



1407 W. North Temple  
Salt Lake City, Utah 84116

May 31, 2018

***VIA ELECTRONIC FILING***

Public Service Commission of Utah  
Heber M. Wells Building, 4<sup>th</sup> Floor  
160 East 300 South  
Salt Lake City, UT 84114

Attn: Gary Widerburg  
Commission Secretary

Re: **Docket 03-035-14 – Quarterly Compliance Filing – 2018.Q1 Avoided Cost Input Changes**  
**Docket 18-035-23 – 2018.Q1 Avoided Cost Input Changes Quarterly Compliance Filing**

PacifiCorp (dba Rocky Mountain Power) hereby respectfully submits its quarterly Schedule 38 compliance filing.

Public Service Commission of Utah (Commission) orders dated October 31, 2005, and February 2, 2006, in Docket 03-035-14 require the Company to keep a record of any changes, including data inputs, made to the Proxy model and the Generation and Regulation Initiative Decision Tool (GRID) model used in calculating avoided costs. The orders further require the Company to notify the Commission and Division of Public Utilities (DPU) of updates made to the models used in the approved Proxy and Partial Displacement Differential Revenue Requirement (PDDRR) avoided cost methodologies. The Commission order dated June 9, 2015, in Docket 14-035-140 requires the Company to identify routine and non-routine updates or modeling changes. Non-routine updates will become effective in three weeks if the update is unchallenged by any party or upon resolution by settlement or Commission action if challenged by any party.

The Company's previous compliance filing dated February 22, 2018, reflected the Commission's January 23, 2018 order in Docket No. 17-035-37. The Commission-approved changes are reflected in the list of Routine Updates.

**Routine Updates**

The Company identifies the following routine updates to its avoided cost inputs since the previous filing:

1. **GRID Model Data Updates** – A number of data and modeling assumption updates have occurred in the GRID model since the last filing. **Appendix A** provides a summary of those updates.

2. **Official Forward Price Curve (OFPC)** – Update to the curve dated September 29, 2017 (1803 OFPC).
3. **Qualifying Facility (QF) Queue** – Update of signed contract queue and current potential QFs. The QF queue was revised to include 4,568 MW nameplate in this filing. The potential queue was 5,466 MW nameplate in the 2017.Q4 filing.
4. **2017 IRP Update Preferred Portfolio Assumptions** – reflect 2017 IRP Update assumptions including resources from 2017 Update Preferred Portfolio, updated federal tax rate of 21%, hourly market scalars, discount rate of 6.91%, and non-levelized PTCs for proxy IRP wind resources.

### **Non-Routine Updates**

The Company has not identified any non-routine updates in this filing.

### **Additional Details**

Additional detail is provided below:

1. **GRID Data Updates** – A number of data and modeling assumption updates have occurred in GRID since the previous compliance filing. **Appendix A** provides a summary of those updates.
2. **Proxy / Partial Displacement Differential Revenue Requirement (PDDRR) Avoided Cost Methodology** – The proxy resources used in the PDDRR avoided cost methodology are consistent with the Company’s 2017 Integrated Resource Plan (IRP) Update filed with the Commission on May 1, 2018. The 2017 IRP Update preferred portfolio includes cost-effective solar and wind resources. The incremental thermal QF resource partially displaces summer and winter front office transactions (FOT) since the 2017 Update portfolio does not include any thermal resources. The incremental tracking solar QF resource partially displaces summer and winter FOTs during study period since the IRP solar resources from 2017 IRP Update portfolio are fully displaced by the potential QFs in the queue. The wind QF resource partially displaces summer and winter FOTs during 2017-2019 and the partially displaces Energy Vision 2020 resources from the 2017 IRP Update preferred portfolio in 2020.
3. **Impact to Avoided Cost Prices (\$/MWh)** – Provided as **Appendix B.1** is the \$/MWh impact of the above mentioned updates on avoided costs, compared to the previous compliance filing. The updates reflect a total increase of approximately \$2.66/MWh.
  - a. Avoided costs presented in **Appendix B.1** were calculated assuming a 100 MW 85 percent capacity factor thermal QF resource.
  - b. Avoided costs presented in **Appendix B.2** were calculated assuming an 80 MW 31.1 percent capacity factor tracking solar QF resource.
  - c. Avoided costs presented in **Appendix B.3** were calculated assuming an 80 MW 31 percent capacity factor wind QF resource.

4. **Major Changes from the Prior Study** – Provided as **Appendix C** is a \$/MWh step impact study of the routine updates from the prior study. Also provided in **Appendix C** is the incremental impact of each change from the prior step.

**Work Papers**

The Company has also provided calculations with additional details on the following:

- Current QF queue and partial displacement adjusted for solar degradation; and
- FOT partial displacement

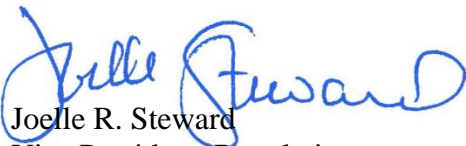
It is respectfully requested that all formal correspondence and requests regarding this compliance filing be addressed to:

By E-Mail (preferred): [datarequest@pacificorp.com](mailto:datarequest@pacificorp.com)

By Regular Mail: Data Request Response Center  
PacifiCorp  
825 NE Multnomah Street, Suite 2000  
Portland, OR 97232

Informal inquiries may be made to Jana Saba at (801) 220-2823, or Dan MacNeil at (503) 813-5523.

Very truly yours,

  
Joelle R. Steward  
Vice President, Regulation

**ROCKY MOUNTAIN POWER**  
**DESCRIPTION OF AVOIDED COST INPUT CHANGES**  
**2018.Q1 – MAY 2018**

## Appendix A

### **PacifiCorp Avoided Cost (Partial Displacement Differential Revenue Requirement (PDDRR)) Model Updates through May 2018 Docket 03-035-14 / Docket 18-035-23**

---

Assumptions that have changed since the 2018.Q1 compliance filing are in **bold and underline**.

#### **GRID Scenario Study Period**

- January 1, 2018 through December 31, 2032 - 15-year study.
- Avoided cost prices starting in January 2018.

#### **Official Forward Price Curve (OFPC) (Gas and Electric Market Prices)**

- **Updated to PacifiCorp's March 31, 2018 OFPC (1803 OFPC)**
- **Hourly Market Price Scalars consistent with 2017 IRP Update**

#### **Fuel Prices (Coal)**

- Average and incremental coal costs based on forecast dated August 2017.
- Coal burn expense reflects incremental coal costs and coal take or pay minimum burn levels.

#### **Integrated Resource Plan (IRP) Resources**

- **2017 IRP Update filed with the Public Service Commission of Utah (UPSC) on May 1, 2018.**
- Resource additions, including generating resources, and front office transactions (FOT), consistent with **2017 IRP Update (Table 8.1).**
- Existing plant retirement consistent with **2017 IRP Update (Table 8.1).**
- The GRID topology includes the Aeolus to Bridger/Anticline portion of Gateway West (Energy Gateway sub-segment D2), consistent with the preferred portfolio in the 2017 IRP Update. The Energy Gateway assumptions are described in more detail in Chapter 7 of the 2017 IRP Update.

#### **REC Ownership:**

Consistent with the Commission's January 23, 2018 order in Docket No. 17-035-37, when a QF defers or avoids a renewable resource, the Company retains the RECs on behalf of ratepayers. When a QF's avoided capacity costs are not based on the costs of a renewable resource, the QF is entitled to the RECs associated with its output.

## **Hydro Resources**

- 2017 hydro forecast prepared December 2017.
- 2017 hydro levels extended thereafter with known and measurable changes.
- Adjust Klamath dispatch to reflect current operating patterns.
- Update Mid-Columbia (Mid-C) generation forecast.

## **Discount Rate**

- **6.91 percent discount rate - 2017 IRP Update**
- Discount rate is consistent with UPSC's order in Docket 11-035-T06.

## **Inflation Rates**

- Company's inflation rate forecast dated **March 2018**.

## **Levelized Prices (Nominal) @ 6.91 percent Discount Rate**

- 15 years 2018 through 2032.
- Levelized prices are for illustrative purposes only.

## **Load Forecast (Retail)**

- 20-year load forecast from July 2017 (Fall 2017 Load Forecast).

## **Long-Term Contracts**

- Long-term contracts which have prices that are indexed to market are consistent with the **1803 OFPC**.
- Contracts are modeled based on 48 months ended **December 2017**.
- Qualifying Facility (QF) power purchase agreements (PPA) are assumed to terminate and not renew at the end of their current PPA term.
- Incorporates signed QF PPAs.

## **Market Capacity**

- Capacity set at 48-month average of all short-term firm (STF) sales ended **December 2017**.
- Mid-C and Palo Verde (PV) 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 2018**

## **Potential Environmental Costs**

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

## Regulating Margin

- Requirements are modeled based on the Flexible Reserve Study used in the 2017 IRP.
- Incremental integration costs for wind and solar resources reflect Flexible Reserve Study results used in the 2017 IRP.

### Incremental Flex Capacity Costs (2016 \$/MWh)

	Regulation Reserve	System Balancing	Total
Wind	0.429	0.145	0.573
Solar	0.458	0.145	0.603

- Levelized integration costs for 2018-2032 for wind and solar are \$0.68/MWh and \$0.72/MWh, respectively.

## Contingency Reserve Calculation

- Reserve modeling reflects NERC / WECC reliability standard BAL-002-WECC-2 – contingency reserves set to 3 percent of retail load plus 3 percent of generating resources.
- Hourly retail load reserve calculation through 2021.
- Typical week retail load reserve calculation thereafter.

## Short-Term Firm (STF) Transactions

- Executed STF contracts as of March 2018.

## Size of the Avoided Cost Resource

- The avoided cost thermal resource is 100 MW with an 85 percent capacity factor and is located in the Utah North transmission bubble.
- The avoided cost tracking solar resource is 80 MW with a 31.1 percent capacity factor and is located in the Utah North transmission bubble.
- The avoided cost wind resource is 80 MW with a 31.0 percent capacity factor and is 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 2017.

## Wind and Solar Resources

- Existing wind generation profiles modeled using 2017 actual generation shape.
- Wind generation shaped to hourly using 2017 actual generation shape<sup>1</sup>.

---

<sup>1</sup> Starting in the 2013.Q4 Compliance filing, wind and solar generation has been modeled hourly using actual generation shape. Potential resources were also modeled hourly when data was provided by the project developer. Since the 2016.Q4 compliance filing, all potential wind generation profiles have been shaped to an hourly profile using the hourly shape of nearby wind resources. Shaping does not alter the 12x24 wind generation profile. This change was made to make potential wind modeling more consistent with existing wind modeling.

- Solar generation modeled using 12x24 profiles.
- Capacity contribution values used in this study reflect the values from the 2017 IRP, and are summarized below.

Renewable Type	Capacity Contribution - Percent of Nameplate	
	EAST	West
Wind	15.8%	11.8%
Solar – Fixed Mount	37.9%	53.9%
Solar –Tracking	59.7%	64.8%

## Transmission

- Short-term transmission modeled based on 48 months ended **December 2017**.
- The GRID topology includes the Aeolus to Bridger/Anticline portion of Gateway West (Energy Gateway sub-segment D2), consistent with the preferred portfolio in the 2017 IRP. The Energy Gateway assumptions are described in more detail in Chapter 4 of the 2017 IRP.
  - Pursuant to the Commission’s January 23, 2017 order in Docket No. 17-035-37, Energy Gateway sub-segment D2 was considered deferrable when the 2021 Aeolus wind resource from 2017 IRP portfolio was deferred by wind resources outside the constrained area of Wyoming. **The 2017 IRP Update preferred portfolio includes 1,311 MW of Energy Vision 2020 (EV 2020) wind resources, of which 1,150 MW require Gateway segment D2,** and 750 MW of incremental transmission capacity. **Deferral of wind resources that require Gateway segment D2** by proposed QFs outside the constrained area of Wyoming results in a proportionate reduction in the transmission capacity upgrade. When Energy Vision 2020 wind resources are deferred by wind resources in the constrained area of Wyoming, they do not defer Energy Gateway sub-segment D2.
  - In addition, each increment of transmission deferral results in prorated adjustments to transmission system reliability in the form of transmission system derates, and to line losses.
- Wyoming Central -> Wyoming Northeast transmission link included.

## IRP Partial Displacements (This Filing)

Provided in the table below are the QFs that have executed a PPA or are actively negotiating for a PPA. Signed resources are new and were not included in the 2017 IRP Update.

QF Queue						
No.	QF	Partial Displacement	Nameplate	CF	Capacity Contribution	Start Date
1	Tesoro Non Firm QF	0.00	25.00	85.0%	0.000%	2018 01 01
2	Soda Lake Geothermal	13.29	20.00	84.2%	66.500%	2019 09 01



3	Sprague River (terminated)	-4.54	-7.00		64.900%	
4	Ivory Pine (terminated)	-6.48	-10.00		64.800%	
5	Roseburg Dillard QF	0.00	20.00	14.3%	0.000%	2018 03 01
Total Signed MW		2.27	48.00			

1	Pryor Caves Wind	12.64	80.00	44.9%	16.000%	2018 11 01
2	Horse Thief Wind	12.64	80.00	42.0%	15.800%	2018 11 01
3	Mud Springs Wind	12.64	80.00	37.4%	15.800%	2018 11 01
4	Grass Butte Solar	25.92	40.00	29.1%	64.800%	2017 12 31
5	Sparrow Solar	25.92	40.00	31.0%	64.800%	2018 06 30
6	Ochoco Solar	25.92	40.00	27.9%	64.800%	2018 12 01
7	Ringtail Solar	25.92	40.00	24.5%	64.800%	2018 12 01
8	Kennecott Smelter Non Firm	0.00	31.80	58.2%	0.000%	2018 01 01
9	Kennecott Refinery Non Firm	0.00	6.20	85.0%	0.000%	2018 01 01
10	Drake Peak Solar	39.27	60.60	25.6%	64.800%	2020 11 01
11	Lincoln Solar	47.74	80.00	26.7%	59.700%	2020 01 01
12	Westmoreland Wind	12.64	80.00	33.0%	15.800%	2020 12 01
13	Jeffrey City RE1 Solar	34.61	58.00	28.0%	59.700%	2020 01 01
14	Jeffrey City RE1 Wind	7.20	50.00	51.6%	14.400%	2020 01 01
15	Tableland Solar	25.92	40.00	28.3%	64.800%	2021 01 01
16	Ponderosa Solar	32.40	50.00	26.7%	64.800%	2021 01 01
17	Tenmile Solar	2.98	5.00	28.4%	59.600%	2019 01 01
18	Bear River Solar	2.98	5.00	28.4%	59.600%	2019 01 01
19	Old Main Solar	2.98	5.00	29.2%	59.600%	2019 01 01
20	Simplot Phosphates	0.00	13.30	85.0%	0.000%	2018 02 01
21	Periwinkle Solar	25.92	40.00	23.1%	64.800%	2020 11 01
22	Elk Mountain 2 Wind	11.99	75.90	46.7%	15.800%	2019 09 01
23	Dinosolar 4 Solar	23.87	40.00	27.4%	59.700%	2019 06 30
24	Dinosolar 1 Solar	17.90	30.00	27.4%	59.700%	2020 01 01
25	Dinosolar 2 Solar	47.74	80.00	27.4%	59.700%	2020 01 01
26	Caiman Solar	11.93	20.00	26.9%	59.700%	2018 12 01
27	Raptor Solar	11.93	20.00	27.7%	59.700%	2018 12 01
28	MTSUN Solar	47.74	80.00	24.8%	59.700%	2020 01 01
29	Broadview Solar 1	47.74	80.00	24.76%	59.700%	2020 01 01
30	Echo Divide Wind	12.64	80.00	31.36%	15.800%	2020 08 01
31	Little Mountain Solar	21.48	36.00	22.58%	59.700%	2019 12 01
32	PacificCorp Solar	47.74	80.00	23.35%	59.700%	2020 12 01
33	Faraday Energy Solar I	47.74	80.00	29.41%	59.700%	2020 12 01
34	Faraday Energy Solar II	47.74	80.00	29.41%	59.700%	2020 12 01
35	Faraday Energy Solar III	47.74	80.00	29.41%	59.700%	2020 12 01
36	Faraday Energy Solar IV	47.74	80.00	29.41%	59.700%	2020 12 01
37	Faraday Energy Solar V	47.74	80.00	29.41%	59.700%	2020 12 01
38	Faraday Energy Solar VI	47.74	80.00	29.41%	59.700%	2020 12 01
39	Faraday Energy Solar VII	47.74	80.00	29.41%	59.700%	2020 12 01
40	Faraday Energy Solar VIII	47.74	80.00	29.41%	59.700%	2021 04 01
41	Faraday Energy Solar IX	47.74	80.00	29.41%	59.700%	2021 04 01
42	Faraday Energy Solar X	47.74	80.00	29.41%	59.700%	2021 04 01
43	Faraday Energy Solar XI	47.74	80.00	29.41%	59.700%	2021 04 01
44	Faraday Energy Solar XII	47.74	80.00	29.41%	59.700%	2021 04 01

45	Faraday Energy Solar XIII	47.74	80.00	29.41%	59.700%	2021 04 01
46	Faraday Energy Solar XIV	47.74	80.00	29.4%	59.700%	2021 04 01
47	Albany Solar	12.96	20.00	21.6%	64.800%	2020 07 01
48	Pleasant Ridge Solar	3.56	5.50	22.9%	64.700%	2020 03 01
49	Chevron Wind	2.61	16.50	29.9%	15.800%	2018 07 01
50	US MagCorp Non-Firm	0.00	36.00	85.0%	0.000%	2018 04 01
51	US MagCorp Firm	36.00	36.00	85.0%	100.000%	2018 04 01
52	Rock Creek I Wind	12.64	80.00	46.6%	15.800%	2020 11 01
53	Rock Creek II Wind	12.64	80.00	46.6%	15.800%	2020 11 01
54	Rock Creek III Wind	12.64	80.00	46.6%	15.800%	2020 11 01
55	Rock Creek IV Wind	6.32	40.00	46.6%	15.800%	2020 11 01
56	Juab Solar Farm	11.93	20.00	28.3%	59.700%	2019 12 01
57	Horseshoe Solar	44.75	75.00	27.4%	59.700%	2020 12 01
58	Elektron Solar	47.74	80.00	28.6%	59.700%	2020 12 01
59	Castle Solar	23.87	40.00	32.1%	59.700%	2020 12 01
60	Steel Solar	47.74	80.00	27.6%	59.700%	2020 12 01
61	Rocket Solar	47.74	80.00	26.2%	59.700%	2020 12 01
62	Harney Solar 1	51.84	80.00	26.7%	64.800%	2021 12 01
63	Harney Solar 2	51.84	80.00	26.7%	64.800%	2021 12 01
64	Harney Solar 3	51.84	80.00	26.7%	64.800%	2021 12 01
65	Hayden Mountain PV1 Solar	32.40	50.00	27.1%	64.800%	2019 12 01
66	Hayden Mountain PV2-A Solar	51.84	80.00	27.1%	64.800%	2019 12 01
67	Hayden Mountain PV2-B Solar	51.84	80.00	27.1%	64.800%	2019 12 01
68	Hayden Mountain PV3-A Solar	51.84	80.00	26.7%	64.800%	2019 12 01
69	Hayden Mountain PV3-B Solar	51.84	80.00	26.7%	64.800%	2019 12 01
70	Hayden Mountain PV3-C Solar	51.84	80.00	26.7%	64.800%	2019 12 01
71	Hamaker Mountain PV1 Solar	32.40	50.00	27.5%	64.800%	2019 12 01
72	Lakeview PV1 Solar	32.40	50.00	28.7%	64.800%	2018 12 01
73	Homa Hills Solar	17.90	30.00	26.8%	59.700%	2020 01 01
74	Jeffrey City PV1 Solar	47.74	80.00	29.0%	59.700%	2020 01 01
75	Bly PV1 Solar	32.40	50.00	28.9%	64.800%	2019 06 01
76	Hornet PV1-3 Solar	29.81	46.00	28.7%	64.800%	2019 06 01
77	Riverton PV1 Solar	44.69	74.90	30.6%	59.700%	2019 03 01
78	Shoshoni PV1 Solar	7.95	13.33	26.7%	59.600%	2019 03 01
<b>Total Potential MW</b>		<b>2362.85</b>	<b>4520.03</b>			
<b>Total Partial Displacement</b>		<b>2365.12</b>	<b>4568.03</b>			

The table below provides the partial displacement of the base case, adjusted for solar degradation. After accounting for the QF queue, the capacity displacement associated with the proxy avoided cost resources in this filing were as follows:

- Thermal: No thermal resources are present in the 2017 IRP Update preferred portfolio. The incremental thermal QF displaces available FOTs for entire term.
- Tracking Solar: 1,860 MW of solar resources are displaced by the QF queue. After degradation, the incremental solar QF displaces available FOTs for entire term.
- Wind: 578 MW of wind resources are displaced by the QF queue. The incremental wind QF displaces 80 MW of Wyoming Aeolus Wind in Nov. 2020. The Company retains 100% of the RECs starting in Nov. 2020.

Year	IRP Additions (Nameplate MW)				Base Case Displacement (Deferred Nameplate MW)				
	IRP Thermal	IRP Baseload Renewable	IRP Solar	IRP Wind	Thermal	Solar	Wind	FOT Summer	FOT Winter
2017	-	-	-	-	-	-	-	(11)	(11)
2018	-	-	-	-	-	-	-	79	79
2019	-	-	-	-	-	-	-	335	303
2020	-	-	-	-	-	-	-	463	296
2021	-	-	-	1,311	-	-	578	395	303
2022	-	-	-	1,311	-	-	578	445	305
2023	-	-	-	1,311	-	-	578	419	310
2024	-	-	-	1,311	-	-	578	428	304
2025	-	-	-	1,311	-	-	578	538	317
2026	-	-	-	1,311	-	-	578	499	330
2027	-	-	-	1,311	-	-	578	500	343
2028	-	-	-	1,311	-	-	578	1,247	357
2029	-	-	-	1,311	-	-	578	1,575	758
2030	-	-	651	1,431	-	651	578	1,575	794
2031	-	-	745	1,431	-	745	578	1,575	809
2032	-	-	878	1,431	-	878	578	1,575	776
2033	-	-	1,854	2,231	-	1,854	578	1,006	868
2034	-	-	1,854	2,231	-	1,854	578	965	875
2035	-	-	1,860	2,564	-	1,860	578	946	946
2036	-	-	1,860	2,713	-	1,860	578	665	665

## IRP Partial Displacements (Previous Filing)

Thermal partial displacement was 2,662 MW in the base case and 2,762 MW in the avoided cost case as shown in the table below, adjusted for solar degradation:

QF Queue						
No.	QF	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Boswell Springs I Wind	12.64	80.00	40.7%	15.800%	2021 12 31
2	Boswell Springs II Wind	12.64	80.00	40.7%	15.800%	2021 12 31
3	Boswell Springs III Wind	12.64	80.00	40.7%	15.800%	2021 12 31
4	Boswell Springs IV Wind	12.64	80.00	40.7%	15.800%	2021 12 31
5	Glen Canyon A Solar QF	44.16	74.00	32.2%	59.700%	2019 09 29
6	Glen Canyon B Solar QF	12.53	21.00	34.9%	59.700%	2019 11 01
7	Sage I Solar QF	11.93	20.00	28.2%	59.700%	2019 10 01
8	Sage II Solar QF	11.93	20.00	28.2%	59.700%	2019 10 01
9	BYU-ID QF	4.20	5.60	79.0%	74.900%	2017 09 29
10	Sage III Solar QF	10.50	17.60	26.7%	59.700%	2019 10 01
11	Beatty Solar (Terminated)	-3.24	-5.00		64.800%	2016 12 01
12	Monticello Wind QF	12.51	79.20	33.8%	15.8%	2021 12 31
13	Tesoro Non Firm QF	0.00	25.00	85.0%	0.000%	2018 01 01
Total Signed MW		155.08	577.40			

1	QF - 245 - WY - Wind	12.64	80.00	44.9%	15.800%	2018 11 01
2	QF - 246 - WY - Wind	12.64	80.00	42.0%	15.800%	2018 11 01
3	QF - 247 - WY - Wind	12.64	80.00	37.4%	15.800%	2018 11 01
4	QF - 249 - OR - Solar	25.92	40.00	29.1%	64.800%	2017 12 31
5	QF - 279 - OR - Solar	25.92	40.00	31.0%	64.800%	2018 06 30
6	QF - 280 - OR - Solar	25.92	40.00	27.9%	64.800%	2018 12 01
7	QF - 281 - OR - Solar	25.92	40.00	24.5%	64.800%	2018 12 01
8	QF - 254 - OR - Solar	35.64	55.00	24.6%	64.800%	2020 12 31
9	QF - 405 - OR - Solar	32.40	50.00	27.1%	64.800%	2019 12 01
10	QF - 406 - OR - Solar	51.84	80.00	27.1%	64.800%	2019 12 01
11	QF - 407 - OR - Solar	51.84	80.00	27.1%	64.800%	2019 12 01
12	QF - 408 - OR - Solar	51.84	80.00	26.7%	64.800%	2019 12 01
13	QF - 409 - OR - Solar	51.84	80.00	26.7%	64.800%	2019 12 01
14	QF - 410 - OR - Solar	51.84	80.00	26.7%	64.800%	2019 12 01
15	QF - 411 - OR - Solar	32.40	50.00	27.5%	64.800%	2019 12 01
16	QF - 418 - OR - Solar	34.99	54.00	22.7%	64.800%	2019 06 01
17	QF - 412 - WY - Wind	7.90	50.00	45.4%	15.800%	2018 12 01
18	QF - 432 - WY - Solar	35.80	60.00	26.3%	59.7%	2018 12 01
19	QF - 432 - WY - Wind	7.61	55.00	27.3%	13.8%	2018 12 01

20	QF - 414 - OR - Solar	10.77	20.00	19.3%	53.900%	2018 11 01
21	QF - 415 - OR - Solar	19.39	36.00	20.3%	53.900%	2018 11 01
22	QF - 416 - OR - Solar	7.00	13.00	21.9%	53.800%	2018 11 01
23	QF - 430 - WY - Wind	2.61	16.50	29.5%	15.800%	2018 07 01
24	QF - 429 - WY - Solar	23.87	40.00	30.2%	59.700%	2020 01 01
25	QF - 428 - WY - Solar	23.87	40.00	30.2%	59.700%	2020 01 01
26	QF - 393 - OR - Solar	32.40	50.00	28.7%	64.800%	2018 12 01
27	QF - 433 - UT - Non firm	0.00	31.80	58.2%	0.000%	2018 01 01
28	QF - 434 - UT - Non firm	0.00	6.20	85.0%	0.000%	2018 01 01
29	QF - 308 - WY - Wind	12.64	80.00	46.6%	15.800%	2020 11 01
30	QF - 309 - WY - Wind	12.64	80.00	46.6%	15.800%	2020 11 01
31	QF - 310 - WY - Wind	12.64	80.00	46.6%	15.800%	2020 11 01
32	QF - 311 - WY - Wind	6.32	40.00	46.6%	15.800%	2020 11 01
33	QF - 313 - UT - Solar	47.74	80.00	29.6%	59.700%	2019 12 01
34	QF - 315 - UT - Solar	47.74	80.00	29.6%	59.700%	2019 12 01
35	QF - 317 - UT - Solar	47.74	80.00	29.6%	59.700%	2019 12 01
36	QF - 319 - UT - Solar	47.74	80.00	29.6%	59.700%	2019 12 01
37	QF - 321 - UT - Solar	47.74	80.00	29.6%	59.700%	2019 12 01
38	QF - 323 - UT - Solar	47.74	80.00	29.6%	59.700%	2019 12 01
39	QF - 325 - UT - Solar	47.74	80.00	29.6%	59.700%	2019 12 01
40	QF - 358 - UT - Solar	47.74	80.00	29.7%	59.700%	2019 12 01
41	QF - 359 - UT - Solar	47.74	80.00	29.7%	59.700%	2019 12 01
42	QF - 360 - UT - Solar	47.74	80.00	29.7%	59.700%	2019 12 01
43	QF - 361 - UT - Solar	47.74	80.00	29.7%	59.700%	2019 12 01
44	QF - 362 - UT - Solar	47.74	80.00	29.7%	59.700%	2019 12 01
45	QF - 363 - UT - Solar	47.74	80.00	29.7%	59.700%	2019 12 01
46	QF - 364 - UT - Solar	47.74	80.00	29.7%	59.700%	2019 12 01
47	QF - 398 - OR - Solar	47.31	73.00	30.6%	64.800%	2021 01 01
48	QF - 399 - OR - Solar	47.31	73.00	30.6%	64.800%	2021 01 01
49	QF - 400 - OR - Solar	47.31	73.00	30.6%	64.800%	2021 01 01
50	QF - 401 - OR - Solar	47.31	73.00	30.6%	64.800%	2021 01 01
51	QF - 402 - OR - Solar	47.31	73.00	30.6%	64.800%	2021 01 01
52	QF - 403 - OR - Solar	47.31	73.00	30.6%	64.800%	2021 01 01
53	QF - 436 - WY - Solar	17.90	30.00	26.8%	59.700%	2020 01 01
54	QF - 437 - WY - Solar	47.74	80.00	29.0%	59.700%	2020 01 01
55	QF - 440 - OR - Solar	32.40	50.00	28.9%	64.800%	2019 06 01
56	QF - 328 - OR - Solar	29.81	46.00	28.7%	64.800%	2019 06 01
57	QF - 282 - WY - Solar	44.69	74.90	30.6%	59.700%	2019 03 01
58	QF - 337 - WY - Solar	7.95	13.33	26.7%	59.700%	2019 03 01
59	QF - 438 - OR - Solar	39.27	60.60	25.6%	64.800%	2020 11 01
60	QF - 439 - UT - Solar	34.61	58.00	31.6%	59.700%	2021 01 01
61	QF - 442 - WY - Solar	47.74	80.00	26.7%	59.700%	2020 01 01
62	QF - 443 - WY - Wind	12.64	80.00	33.0%	15.800%	2020 12 01
63	QF - 444 - WY - Solar	34.61	58.00	28.0%	59.700%	2020 01 01
64	QF - 444 - WY - Wind	7.20	50.00	51.6%	14.400%	2020 01 01

65	QF - 445 - UT - Solar	47.74	80.00	25.8%	59.700%	2020 11 01
66	QF - 292 - OR - Solar	25.92	40.00	28.3%	64.800%	2021 01 01
67	QF - 293 - OR - Solar	32.40	50.00	26.7%	64.800%	2021 01 01
68	QF - 446 - WY - Solar	2.98	5.00	28.4%	59.600%	2019 01 01
69	QF - 447 - WY - Solar	2.98	5.00	28.4%	59.600%	2019 01 01
70	QF - 448 - WY - Solar	2.98	5.00	29.2%	59.600%	2019 01 01
71	QF - 449 - UT - Wind	12.51	79.20	29.6%	15.800%	2020 11 01
72	QF - 451 - OR - Gas	0.00	20.00	14.3%	0.000%	2018 03 01
73	QF - 450 - UT - Solar	11.93	20.00	31.19%	59.700%	2019 01 01
74	QF - 453 - UT - Solar	47.74	80.00	26.9%	59.700%	2020 07 01
75	QF - 454 - UT - Solar	47.74	80.00	26.9%	59.700%	2020 07 01
76	QF - 455 - UT - Solar	47.74	80.00	26.9%	59.700%	2020 07 01
77	QF - 456 - WY - Gas	0.00	13.30	85.0%	0.000%	2018 02 01
78	QF - 458 - OR - Solar	25.92	40.00	23.1%	64.800%	2020 11 01
79	QF - 427 - WY - Wind	11.99	75.90	46.7%	15.800%	2019 09 01
80	QF - 372 - WY - Solar	23.87	40.00	27.4%	59.700%	2019 06 30
81	QF - 304 - WY - Solar	17.90	30.00	27.4%	59.700%	2020 01 01
82	QF - 305 - WY - Solar	47.74	80.00	27.4%	59.700%	2020 01 01
83	QF - 390 - WY - Solar	11.93	20.00	26.9%	59.700%	2018 12 01
84	QF - 391 - WY - Solar	11.93	20.00	27.7%	59.700%	2018 12 01
85	QF - 389 - WY - Wind	12.55	79.40	41.6%	15.800%	2019 01 01
Total Potential MW		2506.96	4889.13			

Total Partial Displacement	<b>2662.04</b>	<b>5466.53</b>
----------------------------	----------------	----------------

86	Utah 2017.Q4	100.00	100.00	85.0%	100.0%	2018 01 01
Partial Displacement after QF		<b>2762.04</b>				

**ROCKY MOUNTAIN POWER**

**UPDATE IMPACT – UPDATED AVOIDED COST STUDY**

**2018.Q1 – MAY 2018**

**Appendix B.1**  
**Avoided Cost Prices \$/MWh**  
**Utah 2018.Q1 Sch 38**

Year	Thermal Avoided Cost at 85.0% CF (2)	Solar Tracking Avoided Cost at 31.1% CF (2)	Wind Avoided Cost at 31.0% CF (2)	Thermal UT 2017.Q4 Filing	Solar Tracking UT 2017.Q4 Filing	Wind UT 2017.Q4 Filing	Thermal Difference	Solar Tracking Difference	Wind Difference
2018	\$16.09	\$13.89	\$14.04	\$19.38	\$19.33	\$17.83	(\$3.29)	(\$5.44)	(\$3.79)
2019	\$16.77	\$13.49	\$14.73	\$19.04	\$17.84	\$17.52	(\$2.27)	(\$4.34)	(\$2.78)
2020	\$16.46	\$11.95	\$12.16	\$15.31	\$9.48	\$14.10	\$1.15	\$2.47	(\$1.94)
2021	\$16.75	\$5.99	\$13.04	\$13.31	\$2.60	\$23.33	\$3.44	\$3.39	(\$10.29)
2022	\$16.87	\$5.60	\$14.64	\$14.65	\$4.40	\$24.97	\$2.21	\$1.21	(\$10.34)
2023	\$17.62	\$6.14	\$14.58	\$14.28	\$3.37	\$24.32	\$3.34	\$2.77	(\$9.74)
2024	\$19.70	\$7.81	\$15.80	\$16.56	\$3.97	\$26.54	\$3.14	\$3.84	(\$10.74)
2025	\$23.79	\$9.80	\$16.12	\$19.81	\$6.50	\$29.67	\$3.98	\$3.29	(\$13.56)
2026	\$24.63	\$10.19	\$17.37	\$19.32	\$5.43	\$29.02	\$5.31	\$4.76	(\$11.65)
2027	\$25.29	\$9.87	\$17.25	\$19.65	\$5.35	\$29.50	\$5.64	\$4.53	(\$12.25)
2028	\$28.79	\$12.69	\$11.48	\$23.89	\$8.65	\$28.73	\$4.90	\$4.04	(\$17.25)
2029	\$32.12	\$14.66	\$10.62	\$26.35	\$9.35	\$30.79	\$5.78	\$5.31	(\$20.17)
2030	\$35.67	\$15.86	\$18.56	\$29.71	\$9.79	\$31.83	\$5.96	\$6.07	(\$13.27)
2031	\$37.27	\$17.42	\$61.93	\$31.17	\$11.19	\$63.21	\$6.10	\$6.23	(\$1.28)
2032	\$39.97	\$18.52	\$63.12	\$32.99	\$11.71	\$63.42	\$6.98	\$6.81	(\$0.30)

15-Year Levelized Prices (Nominal) @ 0.000% Discount Rate (1) (3)

2018-2032	\$/MWh	\$22.38 (4)	\$11.04 (4)	\$18.55 (4)	\$19.72 (4)	\$8.98 (4)	\$27.43 (4)	\$2.66	\$2.06	(\$8.87)
-----------	--------	-------------	-------------	-------------	-------------	------------	-------------	--------	--------	----------

Footnotes:

- (2) 'Energy Only' is the GRID calculated costs and includes some capacity costs.
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2018 - 2032
- (4) Levelized Monthly



**Table 1**  
**Avoided Cost Prices**  
**Utah 2018.Q1 - 100.0 MW and 85.0% CF**

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh <sup>(2)</sup>	85.0% Capacity Factor \$/MWh
2018	\$0.00	\$16.09	\$16.09
2019	\$0.00	\$16.77	\$16.77
2020	\$0.00	\$16.46	\$16.46
2021	\$0.00	\$16.75	\$16.75
2022	\$0.00	\$16.87	\$16.87
2023	\$0.00	\$17.62	\$17.62
2024	\$0.00	\$19.70	\$19.70
2025	\$0.00	\$23.79	\$23.79
2026	\$0.00	\$24.63	\$24.63
2027	\$0.00	\$25.29	\$25.29
2028	\$0.00	\$28.79	\$28.79
2029	\$0.00	\$32.12	\$32.12
2030	\$0.00	\$35.67	\$35.67
2031	\$0.00	\$37.27	\$37.27
2032	\$0.00	\$39.97	\$39.97
2033	\$0.00	\$41.27	\$41.27
2034	\$0.00	\$42.24	\$42.24
2035	\$0.00	\$45.02	\$45.02
2036	\$0.00	\$51.01	\$51.01
2037	\$0.00	\$52.05	\$52.05
2038	\$0.00	#DIV/0!	#DIV/0!

15 Year Starting 2018

15 year Levelized Prices (Nominal) @ 6.91% Discount Rate (1) (3)

\$/kW	\$0.00		
\$/MWh		\$22.38	\$22.38

15 Year Starting 2019

15 year Levelized Prices (Nominal) @ 0.00% Discount Rate (1) (3)

\$/kW	\$0.00		
\$/MWh		\$23.82	\$23.82

20 Year Starting 2019

15 year Levelized Prices (Nominal) @ 0.00% Discount Rate (1) (3)

\$/kW	\$0.00		
\$/MWh		\$27.27	\$27.27

Footnotes:

(1) Discount Rate - 2017 IRP

(2) 'Energy Only' is the GRID calculated costs and includes some capacity costs.

**Table 4**  
**Burnertip Natural Gas Price Forecast**  
**Utah 2018.Q1 - 100.0 MW and 85.0% CF**

Year	PacifiCorp		
	Delivered IRP - Utah Greenfield Fuel Cost	Delivered IRP West Side Fuel Cost	Delivered IRP - Wyo NE Fuel Cost
2016	\$2.32	\$2.30	\$2.35
2017	\$2.71	\$2.77	\$2.76
2018	\$2.21	\$2.09	\$2.21
2019	\$2.06	\$1.95	\$2.03
2020	\$2.15	\$2.02	\$2.13
2021	\$2.24	\$2.15	\$2.23
2022	\$2.33	\$2.23	\$2.34
2023	\$2.42	\$2.38	\$2.42
2024	\$2.88	\$2.86	\$2.91
2025	\$3.56	\$3.54	\$3.59
2026	\$3.82	\$3.80	\$3.85
2027	\$3.94	\$3.93	\$3.97
2028	\$4.15	\$4.19	\$4.18
2029	\$4.53	\$4.64	\$4.56
2030	\$4.98	\$5.10	\$5.02
2031	\$5.01	\$5.09	\$5.05
2032	\$5.39	\$5.48	\$5.43
2033	\$5.67	\$5.78	\$5.71
2034	\$5.61	\$5.67	\$5.65
2035	\$5.80	\$5.82	\$5.84
2036	\$5.75	\$5.77	\$5.79
2037	\$6.09	\$6.15	\$6.13
2038	\$6.50	\$6.59	\$6.54
2039	\$6.74	\$6.86	\$6.78
2040	\$7.13	\$7.27	\$7.17
2041	\$7.28	\$7.42	\$7.32
2042	\$4.86	\$4.94	\$4.90

Official Forward Price Curve Forecast dated Mar 30, 2018

**Table 5**

**Utah 2018.Q1 - 100.0 MW and 85.0% CF**

**January 2018 through December 2037**

**Nominal Avoided Costs Calculated Monthly**

**15 Year Starting 2019**                    \$ 167,667,310    \$ -    \$ 167,667,310    \$ 7,038,138                    \$23.82

**Nominal NPV at 6.91% Discount Rate**

**15 Year Starting 2018**                    \$ 157,507,212    \$ -    \$ 157,507,212    \$ 7,037,797                    \$22.38

**20 Year Starting 2019**                    \$ 223,568,713    \$ -    \$ 223,568,713    \$ 8,197,076                    \$27.27

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	85.0% CF	Dollars	MWH	85.0% CF
Jan-18	1,138,309	-	1,138,309	63,240	18.00
Feb-18	829,516	-	829,516	57,120	14.52
Mar-18	903,330	-	903,330	63,240	14.28
Apr-18	792,407	-	792,407	61,200	12.95
May-18	813,491	-	813,491	63,240	12.86
Jun-18	769,267	-	769,267	61,200	12.57
Jul-18	1,296,412	-	1,296,412	63,240	20.50
Aug-18	1,461,747	-	1,461,747	63,240	23.11
Sep-18	1,032,157	-	1,032,157	61,200	16.87
Oct-18	980,050	-	980,050	63,240	15.50
Nov-18	842,929	-	842,929	61,200	13.77
Dec-18	1,122,122	-	1,122,122	63,240	17.74
Jan-19	1,136,715	-	1,136,715	63,240	17.97
Feb-19	1,050,991	-	1,050,991	57,120	18.40
Mar-19	1,011,637	-	1,011,637	63,240	16.00
Apr-19	753,451	-	753,451	61,200	12.31
May-19	904,477	-	904,477	63,240	14.30
Jun-19	917,443	-	917,443	61,200	14.99
Jul-19	1,261,448	-	1,261,448	63,240	19.95
Aug-19	1,377,659	-	1,377,659	63,240	21.78
Sep-19	1,042,828	-	1,042,828	61,200	17.04
Oct-19	950,622	-	950,622	63,240	15.03
Nov-19	1,012,280	-	1,012,280	61,200	16.54
Dec-19	1,068,131	-	1,068,131	63,240	16.89
Jan-20	1,092,278	-	1,092,278	63,240	17.27
Feb-20	1,030,744	-	1,030,744	59,160	17.42
Mar-20	1,018,062	-	1,018,062	63,240	16.10
Apr-20	859,485	-	859,485	61,200	14.04
May-20	945,768	-	945,768	63,240	14.96
Jun-20	904,882	-	904,882	61,200	14.79
Jul-20	1,193,739	-	1,193,739	63,240	18.88
Aug-20	1,289,092	-	1,289,092	63,240	20.38
Sep-20	979,641	-	979,641	61,200	16.01
Oct-20	1,083,772	-	1,083,772	63,240	17.14
Nov-20	841,923	-	841,923	61,200	13.76
Dec-20	1,047,326	-	1,047,326	63,240	16.56
Jan-21	1,085,921	-	1,085,921	63,240	17.17
Feb-21	1,000,118	-	1,000,118	57,120	17.51
Mar-21	1,219,767	-	1,219,767	63,240	19.29
Apr-21	881,328	-	881,328	61,200	14.40
May-21	747,993	-	747,993	63,240	11.83
Jun-21	798,719	-	798,719	61,200	13.05
Jul-21	1,098,949	-	1,098,949	63,240	17.38
Aug-21	1,074,742	-	1,074,742	63,240	16.99
Sep-21	1,019,799	-	1,019,799	61,200	16.66
Oct-21	1,070,259	-	1,070,259	63,240	16.92
Nov-21	1,200,813	-	1,200,813	61,200	19.62
Dec-21	1,274,322	-	1,274,322	63,240	20.15
Jan-22	1,298,364	-	1,298,364	63,240	20.53
Feb-22	1,066,433	-	1,066,433	57,120	18.67
Mar-22	1,239,744	-	1,239,744	63,240	19.60

Apr-22	863,415	-	863,415	61,200	14.11
May-22	915,133	-	915,133	63,240	14.47
Jun-22	812,787	-	812,787	61,200	13.28
Jul-22	1,048,096	-	1,048,096	63,240	16.57
Aug-22	1,075,858	-	1,075,858	63,240	17.01
Sep-22	944,821	-	944,821	61,200	15.44
Oct-22	1,064,242	-	1,064,242	63,240	16.83
Nov-22	994,458	-	994,458	61,200	16.25
Dec-22	1,237,449	-	1,237,449	63,240	19.57
Jan-23	1,321,506	-	1,321,506	63,240	20.90
Feb-23	1,121,952	-	1,121,952	57,120	19.64
Mar-23	1,367,251	-	1,367,251	63,240	21.62
Apr-23	1,061,903	-	1,061,903	61,200	17.35
May-23	875,311	-	875,311	63,240	13.84
Jun-23	918,747	-	918,747	61,200	15.01
Jul-23	983,145	-	983,145	63,240	15.55
Aug-23	1,099,512	-	1,099,512	63,240	17.39
Sep-23	967,221	-	967,221	61,200	15.80
Oct-23	1,156,401	-	1,156,401	63,240	18.29
Nov-23	1,067,513	-	1,067,513	61,200	17.44
Dec-23	1,178,523	-	1,178,523	63,240	18.64
Jan-24	1,218,035	-	1,218,035	63,240	19.26
Feb-24	1,294,206	-	1,294,206	59,160	21.88
Mar-24	1,429,682	-	1,429,682	63,240	22.61
Apr-24	998,591	-	998,591	61,200	16.32
May-24	954,903	-	954,903	63,240	15.10
Jun-24	988,647	-	988,647	61,200	16.15
Jul-24	1,292,787	-	1,292,787	63,240	20.44
Aug-24	1,271,908	-	1,271,908	63,240	20.11
Sep-24	1,215,535	-	1,215,535	61,200	19.86
Oct-24	1,313,836	-	1,313,836	63,240	20.78
Nov-24	1,420,632	-	1,420,632	61,200	23.21
Dec-24	1,309,370	-	1,309,370	63,240	20.70
Jan-25	1,348,019	-	1,348,019	63,240	21.32
Feb-25	1,586,845	-	1,586,845	57,120	27.78
Mar-25	1,477,779	-	1,477,779	63,240	23.37
Apr-25	1,148,267	-	1,148,267	61,200	18.76
May-25	964,979	-	964,979	63,240	15.26
Jun-25	1,046,138	-	1,046,138	61,200	17.09
Jul-25	1,662,125	-	1,662,125	63,240	26.28
Aug-25	1,703,763	-	1,703,763	63,240	26.94
Sep-25	1,795,473	-	1,795,473	61,200	29.34
Oct-25	1,589,665	-	1,589,665	63,240	25.14
Nov-25	1,689,590	-	1,689,590	61,200	27.61
Dec-25	1,701,978	-	1,701,978	63,240	26.91
Jan-26	1,721,820	-	1,721,820	63,240	27.23
Feb-26	1,607,339	-	1,607,339	57,120	28.14
Mar-26	1,429,229	-	1,429,229	63,240	22.60
Apr-26	1,261,586	-	1,261,586	61,200	20.61
May-26	987,316	-	987,316	63,240	15.61
Jun-26	1,075,661	-	1,075,661	61,200	17.58
Jul-26	1,702,923	-	1,702,923	63,240	26.93
Aug-26	1,688,814	-	1,688,814	63,240	26.70
Sep-26	1,790,059	-	1,790,059	61,200	29.25
Oct-26	1,595,178	-	1,595,178	63,240	25.22
Nov-26	1,729,655	-	1,729,655	61,200	28.26
Dec-26	1,750,336	-	1,750,336	63,240	27.68
Jan-27	1,766,301	-	1,766,301	63,240	27.93
Feb-27	1,670,765	-	1,670,765	57,120	29.25
Mar-27	1,524,647	-	1,524,647	63,240	24.11
Apr-27	1,230,433	-	1,230,433	61,200	20.11
May-27	1,015,285	-	1,015,285	63,240	16.05

Jun-27	965,239	-	965,239	61,200	15.77
Jul-27	1,754,225	-	1,754,225	63,240	27.74
Aug-27	1,751,622	-	1,751,622	63,240	27.70
Sep-27	1,858,785	-	1,858,785	61,200	30.37
Oct-27	1,689,600	-	1,689,600	63,240	26.72
Nov-27	1,780,768	-	1,780,768	61,200	29.10
Dec-27	1,821,762	-	1,821,762	63,240	28.81
Jan-28	1,775,223	-	1,775,223	63,240	28.07
Feb-28	1,967,223	-	1,967,223	59,160	33.25
Mar-28	1,727,980	-	1,727,980	63,240	27.32
Apr-28	1,544,102	-	1,544,102	61,200	25.23
May-28	1,314,434	-	1,314,434	63,240	20.78
Jun-28	1,432,296	-	1,432,296	61,200	23.40
Jul-28	1,990,854	-	1,990,854	63,240	31.48
Aug-28	2,040,659	-	2,040,659	63,240	32.27
Sep-28	1,805,453	-	1,805,453	61,200	29.50
Oct-28	1,966,007	-	1,966,007	63,240	31.09
Nov-28	1,842,269	-	1,842,269	61,200	30.10
Dec-28	2,092,189	-	2,092,189	63,240	33.08
Jan-29	1,949,488	-	1,949,488	63,240	30.83
Feb-29	2,023,492	-	2,023,492	57,120	35.43
Mar-29	2,066,598	-	2,066,598	63,240	32.68
Apr-29	1,857,254	-	1,857,254	61,200	30.35
May-29	1,523,309	-	1,523,309	63,240	24.09
Jun-29	1,677,001	-	1,677,001	61,200	27.40
Jul-29	2,367,496	-	2,367,496	63,240	37.44
Aug-29	2,510,263	-	2,510,263	63,240	39.69
Sep-29	1,892,649	-	1,892,649	61,200	30.93
Oct-29	2,101,673	-	2,101,673	63,240	33.23
Nov-29	1,781,644	-	1,781,644	61,200	29.11
Dec-29	2,168,528	-	2,168,528	63,240	34.29
Jan-30	2,076,214	-	2,076,214	63,240	32.83
Feb-30	1,960,066	-	1,960,066	57,120	34.31
Mar-30	2,306,566	-	2,306,566	63,240	36.47
Apr-30	1,992,837	-	1,992,837	61,200	32.56
May-30	1,725,915	-	1,725,915	63,240	27.29
Jun-30	1,924,546	-	1,924,546	61,200	31.45
Jul-30	2,609,079	-	2,609,079	63,240	41.26
Aug-30	2,882,141	-	2,882,141	63,240	45.57
Sep-30	2,223,480	-	2,223,480	61,200	36.33
Oct-30	2,283,440	-	2,283,440	63,240	36.11
Nov-30	2,225,097	-	2,225,097	61,200	36.36
Dec-30	2,353,012	-	2,353,012	63,240	37.21
Jan-31	2,316,905	-	2,316,905	63,240	36.64
Feb-31	2,160,757	-	2,160,757	57,120	37.83
Mar-31	2,347,582	-	2,347,582	63,240	37.12
Apr-31	2,116,628	-	2,116,628	61,200	34.59
May-31	1,860,600	-	1,860,600	63,240	29.42
Jun-31	2,030,101	-	2,030,101	61,200	33.17
Jul-31	2,641,052	-	2,641,052	63,240	41.76
Aug-31	2,984,980	-	2,984,980	63,240	47.20
Sep-31	2,369,545	-	2,369,545	61,200	38.72
Oct-31	2,267,470	-	2,267,470	63,240	35.85
Nov-31	2,234,789	-	2,234,789	61,200	36.52
Dec-31	2,420,224	-	2,420,224	63,240	38.27
Jan-32	2,316,309	-	2,316,309	63,240	36.63
Feb-32	2,394,829	-	2,394,829	59,160	40.48
Mar-32	2,587,519	-	2,587,519	63,240	40.92
Apr-32	2,420,760	-	2,420,760	61,200	39.55
May-32	2,025,571	-	2,025,571	63,240	32.03
Jun-32	2,178,749	-	2,178,749	61,200	35.60
Jul-32	2,930,003	-	2,930,003	63,240	46.33

Aug-32	3,140,552	-	3,140,552	63,240	49.66
Sep-32	2,510,577	-	2,510,577	61,200	41.02
Oct-32	2,437,217	-	2,437,217	63,240	38.54
Nov-32	2,292,697	-	2,292,697	61,200	37.46
Dec-32	2,605,897	-	2,605,897	63,240	41.21
Jan-33	2,345,006	-	2,345,006	63,240	37.08
Feb-33	2,303,276	-	2,303,276	57,120	40.32
Mar-33	2,462,589	-	2,462,589	63,240	38.94
Apr-33	2,365,213	-	2,365,213	61,200	38.65
May-33	2,122,129	-	2,122,129	63,240	33.56
Jun-33	2,328,705	-	2,328,705	61,200	38.05
Jul-33	3,144,741	-	3,144,741	63,240	49.73
Aug-33	3,357,389	-	3,357,389	63,240	53.09
Sep-33	2,674,938	-	2,674,938	61,200	43.71
Oct-33	2,488,164	-	2,488,164	63,240	39.34
Nov-33	2,379,014	-	2,379,014	61,200	38.87
Dec-33	2,761,187	-	2,761,187	63,240	43.66
Jan-34	2,558,121	-	2,558,121	63,240	40.45
Feb-34	2,447,762	-	2,447,762	57,120	42.85
Mar-34	2,591,823	-	2,591,823	63,240	40.98
Apr-34	2,315,967	-	2,315,967	61,200	37.84
May-34	2,202,908	-	2,202,908	63,240	34.83
Jun-34	2,214,619	-	2,214,619	61,200	36.19
Jul-34	3,255,767	-	3,255,767	63,240	51.48
Aug-34	3,383,002	-	3,383,002	63,240	53.49
Sep-34	2,719,056	-	2,719,056	61,200	44.43
Oct-34	2,516,323	-	2,516,323	63,240	39.79
Nov-34	2,455,647	-	2,455,647	61,200	40.12
Dec-34	2,788,802	-	2,788,802	63,240	44.10
Jan-35	2,570,538	-	2,570,538	63,240	40.65
Feb-35	2,539,120	-	2,539,120	57,120	44.45
Mar-35	2,805,037	-	2,805,037	63,240	44.36
Apr-35	2,476,579	-	2,476,579	61,200	40.47
May-35	2,419,112	-	2,419,112	63,240	38.25
Jun-35	2,356,013	-	2,356,013	61,200	38.50
Jul-35	3,488,252	-	3,488,252	63,240	55.16
Aug-35	3,673,631	-	3,673,631	63,240	58.09
Sep-35	2,920,217	-	2,920,217	61,200	47.72
Oct-35	2,713,956	-	2,713,956	63,240	42.92
Nov-35	2,548,360	-	2,548,360	61,200	41.64
Dec-35	3,014,415	-	3,014,415	63,240	47.67
Jan-36	2,782,388	-	2,782,388	63,240	44.00
Feb-36	2,760,475	-	2,760,475	59,160	46.66
Mar-36	2,773,204	-	2,773,204	63,240	43.85
Apr-36	2,521,209	-	2,521,209	61,200	41.20
May-36	2,643,857	-	2,643,857	63,240	41.81
Jun-36	2,578,873	-	2,578,873	61,200	42.14
Jul-36	4,580,884	-	4,580,884	63,240	72.44
Aug-36	4,393,574	-	4,393,574	63,240	69.47
Sep-36	3,727,656	-	3,727,656	61,200	60.91
Oct-36	3,224,704	-	3,224,704	63,240	50.99
Nov-36	2,861,213	-	2,861,213	61,200	46.75
Dec-36	3,234,780	-	3,234,780	63,240	51.15
Jan-37	2,838,448	-	2,838,448	63,240	44.88
Feb-37	2,718,986	-	2,718,986	57,120	47.60
Mar-37	2,829,079	-	2,829,079	63,240	44.74
Apr-37	2,572,007	-	2,572,007	61,200	42.03
May-37	2,697,125	-	2,697,125	63,240	42.65
Jun-37	2,630,833	-	2,630,833	61,200	42.99
Jul-37	4,673,180	-	4,673,180	63,240	73.90
Aug-37	4,482,096	-	4,482,096	63,240	70.87
Sep-37	3,802,762	-	3,802,762	61,200	62.14

Oct-37	3,289,676	-	3,289,676	63,240	52.02
Nov-37	2,918,861	-	2,918,861	61,200	47.69
Dec-37	3,299,955	-	3,299,955	63,240	52.18
Jan-38	2,895,166	-	2,895,166	63,240	45.78
Feb-38	2,773,317	-	2,773,317	57,120	48.55
Mar-38	2,885,610	-	2,885,610	63,240	45.63
Apr-38	2,623,401	-	2,623,401	61,200	42.87
May-38	2,751,019	-	2,751,019	63,240	43.50
Jun-38	2,683,402	-	2,683,402	61,200	43.85
Jul-38	4,766,559	-	4,766,559	63,240	75.37
Aug-38	4,571,658	-	4,571,658	63,240	72.29
Sep-38	3,878,748	-	3,878,748	61,200	63.38
Oct-38	3,355,410	-	3,355,410	63,240	53.06
Nov-38	2,977,186	-	2,977,186	61,200	48.65
Dec-38	3,365,895	-	3,365,895	63,240	53.22

## Appendix B.2

### Avoided Cost Prices \$/MWh Utah 2017.Q4 Sch 38

Year	Wind Avoided Cost at 31.0% CF (2)	Wind UT 2017.Q4 Filing	Wind Difference
2018	\$14.04	\$17.83	(\$3.79)
2019	\$14.73	\$17.52	(\$2.78)
2020	\$12.16	\$14.10	(\$1.94)
2021	\$13.04	\$23.33	(\$10.29)
2022	\$14.64	\$24.97	(\$10.34)
2023	\$14.58	\$24.32	(\$9.74)
2024	\$15.80	\$26.54	(\$10.74)
2025	\$16.12	\$29.67	(\$13.56)
2026	\$17.37	\$29.02	(\$11.65)
2027	\$17.25	\$29.50	(\$12.25)
2028	\$11.48	\$28.73	(\$17.25)
2029	\$10.62	\$30.79	(\$20.17)
2030	\$18.56	\$31.83	(\$13.27)
2031	\$61.93	\$63.21	(\$1.28)
2032	\$63.12	\$63.42	(\$0.30)

15-Year Levelized Prices (Nominal) @ 0.000% Discount Rate (1) (3)

2018-2032	\$/MWh	\$18.55 (4)	\$27.43 (4)	(\$8.87)
-----------	--------	-------------	-------------	----------

Footnotes:

- (2) 'Energy Only' is the GRID calculated costs and includes some capacity cost
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2018 - 2032
- (4) Levelized Monthly



**Table 1**  
**Avoided Cost Prices**  
**Utah 2018.Q1\_Wind - 80.0 MW and 31.0% CF**

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh <sup>(2)</sup>	Total Price @
			31.0% Capacity Factor \$/MWh
2018	\$0.00	\$14.04	\$14.04
2019	\$0.00	\$14.73	\$14.73
2020	\$4.24	\$10.60	\$12.16
2021	\$19.09	\$6.01	\$13.04
2022	\$22.53	\$6.34	\$14.64
2023	\$21.38	\$6.70	\$14.58
2024	\$24.72	\$6.72	\$15.80
2025	\$23.58	\$7.44	\$16.12
2026	\$26.98	\$7.43	\$17.37
2027	\$25.87	\$7.73	\$17.25
2028	\$29.26	\$0.74	\$11.48
2029	\$28.23	\$0.22	\$10.62
2030	\$50.52	(\$0.04)	\$18.56
2031	\$170.48	(\$0.84)	\$61.93
2032	\$174.03	(\$0.77)	\$63.12
2033	\$177.64	\$0.00	\$65.41
2034	\$181.28	(\$0.61)	\$66.14
2035	\$184.97	(\$0.25)	\$67.86
2036	\$188.70	(\$4.51)	\$64.77
2037	\$192.51	(\$4.56)	\$66.28
2038	\$196.39	#DIV/0!	#DIV/0!

15 Year Starting 2018

15 year Levelized Prices (Nominal) @ 6.91% Discount Rate (1) (3)

\$/kW	\$31.11		
\$/MWh		\$7.10	\$18.55

15 Year Starting 2019

15 year Levelized Prices (Nominal) @ 0.00% Discount Rate (1) (3)

\$/kW	\$40.39		
\$/MWh		\$6.05	\$20.92

20 Year Starting 2019

15 year Levelized Prices (Nominal) @ 0.00% Discount Rate (1) (3)

\$/kW	\$61.33		
\$/MWh		\$4.80	\$27.39

Footnotes:

(1) Discount Rate - 2017 IRP

(2) 'Energy Only' is the GRID calculated costs and includes some capacity costs.

**Table 3**  
**2017 IRP Aeolus-Bridger/Anticline Transmission**

<b>Year</b>	<b>Retail Revenue Requirement</b>	<b>Months In Service</b>	<b>Total Resource Costs</b>
	\$/kW-yr	#	\$/kW-yr
	(b)	(d)	(h)

**2017 IRP Aeolus-Bridger/Anticline Transmission**

2020	\$47.33	2	\$7.89
2021	\$48.59	12	\$48.59
2022	\$49.82	12	\$49.82
2023	\$51.01	12	\$51.01
2024	\$52.20	12	\$52.20
2025	\$53.41	12	\$53.41
2026	\$54.63	12	\$54.63
2027	\$55.83	12	\$55.83
2028	\$57.04	12	\$57.04
2029	\$58.29	12	\$58.29
2030	\$59.56	12	\$59.56
2031	\$60.83	12	\$60.83
2032	\$62.10	12	\$62.10
2033	\$63.39	12	\$63.39
2034	\$64.70	12	\$64.70
2035	\$66.03	12	\$66.03
2036	\$67.37	12	\$67.37
2037	\$68.73	12	\$68.73
2038	\$70.10	12	\$70.10
2039	\$71.51	12	\$71.51
2040	\$72.95	12	\$72.95
2041	\$74.44	12	\$74.44
2042	\$75.98	12	\$75.98

Transfer Capacity (MW)                      750

Retail Revenue Requirement              \$48.59  
(\$/kW-year, 2021\$)

**Company Official Inflation Forecast Dated March 30, 2018**

2017	1.8%	2026	2.3%	2035	2.1%
2018	2.0%	2027	2.2%	2036	2.0%
2019	2.3%	2028	2.2%	2037	2.0%
2020	2.7%	2029	2.2%	2038	2.0%
2021	2.6%	2030	2.2%	2039	2.0%
2022	2.5%	2031	2.1%	2040	2.0%
2023	2.4%	2032	2.1%	2041	2.0%
2024	2.3%	2033	2.1%	2042	2.1%
2025	2.3%	2034	2.1%	2043	2.1%

**Table 3**  
**2017 IRP Update Wyoming Wind Resource**  
**39% Capacity Factor**

Year	Estimated Capital Cost	Capital Cost at Real Levelized Rate	Fixed O&M	Fixed Costs	Variable O&M	Network Upgrade	Tax Credit	Total Resource Cost	Total Resource Costs	Wind Integration Cost
	\$/kW	\$/kW-yr	\$/kW-yr	\$/MWh	\$/MWh	\$/MWh	\$/MWh	\$/MWh	\$/kW-yr	\$/MWh
	(a)	(b)	(c)	(d)	(e)		(f)	(g)	(h)	(h)

**2017 IRP Update Wyoming Wind Resource - 39% Capacity Factor**

2016										
2017			\$26.29	\$7.74	\$1.18	\$1.80		\$10.71	\$36.41	\$0.59
2018			\$26.82	\$7.89	\$1.21	\$1.83		\$10.93	\$37.15	\$0.60
2019			\$27.44	\$8.07	\$1.24	\$1.87		\$11.18	\$38.01	\$0.61
2020	\$1,294	\$68.36	\$28.17	\$28.40	\$1.27	\$1.92	(\$33.15)	(\$0.26)	(\$0.88)	\$0.63
2021		\$70.16	\$28.91	\$29.15	\$1.30	\$1.97	(\$34.48)	(\$2.06)	(\$7.00)	\$0.65
2022		\$71.93	\$29.64	\$29.89	\$1.33	\$2.02	(\$34.48)	(\$1.24)	(\$4.22)	\$0.67
2023		\$73.65	\$30.35	\$30.60	\$1.36	\$2.07	(\$35.80)	(\$1.77)	(\$6.01)	\$0.69
2024		\$75.37	\$31.06	\$31.32	\$1.39	\$2.12	(\$35.80)	(\$0.97)	(\$3.31)	\$0.71
2025		\$77.11	\$31.78	\$32.04	\$1.42	\$2.17	(\$37.13)	(\$1.50)	(\$5.10)	\$0.73
2026		\$78.86	\$32.50	\$32.77	\$1.45	\$2.22	(\$37.13)	(\$0.69)	(\$2.35)	\$0.75
2027		\$80.60	\$33.22	\$33.49	\$1.48	\$2.27	(\$38.45)	(\$1.21)	(\$4.11)	\$0.77
2028		\$82.35	\$33.94	\$34.22	\$1.51	\$2.32	(\$38.45)	(\$0.40)	(\$1.37)	\$0.79
2029		\$84.15	\$34.68	\$34.97	\$1.54	\$2.37	(\$39.78)	(\$0.90)	(\$3.07)	\$0.81
2030		\$85.98	\$35.43	\$35.72	\$1.57	\$2.42	(\$41.11)	\$5.46	\$18.54	\$0.83
2031		\$87.81	\$36.18	\$36.48	\$1.60	\$2.47		\$40.55	\$137.82	\$0.85
2032		\$89.65	\$36.94	\$37.25	\$1.63	\$2.52		\$41.40	\$140.69	\$0.87
2033		\$91.51	\$37.71	\$38.02	\$1.66	\$2.57		\$42.25	\$143.60	\$0.89
2034		\$93.40	\$38.49	\$38.81	\$1.69	\$2.62		\$43.12	\$146.54	\$0.91
2035		\$95.32	\$39.28	\$39.61	\$1.72	\$2.67		\$44.00	\$149.52	\$0.93
2036		\$97.26	\$40.08	\$40.41	\$1.75	\$2.72		\$44.88	\$152.53	\$0.95
2037		\$99.22	\$40.89	\$41.23	\$1.79	\$2.77		\$45.79	\$155.61	\$0.97
2038		\$101.20	\$41.71	\$42.05	\$1.83	\$2.83		\$46.71	\$158.75	\$0.99
2039		\$103.23	\$42.55	\$42.90	\$1.87	\$2.89		\$47.66	\$161.96	\$1.01
2040		\$105.31	\$43.41	\$43.76	\$1.91	\$2.95		\$48.62	\$165.24	\$1.03
2041		\$107.46	\$44.30	\$44.66	\$1.95	\$3.01		\$49.62	\$168.62	\$1.05
2042		\$109.68	\$45.21	\$45.58	\$1.99	\$3.07		\$50.64	\$172.09	\$1.07

**Sources, Inputs and Assumptions**

Source:	(c)(f)	Plant Costs - 2017 IRP Update - Table 5.4 & 5.5
	(a)	Plant capacity cost
	(b)	= (a) x 0.0528395063331536
	(d)	= ((b) + (c)) / (8.76 x 38.8%)
	(g)	= (d) + (f)
	(h)	Plant Costs - 2017 IRP Update - Table 5.4 & 5.5

**2017 IRP Update Wyoming Wind Resource - 39% Capacity Factor**

**Wind Cost and Input Assumptions:**

2020 \$	\$1,294	Plant capacity cost	\$/kW-yr
2017 \$	\$26.29	Fixed O&M, plus on-going capital cost	\$/kW-yr
2017 \$	0.59	Integration Cost	\$/MWh
2017 \$	\$1.18	Variable O&M	\$/MWh
2017 \$	(12.50)	Tax Credit \$/MWh	\$/MWh First Year real levelized
2017 \$	1.80	Network Upgrade (\$/MWh)	\$/MWh
	5.284%	Payment Factor	
	38.8%	Capacity Factor	

**Company Official Inflation Forecast Dated March 30, 2018**

2017	1.8%	2026	2.3%	2035	2.1%
2018	2.0%	2027	2.2%	2036	2.0%
2019	2.3%	2028	2.2%	2037	2.0%
2020	2.7%	2029	2.2%	2038	2.0%
2021	2.6%	2030	2.2%	2039	2.0%
2022	2.5%	2031	2.1%	2040	2.0%
2023	2.4%	2032	2.1%	2041	2.0%
2024	2.3%	2033	2.1%	2042	2.1%
2025	2.3%	2034	2.1%	2043	2.1%

**Table 4**  
**Burnertip Natural Gas Price Forecast**  
**Utah 2018.Q1\_Wind - 80.0 MW and 31.0% CF**

Year	PacifiCorp		
	Delivered IRP - Utah Greenfield Fuel Cost	Delivered IRP West Side Fuel Cost	Delivered IRP - Wyo NE Fuel Cost
2016	\$2.32	\$2.30	\$2.35
2017	\$2.71	\$2.77	\$2.76
2018	\$2.21	\$2.09	\$2.21
2019	\$2.06	\$1.95	\$2.03
2020	\$2.15	\$2.02	\$2.13
2021	\$2.24	\$2.15	\$2.23
2022	\$2.33	\$2.23	\$2.34
2023	\$2.42	\$2.38	\$2.42
2024	\$2.88	\$2.86	\$2.91
2025	\$3.56	\$3.54	\$3.59
2026	\$3.82	\$3.80	\$3.85
2027	\$3.94	\$3.93	\$3.97
2028	\$4.15	\$4.19	\$4.18
2029	\$4.53	\$4.64	\$4.56
2030	\$4.98	\$5.10	\$5.02
2031	\$5.01	\$5.09	\$5.05
2032	\$5.39	\$5.48	\$5.43
2033	\$5.67	\$5.78	\$5.71
2034	\$5.61	\$5.67	\$5.65
2035	\$5.80	\$5.82	\$5.84
2036	\$5.75	\$5.77	\$5.79
2037	\$6.09	\$6.15	\$6.13
2038	\$6.50	\$6.59	\$6.54
2039	\$6.74	\$6.86	\$6.78
2040	\$7.13	\$7.27	\$7.17
2041	\$7.28	\$7.42	\$7.32
2042	\$4.86	\$4.94	\$4.90

Official Forward Price Curve Forecast dated Mar 30, 2018

**Table 5**  
**Utah 2018.Q1\_Wind - 80.0 MW and 31.0% CF**  
**January 2018 through December 2037**  
**Nominal Avoided Costs Calculated Monthly**

**15 Year Starting 2019**                   \$ 12,407,605   \$ 30,476,179   \$ 42,883,784   \$ 2,049,534           \$20.92

**Nominal NPV at 6.91% Discount Rate**

**15 Year Starting 2018**                   \$ 14,543,801   \$ 23,474,792   \$ 38,018,592   \$ 2,049,427           \$18.55

**20 Year Starting 2019**                   \$ 11,465,759   \$ 53,908,866   \$ 65,374,625   \$ 2,387,098           \$27.39

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	31.0% CF	Dollars	MWH	31.0% CF
Jan-18	257,619	-	257,619	16,505	15.61
Feb-18	193,842	-	193,842	13,802	14.04
Mar-18	232,940	-	232,940	16,862	13.81
Apr-18	185,900	-	185,900	14,482	12.84
May-18	174,847	-	174,847	14,297	12.23
Jun-18	207,468	-	207,468	17,930	11.57
Jul-18	314,107	-	314,107	20,642	15.22
Aug-18	364,740	-	364,740	21,488	16.97
Sep-18	284,994	-	284,994	21,070	13.53
Oct-18	272,478	-	272,478	20,190	13.50
Nov-18	255,278	-	255,278	20,169	12.66
Dec-18	306,107	-	306,107	19,837	15.43
Jan-19	261,798	-	261,798	16,505	15.86
Feb-19	238,061	-	238,061	13,802	17.25
Mar-19	262,114	-	262,114	16,862	15.55
Apr-19	178,072	-	178,072	14,482	12.30
May-19	186,265	-	186,265	14,297	13.03
Jun-19	228,826	-	228,826	17,930	12.76
Jul-19	295,991	-	295,991	20,642	14.34
Aug-19	375,587	-	375,587	21,488	17.48
Sep-19	298,377	-	298,377	21,070	14.16
Oct-19	270,035	-	270,035	20,190	13.37
Nov-19	304,515	-	304,515	20,169	15.10
Dec-19	301,215	-	301,215	19,837	15.18
Jan-20	247,403	28,236	275,639	16,505	16.70
Feb-20	236,382	28,236	264,618	14,442	18.32
Mar-20	253,675	28,236	281,911	16,862	16.72
Apr-20	184,365	28,236	212,601	14,482	14.68
May-20	182,333	28,236	210,569	14,297	14.73
Jun-20	228,176	28,236	256,411	17,930	14.30
Jul-20	326,720	28,236	354,956	20,642	17.20
Aug-20	353,343	28,236	381,579	21,488	17.76
Sep-20	282,655	28,236	310,891	21,070	14.75
Oct-20	275,468	28,236	303,704	20,190	15.04
Nov-20	(45,985)	28,236	(17,749)	20,169	(0.88)
Dec-20	(214,626)	28,236	(186,390)	19,837	(9.40)
Jan-21	112,440	127,262	239,702	16,505	14.52
Feb-21	32,867	127,262	160,129	13,802	11.60
Mar-21	159,749	127,262	287,011	16,862	17.02
Apr-21	117,616	127,262	244,878	14,482	16.91
May-21	92,046	127,262	219,308	14,297	15.34
Jun-21	210,867	127,262	338,129	17,930	18.86
Jul-21	165,855	127,262	293,117	20,642	14.20
Aug-21	165,322	127,262	292,584	21,488	13.62
Sep-21	209,345	127,262	336,607	21,070	15.98
Oct-21	42,246	127,262	169,508	20,190	8.40
Nov-21	78,242	127,262	205,504	20,169	10.19
Dec-21	(80,029)	127,262	47,233	19,837	2.38
Jan-22	105,093	150,194	255,288	16,505	15.47
Feb-22	32,655	150,194	182,849	13,802	13.25
Mar-22	169,159	150,194	319,353	16,862	18.94

Apr-22	131,480	150,194	281,674	14,482	19.45
May-22	91,488	150,194	241,682	14,297	16.90
Jun-22	203,478	150,194	353,672	17,930	19.73
Jul-22	195,339	150,194	345,533	20,642	16.74
Aug-22	169,583	150,194	319,778	21,488	14.88
Sep-22	271,272	150,194	421,466	21,070	20.00
Oct-22	49,941	150,194	200,135	20,190	9.91
Nov-22	73,213	150,194	223,407	20,169	11.08
Dec-22	(114,678)	150,194	35,517	19,837	1.79
Jan-23	178,447	142,521	320,968	16,505	19.45
Feb-23	39,671	142,521	182,192	13,802	13.20
Mar-23	180,405	142,521	322,926	16,862	19.15
Apr-23	114,808	142,521	257,329	14,482	17.77
May-23	99,025	142,521	241,546	14,297	16.89
Jun-23	224,914	142,521	367,435	17,930	20.49
Jul-23	171,276	142,521	313,796	20,642	15.20
Aug-23	179,919	142,521	322,440	21,488	15.01
Sep-23	221,851	142,521	364,371	21,070	17.29
Oct-23	68,093	142,521	210,614	20,190	10.43
Nov-23	83,571	142,521	226,092	20,169	11.21
Dec-23	(105,416)	142,521	37,104	19,837	1.87
Jan-24	113,155	164,780	277,935	16,505	16.84
Feb-24	58,086	164,780	222,866	14,442	15.43
Mar-24	180,872	164,780	345,653	16,862	20.50
Apr-24	108,082	164,780	272,862	14,482	18.84
May-24	100,617	164,780	265,397	14,297	18.56
Jun-24	278,478	164,780	443,258	17,930	24.72
Jul-24	179,754	164,780	344,534	20,642	16.69
Aug-24	209,242	164,780	374,022	21,488	17.41
Sep-24	231,268	164,780	396,048	21,070	18.80
Oct-24	15,813	164,780	180,593	20,190	8.94
Nov-24	103,937	164,780	268,718	20,169	13.32
Dec-24	(114,266)	164,780	50,514	19,837	2.55
Jan-25	112,715	157,178	269,893	16,505	16.35
Feb-25	89,477	157,178	246,655	13,802	17.87
Mar-25	169,025	157,178	326,203	16,862	19.35
Apr-25	127,918	157,178	285,096	14,482	19.69
May-25	101,501	157,178	258,678	14,297	18.09
Jun-25	265,984	157,178	423,162	17,930	23.60
Jul-25	261,071	157,178	418,249	20,642	20.26
Aug-25	260,679	157,178	417,857	21,488	19.45
Sep-25	325,322	157,178	482,500	21,070	22.90
Oct-25	(9,536)	157,178	147,641	20,190	7.31
Nov-25	70,165	157,178	227,343	20,169	11.27
Dec-25	(158,166)	157,178	(989)	19,837	(0.05)
Jan-26	150,888	179,878	330,766	16,505	20.04
Feb-26	88,784	179,878	268,662	13,802	19.47
Mar-26	129,289	179,878	309,167	16,862	18.34
Apr-26	131,138	179,878	311,016	14,482	21.48
May-26	107,221	179,878	287,099	14,297	20.08
Jun-26	261,777	179,878	441,655	17,930	24.63
Jul-26	274,222	179,878	454,100	20,642	22.00
Aug-26	249,363	179,878	429,241	21,488	19.98
Sep-26	330,357	179,878	510,235	21,070	24.22
Oct-26	(5,594)	179,878	174,284	20,190	8.63
Nov-26	64,941	179,878	244,819	20,169	12.14
Dec-26	(167,293)	179,878	12,585	19,837	0.63
Jan-27	169,042	172,440	341,482	16,505	20.69
Feb-27	90,640	172,440	263,080	13,802	19.06
Mar-27	162,670	172,440	335,110	16,862	19.87
Apr-27	122,898	172,440	295,338	14,482	20.39
May-27	107,888	172,440	280,329	14,297	19.61

Jun-27	267,959	172,440	440,399	17,930	24.56
Jul-27	283,900	172,440	456,340	20,642	22.11
Aug-27	262,421	172,440	434,861	21,488	20.24
Sep-27	343,662	172,440	516,102	21,070	24.49
Oct-27	(17,138)	172,440	155,302	20,190	7.69
Nov-27	54,877	172,440	227,317	20,169	11.27
Dec-27	(169,539)	172,440	2,902	19,837	0.15
Jan-28	(306,144)	195,038	(111,106)	16,505	(6.73)
Feb-28	(169,531)	195,038	25,507	14,442	1.77
Mar-28	52,634	195,038	247,672	16,862	14.69
Apr-28	44,262	195,038	239,300	14,482	16.52
May-28	85,292	195,038	280,330	14,297	19.61
Jun-28	232,445	195,038	427,483	17,930	23.84
Jul-28	277,650	195,038	472,688	20,642	22.90
Aug-28	301,202	195,038	496,240	21,488	23.09
Sep-28	325,872	195,038	520,910	21,070	24.72
Oct-28	(98,874)	195,038	96,164	20,190	4.76
Nov-28	(142,363)	195,038	52,675	20,169	2.61
Dec-28	(442,238)	195,038	(247,200)	19,837	(12.46)
Jan-29	(402,936)	188,179	(214,757)	16,505	(13.01)
Feb-29	(193,527)	188,179	(5,348)	13,802	(0.39)
Mar-29	(619)	188,179	187,560	16,862	11.12
Apr-29	51,738	188,179	239,917	14,482	16.57
May-29	51,859	188,179	240,038	14,297	16.79
Jun-29	251,168	188,179	439,346	17,930	24.50
Jul-29	327,013	188,179	515,192	20,642	24.96
Aug-29	377,981	188,179	566,160	21,488	26.35
Sep-29	326,361	188,179	514,540	21,070	24.42
Oct-29	(117,240)	188,179	70,939	20,190	3.51
Nov-29	(127,456)	188,179	60,723	20,169	3.01
Dec-29	(495,871)	188,179	(307,692)	19,837	(15.51)
Jan-30	(416,321)	336,791	(79,529)	16,505	(4.82)
Feb-30	(212,206)	336,791	124,585	13,802	9.03
Mar-30	(37,698)	336,791	299,094	16,862	17.74
Apr-30	17,699	336,791	354,491	14,482	24.48
May-30	58,062	336,791	394,854	14,297	27.62
Jun-30	262,302	336,791	599,094	17,930	33.41
Jul-30	385,147	336,791	721,939	20,642	34.97
Aug-30	454,299	336,791	791,090	21,488	36.82
Sep-30	403,098	336,791	739,889	21,070	35.12
Oct-30	(110,980)	336,791	225,811	20,190	11.18
Nov-30	(204,025)	336,791	132,766	20,169	6.58
Dec-30	(607,249)	336,791	(270,458)	19,837	(13.63)
Jan-31	(555,867)	1,136,537	580,671	16,505	35.18
Feb-31	(246,956)	1,136,537	889,581	13,802	64.45
Mar-31	(84,134)	1,136,537	1,052,404	16,862	62.41
Apr-31	18,670	1,136,537	1,155,207	14,482	79.77
May-31	57,077	1,136,537	1,193,614	14,297	83.49
Jun-31	281,152	1,136,537	1,417,689	17,930	79.07
Jul-31	387,500	1,136,537	1,524,037	20,642	73.83
Aug-31	438,285	1,136,537	1,574,823	21,488	73.29
Sep-31	408,406	1,136,537	1,544,943	21,070	73.32
Oct-31	(118,699)	1,136,537	1,017,838	20,190	50.41
Nov-31	(203,312)	1,136,537	933,225	20,169	46.27
Dec-31	(564,817)	1,136,537	571,721	19,837	28.82
Jan-32	(557,451)	1,160,217	602,766	16,505	36.52
Feb-32	(280,403)	1,160,217	879,814	14,442	60.92
Mar-32	(94,253)	1,160,217	1,065,963	16,862	63.22
Apr-32	15,824	1,160,217	1,176,040	14,482	81.20
May-32	66,539	1,160,217	1,226,755	14,297	85.80
Jun-32	270,233	1,160,217	1,430,450	17,930	79.78
Jul-32	411,064	1,160,217	1,571,280	20,642	76.12

Aug-32	475,744	1,160,217	1,635,960	21,488	76.14
Sep-32	465,810	1,160,217	1,626,027	21,070	77.17
Oct-32	(113,821)	1,160,217	1,046,395	20,190	51.83
Nov-32	(201,499)	1,160,217	958,717	20,169	47.54
Dec-32	(625,749)	1,160,217	534,467	19,837	26.94
Jan-33	(537,980)	1,184,234	646,254	16,505	39.16
Feb-33	(245,446)	1,184,234	938,788	13,802	68.02
Mar-33	(48,654)	1,184,234	1,135,580	16,862	67.35
Apr-33	31,994	1,184,234	1,216,228	14,482	83.98
May-33	46,134	1,184,234	1,230,368	14,297	86.06
Jun-33	275,995	1,184,234	1,460,229	17,930	81.44
Jul-33	450,321	1,184,234	1,634,555	20,642	79.19
Aug-33	485,960	1,184,234	1,670,194	21,488	77.73
Sep-33	513,090	1,184,234	1,697,324	21,070	80.56
Oct-33	(99,485)	1,184,234	1,084,749	20,190	53.73
Nov-33	(214,255)	1,184,234	969,979	20,169	48.09
Dec-33	(657,115)	1,184,234	527,119	19,837	26.57
Jan-34	(600,163)	1,208,523	608,360	16,505	36.86
Feb-34	(266,373)	1,208,523	942,150	13,802	68.26
Mar-34	(72,126)	1,208,523	1,136,397	16,862	67.40
Apr-34	25,122	1,208,523	1,233,645	14,482	85.18
May-34	53,669	1,208,523	1,262,192	14,297	88.28
Jun-34	271,526	1,208,523	1,480,049	17,930	82.55
Jul-34	440,467	1,208,523	1,648,990	20,642	79.89
Aug-34	503,610	1,208,523	1,712,133	21,488	79.68
Sep-34	505,526	1,208,523	1,714,049	21,070	81.35
Oct-34	(92,613)	1,208,523	1,115,910	20,190	55.27
Nov-34	(229,078)	1,208,523	979,445	20,169	48.56
Dec-34	(672,155)	1,208,523	536,368	19,837	27.04
Jan-35	(602,725)	1,233,150	630,426	16,505	38.20
Feb-35	(247,792)	1,233,150	985,358	13,802	71.39
Mar-35	(39,297)	1,233,150	1,193,854	16,862	70.80
Apr-35	31,179	1,233,150	1,264,329	14,482	87.30
May-35	51,256	1,233,150	1,284,407	14,297	89.84
Jun-35	293,999	1,233,150	1,527,149	17,930	85.17
Jul-35	452,729	1,233,150	1,685,879	20,642	81.67
Aug-35	524,580	1,233,150	1,757,731	21,488	81.80
Sep-35	535,317	1,233,150	1,768,467	21,070	83.93
Oct-35	(125,465)	1,233,150	1,107,686	20,190	54.86
Nov-35	(228,318)	1,233,150	1,004,833	20,169	49.82
Dec-35	(699,762)	1,233,150	533,388	19,837	26.89
Jan-36	(664,192)	1,258,014	593,821	16,505	35.98
Feb-36	(325,319)	1,258,014	932,695	14,442	64.58
Mar-36	(95,712)	1,258,014	1,162,302	16,862	68.93
Apr-36	(21,803)	1,258,014	1,236,210	14,482	85.36
May-36	(97,054)	1,258,014	1,160,959	14,297	81.20
Jun-36	194,957	1,258,014	1,452,970	17,930	81.04
Jul-36	407,544	1,258,014	1,665,557	20,642	80.69
Aug-36	488,479	1,258,014	1,746,493	21,488	81.28
Sep-36	479,432	1,258,014	1,737,445	21,070	82.46
Oct-36	(239,991)	1,258,014	1,018,022	20,190	50.42
Nov-36	(325,360)	1,258,014	932,653	20,169	46.24
Dec-36	(783,029)	1,258,014	474,984	19,837	23.94
Jan-37	(677,574)	1,283,415	605,841	16,505	36.71
Feb-37	(320,430)	1,283,415	962,985	13,944	69.06
Mar-37	(97,640)	1,283,415	1,185,775	16,862	70.32
Apr-37	(22,243)	1,283,415	1,261,172	14,482	87.08
May-37	(99,010)	1,283,415	1,184,405	14,297	82.84
Jun-37	198,885	1,283,415	1,482,300	17,930	82.67
Jul-37	415,755	1,283,415	1,699,170	20,642	82.32
Aug-37	498,321	1,283,415	1,781,736	21,488	82.92
Sep-37	489,091	1,283,415	1,772,506	21,070	84.12



Oct-37	(244,827)	1,283,415	1,038,588	20,190	51.44
Nov-37	(331,915)	1,283,415	951,499	20,169	47.18
Dec-37	(798,806)	1,283,415	484,609	19,837	24.43
Jan-38	(691,114)	1,309,252	618,138	16,505	37.45
Feb-38	(326,832)	1,309,252	982,420	13,944	70.45
Mar-38	(99,591)	1,309,252	1,209,661	16,862	71.74
Apr-38	(22,687)	1,309,252	1,286,565	14,482	88.84
May-38	(100,988)	1,309,252	1,208,264	14,297	84.51
Jun-38	202,859	1,309,252	1,512,111	17,930	84.34
Jul-38	424,063	1,309,252	1,733,315	20,642	83.97
Aug-38	508,278	1,309,252	1,817,530	21,488	84.59
Sep-38	498,865	1,309,252	1,808,117	21,070	85.81
Oct-38	(249,719)	1,309,252	1,059,533	20,190	52.48
Nov-38	(338,548)	1,309,252	970,704	20,169	48.13
Dec-38	(814,768)	1,309,252	494,484	19,837	24.93

### Appendix B.3

#### Avoided Cost Prices \$/MWh Utah 2017.Q4 Sch 38

Year	Solar Tracking Avoided Cost at 31.1% CF (2)	Solar Tracking UT 2017.Q4 Filing	Solar Tracking Difference
2018	\$13.89	\$19.33	(\$5.44)
2019	\$13.49	\$17.84	(\$4.34)
2020	\$11.95	\$9.48	\$2.47
2021	\$5.99	\$2.60	\$3.39
2022	\$5.60	\$4.40	\$1.21
2023	\$6.14	\$3.37	\$2.77
2024	\$7.81	\$3.97	\$3.84
2025	\$9.80	\$6.50	\$3.29
2026	\$10.19	\$5.43	\$4.76
2027	\$9.87	\$5.35	\$4.53
2028	\$12.69	\$8.65	\$4.04
2029	\$14.66	\$9.35	\$5.31
2030	\$15.86	\$9.79	\$6.07
2031	\$17.42	\$11.19	\$6.23
2032	\$18.52	\$11.71	\$6.81

15-Year Levelized Prices (Nominal) @ 0.000% Discount Rate (1) (3)

2018-2032	\$/MWh	\$11.04 (4)	\$8.98 (4)	\$2.06
-----------	--------	-------------	------------	--------

Footnotes:

- (2) 'Energy Only' is the GRID calculated costs and includes some capacity cost
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2018 - 2032
- (4) Levelized Monthly

**Table 1**  
**Avoided Cost Prices**  
**Utah 2018.Q1\_Solar - 80.0 MW and 31.1% CF**

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh <sup>(2)</sup>	Total Price @ 31.1% Capacity Factor \$/MWh
2018	\$0.00	\$13.89	\$13.89
2019	\$0.00	\$13.49	\$13.49
2020	\$0.00	\$11.95	\$11.95
2021	\$0.00	\$5.99	\$5.99
2022	\$0.00	\$5.60	\$5.60
2023	\$0.00	\$6.14	\$6.14
2024	\$0.00	\$7.81	\$7.81
2025	\$0.00	\$9.80	\$9.80
2026	\$0.00	\$10.19	\$10.19
2027	\$0.00	\$9.87	\$9.87
2028	\$0.00	\$12.69	\$12.69
2029	\$0.00	\$14.66	\$14.66
2030	\$0.00	\$15.86	\$15.86
2031	\$0.00	\$17.42	\$17.42
2032	\$0.00	\$18.52	\$18.52
2033	\$0.00	\$18.33	\$18.33
2034	\$0.00	\$19.83	\$19.83
2035	\$0.00	\$22.31	\$22.31
2036	\$0.00	\$37.25	\$37.25
2037	\$0.00	\$38.02	\$38.02
2038	\$0.00	#DIV/0!	#DIV/0!

15 Year Starting 2018

15 year Levelized Prices (Nominal) @ 6.91% Discount Rate (1) (3)

\$/kW	\$0.00		
\$/MWh		\$11.04	\$11.04

15 Year Starting 2019

15 year Levelized Prices (Nominal) @ 0.00% Discount Rate (1) (3)

\$/kW	\$0.00		
\$/MWh		\$11.00	\$11.00

20 Year Starting 2019

15 year Levelized Prices (Nominal) @ 0.00% Discount Rate (1) (3)

\$/kW	\$0.00		
\$/MWh		\$13.63	\$13.63

Footnotes:

(1) Discount Rate - 2017 IRP

(2) 'Energy Only' is the GRID calculated costs and includes some capacity costs.

**Table 4**  
**Burnertip Natural Gas Price Forecast**  
**Utah 2018.Q1\_Solar - 80.0 MW and 31.1% CF**

Year	PacifiCorp		
	Delivered IRP - Utah Greenfield Fuel Cost	Delivered IRP West Side Fuel Cost	Delivered IRP - Wyo NE Fuel Cost
2016	\$2.32	\$2.30	\$2.35
2017	\$2.71	\$2.77	\$2.76
2018	\$2.21	\$2.09	\$2.21
2019	\$2.06	\$1.95	\$2.03
2020	\$2.15	\$2.02	\$2.13
2021	\$2.24	\$2.15	\$2.23
2022	\$2.33	\$2.23	\$2.34
2023	\$2.42	\$2.38	\$2.42
2024	\$2.88	\$2.86	\$2.91
2025	\$3.56	\$3.54	\$3.59
2026	\$3.82	\$3.80	\$3.85
2027	\$3.94	\$3.93	\$3.97
2028	\$4.15	\$4.19	\$4.18
2029	\$4.53	\$4.64	\$4.56
2030	\$4.98	\$5.10	\$5.02
2031	\$5.01	\$5.09	\$5.05
2032	\$5.39	\$5.48	\$5.43
2033	\$5.67	\$5.78	\$5.71
2034	\$5.61	\$5.67	\$5.65
2035	\$5.80	\$5.82	\$5.84
2036	\$5.75	\$5.77	\$5.79
2037	\$6.09	\$6.15	\$6.13
2038	\$6.50	\$6.59	\$6.54
2039	\$6.74	\$6.86	\$6.78
2040	\$7.13	\$7.27	\$7.17
2041	\$7.28	\$7.42	\$7.32
2042	\$4.86	\$4.94	\$4.90

Official Forward Price Curve Forecast dated Mar 30, 2018

**Table 5**  
**Utah 2018.Q1\_Solar - 80.0 MW and 31.1% CF**  
**January 2018 through December 2037**  
**Nominal Avoided Costs Calculated Monthly**

**15 Year Starting 2019**                   \$ 21,899,017   \$ -   \$ 21,899,017   \$ 1,990,026           \$11.00

**Nominal NPV at 6.91% Discount Rate**

**15 Year Starting 2018**                   \$ 22,086,104   \$ -   \$ 22,086,104   \$ 1,999,952           \$11.04

**20 Year Starting 2019**                   \$ 31,348,749   \$ -   \$ 31,348,749   \$ 2,300,772           \$13.63

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	30.7% CF	Dollars	MWH	30.7% CF
Jan-18	133,162	-	133,162	10,534	12.64
Feb-18	142,133	-	142,133	11,789	12.06
Mar-18	196,116	-	196,116	18,361	10.68
Apr-18	233,369	-	233,369	21,207	11.00
May-18	266,287	-	266,287	24,549	10.85
Jun-18	277,310	-	277,310	26,080	10.63
Jul-18	468,674	-	468,674	23,606	19.85
Aug-18	476,155	-	476,155	23,644	20.14
Sep-18	293,520	-	293,520	20,842	14.08
Oct-18	222,706	-	222,706	16,897	13.18
Nov-18	156,745	-	156,745	11,381	13.77
Dec-18	157,524	-	157,524	8,780	17.94
Jan-19	183,604	-	183,604	10,481	17.52
Feb-19	165,117	-	165,117	11,730	14.08
Mar-19	176,218	-	176,218	18,269	9.65
Apr-19	190,152	-	190,152	21,101	9.01
May-19	288,834	-	288,834	24,426	11.82
Jun-19	316,736	-	316,736	25,950	12.21
Jul-19	435,206	-	435,206	23,488	18.53
Aug-19	423,532	-	423,532	23,526	18.00
Sep-19	257,183	-	257,183	20,738	12.40
Oct-19	192,418	-	192,418	16,813	11.44
Nov-19	170,937	-	170,937	11,324	15.09
Dec-19	122,720	-	122,720	8,736	14.05
Jan-20	170,380	-	170,380	10,429	16.34
Feb-20	149,764	-	149,764	12,089	12.39
Mar-20	153,718	-	153,718	18,178	8.46
Apr-20	219,141	-	219,141	20,996	10.44
May-20	269,591	-	269,591	24,304	11.09
Jun-20	300,464	-	300,464	25,820	11.64
Jul-20	354,832	-	354,832	23,371	15.18
Aug-20	347,029	-	347,029	23,409	14.82
Sep-20	203,374	-	203,374	20,634	9.86
Oct-20	217,118	-	217,118	16,729	12.98
Nov-20	121,925	-	121,925	11,268	10.82
Dec-20	72,518	-	72,518	8,693	8.34
Jan-21	145,629	-	145,629	10,377	14.03
Feb-21	131,178	-	131,178	11,614	11.30
Mar-21	146,371	-	146,371	18,087	8.09
Apr-21	59,676	-	59,676	20,891	2.86
May-21	(3,886)	-	(3,886)	24,183	(0.16)
Jun-21	122,933	-	122,933	25,691	4.79
Jul-21	189,387	-	189,387	23,254	8.14
Aug-21	141,671	-	141,671	23,292	6.08
Sep-21	70,107	-	70,107	20,531	3.41
Oct-21	61,177	-	61,177	16,645	3.68
Nov-21	109,928	-	109,928	11,211	9.81
Dec-21	110,092	-	110,092	8,649	12.73
Jan-22	153,605	-	153,605	10,325	14.88
Feb-22	110,551	-	110,551	11,555	9.57
Mar-22	108,341	-	108,341	17,997	6.02

Apr-22	51,299	-	51,299	20,786	2.47
May-22	60,362	-	60,362	24,062	2.51
Jun-22	115,322	-	115,322	25,563	4.51
Jul-22	165,793	-	165,793	23,137	7.17
Aug-22	127,197	-	127,197	23,175	5.49
Sep-22	59,497	-	59,497	20,429	2.91
Oct-22	56,840	-	56,840	16,562	3.43
Nov-22	92,314	-	92,314	11,155	8.28
Dec-22	94,585	-	94,585	8,606	10.99
Jan-23	158,409	-	158,409	10,273	15.42
Feb-23	111,757	-	111,757	11,498	9.72
Mar-23	115,043	-	115,043	17,907	6.42
Apr-23	66,319	-	66,319	20,682	3.21
May-23	59,589	-	59,589	23,941	2.49
Jun-23	159,587	-	159,587	25,435	6.27
Jul-23	88,132	-	88,132	23,022	3.83
Aug-23	128,788	-	128,788	23,059	5.59
Sep-23	64,083	-	64,083	20,327	3.15
Oct-23	143,832	-	143,832	16,479	8.73
Nov-23	102,089	-	102,089	11,099	9.20
Dec-23	106,344	-	106,344	8,563	12.42
Jan-24	161,138	-	161,138	10,222	15.76
Feb-24	138,259	-	138,259	11,849	11.67
Mar-24	119,980	-	119,980	17,817	6.73
Apr-24	75,344	-	75,344	20,579	3.66
May-24	78,884	-	78,884	23,822	3.31
Jun-24	147,423	-	147,423	25,308	5.83
Jul-24	239,637	-	239,637	22,907	10.46
Aug-24	175,212	-	175,212	22,944	7.64
Sep-24	110,337	-	110,337	20,225	5.46
Oct-24	121,950	-	121,950	16,397	7.44
Nov-24	150,774	-	150,774	11,044	13.65
Dec-24	133,912	-	133,912	8,520	15.72
Jan-25	166,367	-	166,367	10,171	16.36
Feb-25	161,578	-	161,578	11,383	14.19
Mar-25	128,984	-	128,984	17,728	7.28
Apr-25	79,788	-	79,788	20,476	3.90
May-25	73,700	-	73,700	23,703	3.11
Jun-25	142,384	-	142,384	25,181	5.65
Jul-25	300,828	-	300,828	22,792	13.20
Aug-25	259,853	-	259,853	22,829	11.38
Sep-25	217,416	-	217,416	20,124	10.80
Oct-25	178,156	-	178,156	16,315	10.92
Nov-25	188,283	-	188,283	10,989	17.13
Dec-25	161,854	-	161,854	8,477	19.09
Jan-26	191,357	-	191,357	10,120	18.91
Feb-26	169,949	-	169,949	11,326	15.01
Mar-26	133,721	-	133,721	17,639	7.58
Apr-26	92,957	-	92,957	20,374	4.56
May-26	75,801	-	75,801	23,584	3.21
Jun-26	188,990	-	188,990	25,055	7.54
Jul-26	298,933	-	298,933	22,678	13.18
Aug-26	248,058	-	248,058	22,715	10.92
Sep-26	202,927	-	202,927	20,023	10.13
Oct-26	173,977	-	173,977	16,233	10.72
Nov-26	190,461	-	190,461	10,934	17.42
Dec-26	163,927	-	163,927	8,435	19.43
Jan-27	192,267	-	192,267	10,069	19.09
Feb-27	178,735	-	178,735	11,269	15.86
Mar-27	143,320	-	143,320	17,551	8.17
Apr-27	88,071	-	88,071	20,272	4.34
May-27	73,912	-	73,912	23,466	3.15

Jun-27	52,545	-	52,545	24,930	2.11
Jul-27	304,977	-	304,977	22,565	13.52
Aug-27	265,418	-	265,418	22,602	11.74
Sep-27	205,125	-	205,125	19,923	10.30
Oct-27	175,976	-	175,976	16,152	10.89
Nov-27	200,986	-	200,986	10,879	18.47
Dec-27	173,320	-	173,320	8,393	20.65
Jan-28	197,526	-	197,526	10,019	19.72
Feb-28	206,955	-	206,955	11,614	17.82
Mar-28	172,554	-	172,554	17,463	9.88
Apr-28	146,199	-	146,199	20,170	7.25
May-28	135,541	-	135,541	23,349	5.81
Jun-28	242,613	-	242,613	24,805	9.78
Jul-28	380,668	-	380,668	22,452	16.95
Aug-28	335,877	-	335,877	22,489	14.94
Sep-28	184,294	-	184,294	19,823	9.30
Oct-28	234,073	-	234,073	16,071	14.56
Nov-28	205,547	-	205,547	10,825	18.99
Dec-28	189,658	-	189,658	8,351	22.71
Jan-29	230,958	-	230,958	9,969	23.17
Feb-29	223,435	-	223,435	11,157	20.03
Mar-29	207,471	-	207,471	17,376	11.94
Apr-29	181,628	-	181,628	20,069	9.05
May-29	194,538	-	194,538	23,232	8.37
Jun-29	315,593	-	315,593	24,681	12.79
Jul-29	457,051	-	457,051	22,340	20.46
Aug-29	405,137	-	405,137	22,376	18.11
Sep-29	172,525	-	172,525	19,724	8.75
Oct-29	232,855	-	232,855	15,991	14.56
Nov-29	200,230	-	200,230	10,771	18.59
Dec-29	198,596	-	198,596	8,309	23.90
Jan-30	221,243	-	221,243	9,919	22.30
Feb-30	201,234	-	201,234	11,101	18.13
Mar-30	238,418	-	238,418	17,289	13.79
Apr-30	226,131	-	226,131	19,969	11.32
May-30	217,303	-	217,303	23,116	9.40
Jun-30	355,638	-	355,638	24,558	14.48
Jul-30	484,189	-	484,189	22,228	21.78
Aug-30	467,473	-	467,473	22,264	21.00
Sep-30	197,251	-	197,251	19,626	10.05
Oct-30	224,620	-	224,620	15,911	14.12
Nov-30	200,087	-	200,087	10,717	18.67
Dec-30	217,140	-	217,140	8,268	26.26
Jan-31	237,184	-	237,184	9,869	24.03
Feb-31	226,394	-	226,394	11,046	20.50
Mar-31	259,789	-	259,789	17,203	15.10
Apr-31	248,535	-	248,535	19,869	12.51
May-31	239,473	-	239,473	23,000	10.41
Jun-31	391,193	-	391,193	24,435	16.01
Jul-31	494,222	-	494,222	22,117	22.35
Aug-31	536,098	-	536,098	22,153	24.20
Sep-31	230,477	-	230,477	19,528	11.80
Oct-31	243,206	-	243,206	15,831	15.36
Nov-31	229,096	-	229,096	10,663	21.48
Dec-31	217,197	-	217,197	8,226	26.40
Jan-32	240,471	-	240,471	9,820	24.49
Feb-32	240,943	-	240,943	11,383	21.17
Mar-32	296,959	-	296,959	17,117	17.35
Apr-32	267,301	-	267,301	19,770	13.52
May-32	252,815	-	252,815	22,885	11.05
Jun-32	424,266	-	424,266	24,313	17.45
Jul-32	560,250	-	560,250	22,006	25.46

Aug-32	535,434	-	535,434	22,042	24.29
Sep-32	254,581	-	254,581	19,430	13.10
Oct-32	249,792	-	249,792	15,752	15.86
Nov-32	216,406	-	216,406	10,610	20.40
Dec-32	225,729	-	225,729	8,185	27.58
Jan-33	231,372	-	231,372	9,771	23.68
Feb-33	203,781	-	203,781	10,936	18.63
Mar-33	242,718	-	242,718	17,031	14.25
Apr-33	252,916	-	252,916	19,671	12.86
May-33	245,959	-	245,959	22,771	10.80
Jun-33	436,807	-	436,807	24,191	18.06
Jul-33	606,127	-	606,127	21,896	27.68
Aug-33	593,313	-	593,313	21,932	27.05
Sep-33	259,085	-	259,085	19,333	13.40
Oct-33	193,911	-	193,911	15,674	12.37
Nov-33	206,090	-	206,090	10,557	19.52
Dec-33	229,054	-	229,054	8,144	28.12
Jan-34	263,583	-	263,583	9,722	27.11
Feb-34	237,014	-	237,014	10,881	21.78
Mar-34	281,750	-	281,750	16,946	16.63
Apr-34	230,589	-	230,589	19,573	11.78
May-34	299,246	-	299,246	22,657	13.21
Jun-34	398,214	-	398,214	24,070	16.54
Jul-34	671,034	-	671,034	21,787	30.80
Aug-34	601,357	-	601,357	21,822	27.56
Sep-34	287,199	-	287,199	19,236	14.93
Oct-34	242,849	-	242,849	15,595	15.57
Nov-34	233,799	-	233,799	10,504	22.26
Dec-34	237,881	-	237,881	8,103	29.36
Jan-35	266,988	-	266,988	9,674	27.60
Feb-35	237,870	-	237,870	10,826	21.97
Mar-35	291,394	-	291,394	16,861	17.28
Apr-35	245,685	-	245,685	19,475	12.62
May-35	367,422	-	367,422	22,544	16.30
Jun-35	447,244	-	447,244	23,950	18.67
Jul-35	742,834	-	742,834	21,678	34.27
Aug-35	682,682	-	682,682	21,713	31.44
Sep-35	345,091	-	345,091	19,140	18.03
Oct-35	287,907	-	287,907	15,517	18.55
Nov-35	252,594	-	252,594	10,451	24.17
Dec-35	291,423	-	291,423	8,063	36.14
Jan-36	319,445	-	319,445	9,625	33.19
Feb-36	311,032	-	311,032	11,157	27.88
Mar-36	386,929	-	386,929	16,777	23.06
Apr-36	454,731	-	454,731	19,377	23.47
May-36	628,112	-	628,112	22,431	28.00
Jun-36	711,286	-	711,286	23,830	29.85
Jul-36	1,361,480	-	1,361,480	21,569	63.12
Aug-36	1,157,267	-	1,157,267	21,605	53.57
Sep-36	833,015	-	833,015	19,044	43.74
Oct-36	529,062	-	529,062	15,440	34.27
Nov-36	381,572	-	381,572	10,399	36.69
Dec-36	348,875	-	348,875	8,023	43.49
Jan-37	325,882	-	325,882	9,625	33.86
Feb-37	306,357	-	306,357	10,772	28.44
Mar-37	394,725	-	394,725	16,777	23.53
Apr-37	463,893	-	463,893	19,377	23.94
May-37	640,768	-	640,768	22,431	28.57
Jun-37	725,617	-	725,617	23,830	30.45
Jul-37	1,388,911	-	1,388,911	21,569	64.39
Aug-37	1,180,584	-	1,180,584	21,605	54.65
Sep-37	849,799	-	849,799	19,044	44.62



Oct-37	539,721	-	539,721	15,440	34.96
Nov-37	389,260	-	389,260	10,399	37.43
Dec-37	355,904	-	355,904	8,023	44.36
Jan-38	332,393	-	332,393	9,625	34.53
Feb-38	312,479	-	312,479	10,772	29.01
Mar-38	402,612	-	402,612	16,777	24.00
Apr-38	473,162	-	473,162	19,377	24.42
May-38	653,571	-	653,571	22,431	29.14
Jun-38	740,116	-	740,116	23,830	31.06
Jul-38	1,416,664	-	1,416,664	21,569	65.68
Aug-38	1,204,174	-	1,204,174	21,605	55.74
Sep-38	866,779	-	866,779	19,044	45.51
Oct-38	550,506	-	550,506	15,440	35.66
Nov-38	397,038	-	397,038	10,399	38.18
Dec-38	363,016	-	363,016	8,023	45.25

**ROCKY MOUNTAIN POWER**

**STEP STUDY BETWEEN PRIOR FILING AND CURRENT FILING**

**2018.Q1 – MAY 2018**

**2018 - 2032, Nominal Levelized Payment at 6.910% Discount Rate**

2017.Q4 As Filed	\$19.68	
OFPC		+\$0.01
Generic		+\$0.30
Queue		+\$0.71
2017IRP Update		+\$1.70
2018.Q1 As Filed	\$22.39	+\$2.71

**2019 - 2033, Nominal Levelized Payment at 6.910% Discount Rate (3)**

2017.Q4 As Filed	\$20.47	
OFPC		\$0.53
Generic		\$0.33
Queue		\$0.81
2017IRP Update		\$1.70
2018.Q1 As Filed	\$23.84	\$3.37

**2018 - 2032, Nominal Levelized Payment at 6.910% Discount Rate**

	Baseload	Wind	Tracking S
2017.Q4	\$19.68	\$27.43	\$8.98
Official Forward Price Curve	\$19.69	\$27.44	\$8.98
Generic	\$19.99	\$27.86	\$9.12
Qualifying Facility Queue	\$20.70	\$28.84	\$9.44
2017 IRP Update	\$22.39	\$18.55	\$11.04

## Appendix C

### Utah Quarterly Compliance Filing Step Study between 2018.Q1 and 2017.Q4 Compliance Filing Avoided Cost Impact of Changing Assumptions \$/MWH (1)

Year	OFPC (2)	Generic	Queue	IRP17Update	Total Impact
2018	\$ (3.93)	\$ 0.03	\$ (0.23)	\$ 0.85	\$ (3.29)
2019	\$ (3.58)	\$ (0.16)	\$ 0.06	\$ 1.41	\$ (2.27)
2020	\$ (4.84)	\$ 0.09	\$ 4.25	\$ 1.65	\$ 1.15
2021	\$ 1.71	\$ 0.51	\$ 0.05	\$ 1.17	\$ 3.44
2022	\$ 0.36	\$ 0.39	\$ 0.32	\$ 1.15	\$ 2.22
2023	\$ 0.84	\$ 0.58	\$ 0.71	\$ 1.20	\$ 3.34
2024	\$ 0.88	\$ 0.50	\$ 0.66	\$ 1.10	\$ 3.14
2025	\$ 1.37	\$ 0.40	\$ 0.22	\$ 1.99	\$ 3.98
2026	\$ 2.86	\$ 0.40	\$ 0.07	\$ 1.97	\$ 5.31
2027	\$ 2.88	\$ 0.28	\$ 0.54	\$ 1.94	\$ 5.64
2028	\$ 1.30	\$ 0.20	\$ 1.03	\$ 2.37	\$ 4.91
2029	\$ 1.82	\$ 0.95	\$ 0.53	\$ 2.48	\$ 5.78
2030	\$ 2.15	\$ 0.39	\$ 0.80	\$ 2.62	\$ 5.96
2031	\$ 1.95	\$ 0.49	\$ 0.58	\$ 3.08	\$ 6.10
2032	\$ 3.27	\$ (0.09)	\$ 0.67	\$ 3.13	\$ 6.98
2033	\$ 2.17	\$ 0.19	\$ 0.89	\$ (0.64)	\$ 2.61
2034	\$ 0.52	\$ 0.13	\$ 0.96	\$ (0.98)	\$ 0.63
2035	\$ 0.00	\$ 0.06	\$ (3.39)	\$ (0.45)	\$ (3.78)

#### Nominal Levelized Payment at 6.910% Discount Rate (3)

2018 - 2032	\$ 0.01	\$ 0.30	\$ 0.71	\$ 1.70	\$ 2.71
2019 - 2033	\$ 0.53	\$ 0.33	\$ 0.81	\$ 1.70	\$ 3.37
2020 - 2034	\$ 0.97	\$ 0.37	\$ 0.90	\$ 1.62	\$ 3.87

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated March 2018
- (3) Discount Rate - 2017 IRP Update

## Appendix C

### Utah Quarterly Compliance Filing Step Study between 2018.Q1 and 2017.Q4 Compliance Filing Total Avoided Cost Prices \$/MWH (1) (4)

Year	2017.Q4 As Filed	OFPC (2)	Generic	Queue	IRP17Update
2018	\$19.38	\$15.45	\$15.48	\$15.25	\$16.09
2019	\$19.04	\$15.46	\$15.30	\$15.36	\$16.77
2020	\$15.31	\$10.46	\$10.55	\$14.80	\$16.46
2021	\$13.31	\$15.03	\$15.54	\$15.59	\$16.75
2022	\$14.65	\$15.01	\$15.40	\$15.72	\$16.87
2023	\$14.28	\$15.12	\$15.71	\$16.42	\$17.62
2024	\$16.56	\$17.44	\$17.94	\$18.60	\$19.70
2025	\$19.81	\$21.18	\$21.58	\$21.80	\$23.79
2026	\$19.32	\$22.18	\$22.58	\$22.66	\$24.63
2027	\$19.65	\$22.53	\$22.81	\$23.35	\$25.29
2028	\$23.89	\$25.19	\$25.39	\$26.42	\$28.79
2029	\$26.35	\$28.17	\$29.12	\$29.64	\$32.12
2030	\$29.72	\$31.86	\$32.25	\$33.05	\$35.67
2031	\$31.17	\$33.12	\$33.61	\$34.19	\$37.27
2032	\$32.99	\$36.26	\$36.17	\$36.84	\$39.97
2033	\$38.66	\$40.84	\$41.02	\$41.91	\$41.27
2034	\$41.61	\$42.13	\$42.26	\$43.22	\$42.24
2035	\$48.80	\$48.80	\$48.86	\$45.48	\$45.02

#### Nominal Levelized Payment at 6.910% Discount Rate (3)

2018 - 2032	\$19.68	\$19.69	\$19.99	\$20.70	\$22.39
2019 - 2033	\$20.47	\$21.00	\$21.33	\$22.14	\$23.84
2020 - 2034	\$21.48	\$22.45	\$22.82	\$23.73	\$25.35

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated March 2018
- (3) Discount Rate - 2017 IRP Update
- (4) Capacity costs are allocated assuming an 85% capacity factor.

## Appendix C

### Utah Quarterly Compliance Filing Step Study between 2018.Q1 and 2017.Q4 Compliance Filing GRID Calculated Energy Avoided Cost Prices \$/MWH (1)

Year	2017.Q4 As Filed	OFPC	Generic	Queue	IRP17Update
2018	\$19.38	\$15.45	\$15.48	\$15.25	\$16.09
2019	\$19.04	\$15.46	\$15.30	\$15.36	\$16.77
2020	\$15.31	\$10.46	\$10.55	\$14.80	\$16.46
2021	\$13.31	\$15.03	\$15.54	\$15.59	\$16.75
2022	\$14.65	\$15.01	\$15.40	\$15.72	\$16.87
2023	\$14.28	\$15.12	\$15.71	\$16.42	\$17.62
2024	\$16.56	\$17.44	\$17.94	\$18.60	\$19.70
2025	\$19.81	\$21.18	\$21.58	\$21.80	\$23.79
2026	\$19.32	\$22.18	\$22.58	\$22.66	\$24.63
2027	\$19.65	\$22.53	\$22.81	\$23.35	\$25.29
2028	\$23.89	\$25.19	\$25.39	\$26.42	\$28.79
2029	\$26.35	\$28.17	\$29.12	\$29.64	\$32.12
2030	\$29.72	\$31.86	\$32.25	\$33.05	\$35.67
2031	\$31.17	\$33.12	\$33.61	\$34.19	\$37.27
2032	\$32.99	\$36.26	\$36.17	\$36.84	\$39.97
2033	\$38.66	\$40.84	\$41.02	\$41.91	\$41.27
2034	\$41.61	\$42.13	\$42.26	\$43.22	\$42.24
2035	\$48.80	\$48.80	\$48.86	\$45.48	\$45.02

#### Nominal Levelized Payment at 6.91% Discount Rate (3) (4)

2018 - 2032	\$19.68	\$19.69	\$19.99	\$20.70	\$22.39
2019 - 2033	\$20.48	\$21.00	\$21.33	\$22.14	\$23.84
2020 - 2034	\$21.48	\$22.45	\$22.82	\$23.73	\$25.35

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated March 2018
- (3) Discount Rate - 2017 IRP Update
- (4) 15-Year Nominal Levelized Payment (2018-2032)

**Appendix C**  
**Utah Quarterly Compliance Filing**  
**Step Study between 2018.Q1 and 2017.Q4 Compliance Filing**  
**Capacity Avoided Cost Prices**

Year	\$/kW-Year		\$/MWH (1)	
	2017.Q4 (3)	2018.Q1 (3)	2017.Q4 (3)	2018.Q1 (3)
2018	-	-	-	-
2019	-	-	-	-
2020	-	-	-	-
2021	-	-	-	-
2022	-	-	-	-
2023	-	-	-	-
2024	-	-	-	-
2025	-	-	-	-
2026	-	-	-	-
2027	-	-	-	-
2028	-	-	-	-
2029	-	-	-	-
2030	-	-	-	-
2031	-	-	-	-
2032	-	-	-	-
2033	-	-	-	-
2034	-	-	-	-
2035	-	-	-	-

Nominal Levelized Payment at 6.910% Discount Rate (2)

2018 - 2032	\$0.00	\$0.00	\$0.00	\$0.00
2019 - 2033	\$0.00	\$0.00	\$0.00	\$0.00
2020 - 2034	\$0.00	\$0.00	\$0.00	\$0.00

- (1) Capacity costs are allocated assuming an 85% capacity factor.
- (2) (3) Discount Rate - 2017 IRP Update
- (3) No Capacity costs-All of the 2017 IRP Thermal resources are deferred due to the size of the

## CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing **Quarterly Compliance Filing – Avoided Cost Input Changes** in Docket Nos. 03-035-14 and 18-035-23 was served upon the following by email on May 31, 2018.

Justin Jetter  
Patricia Schmid  
Robert Moore  
Assistant Attorney General  
500 Heber M. Wells Building  
160 East 300 South  
Salt Lake City, Utah 84111  
[jjetter@agutah.gov](mailto:jjetter@agutah.gov)  
[Pschmid@agutah.gov](mailto:Pschmid@agutah.gov)  
[rmoore@agutah.gov](mailto:rmoore@agutah.gov)

Chris Parker  
William Powell  
Erika Tedder  
Division of Public Utilities  
160 East 300 South, 4<sup>th</sup> Floor  
Salt Lake City, UT 84111  
[ChrisParker@utah.gov](mailto:ChrisParker@utah.gov)  
[wpowell@utah.gov](mailto:wpowell@utah.gov)  
[etedder@utah.gov](mailto:etedder@utah.gov)

Stephen F. Mecham  
Callister Nebeker & McCullough  
10 East South Temple, Suite 900  
Salt Lake City, UT 84133  
[sfmecham@cnmlaw.com](mailto:sfmecham@cnmlaw.com)

Roger Swenson  
E-Quant Consulting, Inc.  
1592 East 3350 South  
Salt Lake City, UT 84106  
[Roger.swenson@prodigy.net](mailto:Roger.swenson@prodigy.net)

Gregory L. Probst  
c/o Energy Strategies  
39 Market Street, Suite 200  
Salt Lake City, UT 84101  
[gprobst@earthlink.net](mailto:gprobst@earthlink.net)

Thor Nelson  
Holland & Hart LLP  
8390 East Crescent Parkway, Suite 400  
Greenwood Village, CO 80111-2811  
[tnelson@hollandhart.com](mailto:tnelson@hollandhart.com)

Kate Bowman  
Utah Clean Energy  
1014 2nd Avenue  
Salt Lake City, UT 84111  
[kate@utahcleanenergy.org](mailto:kate@utahcleanenergy.org)

Cheryl Murray  
Michele Beck  
Bela Vastag  
Office of Consumer Services  
500 Heber M. Wells Building  
160 East 300 South  
Salt Lake City, UT 84111  
[cmurray@utah.gov](mailto:cmurray@utah.gov)  
[mbeck@utah.gov](mailto:mbeck@utah.gov)  
[bvastag@utah.gov](mailto:bvastag@utah.gov)


Kelly Francone  
Neal Townsend  
Energy Strategies LLC  
215 South State, Suite 200  
Salt Lake City, UT 84111  
[kfrancone@energystrat.com](mailto:kfrancone@energystrat.com)  
[ntownsend@energystrat.com](mailto:ntownsend@energystrat.com)

Gary A. Dodge  
Hatch James & Dodge  
10 West Broadway, #400  
Salt Lake City, UT 84101  
[gdodge@hjdllaw.com](mailto:gdodge@hjdllaw.com)

James W. Holtkamp  
Holland & Hart, LLP  
60 East South Temple, Suite 2000  
Salt Lake City, UT 84111  
[jholtkamp@hollandhart.com](mailto:jholtkamp@hollandhart.com)

Richard Collins & Tracy Livingston Mikell  
Wasatch Wind LLC  
357 West 910 South  
Heber City, UT 84032  
[rcollins@westminstercollege.edu](mailto:rcollins@westminstercollege.edu)

Lt. Col. Karen White  
FEA  
139 Barnes Drive, Suite 1  
Tyndall AFB, FL 32403-5319  
[Karen.white@tyndall.af.mil](mailto:Karen.white@tyndall.af.mil)



Katie Savarin  
Coordinator, Regulatory Operations