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

Assumptions that have changed since the 2015.Q3 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 December 2015 Official Forward Price Curve (1512 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 filed with the Commission on March 31, 2015
Resource additions, including generating resources, and front office transactions (FOT), consistent with 2015 IRP Table 8.7
Existing plant retirement consistent with 2015 IRP Table 8.7
No transmission additions consistent with the 2015 IRP - Scenario EG 1

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 page 141

Discount rate is consistent with the Commission's order in Docket No. 11-035-T06

Inflation Rates

Company's inflation rate forecast dated **December 2015**

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 **1512 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

Pavant Solar III, a 20 MW solar project acquired for the Utah Subscriber Solar Program, was added as a signed contract.

Market Capacity

Capacity set at 48 month average of all STF sales ended June 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 **January 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 2016
Typical weekday retail load reserve calculation thereafter

Short-Term Firm (STF) Transactions

Executed STF contracts as of **January 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 **June 2015**

Wind and Solar Resources

Existing wind generation profiles modeled using 2014 actual generation shape
New wind and solar generation profiles modeled using 12x24 profile
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 June 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 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

IRP Partial Displacements (Previous Filing)

Thermal partial displacement is 735.99 MW in the base case and 835.99 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 QFs are new QFs that were not included in the 2015 IRP.

QF Queue						
No.	QF	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Utah 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
Total Signed MW		191.94	503.89			

1	QF - 101 - OR - Geoth	3.50	3.50	85.0%	100.0%	2015 08 01
2	QF - 172 - UT - Solar	5.67	14.50	25.3%	39.1%	2016 12 31
3	QF - 173 - UT - Solar	2.93	7.50	25.8%	39.1%	2016 12 31
4	QF - 182 - OR - Solar	16.22	44.20	24.0%	36.7%	2017 01 01
5	QF - 183 - OR - Solar	16.52	45.00	27.5%	36.7%	2016 12 31
6	QF - 220 - OR - Solar	29.36	80.00	26.6%	36.7%	2016 12 31
7	Oregon Potential Solar	3.67	10.00	27.2%	36.7%	2016 12 31
8	Utah Potential Solar COD before 7/2016	3.41	9.00	29.1%	37.9%	2016 07 01
9	Utah Potential Solar COD before 7/2017	1.14	3.00	29.1%	37.9%	2017 07 01
10	QF - 230 - UT - Solar	31.28	80.00	30.7%	39.1%	2016 12 01
11	QF - 231 - UT - Solar	31.28	80.00	30.7%	39.1%	2016 12 01
12	QF - 232 - UT - Solar	31.28	80.00	30.7%	39.1%	2016 12 01
13	QF - 233 - UT - Solar	31.28	80.00	30.7%	39.1%	2016 12 01
14	QF - 234 - UT - Solar	21.51	55.00	30.7%	39.1%	2016 12 01
15	Tesoro QF	25.00	25.00	85.0%	100.0%	2016 01 01
16	QF - 177 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
17	QF - 180 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
18	QF - 193 - WY - Wind	11.01	75.90	42.7%	14.5%	2016 12 01
19	QF - 194 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
20	QF - 195 - WY - Wind	11.60	80.00	40.7%	14.5%	2016 12 31
21	QF - 217 - WY - Wind	11.60	80.00	42.3%	14.5%	2016 12 31
22	QF - 218 - WY - Wind	11.60	80.00	35.5%	14.5%	2016 12 31
23	QF - 219 - WY - Wind	11.60	80.00	45.5%	14.5%	2016 12 31
24	QF - 223 - WY - Solar	31.28	80.00	26.6%	39.1%	2018 11 01
25	QF - 235 - UT - Solar	27.28	80.00	32.7%	34.1%	2018 12 31
26	QF - 236 - UT - Solar	27.28	80.00	32.7%	34.1%	2018 12 31
27	QF - 237 - UT - Solar	27.28	80.00	32.7%	34.1%	2018 12 31
28	QF - 238 - UT - Solar	27.28	80.00	32.7%	34.1%	2018 12 31

QF Queue						
No.	**QF**	**Partial Displacement**	**Name plate**	**CF**	**Capacity Contribution**	**Start Date**
29	QF - 239 - UT - Solar	10.23	30.00	32.7%	34.1%	2018 12 31
30	QF - 240 - UT - Solar	10.23	30.00	32.7%	34.1%	2018 12 31
31	QF - 241 - OR - Solar	20.19	55.00	23.5%	36.7%	2016 12 01
32	QF - 242 - OR - Solar	16.74	52.00	23.8%	32.2%	2016 12 31
Total Potential MW		544.05	1819.60			

Total Partial Displacement	**735.99**	**2323.49**	

33	Avoided Cost Resource	100.00	100.00	85.0%	100.0%	2017 01 01
Partial Displacement after QF		**835.99**				

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			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)
2015	-	-	-	-	726.8	-	-	-	-	-	-
2016	-	31.9	31.9	-	937.2	-	31.9	100.0	131.9	-	131.9
2017	188.0	358.1	546.2	-	904.3	-	546.2	100.0	646.2	-	646.2
2018	190.8	356.3	547.1	-	869.8	-	547.1	100.0	647.1	-	647.1
2019	189.5	515.4	705.0	-	935.2	-	705.0	100.0	805.0	-	805.0
2020	188.3	512.7	701.1	-	978.6	-	701.1	100.0	801.1	-	801.1
2021	187.2	510.1	697.2	-	768.7	-	697.2	100.0	797.2	-	768.7
2022	186.0	507.5	693.4	-	791.3	-	693.4	100.0	793.4	-	791.3
2023	184.8	504.8	689.6	-	760.6	-	689.6	100.0	789.6	-	760.6
2024	183.6	502.2	685.8	-	754.4	-	685.8	100.0	785.8	-	754.4
2025	182.4	499.6	682.0	-	770.5	-	682.0	100.0	782.0	-	770.5
2026	181.2	497.0	678.3	-	791.5	-	678.3	100.0	778.3	-	778.3
2027	180.0	494.5	674.5	-	834.9	-	674.5	100.0	774.5	-	774.5
2028	178.9	491.9	670.8	423.0	1,304.0	423.0	247.8	100.0	770.8	423.0	347.8
2029	177.7	489.4	667.1	423.0	1,166.5	423.0	244.1	100.0	767.1	423.0	344.1
2030	176.5	486.9	663.4	1,582.0	1,252.5	663.4	-	100.0	763.4	763.4	-
2031	175.3	484.4	659.7	1,582.0	1,246.8	663.4	-	100.0	759.7	763.4	-
2032	156.2	481.9	638.1	1,582.0	1,410.5	663.4	-	100.0	738.1	763.4	-
2033	155.2	479.5	634.6	2,217.0	1,360.3	663.4	-	100.0	734.6	763.4	-
2034	154.1	477.0	631.1	2,852.0	1,086.5	663.4	-	100.0	731.1	763.4	-
2035	153.1	474.6	627.6	2,852.0	1,086.5	663.4	-	100.0	727.6	763.4	-
2036	152.0	465.7	617.7	2,852.0	1,086.5	663.4	-	100.0	717.7	763.4	-
2037	3.6	145.5	149.0	2,852.0	1,086.5	663.4	-	100.0	249.0	763.4	-
2038	-	144.7	144.7	2,852.0	1,086.5	663.4	-	100.0	244.7	763.4	-
2039	-	-	-	2,852.0	1,086.5	663.4	-	100.0	100.0	763.4	-
2040	-	-	-	2,852.0	1,086.5	663.4	-	100.0	100.0	763.4	-

CCCT Partial Displacement in 2030	Base Case	AC Case
Before Solar Degradation	735.99	835.99
After Solar Degradation	663.40	763.40