

Appendix A
PacifiCorp
Avoided Cost (GRID and Differential Revenue Requirement)
Model Updates through February 2014
Docket No. 03-035-14

GRID Scenario Study Period

January 1, 2015 through December 31, 2034 (20-year study)
Avoided Cost prices starting in January 2015

Official Forward Price Curve (Gas and Market Prices)

Updated to PacifiCorp's December 2013 Official Forward Price Curve (1312 OFPC)

Fuel Prices (Coal)

Average and incremental coal costs based on forecast dated January 2013

Integrated Resource Plan (IRP) Resources

2013 IRP filed with Commission on April 30, 2013
Resource additions, including generating resources, DSM, and front office transactions (FOT), consistent with 2013 IRP
Transmission additions consistent with the 2013 IRP

Hydro Resources

2013 hydro forecast prepared April 2013
2013 hydro levels extended thereafter with known and measurable changes

Discount Rate

6.882% discount rate - 2013 IRP page 164
Discount rate is consistent with the Commission's order in Docket No. 11-035-T06

Inflation Rates

Company's most recent inflation rate forecast dated December 2013

Load Forecast (Retail)

20-Year load forecast dated February 2014

Long-Term Contracts

Long-term contracts which have prices that are indexed to market are consistent with the 1312 OFPC

Contracts are modeled based on 48 months ended June 2013

Wind and solar generation profiles modeled hourly when data available

Utah Schedule 37 solar projects are combined and included in “Utah Post-MSP Solar QF” modeling

Public Service of Colorado Exchange contract extended through October 2022

Utah Red Hills Solar QF – New Contract – 80 MW - Starting January 2017

Market Capacity

Capacity set at 48 month average of all STF sales ended June 2013

Additional heavy load hour (HLH) and light load hour (LLH) sales limited to historical 48 month average less monthly executed STF contracts as of October 2013

Potential Environmental Costs

Costs are consistent with the 1312 OFPC

Costs are excluded from fuel costing and are excluded from avoided costs

Costs included in incremental fuel costs for plant commitment and dispatch decisions starting in 2022

Regulating Margin

Study consistent with the 2012 Wind Integration study

Regulation reserves starting at 451 aMW in 2013 and increasing as necessary to provide wind integration

Increasing at 8.2 MW of regulation reserve per 100 MW of incremental wind

Short-Term Firm (STF) Transactions

Updated to include executed STF contracts as of January 2014

Size of the Avoided Cost Resource

The size of the avoided cost resource has not been changed

The avoided cost thermal resource is a 100 MW and 85% capacity factor thermal resource.

Thermal Resources

Thermal resource operating characteristics updated to be consistent with current Company official characteristics
Forced & planned outage and heat rate levels based on 48 months ended June 2013

Wind and Solar Resources

Existing wind and solar generation profiles modeled using 2011 actual generation shape
New wind and solar generation profiles modeled hourly when data available
Integration cost methodology pursuant to Commission orders in Docket No. 12-035-100 (issued August 16, 2013, and October 4, 2013)
Wind integration costs filed with the Commission in Company's 2013.Q2 Compliance Filing: \$4.86/MWh (2015-2034) on a 20-year nominal levelized
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 August 16, 2013, Commission order in Docket No. 12-035-100 (see table below)

Renewable Type	Capacity Contribution Percent of Nameplate
Wind	20.5%
Solar – Fixed base / Energy	68%
Solar – Peak oriented / Tracking	84%

Topology

There were no changes to the GRID model topology

Transmission

Short term transmission modeled based on 48 months ended June 2013
Energy Gateway modeled consistent with 2013 IRP Chapter 4
Four transmission links were updated to reflect current transmission rights

IRP Partial Displacements (This Filing)

Base Case - Thermal partial displacement is 885.24 MW. Listed below are the QFs that have executed a power purchase agreement or are actively negotiating for a power purchase agreement.

QF Queue						
No.	QF	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Columbia Biogas	3.00	3.00	45.7%	100.0%	2015 03 01
2	EBD Hydro	3.00	3.00	39.1%	100.0%	2014 04 01
3	TMF Biofuels	4.80	4.80	88.5%	100.0%	2012 12 31
4	Utah Sch 37 Solar (b/4 2015.Q3)	9.32	11.10	31.2%	84.0%	2015 06 30
	Utah Sch 37 Solar (b/4 2016.Q3)	24.53	29.20	31.2%	84.0%	2016 06 30
	Utah Sch 37 Solar (b/4 2017.Q3)	2.52	3.00	31.2%	84.0%	2017 06 30
5	Champlin Blue Mtn Wind	16.40	80.00	35.6%	20.5%	2015 11 30
6	Long Ridge Wind I	16.38	79.90	34.3%	20.5%	2015 12 31
7	Long Ridge Wind II	16.38	79.90	34.3%	20.5%	2015 12 31
8	Latigo Wind Park	12.30	60.00	33.8%	20.5%	2015 05 01
9	Utah Red Hills Solar	67.20	80.00	29.1%	84.0%	2017 01 01
Total Signed MW		175.83	433.90			
1	QF - 82 - UT - Wind	16.24	79.20	33.8%	20.5%	2015 10 01
2	QF - 84 - WY - Wind	16.40	80.00	40.7%	20.5%	2015 03 01
3	QF - 86 - OR - Wind	16.40	80.00	33.9%	20.5%	2015 01 01
4	QF - 88 - OR - Solar	67.20	80.00	28.0%	84.0%	2017 01 01
5	QF - 90 - UT - Solar	3.36	4.00	25.2%	84.0%	2015 07 31
6	QF - 91 - UT - Solar	67.20	80.00	30.7%	84.0%	2016 01 01
7	QF - 92 - UT - Solar	67.20	80.00	29.7%	84.0%	2016 01 01
8	QF - 93 - UT - Solar	67.20	80.00	29.7%	84.0%	2016 01 01
9	QF - 99 - UT - Solar	42.00	50.00	28.7%	84.0%	2016 01 01
10	QF - 102 - UT - Wind	2.46	12.00	33.2%	20.5%	2014 09 01
11	QF - 103 - OR - Wind	2.05	10.00	27.0%	20.5%	2015 12 31
12	QF - 104 - OR - Wind	2.05	10.00	27.0%	20.5%	2015 12 31
13	QF - 109 - UT - Solar	42.34	50.40	31.4%	84.0%	2016 08 01
14	QF - 110 - UT - Solar	67.20	80.00	31.1%	84.0%	2016 09 01
15	QF - 113 - WY - Wind	5.07	24.75	35.9%	20.5%	2014 08 01
16	QF - 114 - WY - Wind	12.30	60.00	45.0%	20.5%	2015 12 01
17	QF - 115 - OR - Geothermal	2.70	2.70	84.5%	100.0%	2014 03 01
18	QF - 116 - UT - Solar	67.20	80.00	2.9%	84.0%	2014 03 01
19	QF - 117 - UT - Solar	8.84	13.00	17.5%	68.0%	2014 03 01
20	QF - 118 - WY - Wind	16.40	80.00	2.9%	20.5%	2014 03 01
21	QF - 119 - UT - Solar	67.20	80.00	2.9%	84.0%	2016 10 01
22	QF - 120 - UT - Solar	50.40	60.00	3.8%	84.0%	2016 10 01
Total Potential MW		709.41	1176.05			
Total Partial Displacement		885.24				

The partial displacement is shown below.

Displacement in Base Case				
Year	Displaced Resource	2013 IRP Resource Size	Displacement MW	Remaining MW
2015	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	84.3	15.7
	IRP FOT - Mid-C +10 - Q3 HLH	98.0	0.0	98.0
	IRP FOT - COB - Q3 HLH	247.0	0.0	247.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2016	IRP FOT - COB - Q3 HLH	262.0	262.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	221.0	92.0	129.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2017	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	305.0	305.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	183.2	216.8
2018	IRP FOT - Mona - Q3 HLH	37.0	37.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	76.2	323.8
2019	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mona - Q3 HLH	151.0	151.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	62.2	37.8
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2020	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	248.0	248.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	162.2	134.8
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2021	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	19.0	19.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	391.2	8.8
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0

Displacement in Base Case - Continued

Year	Displaced Resource	2013 IRP Resource Size	Displacement MW	Remaining MW
2022	IRP FOT - Mona - Q3 HLH	161.0	161.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	249.2	47.8
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2023	IRP FOT - Mona - Q3 HLH	255.0	255.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	155.2	141.8
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2024	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	87.2	12.8
	IRP FOT - COB - Q3 HLH	237.0	0.0	237.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2025	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	132.0	132.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	330.2	44.8
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2026	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	253.0	87.2	165.8
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2027	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	297.0	87.2	209.8
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2028	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	2028 CCCT (661 MW "F" 2x1)	661.0	462.2	198.8

FOT displacement in early years reflects the start date timing of when signed and potential resources are available. Market FOTs are displaced based upon the year the FOT is available and from highest to lowest price.

Avoided Cost Case – A 100 MW 85% capacity factor (CF) avoided cost resource is added to the thermal resource queue.

QF Queue						
No.	QF	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Columbia Biogas	3.00	3.00	45.7%	100.0%	2015 03 01
2	EBD Hydro	3.00	3.00	39.1%	100.0%	2014 04 01
3	TMF Biofuels	4.80	4.80	88.5%	100.0%	2012 12 31
4	Utah Sch 37 Solar (b/4 2015.Q3)	9.32	11.10	31.2%	84.0%	2015 06 30
	Utah Sch 37 Solar (b/4 2016.Q3)	24.53	29.20	31.2%	84.0%	2016 06 30
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5	Champlin Blue Mtn Wind	16.40	80.00	35.6%	20.5%	2015 11 30
6	Long Ridge Wind I	16.38	79.90	34.3%	20.5%	2015 12 31
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8	Latigo Wind Park	12.30	60.00	33.8%	20.5%	2015 05 01
9	Utah Red Hills Solar	67.20	80.00	29.1%	84.0%	2017 01 01
Total Signed MW		175.83	433.90			
1	QF - 82 - UT - Wind	16.24	79.20	33.8%	20.5%	2015 10 01
2	QF - 84 - WY - Wind	16.40	80.00	40.7%	20.5%	2015 03 01
3	QF - 86 - OR - Wind	16.40	80.00	33.9%	20.5%	2015 01 01
4	QF - 88 - OR - Solar	67.20	80.00	28.0%	84.0%	2017 01 01
5	QF - 90 - UT - Solar	3.36	4.00	25.2%	84.0%	2015 07 31
6	QF - 91 - UT - Solar	67.20	80.00	30.7%	84.0%	2016 01 01
7	QF - 92 - UT - Solar	67.20	80.00	29.7%	84.0%	2016 01 01
8	QF - 93 - UT - Solar	67.20	80.00	29.7%	84.0%	2016 01 01
9	QF - 99 - UT - Solar	42.00	50.00	28.7%	84.0%	2016 01 01
10	QF - 102 - UT - Wind	2.46	12.00	33.2%	20.5%	2014 09 01
11	QF - 103 - OR - Wind	2.05	10.00	27.0%	20.5%	2015 12 31
12	QF - 104 - OR - Wind	2.05	10.00	27.0%	20.5%	2015 12 31
13	QF - 109 - UT - Solar	42.34	50.40	31.4%	84.0%	2016 08 01
14	QF - 110 - UT - Solar	67.20	80.00	31.1%	84.0%	2016 09 01
15	QF - 113 - WY - Wind	5.07	24.75	35.9%	20.5%	2014 08 01
16	QF - 114 - WY - Wind	12.30	60.00	45.0%	20.5%	2015 12 01
17	QF - 115 - OR - Geothermal	2.70	2.70	84.5%	100.0%	2014 03 01
18	QF - 116 - UT - Solar	67.20	80.00	2.9%	84.0%	2014 03 01
19	QF - 117 - UT - Solar	8.84	13.00	17.5%	68.0%	2014 03 01
20	QF - 118 - WY - Wind	16.40	80.00	2.9%	20.5%	2014 03 01
21	QF - 119 - UT - Solar	67.20	80.00	2.9%	84.0%	2016 10 01
22	QF - 120 - UT - Solar	50.40	60.00	3.8%	84.0%	2016 10 01
Total Potential MW		709.41	1176.05			
Total Partial Displacement		885.24				
23	Avoided Cost Resource	100.00	100.0	85.0%	100.0%	2015 01 01
Partial Displacement after QF		985.24				

The Table below shows the resources that are displaced for the Avoided Cost Case which includes the 100 MW 85% capacity factor avoided cost resource.

Displacement in Avoided Cost Case				
Year	Displaced Resource	2013 IRP Resource Size	Displacement MW	Remaining MW
2015	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	98.0	84.3	13.7
	IRP FOT - COB - Q3 HLH	247.0	0.0	247.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2016	IRP FOT - COB - Q3 HLH	262.0	262.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	221.0	192.0	29.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2017	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	305.0	305.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	283.2	116.8
2018	IRP FOT - Mona - Q3 HLH	37.0	37.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	176.2	223.8
2019	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mona - Q3 HLH	151.0	151.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	62.2	337.8
2020	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	248.0	248.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	262.2	34.8
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2021	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	19.0	19.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	400.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	91.2	205.8

Displacement in Avoided Cost Case - Continued

Year	Displaced Resource	2013 IRP Resource Size	Displacement MW	Remaining MW
2022	IRP FOT - Mona - Q3 HLH	161.0	161.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	52.2	347.8
2023	IRP FOT - Mona - Q3 HLH	255.0	255.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	255.2	41.8
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2024	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	237.0	87.2	149.8
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2025	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	132.0	132.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	55.2	44.8
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2026	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	253.0	187.2	65.8
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2027	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	297.0	187.2	109.8
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2028	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	2028 CCCT (661 MW "F" 2x1)	661.0	562.2	98.8

FOT displacement in early years reflects the start date timing of when signed and potential resources are available. Market FOTs are displaced based upon the year the FOT is available and from highest to lowest price.

IRP Partial Displacements (Previous Filing)

Base Case - Thermal partial displacement was 943.75 MW. Listed below are the QFs that have executed a power purchase agreement or are actively negotiating for new power purchase agreement.

QF Queue						
No.	QF	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Columbia Biogas	3.00	3.00	45.7%	100.0%	2015 03 01
2	EBD Hydro	3.00	3.00	39.1%	100.0%	2014 04 01
3	TMF Biofuels	4.80	4.80	88.5%	100.0%	2012 12 31
4	Utah Sch 37 Solar (b/4 2015.Q3)	9.32	11.10	31.2%	84.0%	2015 06 30
	Utah Sch 37 Solar (b/4 2016.Q3)	25.20	30.00	31.2%	84.0%	2016 06 30
	Utah Sch 37 Solar (b/4 2017.Q3)	2.52	3.00	31.2%	84.0%	2017 06 30
5	Champlin Blue Mtn Wind	16.40	80.00	35.6%	20.5%	2015 11 30
6	Long Ridge Wind I	16.38	79.90	34.3%	20.5%	2015 12 31
7	Long Ridge Wind II	16.38	79.90	34.3%	20.5%	2015 12 31
8	Latigo Wind Park	12.30	60.00	33.8%	20.5%	2015 05 01
Total Signed MW		109.30	354.70			
1	QF - 82 - UT - Wind	16.24	79.20	33.8%	20.5%	2015 10 01
2	QF - 84 - WY - Wind	16.40	80.00	40.7%	20.5%	2015 03 01
3	QF - 86 - OR - Wind	16.40	80.00	33.9%	20.5%	2015 01 01
4	QF - 88 - OR - Solar	67.20	80.00	28.0%	84.0%	2017 01 01
5	QF - 90 - UT - Solar	3.36	4.00	31.2%	84.0%	2015 07 31
6	QF - 91 - UT - Solar	67.20	80.00	30.7%	84.0%	2016 01 01
7	QF - 92 - UT - Solar	67.20	80.00	29.7%	84.0%	2016 01 01
8	QF - 93 - UT - Solar	67.20	80.00	29.7%	84.0%	2016 01 01
9	QF - 99 - UT - Solar	42.00	50.00	28.7%	84.0%	2016 01 01
10	QF - 101 - UT - Solar	67.20	80.00	29.1%	84.0%	2017 01 01
11	QF - 102 - UT - Wind	2.46	12.00	33.2%	20.5%	2014 09 01
12	QF - 103 - OR - Wind	2.05	10.00	27.0%	20.5%	2015 12 31
13	QF - 104 - OR - Wind	2.05	10.00	27.0%	20.5%	2015 12 31
14	QF - 105 - UT - Solar	67.20	80.00	29.6%	84.0%	2015 07 01
15	QF - 106 - UT - Solar	67.20	80.00	31.7%	84.0%	2015 07 01
16	QF - 107 - UT - Solar	54.40	80.00	18.3%	68.0%	2014 04 01
17	QF - 108 - UT - Solar	60.48	72.00	25.6%	84.0%	2017 01 01
18	QF - 109 - UT - Solar	42.34	50.40	31.4%	84.0%	2016 08 01
19	QF - 110 - UT - Solar	67.20	80.00	31.1%	84.0%	2016 09 01
20	QF - 111 - UT - Solar	16.80	20.00	29.2%	84.0%	2016 01 01
21	QF - 112 - UT - Solar	16.80	20.00	29.2%	84.0%	2016 01 01
22	QF - 113 - WY - Wind	5.07	24.75	35.9%	20.5%	2014 08 01
Total Potential MW		834.45	1232.35			
Total Partial Displacement		943.75				

The partial displacement is shown below.

Displacement in Base Case				
Year	Displaced Resource	2013 IRP Resource Size	Displacement MW	Remaining MW
2015	IRP FOT - Mid-C +10 - Q3 HLH	98.0	98.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - COB - Q3 HLH	247.0	63.6	183.5
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2016	IRP FOT - Mid-C +10 - Q3 HLH	221.0	221.0	0.0
	IRP FOT - COB - Q3 HLH	262.0	262.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	53.8	346.2
2017	IRP FOT - Mid-C +10 - Q3 HLH	305.0	305.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	241.8	158.3
2018	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	37.0	37.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	134.8	265.3
2019	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	151.0	151.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	20.8	379.3
2020	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	248.0	248.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	220.8	76.2
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2021	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	19.0	19.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	400.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	49.8	247.3

Displacement in Base Case - Continued

Year	Displaced Resource	2013 IRP Resource Size	Displacement MW	Remaining MW
2022	IRP FOT - Mona - Q3 HLH	161.0	161.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	10.8	389.3
2023	IRP FOT - Mona - Q3 HLH	255.0	255.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	213.8	83.2
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2024	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	237.0	45.8	191.3
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2025	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	132.0	132.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	13.8	86.2
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2026	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	253.0	253.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	267.8	107.3
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2027	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	223.8	151.3
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2028	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	2028 CCCT (661 MW "F" 2x1)	661.0	520.8	140.3

FOT displacement in early years reflects the start date timing of when signed and potential resources are available. Market FOTs are displaced based upon the year the FOT is available and from highest to lowest price.

Avoided Cost Case – A 100 MW 85% capacity factor (CF) avoided cost resource is added to the thermal resource queue.

QF Queue						
No.	QF	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Columbia Biogas	3.00	3.00	45.7%	100.0%	2015 03 01
2	EBD Hydro	3.00	3.00	39.1%	100.0%	2014 04 01
3	TMF Biofuels	4.80	4.80	88.5%	100.0%	2012 12 31
4	Utah Sch 37 Solar (b/4 2015.Q3)	9.32	11.10	31.2%	84.0%	2015 06 30
	Utah Sch 37 Solar (b/4 2016.Q3)	25.20	30.00	31.2%	84.0%	2016 06 30
	Utah Sch 37 Solar (b/4 2017.Q3)	2.52	3.00	31.2%	84.0%	2017 06 30
5	Champlin Blue Mtn Wind	16.40	80.00	35.6%	20.5%	2015 11 30
6	Long Ridge Wind I	16.38	79.90	34.3%	20.5%	2015 12 31
7	Long Ridge Wind II	16.38	79.90	34.3%	20.5%	2015 12 31
8	Latigo Wind Park	12.30	60.00	33.8%	20.5%	2015 05 01
Total Signed MW		109.30	354.70			
1	QF - 82 - UT - Wind	16.24	79.20	33.8%	20.5%	2015 10 01
2	QF - 84 - WY - Wind	16.40	80.00	40.7%	20.5%	2015 03 01
3	QF - 86 - OR - Wind	16.40	80.00	33.9%	20.5%	2015 01 01
4	QF - 88 - OR - Solar	67.20	80.00	28.0%	84.0%	2017 01 01
5	QF - 90 - UT - Solar	3.36	4.00	31.2%	84.0%	2015 07 31
6	QF - 91 - UT - Solar	67.20	80.00	30.7%	84.0%	2016 01 01
7	QF - 92 - UT - Solar	67.20	80.00	29.7%	84.0%	2016 01 01
8	QF - 93 - UT - Solar	67.20	80.00	29.7%	84.0%	2016 01 01
9	QF - 99 - UT - Solar	42.00	50.00	28.7%	84.0%	2016 01 01
10	QF - 101 - UT - Solar	67.20	80.00	29.1%	84.0%	2017 01 01
11	QF - 102 - UT - Wind	2.46	12.00	33.2%	20.5%	2014 09 01
12	QF - 103 - OR - Wind	2.05	10.00	27.0%	20.5%	2015 12 31
13	QF - 104 - OR - Wind	2.05	10.00	27.0%	20.5%	2015 12 31
14	QF - 105 - UT - Solar	67.20	80.00	29.6%	84.0%	2015 07 01
15	QF - 106 - UT - Solar	67.20	80.00	31.7%	84.0%	2015 07 01
16	QF - 107 - UT - Solar	54.40	80.00	18.3%	68.0%	2014 04 01
17	QF - 108 - UT - Solar	60.48	72.00	25.6%	84.0%	2017 01 01
18	QF - 109 - UT - Solar	42.34	50.40	31.4%	84.0%	2016 08 01
19	QF - 110 - UT - Solar	67.20	80.00	31.1%	84.0%	2016 09 01
20	QF - 111 - UT - Solar	16.80	20.00	29.2%	84.0%	2016 01 01
21	QF - 112 - UT - Solar	16.80	20.00	29.2%	84.0%	2016 01 01
22	QF - 113 - WY - Wind	5.07	24.75	35.9%	20.5%	2014 08 01
Total Potential MW		834.45	1232.35			
Total Partial Displacement		943.75				
23	Avoided Cost Resource	100.00	100.0	85.0%	100.0%	2015 01 01
Partial Displacement after QF		1043.75				

The Table below shows the resources that are displaced for the Avoided Cost Case which includes the 100 MW 85% capacity factor avoided cost resource.

Displacement in Avoided Cost Case				
Year	Displaced Resource	2013 IRP Resource Size	Displacement MW	Remaining MW
2015	IRP FOT - Mid-C +10 - Q3 HLH	98.0	98.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - COB - Q3 HLH	247.0	163.6	83.5
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2016	IRP FOT - Mid-C +10 - Q3 HLH	221.0	221.0	0.0
	IRP FOT - COB - Q3 HLH	262.0	262.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	153.8	246.2
2017	IRP FOT - Mid-C +10 - Q3 HLH	305.0	305.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	341.8	58.3
2018	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	37.0	37.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	234.8	165.3
2019	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mona - Q3 HLH	151.0	151.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	120.8	279.3
2020	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	248.0	248.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	23.8	376.3
2021	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - Mona - Q3 HLH	19.0	19.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	400.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	149.8	147.3

Displacement in Avoided Cost Case - Continued

Year	Displaced Resource	2013 IRP Resource Size	Displacement MW	Remaining MW
2022	IRP FOT - Mona - Q3 HLH	161.0	161.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	110.8	289.3
2023	IRP FOT - Mona - Q3 HLH	255.0	255.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mid-C - Q3 HLH	400.0	16.8	383.3
2024	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	0.0	0.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	237.0	145.8	91.3
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2025	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	132.0	132.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	375.0	0.0
	IRP FOT - NOB - Q3 HLH	100.0	100.0	0.0
	IRP FOT - COB - Q3 HLH	297.0	13.8	283.3
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2026	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	253.0	253.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	367.8	7.3
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2027	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	IRP FOT - Mona - Q3 HLH	297.0	297.0	0.0
	IRP FOT - Mid-C +10 - Q3 HLH	375.0	323.8	51.3
	IRP FOT - NOB - Q3 HLH	100.0	0.0	100.0
	IRP FOT - COB - Q3 HLH	297.0	0.0	297.0
	IRP FOT - Mid-C - Q3 HLH	400.0	0.0	400.0
2028	2024 CCCT (423 MW "J" 1x1)	423.0	423.0	0.0
	2028 CCCT (661 MW "F" 2x1)	661.0	620.8	40.3

FOT displacement in early years reflects the start date timing of when signed and potential resources are available. Market FOTs are displaced based upon the year the FOT is available and from highest to lowest price.