Oregon Sch 37 Solar QF - COD before 7/2018	3.92	10.90	26.3%	35.99%	2018 07 01
7	Three Peaks Solar	31.28	80.00	31.3%	39.1%	2016 12 31
8	Pavant Solar III	7.82	20.00	29.5%	39.1%	2016 12 31
	Total Signed MW	199.76	523.89			
1	QF - 101 - OR - Geoth	3.50	3.50	85.0%	100.0%	2015 08 01
2	QF - 182 - OR - Solar	16.22	44.20	24.0%	36.7%	2017 01 01
3	QF - 183 - OR - Solar	16.52	45.00	27.5%	36.7%	2016 12 31
4	QF - 220 - OR - Solar	29.36	80.00	26.6%	36.7%	2016 12 31
5	QF - 224 - OR - Solar	3.67	10.00	27.2%	36.7%	2016 12 31
6	QF - 177 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
7	QF - 180 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
8	QF - 194 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
9	QF - 195 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
10	QF - 223 - WY - Solar	31.28	80.00	26.6%	39.1%	2018 11 01
11	QF - 241 - OR - Solar	20.19	55.00	23.5%	36.7%	2016 12 01
12	QF - 242 - OR - Solar	16.74	52.00	23.8%	32.2%	2016 12 31
13	QF - 243 - WY - Wind	2.39	16.50	29.5%	14.5%	2016 07 01
14	QF - 244 - UT - Solar	7.82	20.00	28.7%	39.1%	2018 12 31
	Total Potential MW	194.09	726.20			
Total Partial Displacement		**393.85**	**1250.09**			

Pavant Solar III is a Utah non-QF solar resource added for the Utah Subscriber Solar Program. Shown above is the QF Queue at the time the study was prepared. After completing the study but before release, Sweetwater Solar QF, listed above as "QF – 223-WY – Solar" signed a power purchase agreement.

Partial displacement, adjusted for solar degradation, is shown below.

	a	b	c	d	e	f	g	h	i	j	k
Year	Signed & Potential QFs Adjusted For Solar Degradation			Cumulative 2015 IRP		Base Case Displacement		Avoided Cost Case			
								Nameplate		Displacement	
	Signed	Potential	Total	CCCT MW	FOT	CCCT	FOT	New QF	Total	CCCT	FOT
			a + b			MIN(c,d)	MIN(e,c - f)		c + h	MIN(d,i)	MIN(e,i - j)
2015	-	-	-	-	726.8	-	-	-	-	-	-
2016	-	5.9	5.9	-	937.2	-	5.9	-	5.9	-	5.9
2017	195.8	155.0	350.8	-	904.3	-	350.8	100.0	450.8	-	450.8
2018	198.5	154.3	352.8	-	869.8	-	352.8	100.0	452.8	-	452.8
2019	197.3	192.8	390.0	-	935.2	-	390.0	100.0	490.0	-	490.0
2020	196.1	191.8	387.9	-	978.6	-	387.9	100.0	487.9	-	487.9
2021	194.8	188.5	383.3	-	768.7	-	383.3	100.0	483.3	-	483.3
2022	193.6	187.5	381.1	-	791.3	-	381.1	100.0	481.1	-	481.1
2023	192.4	186.6	378.9	-	760.6	-	378.9	100.0	478.9	-	478.9
2024	191.1	185.7	376.8	-	754.4	-	376.8	100.0	476.8	-	476.8
2025	189.9	184.7	374.6	-	770.5	-	374.6	100.0	474.6	-	474.6
2026	188.7	183.8	372.5	-	791.5	-	372.5	100.0	472.5	-	472.5
2027	187.5	182.9	370.3	-	834.9	-	370.3	100.0	470.3	-	470.3
2028	186.2	182.0	368.2	423.0	1,304.0	368.2	-	100.0	468.2	423.0	45.2
2029	185.0	181.1	366.1	423.0	1,166.5	368.2	-	100.0	466.1	423.0	43.1
2030	183.8	180.2	364.0	1,582.0	1,252.5	368.2	-	100.0	464.0	464.0	-
2031	182.6	179.3	361.9	1,582.0	1,246.8	368.2	-	100.0	461.9	464.0	-
2032	163.5	178.4	341.9	1,582.0	1,410.5	368.2	-	100.0	441.9	464.0	-
2033	162.4	177.5	339.9	2,217.0	1,360.3	368.2	-	100.0	439.9	464.0	-
2034	161.3	169.4	330.7	2,852.0	1,086.5	368.2	-	100.0	430.7	464.0	-
2035	160.2	168.6	328.7	2,852.0	1,086.5	368.2	-	100.0	428.7	464.0	-
2036	159.1	164.2	323.3	2,852.0	1,086.5	368.2	-	100.0	423.3	464.0	-
2037	3.6	27.1	30.6	2,852.0	1,086.5	368.2	-	100.0	130.6	464.0	-
2038	-	26.9	26.9	2,852.0	1,086.5	368.2	-	100.0	126.9	464.0	-
2039	-	-	-	2,852.0	1,086.5	368.2	-	100.0	100.0	464.0	-
2040	-	-	-	2,852.0	1,086.5	368.2	-	100.0	100.0	464.0	-

CCCT Partial Displacement in 2030	Base Case	AC Case
Before Solar Degradation	393.85	493.85
After Solar Degradation	368.22	463.99