



1407 W. North Temple
Salt Lake City, Utah 84116

September 30, 2019

VIA ELECTRONIC FILING

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

Attn: Gary Widerburg
Commission Secretary

Re: **Docket No. 19-035-18 – 2019.Q2 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 No. 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 No. 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.

No comments were filed challenging the Company’s previous compliance filing, which was submitted to the Commission on April 30, 2019 (“2019.Q1 filing”).

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 prices dated June 28, 2019 (1906 OFPC).
3. **Load Forecast Update**
Update to load forecast dated June 20, 2019.
4. **Qualifying Facility (QF) Queue**
Update of signed contract queue and current potential QFs. The QF queue was revised to include 2,687 MW nameplate in this filing. The potential queue was 2,612 MW nameplate in the 2019.Q1 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 IRP Update portfolio does not include any thermal resources. The incremental tracking solar QF resource partially displaces summer and winter FOTs during 2019-2032 and partially displaces the Utah South Solar resource in 2033. The incremental wind QF resource partially displaces summer and winter FOTs during 2019-2029 and partially displaces the Goshen and Dave Johnston wind resources in 2030.
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.
 - a. Avoided costs presented in **Appendix B.1** were calculated assuming a 100 MW 100 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 single-axis 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

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 Steward
Vice President, Regulation

cc: Service List (Docket No. 19-035-18)

ROCKY MOUNTAIN POWER
DESCRIPTION OF AVOIDED COST INPUT CHANGES
2019.Q2 – September 2019

Appendix A

PacifiCorp Avoided Cost (Partial Displacement Differential Revenue Requirement (“PDDRR”)) Model Updates through August 2019 Docket No. 19-035-18 / Docket No. 03-035-14

Assumptions that have changed since the 2019.Q1 compliance filing are in **bold and underline**.

GRID Scenario Study Period

- January 1, 2020 through December 31, 2034 – 15-year study.
- Avoided cost prices starting in January 2020.

Official Forward Price Curve (“OFPC”) (Gas and Electric Market Prices)

- **Updated to PacifiCorp’s June 28, 2019 OFPC (1906 OFPC)**.
- Hourly Market Price Scalars consistent with 2017 Integrated Resource Plan (“IRP”) Update.

Fuel Prices (Coal)

- Average and incremental coal costs based on forecast dated **August 2019**.
- Coal burn expense reflects incremental coal costs and coal take or pay minimum burn levels.

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.
- Wind resources contained in the load and resource balance for the 2017 IRP Update preferred portfolio that were not approved by the Utah or Wyoming Commission have been replaced by Front Office Transactions through 2029 and proxy wind resources in comparable locations starting in 2030. The replacement resources are deferrable.
 - Everpower Wind qualified facility (“QF”) (Wyoming Northeast)
 - EV2020 Uinta Wind (Goshen)
 - Monticello Wind QF (Utah South)

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 renewable energy credits (“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

- Hydro forecast prepared March 2019.
- 2019 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 the Commission’s order in Docket 11-035-T06.

Inflation Rates

- Company’s inflation rate forecast dated **June 2019**.

Levelized Prices (Nominal) at 6.91 percent Discount Rate

- 15 years **2020** through **2034**.
- Levelized prices are for illustrative purposes only.

Load Forecast (Retail)

- 20-year load forecast dated **June 20, 2019**.

Long-Term Contracts

- Long-term contracts which have prices that are indexed to market are consistent with the **1906 OFPC**.
- Contracts are modeled based on 48 months ended December 2018.
- Qualifying Facility (QF) power purchase agreements (PPA) are assumed to terminate and not renew at the end of their current PPA term.
- Incorporates signed PPAs.

Market Capacity

- Capacity set at 48-month average of all short-term firm (“STF”) sales ended December 2018.
- 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 **June 2019**.

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 the North American Electric Reliability Corporation / Western Electricity Coordinating Council 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 2022.
- Typical week retail load reserve calculation thereafter.

STF Transactions

- Executed STF contracts as of **June 2019**.

Size of the Avoided Cost Resource

- The avoided cost thermal resource is 100 megawatt (“MW”) with a 100 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 2018.

Wind and Solar Resources

- Existing wind and solar generation profiles modeled using 2018 actual generation shape.¹
- Wind and solar generation shaped to hourly using 2018 actual generation shape.¹
- Non-PTC wind resources that are located in a constrained area and can be curtailed on an economic basis are dispatched within the GRID model.²
- 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 2018.
- 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. In Docket No. 17-035-37, the Commission specifically identified that the 2021 Aeolus Wind and Aeolus-Bridger Anticline Transmission (Gateway segment D2) in the 2017 IRP be considered deferrable by Utah Wind QFs until a final Commission determination was made. As a result of the Utah Commission's June 22, 2018 order approving the EV2020 Wind resources and Energy Gateway sub-segment D2, this transmission is no longer considered deferrable. **Since the 2017 IRP Update was prepared, the expected incremental transfer capability of Energy Gateway sub-segment D2 has increased to 950 MW, and this updated rating is included in the indicative avoided cost pricing.**
- The loads and resources in the Wyoming Northeast transmission area have been reassigned to either the Wyoming East or Wyoming North transmission area and transmission limits between these areas are reflected in the GRID topology.

¹ Starting in the 2013.Q4 Compliance filing, wind 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. The hourly shaping of solar generation was identified as a non-routine change in the 2018.Q2 compliance filing.

² Wind dispatch was identified as a non-routine change in the 2018.Q2 compliance filing.

IRP Partial Displacements (This Filing)

Provided in the table below are the Contracts 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.

Contracts Queue						
No.	Signed Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Soda Lake Geothermal PPA	13.3	20.0		66.5%	2019 09 01
2	Sprague River QF(terminated)	-4.5	-7.0		64.8%	
3	Ivory Pine QF (terminated)	-6.5	-10.0		64.8%	
4	Deschutes Valley Water District QF	5.9	5.9		100.0%	2021 01 01
5	Cove Mountain Solar PPA	34.6	58.0		59.7%	2020 12 31
6	Hunter Solar PPA	59.7	100.0		59.7%	2020 12 31
7	Milford Solar PPA	59.1	99.0		59.7%	2020 11 30
8	Milican Solar PPA	29.2	45.0		64.8%	2020 12 31
9	Prineville Solar PPA	35.6	55.0		64.8%	2020 12 31
10	Sigurd Solar PPA	47.8	80.0		59.7%	2020 12 31
11	Three Sisters Irrig. District PPA	0.2	0.2		100.0%	2018 11 05
12	Cove Mountain Solar II PPA	72.8	122.0		59.7%	2020 11 01
13	Non-deferrable PPA_P2*	46.6	78.0		59.7%	2022 05 01
14	Non-deferrable PPA_P3*	59.7	100.0		59.7%	2023 07 01
15	Non-deferrable PPA_P4*	59.7	100.0		59.7%	2025 06 01
16	Non-deferrable PPA_P5*	59.7	100.0		59.7%	2026 08 01
17	Non-deferrable PPA_P6*	29.9	50.0		59.7%	2028 06 01
18	Everpower QF**	-0.03	-0.2		15.8%	2020 12 01
19	IRP17 WYAE WindUinta2020	-25.4	-161.0		15.8%	2020 11 01
20	Monticello Wind QF	-12.5	-79.2		15.8%	2021 12 31
21	Simplot Phosphates QF	0	13.3		0%	2018 02 01
22	Tesoro Non Firm QF	0	25.0		0%	2019 01 01
23	Kennecott Smelter Non Firm QF	0	31.8		0%	2019 01 01
24	Kennecott Refinery Non Firm QF	0	6.2		0%	2019 01 01
25	ExxonMobil QF	0	98.0		0%	2019 01 01
26	Tata Chemicals QF	0	30.0		0%	2019 01 01
27	Cedar Springs Wind III PPA	19.0	120.0		15.8%	2020 12 31
28	Roseburg Weed QF	2.9	10.0		29.0%	2019 01 01
29	Slate Creek Hydro QF	0.6	4.2		14.0%	2019 01 01
30	Yakima Tieton Cowiche QF	1.0	1.5		67.0%	2019 01 01
31	Roseburg Dillard QF	2.44	2.44		100.0%	2019 01 01
32	COID Siphon QF	3.1	5.0		62.0%	2021 01 01
Total Signed MW		593.72	1103.14			
No.	Potential QF Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	QF - 249 - OR - Solar	25.9	40.0	29.1%	64.8%	2019 12 31
2	QF - 279 - OR - Solar	25.9	40.0	31.0%	64.8%	2019 12 31

3	QF - 280 - OR - Solar	13.0	20.0	27.9%	64.8%	2019 01 01
4	QF - 505 - WY - Solar	60.7	80.0	38.6%	75.8%	2022 02 01
5	QF - 514 - WY - Gas	0	30.0	85.0%	0.0%	2020 01 01
6	QF - 541 - WY - Solar	47.7	80.0	27.2%	59.7%	2022 06 01
7	QF - 542 - WY - Solar	47.7	80.0	27.2%	59.7%	2022 06 01
8	QF - 516 - WY - Wind	3.9	24.8	34.5%	15.8%	2019 08 01
9	QF - 517 - WY - Wind	0.3	1.8	34.5%	15.6%	2019 08 01
10	QF - 442 - WY - Solar	47.7	80.0	26.7%	59.7%	2022 05 01
11	QF - 506 - WY - Solar	60.7	80.0	38.6%	75.8%	2022 05 01
12	QF - 519 - WY - Solar	47.7	80.0	27.2%	59.7%	2022 09 01
13	QF - 520 - WY - Solar	47.7	80.0	27.2%	59.7%	2022 09 01
14	QF - 433 - UT - Gas	0	31.8	58.2%	0.0%	2020 01 01
15	QF - 434 - UT - Gas	0	6.2	85.0%	0.0%	2020 01 01
16	QF - 435 - UT - Gas	0	25.0	85.0%	0.0%	2020 01 01
17	QF - 521 - OR - Solar	51.8	80.0	26.7%	64.8%	2022 12 01
18	QF - 522 - OR - Solar	51.8	80.0	26.7%	64.8%	2022 12 01
19	QF - 523 - OR - Solar	51.8	80.0	26.7%	64.8%	2022 12 01
20	QF - 524 - OR - Solar	51.8	80.0	26.7%	64.8%	2022 12 01
21	QF - 525 - WY - Gas	0	98.0	75.0%	0.0%	2020 01 01
22	QF - 527 - WY - Wind	2.7	16.80	34.5%	15.8%	2020 11 01
23	QF - 528 - UT - Solar	46.5	78.0	29.9%	59.7%	2022 09 01
24	QF - 507 - UT - Solar	60.7	80.0	38.6%	75.8%	2022 07 01
25	QF - 509 - UT - Solar	60.7	80.0	38.6%	75.8%	2022 07 01
26	QF - 538 - OR - Solar	51.8	80.0	33.4%	64.8%	2023 10 01
27	QF - 537 - WY - Wind	2.6	16.5	29.5%	15.8%	2019 09 01
28	QF - 540 - UT - Solar	20.9	35.0	34.5%	59.7%	2022 10 01
Total Potential MW		882.22	1583.85			

Total Partial Displacement	1475.94	2686.99
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29	Utah 2019.Q2	100.00	100.00	100.0%	100.0%	2019 01 01
Partial Displacement after QF		1575.94	2786.99			

* PacifiCorp's **June 2019** load forecast includes incremental loads that are contingent upon the concurrent addition of renewable resources. To account for this, proxy renewable resources sufficient to meet the requirements embedded in the load forecast have been included in the queue of committed resources.

**** The 240 MW Everpower QF was included in the 2017 IRP Update portfolio but was removed following a determination by the Wyoming Public Service Commission. The Company has now acquired a 239.8 MW resource at that location; the -0.2 MW shown is the net.**

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: **1,482** MW of solar resources are displaced by the QF queue. After degradation, the incremental solar QF displaces **75 MW of Utah South solar resources in 2033. The Company retains 100% of the REC's starting in 2033.**
- Wind: **180** MW of wind resources are displaced by the QF queue. **The incremental wind QF displaces 60 MW of Goshen wind resources and 20 MW of Dave Johnston wind resources in 2030. The Company retains 100% of the REC's starting in 2030.**

Year	IRP Additions (Nameplate MW)				Base Case Displacement (Nameplate MW)				
	IRP Thermal	IRP Baseload Renewable	IRP Solar	IRP Wind	Thermal	Solar	Wind	FOT Summer	FOT Winter
2019	-	-	-	-	-	-	-	(202)	(202)
2020	-	-	-	-	-	-	-	(201)	(201)
2021	-	-	-	1,149	-	-	-	102	102
2022	-	-	-	1,149	-	-	-	445	305
2023	-	-	-	1,149	-	-	-	419	310
2024	-	-	-	1,149	-	-	-	428	304
2025	-	-	-	1,149	-	-	-	538	317
2026	-	-	-	1,149	-	-	-	499	330
2027	-	-	-	1,149	-	-	-	500	343
2028	-	-	-	1,149	-	-	-	977	357
2029	-	-	-	1,149	-	-	-	977	758
2030	-	-	651	1,750	-	651	180	586	586
2031	-	-	745	1,750	-	745	180	522	522
2032	-	-	878	1,750	-	878	180	436	436
2033	-	-	1,854	2,550	-	1,482	180	74	74
2034	-	-	1,854	2,550	-	1,482	180	62	62
2035	-	-	1,860	2,883	-	1,482	180	13	13
2036	-	-	1,860	3,032	-	1,482	180	13	13

IRP Partial Displacements (Previous Filing)

Total partial displacement was 1,503.94 MW in the base case and 1,603.94 MW in the avoided cost case as shown in the table below, adjusted for solar degradation:

Contracts Queue						
No.	Signed Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Soda Lake Geothermal PPA	13.3	20.0		66.5%	2019 09 01
2	Sprague River QF(terminated)	-4.5	-7.0		64.8%	
3	Ivory Pine QF (terminated)	-6.5	-10.0		64.8%	
4	Deschutes Valley Water District QF	5.9	5.9		100.0%	2021 01 01
5	Cove Mountain Solar PPA	34.6	58.0		59.7%	2020 12 31
6	Hunter Solar PPA	59.7	100.0		59.7%	2020 12 31
7	Milford Solar PPA	59.1	99.0		59.7%	2020 11 30
8	Milican Solar PPA	29.2	45.0		64.8%	2020 12 31
9	Prineville Solar PPA	35.6	55.0		64.8%	2020 12 31
10	Sigurd Solar PPA	47.8	80.0		59.7%	2020 12 31
11	Three Sisters Irrig. District PPA	0.2	0.2		100.0%	2018 11 05
12	Cove Mountain Solar II PPA	72.8	122.0		59.7%	2020 11 01
13	Non-deferrable PPA_P2	46.6	78.0		59.7%	2022 05 01
14	Non-deferrable PPA_P3	59.7	100.0		59.7%	2023 07 01
15	Non-deferrable PPA_P4	59.7	100.0		59.7%	2025 06 01
16	Non-deferrable PPA_P5	59.7	100.0		59.7%	2026 08 01
17	Non-deferrable PPA_P6	29.9	50.0		59.7%	2028 06 01
18	Everpower QF	-37.9	-240.0		15.8%	2019 11 01
19	IRP17 WYAE WindUinta2020	-25.4	-161.0		15.8%	2020 11 01
20	Monticello Wind QF	-12.5	-79.2		15.8%	2021 12 31
21	Simplot Phosphates QF	0.0	13.3		0.0%	2018 02 01
22	Tesoro Non Firm QF	0.0	25.0		0.0%	2019 01 01
23	Kennecott Smelter Non Firm QF	0.0	31.8		0.0%	2019 01 01
24	Kennecott Refinery Non Firm QF	0.0	6.2		0.0%	2019 01 01
25	ExxonMobil QF	0.0	98.0		0.0%	2019 01 01
26	Tata Chemicals QF	0.0	30.0		0.0%	2019 01 01
27	Cedar Springs Wind III PPA	19.0	120.0		15.8%	2020 12 31
28	Roseburg Weed QF	2.9	10.0		29.0%	2019 01 01
29	Slate Creek Hydro QF	0.6	4.2		14.0%	2019 01 01
30	Yakima Tieton Cowiche QF	1.0	1.5		67.0%	2019 01 01
31	COID Siphon QF	3.1	5.0		62.0%	2021 01 01
Total Signed MW		553.39	860.90			
No.	Potential QF Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	QF - 249 - OR - Solar	25.9	40.0	29.1%	64.8%	2019 12 31
2	QF - 279 - OR - Solar	25.9	40.0	31.0%	64.8%	2019 12 31
3	QF - 280 - OR - Solar	13.0	20.0	27.9%	64.8%	2019 01 01

4	QF - 281 - OR - Solar	25.9	40.0	24.5%	64.8%	2019 12 31
5	QF - 308 - WY - Wind	12.6	80.0	46.6%	15.8%	2020 11 01
6	QF - 309 - WY - Wind	12.6	80.0	46.6%	15.8%	2020 11 01
7	QF - 310 - WY - Wind	12.6	80.0	46.6%	15.8%	2020 11 01
8	QF - 311 - WY - Wind	6.3	40.0	46.6%	15.8%	2020 11 01
9	QF - 502 - WY - Solar	47.7	80.0	30.8%	59.7%	2020 12 01
10	QF - 451 - OR - Gas	0.0	2.4	100.1%	0.0%	2019 01 01
11	QF - 515 -WY Wind	2.6	16.5	29.5%	15.8%	2019 01 01
12	QF - 503 - WY - Solar	44.7	74.9	28.5%	59.7%	2022 01 01
13	QF - 504 - WY - Solar	29.8	50.0	29.9%	59.7%	2022 01 01
14	QF - 505 - WY - Solar	60.7	80.0	38.6%	75.8%	2022 02 01
15	QF - 508 - WY - Solar	36.3	50.0	31.7%	72.7%	2022 02 01
16	QF - 510 - WY - Solar	60.7	80.0	38.6%	75.8%	2022 02 01
17	QF - 511 - WY - Solar	60.7	80.0	38.6%	75.8%	2022 02 01
18	QF - 512 - WY - Solar	60.7	80.0	38.6%	75.8%	2022 02 01
19	QF - 513 - WY - Solar	34.6	58.0	28.2%	59.7%	2020 12 01
20	QF - 514 - WY - Gas	0.0	30.0	85.0%	0.0%	2020 01 01
21	QF - 515 - WY - Solar	47.7	80.0	27.9%	59.7%	2021 01 01
22	QF - 516 - WY - Wind	3.9	24.8	34.5%	15.8%	2019 08 01
23	QF - 517 - WY - Wind	0.3	1.8	34.5%	15.6%	2019 08 01
24	QF - 442 - WY - Solar	47.7	80.0	26.7%	59.7%	2022 05 01
25	QF - 507 - UT - Solar	60.7	80.0	38.6%	75.8%	2022 05 01
26	QF - 509 - UT - Solar	60.7	80.0	38.6%	75.8%	2022 05 01
27	QF - 506 - WY - Solar	60.7	80.0	38.6%	75.8%	2022 05 01
28	QF - 519 - WY - Solar	47.7	80.0	27.2%	59.7%	2022 06 01
29	QF - 520 - WY - Solar	47.7	80.0	27.2%	59.7%	2022 06 01
30	QF - 433 - UT - Gas	0.0	31.8	58.2%	0.0%	2020 01 01
31	QF - 434 - UT - Gas	0.0	6.2	85.0%	0.0%	2020 01 01
32	QF - 435 - UT - Gas	0.0	25.0	85.0%	0.0%	2020 01 01
Total Potential MW		950.55	1751.39			

Total Partial Displacement	1503.94	2612.29
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ROCKY MOUNTAIN POWER

UPDATE IMPACT – UPDATED AVOIDED COST STUDY

2019.Q2 – September 2019

Appendix B.1
Avoided Cost Prices \$/MWh
Utah 2019.Q2 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 2019.Q1 Filing	Solar Tracking UT 2019.Q1 Filing	Wind UT 2019.Q1 Filing	Thermal Difference	Solar Tracking Difference	Wind Difference
2020	\$18.30	\$17.93	\$14.15	\$21.07	\$19.95	\$18.62	(\$2.77)	(\$2.02)	(\$4.47)
2021	\$17.22	\$14.91	\$14.16	\$17.47	\$13.99	\$16.89	(\$0.24)	\$0.92	(\$2.73)
2022	\$18.66	\$15.83	\$15.32	\$17.99	\$13.75	\$15.08	\$0.67	\$2.07	\$0.24
2023	\$19.45	\$16.03	\$16.71	\$17.84	\$14.19	\$15.47	\$1.61	\$1.85	\$1.25
2024	\$21.53	\$17.24	\$18.42	\$23.57	\$18.33	\$22.37	(\$2.04)	(\$1.09)	(\$3.95)
2025	\$24.16	\$20.64	\$22.75	\$24.45	\$19.35	\$22.85	(\$0.29)	\$1.29	(\$0.10)
2026	\$28.65	\$22.28	\$26.00	\$25.88	\$20.87	\$23.83	\$2.77	\$1.41	\$2.16
2027	\$30.06	\$23.01	\$27.27	\$26.50	\$19.54	\$24.99	\$3.55	\$3.47	\$2.28
2028	\$33.32	\$25.32	\$31.05	\$30.32	\$23.32	\$28.43	\$3.00	\$2.00	\$2.62
2029	\$37.24	\$29.87	\$35.04	\$35.12	\$26.70	\$33.16	\$2.13	\$3.17	\$1.88
2030	\$41.89	\$34.20	\$50.11	\$39.43	\$30.72	\$58.05	\$2.46	\$3.48	(\$7.93)
2031	\$45.71	\$37.22	\$50.02	\$42.21	\$32.98	\$57.23	\$3.50	\$4.24	(\$7.21)
2032	\$47.92	\$39.40	\$50.09	\$43.93	\$34.26	\$57.80	\$3.98	\$5.14	(\$7.72)
2033	\$53.47	\$43.49	\$52.81	\$50.00	\$43.64	\$60.12	\$3.46	(\$0.15)	(\$7.32)
2034	\$56.08	\$44.70	\$53.73	\$52.36	\$44.88	\$61.73	\$3.72	(\$0.18)	(\$8.00)

15-Year Levelized Prices (Nominal) @ 6.910% Discount Rate (1) (3)										
2020-2034	\$/MWh	\$29.35	\$23.89	\$27.79	\$28.13	\$22.46	\$29.89	\$1.22	\$1.43	(\$2.10)
							4%	6%	-7%	

Footnotes:

- (1) Discount Rate - 2017 IRP Update
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2020 - 2034, levelized monthly

Table 1
Avoided Cost Prices
Utah 2019.Q2 - 100.0 MW and 100.0% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	100.0% Capacity Factor \$/MWh
2019	\$0.00	\$21.56	\$21.56
2020	\$0.00	\$18.30	\$18.30
2021	\$0.00	\$17.22	\$17.22
2022	\$0.00	\$18.66	\$18.66
2023	\$0.00	\$19.45	\$19.45
2024	\$0.00	\$21.53	\$21.53
2025	\$0.00	\$24.16	\$24.16
2026	\$0.00	\$28.65	\$28.65
2027	\$0.00	\$30.06	\$30.06
2028	\$0.00	\$33.32	\$33.32
2029	\$0.00	\$37.24	\$37.24
2030	\$0.00	\$41.89	\$41.89
2031	\$0.00	\$45.71	\$45.71
2032	\$0.00	\$47.92	\$47.92
2033	\$0.00	\$53.47	\$53.47
2034	\$0.00	\$56.08	\$56.08
2035	\$0.00	\$59.90	\$59.90
2036	\$0.00	\$61.91	\$61.91
2037	\$0.00	\$63.31	\$63.31
2038	\$0.00	\$64.70	\$64.70

15 Year Starting 2019

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

\$/kW	\$0.00		
		\$/MWh	\$27.56
			\$27.56

15 Year Starting 2020

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

\$/kW	\$0.00		
		\$/MWh	\$29.35
			\$29.35

Footnotes:

- (1) Discount Rate - 2017 IRP Update
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: levelized monthly

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2019.Q2 - 100.0 MW and 100.0% CF

Year	Annual	Winter Season					Summer Season				Winter Season		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Energy Only													
2019	21.56	22.15	42.28	23.29	16.89	13.10	14.51	40.06	29.43	15.60	12.53	13.01	17.05
2020	18.30	18.75	15.89	14.05	12.79	14.17	14.35	43.63	28.91	14.55	12.54	12.81	16.36
2021	17.22	19.49	14.98	15.56	15.94	15.05	15.93	28.94	22.42	15.59	13.95	14.04	14.35
2022	18.66	18.23	19.39	17.97	17.08	15.20	14.41	31.42	27.55	16.11	14.72	15.52	16.03
2023	19.45	18.34	16.67	18.92	18.33	16.55	17.88	31.73	27.96	15.43	16.93	17.09	17.03
2024	21.53	17.99	18.57	21.02	18.08	18.32	19.63	35.93	32.21	20.17	17.72	19.26	18.95
2025	24.16	20.06	21.73	22.80	21.45	19.75	21.43	37.84	38.39	22.33	22.79	20.60	20.19
2026	28.65	26.71	26.77	23.39	23.76	23.20	26.58	45.96	41.90	26.47	25.57	26.07	26.83
2027	30.06	27.99	28.24	26.98	26.25	23.61	28.75	46.30	42.63	27.65	27.06	27.04	27.66
2028	33.32	27.41	27.18	28.26	27.76	25.22	29.89	60.92	53.51	30.46	27.65	28.90	31.79
2029	37.24	29.74	29.68	29.92	28.42	26.58	31.92	66.63	75.15	34.82	28.38	30.20	33.99
2030	41.89	34.25	32.35	30.51	29.14	28.45	35.89	81.59	82.77	40.02	33.13	34.36	38.35
2031	45.71	37.66	35.92	34.56	32.27	33.17	40.69	87.68	87.62	43.34	36.98	36.51	40.18
2032	47.92	37.73	36.93	36.12	36.71	33.68	46.39	90.62	90.58	45.02	38.11	38.26	43.32
2033	53.47	41.31	42.79	38.48	36.31	33.57	52.87	112.37	101.36	49.33	42.42	42.22	46.48
2034	56.08	43.61	45.46	41.01	38.63	33.58	56.24	118.57	108.20	50.44	43.11	44.01	47.97
2035	59.90	45.91	46.09	43.87	42.42	34.22	53.40	122.48	131.85	53.53	44.65	44.59	52.96
2036	61.91	46.48	47.36	41.96	40.22	35.86	57.59	136.68	123.68	58.56	49.11	46.44	56.57

Table 4
Burnertip Natural Gas Price Forecast
Utah 2019.Q2 - 100.0 MW and 100.0% 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	\$2.65	\$3.31	\$2.66
2018	\$2.59	\$3.23	\$2.60
2019	\$2.38	\$4.07	\$2.11
2020	\$2.15	\$2.11	\$1.97
2021	\$2.20	\$2.11	\$2.07
2022	\$2.31	\$2.23	\$2.17
2023	\$2.52	\$2.47	\$2.38
2024	\$2.80	\$2.81	\$2.66
2025	\$3.16	\$3.15	\$3.01
2026	\$3.38	\$3.40	\$3.23
2027	\$3.52	\$3.56	\$3.37
2028	\$3.75	\$3.81	\$3.60
2029	\$3.89	\$3.97	\$3.73
2030	\$4.04	\$4.11	\$3.89
2031	\$4.35	\$4.39	\$4.19
2032	\$4.59	\$4.62	\$4.43
2033	\$4.97	\$4.96	\$4.80
2034	\$5.11	\$5.09	\$4.95
2035	\$5.27	\$5.19	\$5.10
2036	\$5.39	\$5.27	\$5.22
2037	\$5.79	\$5.68	\$5.61
2038	\$6.05	\$5.92	\$5.88
2039	\$6.30	\$6.15	\$6.12
2040	\$6.51	\$6.38	\$6.33

Official Forward Price Curve Forecast dated Jun 28, 2019

Table 5

Utah 2019.Q2 - 100.0 MW and 100.0% CF
 January 2019 through December 2038
 Nominal Avoided Costs Calculated Monthly

Nominal NPV at 6.91% Discount Rate

15 Year Starting 2019	\$ 228,224,368	\$ -	\$ 228,224,368	\$ 8,280,163	\$27.56
15 Year Starting 2020	\$ 243,015,055	\$ -	\$ 243,015,055	\$ 8,280,592	\$29.35
15 Year Starting 2021	\$ 263,058,934	\$ -	\$ 263,058,934	\$ 8,278,514	\$31.78

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	100.0% CF	Dollars	MWH	100.0% CF
Jan-19	1,648,180	-	1,648,180	74,400	22.15
Feb-19	2,841,029	-	2,841,029	67,200	42.28
Mar-19	1,733,008	-	1,733,008	74,400	23.29
Apr-19	1,215,889	-	1,215,889	72,000	16.89
May-19	974,949	-	974,949	74,400	13.10
Jun-19	1,044,917	-	1,044,917	72,000	14.51
Jul-19	2,980,299	-	2,980,299	74,400	40.06
Aug-19	2,189,260	-	2,189,260	74,400	29.43
Sep-19	1,123,407	-	1,123,407	72,000	15.60
Oct-19	932,519	-	932,519	74,400	12.53
Nov-19	936,542	-	936,542	72,000	13.01
Dec-19	1,268,876	-	1,268,876	74,400	17.05
Jan-20	1,394,946	-	1,394,946	74,400	18.75
Feb-20	1,106,265	-	1,106,265	69,600	15.89
Mar-20	1,045,619	-	1,045,619	74,400	14.05
Apr-20	921,144	-	921,144	72,000	12.79
May-20	1,054,212	-	1,054,212	74,400	14.17
Jun-20	1,032,888	-	1,032,888	72,000	14.35
Jul-20	3,246,112	-	3,246,112	74,400	43.63
Aug-20	2,151,215	-	2,151,215	74,400	28.91
Sep-20	1,047,610	-	1,047,610	72,000	14.55
Oct-20	932,997	-	932,997	74,400	12.54
Nov-20	922,319	-	922,319	72,000	12.81
Dec-20	1,216,874	-	1,216,874	74,400	16.36
Jan-21	1,449,932	-	1,449,932	74,400	19.49
Feb-21	1,006,698	-	1,006,698	67,200	14.98
Mar-21	1,157,504	-	1,157,504	74,400	15.56
Apr-21	1,147,425	-	1,147,425	72,000	15.94
May-21	1,119,780	-	1,119,780	74,400	15.05
Jun-21	1,146,864	-	1,146,864	72,000	15.93
Jul-21	2,152,823	-	2,152,823	74,400	28.94
Aug-21	1,668,005	-	1,668,005	74,400	22.42
Sep-21	1,122,757	-	1,122,757	72,000	15.59
Oct-21	1,038,200	-	1,038,200	74,400	13.95
Nov-21	1,011,031	-	1,011,031	72,000	14.04
Dec-21	1,067,517	-	1,067,517	74,400	14.35
Jan-22	1,356,615	-	1,356,615	74,400	18.23
Feb-22	1,303,092	-	1,303,092	67,200	19.39
Mar-22	1,337,047	-	1,337,047	74,400	17.97
Apr-22	1,229,923	-	1,229,923	72,000	17.08
May-22	1,130,545	-	1,130,545	74,400	15.20
Jun-22	1,037,246	-	1,037,246	72,000	14.41
Jul-22	2,337,476	-	2,337,476	74,400	31.42
Aug-22	2,049,986	-	2,049,986	74,400	27.55
Sep-22	1,159,674	-	1,159,674	72,000	16.11
Oct-22	1,095,096	-	1,095,096	74,400	14.72
Nov-22	1,117,364	-	1,117,364	72,000	15.52
Dec-22	1,192,930	-	1,192,930	74,400	16.03
Jan-23	1,364,735	-	1,364,735	74,400	18.34

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	100.0% CF	Dollars	MWH	100.0% CF
Feb-23	1,120,018	-	1,120,018	67,200	16.67
Mar-23	1,407,473	-	1,407,473	74,400	18.92
Apr-23	1,319,804	-	1,319,804	72,000	18.33
May-23	1,231,667	-	1,231,667	74,400	16.55
Jun-23	1,287,689	-	1,287,689	72,000	17.88
Jul-23	2,360,662	-	2,360,662	74,400	31.73
Aug-23	2,079,860	-	2,079,860	74,400	27.96
Sep-23	1,110,628	-	1,110,628	72,000	15.43
Oct-23	1,259,868	-	1,259,868	74,400	16.93
Nov-23	1,230,400	-	1,230,400	72,000	17.09
Dec-23	1,266,697	-	1,266,697	74,400	17.03
Jan-24	1,338,466	-	1,338,466	74,400	17.99
Feb-24	1,292,535	-	1,292,535	69,600	18.57
Mar-24	1,563,855	-	1,563,855	74,400	21.02
Apr-24	1,301,491	-	1,301,491	72,000	18.08
May-24	1,362,874	-	1,362,874	74,400	18.32
Jun-24	1,413,174	-	1,413,174	72,000	19.63
Jul-24	2,673,534	-	2,673,534	74,400	35.93
Aug-24	2,396,599	-	2,396,599	74,400	32.21
Sep-24	1,452,540	-	1,452,540	72,000	20.17
Oct-24	1,318,411	-	1,318,411	74,400	17.72
Nov-24	1,386,611	-	1,386,611	72,000	19.26
Dec-24	1,410,235	-	1,410,235	74,400	18.95
Jan-25	1,492,276	-	1,492,276	74,400	20.06
Feb-25	1,460,264	-	1,460,264	67,200	21.73
Mar-25	1,696,238	-	1,696,238	74,400	22.80
Apr-25	1,544,212	-	1,544,212	72,000	21.45
May-25	1,469,044	-	1,469,044	74,400	19.75
Jun-25	1,542,895	-	1,542,895	72,000	21.43
Jul-25	2,815,477	-	2,815,477	74,400	37.84
Aug-25	2,856,546	-	2,856,546	74,400	38.39
Sep-25	1,607,629	-	1,607,629	72,000	22.33
Oct-25	1,695,799	-	1,695,799	74,400	22.79
Nov-25	1,483,444	-	1,483,444	72,000	20.60
Dec-25	1,502,235	-	1,502,235	74,400	20.19
Jan-26	1,987,033	-	1,987,033	74,400	26.71
Feb-26	1,798,879	-	1,798,879	67,200	26.77
Mar-26	1,740,022	-	1,740,022	74,400	23.39
Apr-26	1,710,912	-	1,710,912	72,000	23.76
May-26	1,725,734	-	1,725,734	74,400	23.20
Jun-26	1,913,803	-	1,913,803	72,000	26.58
Jul-26	3,419,788	-	3,419,788	74,400	45.96
Aug-26	3,117,550	-	3,117,550	74,400	41.90
Sep-26	1,905,984	-	1,905,984	72,000	26.47
Oct-26	1,902,082	-	1,902,082	74,400	25.57
Nov-26	1,876,898	-	1,876,898	72,000	26.07
Dec-26	1,996,517	-	1,996,517	74,400	26.83
Jan-27	2,082,732	-	2,082,732	74,400	27.99
Feb-27	1,897,417	-	1,897,417	67,200	28.24
Mar-27	2,007,069	-	2,007,069	74,400	26.98
Apr-27	1,890,300	-	1,890,300	72,000	26.25
May-27	1,756,911	-	1,756,911	74,400	23.61
Jun-27	2,069,872	-	2,069,872	72,000	28.75
Jul-27	3,444,843	-	3,444,843	74,400	46.30
Aug-27	3,171,774	-	3,171,774	74,400	42.63
Sep-27	1,990,979	-	1,990,979	72,000	27.65
Oct-27	2,013,449	-	2,013,449	74,400	27.06
Nov-27	1,946,949	-	1,946,949	72,000	27.04
Dec-27	2,058,200	-	2,058,200	74,400	27.66
Jan-28	2,039,580	-	2,039,580	74,400	27.41

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	100.0% CF	Dollars	MWH	100.0% CF
Feb-28	1,891,809	-	1,891,809	69,600	27.18
Mar-28	2,102,773	-	2,102,773	74,400	28.26
Apr-28	1,999,070	-	1,999,070	72,000	27.76
May-28	1,876,333	-	1,876,333	74,400	25.22
Jun-28	2,152,417	-	2,152,417	72,000	29.89
Jul-28	4,532,548	-	4,532,548	74,400	60.92
Aug-28	3,981,217	-	3,981,217	74,400	53.51
Sep-28	2,193,007	-	2,193,007	72,000	30.46
Oct-28	2,056,974	-	2,056,974	74,400	27.65
Nov-28	2,080,591	-	2,080,591	72,000	28.90
Dec-28	2,364,812	-	2,364,812	74,400	31.79
Jan-29	2,212,434	-	2,212,434	74,400	29.74
Feb-29	1,994,399	-	1,994,399	67,200	29.68
Mar-29	2,225,804	-	2,225,804	74,400	29.92
Apr-29	2,045,949	-	2,045,949	72,000	28.42
May-29	1,977,840	-	1,977,840	74,400	26.58
Jun-29	2,298,150	-	2,298,150	72,000	31.92
Jul-29	4,957,537	-	4,957,537	74,400	66.63
Aug-29	5,591,144	-	5,591,144	74,400	75.15
Sep-29	2,507,316	-	2,507,316	72,000	34.82
Oct-29	2,111,735	-	2,111,735	74,400	28.38
Nov-29	2,174,259	-	2,174,259	72,000	30.20
Dec-29	2,529,070	-	2,529,070	74,400	33.99
Jan-30	2,548,025	-	2,548,025	74,400	34.25
Feb-30	2,174,032	-	2,174,032	67,200	32.35
Mar-30	2,269,720	-	2,269,720	74,400	30.51
Apr-30	2,097,946	-	2,097,946	72,000	29.14
May-30	2,116,577	-	2,116,577	74,400	28.45
Jun-30	2,584,374	-	2,584,374	72,000	35.89
Jul-30	6,070,310	-	6,070,310	74,400	81.59
Aug-30	6,157,946	-	6,157,946	74,400	82.77
Sep-30	2,881,154	-	2,881,154	72,000	40.02
Oct-30	2,464,635	-	2,464,635	74,400	33.13
Nov-30	2,474,035	-	2,474,035	72,000	34.36
Dec-30	2,852,949	-	2,852,949	74,400	38.35
Jan-31	2,801,549	-	2,801,549	74,400	37.66
Feb-31	2,414,072	-	2,414,072	67,200	35.92
Mar-31	2,571,257	-	2,571,257	74,400	34.56
Apr-31	2,323,420	-	2,323,420	72,000	32.27
May-31	2,467,897	-	2,467,897	74,400	33.17
Jun-31	2,929,738	-	2,929,738	72,000	40.69
Jul-31	6,523,362	-	6,523,362	74,400	87.68
Aug-31	6,518,962	-	6,518,962	74,400	87.62
Sep-31	3,120,701	-	3,120,701	72,000	43.34
Oct-31	2,751,099	-	2,751,099	74,400	36.98
Nov-31	2,628,818	-	2,628,818	72,000	36.51
Dec-31	2,989,111	-	2,989,111	74,400	40.18
Jan-32	2,807,341	-	2,807,341	74,400	37.73
Feb-32	2,570,667	-	2,570,667	69,600	36.93
Mar-32	2,687,029	-	2,687,029	74,400	36.12
Apr-32	2,643,174	-	2,643,174	72,000	36.71
May-32	2,505,548	-	2,505,548	74,400	33.68
Jun-32	3,340,257	-	3,340,257	72,000	46.39
Jul-32	6,742,479	-	6,742,479	74,400	90.62
Aug-32	6,739,245	-	6,739,245	74,400	90.58
Sep-32	3,241,540	-	3,241,540	72,000	45.02
Oct-32	2,835,624	-	2,835,624	74,400	38.11
Nov-32	2,754,475	-	2,754,475	72,000	38.26
Dec-32	3,222,666	-	3,222,666	74,400	43.32
Jan-33	3,073,286	-	3,073,286	74,400	41.31

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	100.0% CF	Dollars	MWH	100.0% CF
Feb-33	2,875,480	-	2,875,480	67,200	42.79
Mar-33	2,862,560	-	2,862,560	74,400	38.48
Apr-33	2,614,117	-	2,614,117	72,000	36.31
May-33	2,497,533	-	2,497,533	74,400	33.57
Jun-33	3,806,700	-	3,806,700	72,000	52.87
Jul-33	8,359,971	-	8,359,971	74,400	112.37
Aug-33	7,541,505	-	7,541,505	74,400	101.36
Sep-33	3,551,403	-	3,551,403	72,000	49.33
Oct-33	3,155,961	-	3,155,961	74,400	42.42
Nov-33	3,039,552	-	3,039,552	72,000	42.22
Dec-33	3,458,375	-	3,458,375	74,400	46.48
Jan-34	3,244,325	-	3,244,325	74,400	43.61
Feb-34	3,054,865	-	3,054,865	67,200	45.46
Mar-34	3,051,206	-	3,051,206	74,400	41.01
Apr-34	2,781,041	-	2,781,041	72,000	38.63
May-34	2,498,444	-	2,498,444	74,400	33.58
Jun-34	4,049,562	-	4,049,562	72,000	56.24
Jul-34	8,821,615	-	8,821,615	74,400	118.57
Aug-34	8,049,924	-	8,049,924	74,400	108.20
Sep-34	3,631,326	-	3,631,326	72,000	50.44
Oct-34	3,207,511	-	3,207,511	74,400	43.11
Nov-34	3,168,846	-	3,168,846	72,000	44.01
Dec-34	3,568,897	-	3,568,897	74,400	47.97
Jan-35	3,415,995	-	3,415,995	74,400	45.91
Feb-35	3,097,384	-	3,097,384	67,200	46.09
Mar-35	3,264,248	-	3,264,248	74,400	43.87
Apr-35	3,053,949	-	3,053,949	72,000	42.42
May-35	2,545,885	-	2,545,885	74,400	34.22
Jun-35	3,844,711	-	3,844,711	72,000	53.40
Jul-35	9,112,797	-	9,112,797	74,400	122.48
Aug-35	9,809,666	-	9,809,666	74,400	131.85
Sep-35	3,853,841	-	3,853,841	72,000	53.53
Oct-35	3,322,190	-	3,322,190	74,400	44.65
Nov-35	3,210,265	-	3,210,265	72,000	44.59
Dec-35	3,940,458	-	3,940,458	74,400	52.96
Jan-36	3,458,408	-	3,458,408	74,400	46.48
Feb-36	3,296,188	-	3,296,188	69,600	47.36
Mar-36	3,122,037	-	3,122,037	74,400	41.96
Apr-36	2,895,735	-	2,895,735	72,000	40.22
May-36	2,667,834	-	2,667,834	74,400	35.86
Jun-36	4,146,574	-	4,146,574	72,000	57.59
Jul-36	10,169,077	-	10,169,077	74,400	136.68
Aug-36	9,201,533	-	9,201,533	74,400	123.68
Sep-36	4,216,499	-	4,216,499	72,000	58.56
Oct-36	3,653,461	-	3,653,461	74,400	49.11
Nov-36	3,343,424	-	3,343,424	72,000	46.44
Dec-36	4,209,023	-	4,209,023	74,400	56.57

Appendix B.2
Avoided Cost Prices \$/MWh
Utah 2019.Q2 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 2019.Q1 Filing	Solar Tracking UT 2019.Q1 Filing	Wind UT 2019.Q1 Filing	Thermal Difference	Solar Tracking Difference	Wind Difference
2020	\$18.30	\$17.93	\$14.15	\$21.07	\$19.95	\$18.62	(\$2.77)	(\$2.02)	(\$4.47)
2021	\$17.22	\$14.91	\$14.16	\$17.47	\$13.99	\$16.89	(\$0.24)	\$0.92	(\$2.73)
2022	\$18.66	\$15.83	\$15.32	\$17.99	\$13.75	\$15.08	\$0.67	\$2.07	\$0.24
2023	\$19.45	\$16.03	\$16.71	\$17.84	\$14.19	\$15.47	\$1.61	\$1.85	\$1.25
2024	\$21.53	\$17.24	\$18.42	\$23.57	\$18.33	\$22.37	(\$2.04)	(\$1.09)	(\$3.95)
2025	\$24.16	\$20.64	\$22.75	\$24.45	\$19.35	\$22.85	(\$0.29)	\$1.29	(\$0.10)
2026	\$28.65	\$22.28	\$26.00	\$25.88	\$20.87	\$23.83	\$2.77	\$1.41	\$2.16
2027	\$30.06	\$23.01	\$27.27	\$26.50	\$19.54	\$24.99	\$3.55	\$3.47	\$2.28
2028	\$33.32	\$25.32	\$31.05	\$30.32	\$23.32	\$28.43	\$3.00	\$2.00	\$2.62
2029	\$37.24	\$29.87	\$35.04	\$35.12	\$26.70	\$33.16	\$2.13	\$3.17	\$1.88
2030	\$41.89	\$34.20	\$50.11	\$39.43	\$30.72	\$58.05	\$2.46	\$3.48	(\$7.93)
2031	\$45.71	\$37.22	\$50.02	\$42.21	\$32.98	\$57.23	\$3.50	\$4.24	(\$7.21)
2032	\$47.92	\$39.40	\$50.09	\$43.93	\$34.26	\$57.80	\$3.98	\$5.14	(\$7.72)
2033	\$53.47	\$43.49	\$52.81	\$50.00	\$43.64	\$60.12	\$3.46	(\$0.15)	(\$7.32)
2034	\$56.08	\$44.70	\$53.73	\$52.36	\$44.88	\$61.73	\$3.72	(\$0.18)	(\$8.00)

15-Year Levelized Prices (Nominal) @ 6.910% Discount Rate (1) (3)										
2020-2034	\$/MWh	\$29.35	\$23.89	\$27.79	\$28.13	\$22.46	\$29.89	\$1.22	\$1.43	(\$2.10)
							4%	6%	-7%	

Footnotes:

- (1) Discount Rate - 2017 IRP Update
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2020 - 2034, levelized monthly

Table 1
Avoided Cost Prices
Utah 2019.Q2_Solar - 80.0 MW and 31.0% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	31.0% Capacity Factor \$/MWh
2019	\$0.00	\$20.28	\$20.28
2020	\$0.00	\$17.93	\$17.93
2021	\$0.00	\$14.91	\$14.91
2022	\$0.00	\$15.83	\$15.83
2023	\$0.00	\$16.03	\$16.03
2024	\$0.00	\$17.24	\$17.24
2025	\$0.00	\$20.64	\$20.64
2026	\$0.00	\$22.28	\$22.28
2027	\$0.00	\$23.01	\$23.01
2028	\$0.00	\$25.32	\$25.32
2029	\$0.00	\$29.87	\$29.87
2030	\$0.00	\$34.20	\$34.20
2031	\$0.00	\$37.22	\$37.22
2032	\$0.00	\$39.40	\$39.40
2033	\$110.03	\$0.08	\$43.49
2034	\$112.45	\$0.12	\$44.70
2035	\$114.92	(\$0.09)	\$45.70
2036	\$117.45	(\$0.23)	\$46.66
2037	\$120.03	(\$0.23)	\$47.78
2038	\$122.67	(\$0.24)	\$48.83

15 Year Starting 2019

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

\$/kW-yr	\$4.53		
		\$21.11	\$22.77

15 Year Starting 2020

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

\$/kW-yr	\$9.52		
		\$20.39	\$23.89

Footnotes:

- (1) Discount Rate - 2017 IRP Update
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: levelized monthly

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2019.Q2_Solar - 80.0 MW and 31.0% CF

Year	Annual	Winter Season					Summer Season				Winter Season		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Energy Only													
2019	20.28	17.94	40.87	16.30	13.17	10.67	13.59	45.87	29.70	14.23	12.24	10.67	15.84
2020	17.93	14.69	10.44	11.75	11.58	11.96	12.41	50.36	27.65	13.09	11.33	11.16	13.19
2021	14.91	13.56	11.29	11.22	11.15	12.55	14.28	27.11	19.66	13.17	12.18	11.94	14.26
2022	15.83	14.52	13.98	13.19	12.41	12.42	12.64	28.04	24.49	13.84	12.41	12.45	12.07
2023	16.03	13.91	13.32	13.31	12.10	13.17	15.27	27.11	22.15	13.83	14.15	13.43	13.57
2024	17.24	13.70	14.46	13.20	12.27	14.17	16.32	29.81	25.15	15.63	14.11	15.41	14.13
2025	20.64	17.50	16.81	15.15	14.55	16.17	19.56	32.58	32.42	19.18	19.56	17.27	17.45
2026	22.28	19.09	18.27	15.23	15.49	16.98	22.06	38.47	32.54	19.81	20.27	19.01	20.77
2027	23.01	19.73	19.13	17.24	15.84	17.47	23.30	37.67	33.70	20.59	20.80	20.12	21.67
2028	25.32	20.47	20.20	18.17	16.92	19.18	24.79	52.06	30.27	22.50	22.27	21.46	24.79
2029	29.87	16.65	20.95	17.58	17.83	19.29	28.45	58.19	59.89	24.59	21.64	22.44	27.26
2030	34.20	25.09	22.66	19.19	18.48	19.93	28.33	75.80	66.77	28.13	24.46	25.21	32.42
2031	37.22	27.91	24.84	21.99	20.22	22.12	31.86	79.99	72.15	31.67	26.74	26.77	33.62
2032	39.40	28.19	25.80	23.34	22.76	22.94	36.87	82.60	75.29	33.25	28.83	28.52	35.64
2033	0.08	0.02	(0.01)	0.01	(0.01)	(0.01)	(0.04)	(0.16)	1.01	(0.02)	(0.01)	(0.02)	(0.02)
2034	0.12	(0.00)	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)	(0.27)	1.41	(0.02)	(0.01)	0.02	(0.02)
2035	(0.09)	(0.24)	(0.19)	(0.12)	(0.13)	(0.12)	(0.29)	(0.86)	1.41	(0.21)	(0.21)	(0.24)	(0.30)
2036	(0.23)	(0.25)	(0.22)	(0.15)	(0.13)	(0.12)	(0.25)	(1.18)	0.56	(0.25)	(0.24)	(0.26)	(0.31)

Table 4
Burnertip Natural Gas Price Forecast
Utah 2019.Q2_Solar - 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	\$2.65	\$3.31	\$2.66
2018	\$2.59	\$3.23	\$2.60
2019	\$2.38	\$4.07	\$2.11
2020	\$2.15	\$2.11	\$1.97
2021	\$2.20	\$2.11	\$2.07
2022	\$2.31	\$2.23	\$2.17
2023	\$2.52	\$2.47	\$2.38
2024	\$2.80	\$2.81	\$2.66
2025	\$3.16	\$3.15	\$3.01
2026	\$3.38	\$3.40	\$3.23
2027	\$3.52	\$3.56	\$3.37
2028	\$3.75	\$3.81	\$3.60
2029	\$3.89	\$3.97	\$3.73
2030	\$4.04	\$4.11	\$3.89
2031	\$4.35	\$4.39	\$4.19
2032	\$4.59	\$4.62	\$4.43
2033	\$4.97	\$4.96	\$4.80
2034	\$5.11	\$5.09	\$4.95
2035	\$5.27	\$5.19	\$5.10
2036	\$5.39	\$5.27	\$5.22
2037	\$5.79	\$5.68	\$5.61
2038	\$6.05	\$5.92	\$5.88
2039	\$6.30	\$6.15	\$6.12
2040	\$6.51	\$6.38	\$6.33

Official Forward Price Curve Forecast dated Jun 28, 2019

Table 5

Utah 2019.Q2_Solar - 80.0 MW and 31.0% CF
 January 2019 through December 2038
 Nominal Avoided Costs Calculated Monthly

Nominal NPV at 6.91% Discount Rate

15 Year Starting 2019	\$ 42,198,717	\$ 3,331,893	\$ 45,530,610	\$ 1,999,406	\$22.77
15 Year Starting 2020	\$ 40,566,614	\$ 6,967,453	\$ 47,534,067	\$ 1,989,542	\$23.89
15 Year Starting 2021	\$ 39,352,823	\$ 10,929,075	\$ 50,281,899	\$ 1,978,989	\$25.41

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	30.7% CF	Dollars	MWH	30.7% CF
Jan-19	188,989	-	188,989	10,534	17.94
Feb-19	481,845	-	481,845	11,790	40.87
Mar-19	297,455	-	297,455	18,247	16.30
Apr-19	279,396	-	279,396	21,209	13.17
May-19	262,008	-	262,008	24,553	10.67
Jun-19	354,596	-	354,596	26,084	13.59
Jul-19	1,082,823	-	1,082,823	23,608	45.87
Aug-19	702,218	-	702,218	23,646	29.70
Sep-19	296,576	-	296,576	20,843	14.23
Oct-19	206,831	-	206,831	16,897	12.24
Nov-19	121,376	-	121,376	11,381	10.67
Dec-19	138,402	-	138,402	8,735	15.84
Jan-20	154,010	-	154,010	10,481	14.69
Feb-20	129,886	-	129,886	12,436	10.44
Mar-20	213,320	-	213,320	18,156	11.75
Apr-20	244,347	-	244,347	21,103	11.58
May-20	292,209	-	292,209	24,430	11.96
Jun-20	322,078	-	322,078	25,954	12.41
Jul-20	1,182,921	-	1,182,921	23,490	50.36
Aug-20	650,608	-	650,608	23,527	27.65
Sep-20	271,523	-	271,523	20,738	13.09
Oct-20	190,544	-	190,544	16,813	11.33
Nov-20	126,377	-	126,377	11,324	11.16
Dec-20	114,634	-	114,634	8,692	13.19
Jan-21	141,464	-	141,464	10,429	13.56
Feb-21	131,761	-	131,761	11,672	11.29
Mar-21	202,711	-	202,711	18,065	11.22
Apr-21	234,223	-	234,223	20,998	11.15
May-21	305,037	-	305,037	24,308	12.55
Jun-21	368,877	-	368,877	25,824	14.28
Jul-21	633,605	-	633,605	23,373	27.11
Aug-21	460,351	-	460,351	23,410	19.66
Sep-21	271,673	-	271,673	20,635	13.17
Oct-21	203,706	-	203,706	16,729	12.18
Nov-21	134,580	-	134,580	11,267	11.94
Dec-21	123,356	-	123,356	8,648	14.26
Jan-22	150,664	-	150,664	10,377	14.52
Feb-22	162,304	-	162,304	11,614	13.98
Mar-22	237,034	-	237,034	17,975	13.19
Apr-22	259,195	-	259,195	20,893	12.41
May-22	300,447	-	300,447	24,186	12.42
Jun-22	324,905	-	324,905	25,695	12.64
Jul-22	652,038	-	652,038	23,256	28.04
Aug-22	570,352	-	570,352	23,293	24.49
Sep-22	284,187	-	284,187	20,532	13.84
Oct-22	206,525	-	206,525	16,645	12.41
Nov-22	139,561	-	139,561	11,211	12.45
Dec-22	103,887	-	103,887	8,605	12.07
Jan-23	143,611	-	143,611	10,325	13.91

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	30.7% CF	Dollars	MWH	30.7% CF
Feb-23	153,938	-	153,938	11,555	13.32
Mar-23	237,976	-	237,976	17,885	13.31
Apr-23	251,504	-	251,504	20,788	12.10
May-23	317,025	-	317,025	24,065	13.17
Jun-23	390,492	-	390,492	25,566	15.27
Jul-23	627,222	-	627,222	23,140	27.11
Aug-23	513,327	-	513,327	23,176	22.15
Sep-23	282,487	-	282,487	20,429	13.83
Oct-23	234,326	-	234,326	16,562	14.15
Nov-23	149,847	-	149,847	11,155	13.43
Dec-23	116,152	-	116,152	8,562	13.57
Jan-24	140,790	-	140,790	10,273	13.70
Feb-24	176,214	-	176,214	12,190	14.46
Mar-24	234,843	-	234,843	17,796	13.20
Apr-24	253,822	-	253,822	20,684	12.27
May-24	339,388	-	339,388	23,945	14.17
Jun-24	415,282	-	415,282	25,438	16.32
Jul-24	686,400	-	686,400	23,024	29.81
Aug-24	580,049	-	580,049	23,060	25.15
Sep-24	317,689	-	317,689	20,327	15.63
Oct-24	232,514	-	232,514	16,479	14.11
Nov-24	171,020	-	171,020	11,099	15.41
Dec-24	120,415	-	120,415	8,519	14.13
Jan-25	178,874	-	178,874	10,222	17.50
Feb-25	192,338	-	192,338	11,440	16.81
Mar-25	268,187	-	268,187	17,707	15.15
Apr-25	299,519	-	299,519	20,581	14.55
May-25	385,370	-	385,370	23,825	16.17
Jun-25	495,164	-	495,164	25,311	19.56
Jul-25	746,441	-	746,441	22,909	32.58
Aug-25	743,794	-	743,794	22,945	32.42
Sep-25	388,002	-	388,002	20,225	19.18
Oct-25	320,742	-	320,742	16,397	19.56
Nov-25	190,686	-	190,686	11,044	17.27
Dec-25	147,945	-	147,945	8,476	17.45
Jan-26	194,188	-	194,188	10,171	19.09
Feb-26	207,978	-	207,978	11,383	18.27
Mar-26	268,360	-	268,360	17,618	15.23
Apr-26	317,249	-	317,249	20,478	15.49
May-26	402,545	-	402,545	23,706	16.98
Jun-26	555,665	-	555,665	25,185	22.06
Jul-26	876,972	-	876,972	22,794	38.47
Aug-26	742,976	-	742,976	22,830	32.54
Sep-26	398,712	-	398,712	20,124	19.81
Oct-26	330,753	-	330,753	16,315	20.27
Nov-26	208,871	-	208,871	10,988	19.01
Dec-26	175,182	-	175,182	8,434	20.77
Jan-27	199,710	-	199,710	10,120	19.73
Feb-27	216,679	-	216,679	11,326	19.13
Mar-27	302,243	-	302,243	17,530	17.24
Apr-27	322,819	-	322,819	20,376	15.84
May-27	412,185	-	412,185	23,587	17.47
Jun-27	583,868	-	583,868	25,059	23.30
Jul-27	854,312	-	854,312	22,680	37.67
Aug-27	765,516	-	765,516	22,716	33.70
Sep-27	412,240	-	412,240	20,023	20.59
Oct-27	337,711	-	337,711	16,233	20.80
Nov-27	219,957	-	219,957	10,933	20.12
Dec-27	181,817	-	181,817	8,392	21.67
Jan-28	206,076	-	206,076	10,069	20.47

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	30.7% CF	Dollars	MWH	30.7% CF
Feb-28	241,393	-	241,393	11,948	20.20
Mar-28	316,875	-	316,875	17,442	18.17
Apr-28	342,944	-	342,944	20,274	16.92
May-28	450,083	-	450,083	23,470	19.18
Jun-28	618,181	-	618,181	24,934	24.79
Jul-28	1,174,804	-	1,174,804	22,567	52.06
Aug-28	684,226	-	684,226	22,603	30.27
Sep-28	448,198	-	448,198	19,923	22.50
Oct-28	359,643	-	359,643	16,152	22.27
Nov-28	233,490	-	233,490	10,879	21.46
Dec-28	206,995	-	206,995	8,350	24.79
Jan-29	166,841	-	166,841	10,019	16.65
Feb-29	234,943	-	234,943	11,213	20.95
Mar-29	305,163	-	305,163	17,355	17.58
Apr-29	359,618	-	359,618	20,173	17.83
May-29	450,575	-	450,575	23,352	19.29
Jun-29	705,718	-	705,718	24,809	28.45
Jul-29	1,306,518	-	1,306,518	22,454	58.19
Aug-29	1,346,955	-	1,346,955	22,490	59.89
Sep-29	487,381	-	487,381	19,824	24.59
Oct-29	347,834	-	347,834	16,071	21.64
Nov-29	242,862	-	242,862	10,824	22.44
Dec-29	226,442	-	226,442	8,308	27.26
Jan-30	250,091	-	250,091	9,969	25.09
Feb-30	252,839	-	252,839	11,157	22.66
Mar-30	331,450	-	331,450	17,268	19.19
Apr-30	371,010	-	371,010	20,072	18.48
May-30	463,062	-	463,062	23,235	19.93
Jun-30	699,395	-	699,395	24,685	28.33
Jul-30	1,693,614	-	1,693,614	22,342	75.80
Aug-30	1,494,204	-	1,494,204	22,377	66.77
Sep-30	554,827	-	554,827	19,724	28.13
Oct-30	391,120	-	391,120	15,991	24.46
Nov-30	271,567	-	271,567	10,770	25.21
Dec-30	268,021	-	268,021	8,267	32.42
Jan-31	276,818	-	276,818	9,919	27.91
Feb-31	275,801	-	275,801	11,101	24.84
Mar-31	377,821	-	377,821	17,182	21.99
Apr-31	403,909	-	403,909	19,971	20.22
May-31	511,400	-	511,400	23,119	22.12
Jun-31	782,615	-	782,615	24,561	31.86
Jul-31	1,778,173	-	1,778,173	22,230	79.99
Aug-31	1,606,534	-	1,606,534	22,265	72.15
Sep-31	621,534	-	621,534	19,626	31.67
Oct-31	425,433	-	425,433	15,911	26.74
Nov-31	286,891	-	286,891	10,716	26.77
Dec-31	276,570	-	276,570	8,225	33.62
Jan-32	278,181	-	278,181	9,869	28.19
Feb-32	302,180	-	302,180	11,710	25.80
Mar-32	399,021	-	399,021	17,096	23.34
Apr-32	452,257	-	452,257	19,871	22.76
May-32	527,623	-	527,623	23,004	22.94
Jun-32	901,039	-	901,039	24,439	36.87
Jul-32	1,826,920	-	1,826,920	22,119	82.60
Aug-32	1,667,986	-	1,667,986	22,154	75.29
Sep-32	649,213	-	649,213	19,528	33.25
Oct-32	456,463	-	456,463	15,831	28.83
Nov-32	304,099	-	304,099	10,663	28.52
Dec-32	291,669	-	291,669	8,184	35.64
Jan-33	203	733,507	733,710	9,820	74.72

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	30.7% CF	Dollars	MWH	30.7% CF
Feb-33	(98)	733,507	733,409	10,991	66.73
Mar-33	159	733,507	733,667	17,011	43.13
Apr-33	(183)	733,507	733,324	19,772	37.09
May-33	(235)	733,507	733,272	22,889	32.04
Jun-33	(865)	733,507	732,643	24,316	30.13
Jul-33	(3,457)	733,507	730,051	22,008	33.17
Aug-33	22,254	733,507	755,761	22,043	34.29
Sep-33	(318)	733,507	733,189	19,430	37.73
Oct-33	(219)	733,507	733,288	15,752	46.55
Nov-33	(195)	733,507	733,312	10,609	69.12
Dec-33	(123)	733,507	733,385	8,143	90.06
Jan-34	(3)	749,673	749,670	9,771	76.72
Feb-34	(192)	749,673	749,482	10,936	68.54
Mar-34	(145)	749,673	749,529	16,926	44.28
Apr-34	(192)	749,673	749,482	19,673	38.10
May-34	(240)	749,673	749,434	22,774	32.91
Jun-34	(103)	749,673	749,570	24,195	30.98
Jul-34	(5,985)	749,673	743,689	21,898	33.96
Aug-34	30,979	749,673	780,652	21,933	35.59
Sep-34	(313)	749,673	749,361	19,333	38.76
Oct-34	(218)	749,673	749,456	15,674	47.82
Nov-34	193	749,673	749,866	10,556	71.03
Dec-34	(133)	749,673	749,540	8,103	92.51
Jan-35	(2,325)	766,150	763,825	9,722	78.57
Feb-35	(2,014)	766,150	764,136	10,881	70.23
Mar-35	(2,045)	766,150	764,106	16,841	45.37
Apr-35	(2,502)	766,150	763,649	19,575	39.01
May-35	(2,735)	766,150	763,415	22,660	33.69
Jun-35	(7,026)	766,150	759,124	24,074	31.53
Jul-35	(18,731)	766,150	747,420	21,789	34.30
Aug-35	30,782	766,150	796,933	21,823	36.52
Sep-35	(4,076)	766,150	762,074	19,236	39.62
Oct-35	(3,270)	766,150	762,881	15,595	48.92
Nov-35	(2,501)	766,150	763,649	10,504	72.70
Dec-35	(2,420)	766,150	763,730	8,062	94.73
Jan-36	(2,419)	783,001	780,582	9,673	80.69
Feb-36	(2,524)	783,001	780,477	11,478	68.00
Mar-36	(2,437)	783,001	780,563	16,757	46.58
Apr-36	(2,468)	783,001	780,532	19,477	40.07
May-36	(2,807)	783,001	780,193	22,547	34.60
Jun-36	(6,076)	783,001	776,925	23,953	32.43
Jul-36	(25,497)	783,001	757,504	21,680	34.94
Aug-36	12,058	783,001	795,058	21,714	36.61
Sep-36	(4,748)	783,001	778,253	19,140	40.66
Oct-36	(3,746)	783,001	779,254	15,517	50.22
Nov-36	(2,677)	783,001	780,324	10,451	74.66
Dec-36	(2,502)	783,001	780,499	8,022	97.30

Table 3
2017 IRP Update Utah Solar Resource-2033
31% Capacity Factor

Year	Estimated Capital Cost \$/kW (a)	Fixed Capital Cost at Real Levelized \$/kW-yr (b)	Fixed O&M \$/kW-yr (c)	Fixed Costs \$/MWh (d)	Variable O&M \$/MWh (e)	Tax Credit \$/MWh (f)	Total Resource Costs \$/MWh (g)	Total Resource Costs \$/kW-yr (h)	Wind Integration Cost \$/MWh (h)
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2017 IRP Update Utah Solar Resource-2033 - 31% Capacity Factor

2016									
2017		\$0.00	\$19.69	\$7.23	\$0.00	\$0.00	\$7.23	\$19.69	\$0.62
2018		\$0.00	\$20.14	\$7.39	\$0.00	\$0.00	\$7.39	\$20.14	\$0.63
2019		\$0.00	\$20.52	\$7.53	\$0.00	\$0.00	\$7.53	\$20.52	\$0.64
2020		\$0.00	\$20.97	\$7.70	\$0.00	\$0.00	\$7.70	\$20.97	\$0.65
2021		\$0.00	\$21.43	\$7.87	\$0.00	\$0.00	\$7.87	\$21.43	\$0.66
2022		\$0.00	\$21.92	\$8.05	\$0.00	\$0.00	\$8.05	\$21.92	\$0.68
2023		\$0.00	\$22.40	\$8.22	\$0.00	\$0.00	\$8.22	\$22.40	\$0.69
2024		\$0.00	\$22.89	\$8.40	\$0.00	\$0.00	\$8.40	\$22.89	\$0.71
2025		\$0.00	\$23.39	\$8.59	\$0.00	\$0.00	\$8.59	\$23.39	\$0.73
2026		\$0.00	\$23.90	\$8.77	\$0.00	\$0.00	\$8.77	\$23.90	\$0.75
2027		\$0.00	\$24.43	\$8.97	\$0.00	\$0.00	\$8.97	\$24.43	\$0.77
2028		\$0.00	\$24.99	\$9.17	\$0.00	\$0.00	\$9.17	\$24.99	\$0.79
2029		\$0.00	\$25.56	\$9.38	\$0.00	\$0.00	\$9.38	\$25.56	\$0.81
2030		\$0.00	\$26.15	\$9.60	\$0.00	\$0.00	\$9.60	\$26.15	\$0.83
2031		\$0.00	\$26.75	\$9.82	\$0.00	\$0.00	\$9.82	\$26.75	\$0.85
2032		\$0.00	\$27.37	\$10.05	\$0.00	\$0.00	\$10.05	\$27.37	\$0.87
2033	\$1,166	\$90.00	\$27.97	\$43.30	\$0.00	\$0.00	\$43.30	\$117.97	\$0.89
2034		\$91.98	\$28.59	\$44.26	\$0.00	\$0.00	\$44.26	\$120.57	\$0.91
2035		\$94.00	\$29.22	\$45.23	\$0.00	\$0.00	\$45.23	\$123.22	\$0.93
2036		\$96.07	\$29.86	\$46.22	\$0.00	\$0.00	\$46.22	\$125.93	\$0.95
2037		\$98.18	\$30.52	\$47.24	\$0.00	\$0.00	\$47.24	\$128.70	\$0.97
2038		\$100.34	\$31.19	\$48.28	\$0.00	\$0.00	\$48.28	\$131.53	\$0.99
2039		\$102.55	\$31.88	\$49.34	\$0.00	\$0.00	\$49.34	\$134.43	\$1.01
2040		\$104.81	\$32.58	\$50.43	\$0.00	\$0.00	\$50.43	\$137.39	\$1.03
2041		\$107.12	\$33.30	\$51.54	\$0.00	\$0.00	\$51.54	\$140.42	\$1.05
2042		\$109.58	\$34.07	\$52.73	\$0.00	\$0.00	\$52.73	\$143.65	\$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 0.0771966024070909
(d) = ((b) + (c)) / (8.76 x 31.1%)
(g) = (d) + (f)
(h) Plant Costs - 2017 IRP Update - Table 5.4 & 5.5

2017 IRP Update Utah Solar Resource-2033 - 31% Capacity Factor	
Wind	Cost and Input Assumptions

2033 \$	\$1,166	Plant capacity cost	\$/kW-yr
2017 \$	\$19.69	Fixed O&M, plus on-going capital cost	\$/kW-yr
2017 \$	0.62	Integration Cost	\$/MWH
2017 \$	\$0.00	Variable O&M	\$/MWH
2017 \$		Tax Credit \$/MWh	\$/MWH
	7.720%	Payment Factor	
	31.1%	Capacity Factor	

Company Official Inflation Forecast Dated June 28, 2019					
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2017	2.0%	2026	2.2%	2035	2.2%
2018	2.3%	2027	2.2%	2036	2.2%
2019	1.9%	2028	2.3%	2037	2.2%
2020	2.2%	2029	2.3%	2038	2.2%
2021	2.2%	2030	2.3%	2039	2.2%
2022	2.3%	2031	2.3%	2040	2.2%
2023	2.2%	2032	2.3%	2041	2.2%
2024	2.2%	2033	2.2%	2042	2.3%
2025	2.2%	2034	2.2%	2043	2.3%

Appendix B.3
Avoided Cost Prices \$/MWh
Utah 2019.Q2 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 2019.Q1 Filing	Solar Tracking UT 2019.Q1 Filing	Wind UT 2019.Q1 Filing	Thermal Difference	Solar Tracking Difference	Wind Difference
2020	\$18.30	\$17.93	\$14.15	\$21.07	\$19.95	\$18.62	(\$2.77)	(\$2.02)	(\$4.47)
2021	\$17.22	\$14.91	\$14.16	\$17.47	\$13.99	\$16.89	(\$0.24)	\$0.92	(\$2.73)
2022	\$18.66	\$15.83	\$15.32	\$17.99	\$13.75	\$15.08	\$0.67	\$2.07	\$0.24
2023	\$19.45	\$16.03	\$16.71	\$17.84	\$14.19	\$15.47	\$1.61	\$1.85	\$1.25
2024	\$21.53	\$17.24	\$18.42	\$23.57	\$18.33	\$22.37	(\$2.04)	(\$1.09)	(\$3.95)
2025	\$24.16	\$20.64	\$22.75	\$24.45	\$19.35	\$22.85	(\$0.29)	\$1.29	(\$0.10)
2026	\$28.65	\$22.28	\$26.00	\$25.88	\$20.87	\$23.83	\$2.77	\$1.41	\$2.16
2027	\$30.06	\$23.01	\$27.27	\$26.50	\$19.54	\$24.99	\$3.55	\$3.47	\$2.28
2028	\$33.32	\$25.32	\$31.05	\$30.32	\$23.32	\$28.43	\$3.00	\$2.00	\$2.62
2029	\$37.24	\$29.87	\$35.04	\$35.12	\$26.70	\$33.16	\$2.13	\$3.17	\$1.88
2030	\$41.89	\$34.20	\$50.11	\$39.43	\$30.72	\$58.05	\$2.46	\$3.48	(\$7.93)
2031	\$45.71	\$37.22	\$50.02	\$42.21	\$32.98	\$57.23	\$3.50	\$4.24	(\$7.21)
2032	\$47.92	\$39.40	\$50.09	\$43.93	\$34.26	\$57.80	\$3.98	\$5.14	(\$7.72)
2033	\$53.47	\$43.49	\$52.81	\$50.00	\$43.64	\$60.12	\$3.46	(\$0.15)	(\$7.32)
2034	\$56.08	\$44.70	\$53.73	\$52.36	\$44.88	\$61.73	\$3.72	(\$0.18)	(\$8.00)

15-Year Levelized Prices (Nominal) @ 6.910% Discount Rate (1) (3)										
2020-2034	\$/MWh	\$29.35	\$23.89	\$27.79	\$28.13	\$22.46	\$29.89	\$1.22	\$1.43	(\$2.10)
							4%	6%	-7%	

Footnotes:

- (1) Discount Rate - 2017 IRP Update
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2020 - 2034, levelized monthly

Table 1
Avoided Cost Prices
Utah 2019.Q2_Wind - 80.0 MW and 31.0% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	31.0% Capacity Factor \$/MWh
2019	\$0.00	\$16.88	\$16.88
2020	\$0.00	\$14.15	\$14.15
2021	\$0.00	\$14.16	\$14.16
2022	\$0.00	\$15.32	\$15.32
2023	\$0.00	\$16.71	\$16.71
2024	\$0.00	\$18.42	\$18.42
2025	\$0.00	\$22.75	\$22.75
2026	\$0.00	\$26.00	\$26.00
2027	\$0.00	\$27.27	\$27.27
2028	\$0.00	\$31.05	\$31.05
2029	\$0.00	\$35.04	\$35.04
2030	\$149.94	(\$5.09)	\$50.11
2031	\$153.40	(\$6.46)	\$50.02
2032	\$156.92	(\$7.63)	\$50.09
2033	\$160.37	(\$6.24)	\$52.81
2034	\$163.90	(\$6.62)	\$53.73
2035	\$167.50	(\$6.76)	\$54.91
2036	\$171.18	(\$7.32)	\$55.65
2037	\$174.95	(\$7.42)	\$57.07
2038	\$178.79	(\$7.59)	\$58.33

15 Year Starting 2019

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

\$/kW-yr	\$27.57		
\$/MWh		\$15.56	\$25.71

15 Year Starting 2020

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

\$/kW-yr	\$36.06		
\$/MWh		\$14.51	\$27.79

Footnotes:

- (1) Discount Rate - 2017 IRP Update
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: levelized monthly

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2019.Q2_Wind - 80.0 MW and 31.0% CF

Year	Annual	Winter Season					Summer Season				Winter Season		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Energy Only													
2019	16.88	19.50	34.48	20.74	15.50	12.27	12.89	23.74	22.14	11.65	10.66	10.43	12.76
2020	14.15	15.01	9.56	12.85	11.80	13.13	13.79	25.62	20.82	10.42	10.82	10.10	12.83
2021	14.16	15.74	11.34	13.97	14.63	13.48	14.63	21.13	16.68	11.72	12.33	11.44	11.90
2022	15.32	14.54	13.92	16.23	15.64	13.25	13.33	23.15	21.61	12.72	13.05	12.92	11.72
2023	16.71	15.44	13.48	18.70	16.53	14.70	16.39	23.22	23.62	12.65	16.66	13.60	13.50
2024	18.42	14.87	13.42	18.44	16.41	16.66	17.87	27.07	27.38	17.64	15.77	15.98	15.47
2025	22.75	19.31	19.49	21.67	20.52	19.63	21.08	30.14	34.82	23.21	21.00	19.02	18.54
2026	26.00	24.28	23.34	21.90	22.52	22.91	24.96	36.40	36.09	25.26	23.33	22.59	23.70
2027	27.27	25.43	25.06	25.49	25.78	23.62	27.15	37.29	33.97	26.64	24.89	23.96	24.47
2028	31.05	25.04	23.57	26.66	26.43	24.32	27.81	47.96	52.48	29.76	25.67	25.95	27.40
2029	35.04	27.33	25.09	31.81	27.36	25.79	30.69	54.16	68.47	35.23	25.60	26.98	28.87
2030	(5.09)	(10.59)	(18.43)	(16.97)	(19.48)	(8.45)	(3.37)	1.49	19.34	5.60	(0.02)	(12.42)	(12.18)
2031	(6.46)	(15.84)	(25.24)	(21.88)	(22.65)	(8.54)	(3.87)	3.69	20.30	5.23	0.00	(13.37)	(13.02)
2032	(7.63)	(15.59)	(26.07)	(27.18)	(24.81)	(9.30)	(5.57)	4.96	17.69	4.96	(0.20)	(14.60)	(13.89)
2033	(6.24)	(18.13)	(29.42)	(19.57)	(22.67)	(8.31)	(4.10)	6.83	20.99	7.19	1.64	(14.49)	(14.35)
2034	(6.62)	(19.19)	(30.20)	(22.70)	(24.07)	(9.46)	(5.40)	6.34	24.02	7.51	1.94	(14.58)	(14.71)
2035	(6.76)	(19.67)	(30.27)	(24.08)	(27.02)	(10.50)	(5.67)	6.03	26.40	8.47	1.90	(14.74)	(14.58)
2036	(7.32)	(19.93)	(31.37)	(23.72)	(25.92)	(10.26)	(5.77)	3.30	27.94	7.43	1.32	(14.95)	(17.52)

Table 4
Burnertip Natural Gas Price Forecast
Utah 2019.Q2_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	\$2.65	\$3.31	\$2.66
2018	\$2.59	\$3.23	\$2.60
2019	\$2.38	\$4.07	\$2.11
2020	\$2.15	\$2.11	\$1.97
2021	\$2.20	\$2.11	\$2.07
2022	\$2.31	\$2.23	\$2.17
2023	\$2.52	\$2.47	\$2.38
2024	\$2.80	\$2.81	\$2.66
2025	\$3.16	\$3.15	\$3.01
2026	\$3.38	\$3.40	\$3.23
2027	\$3.52	\$3.56	\$3.37
2028	\$3.75	\$3.81	\$3.60
2029	\$3.89	\$3.97	\$3.73
2030	\$4.04	\$4.11	\$3.89
2031	\$4.35	\$4.39	\$4.19
2032	\$4.59	\$4.62	\$4.43
2033	\$4.97	\$4.96	\$4.80
2034	\$5.11	\$5.09	\$4.95
2035	\$5.27	\$5.19	\$5.10
2036	\$5.39	\$5.27	\$5.22
2037	\$5.79	\$5.68	\$5.61
2038	\$6.05	\$5.92	\$5.88
2039	\$6.30	\$6.15	\$6.12
2040	\$6.51	\$6.38	\$6.33

Official Forward Price Curve Forecast dated Jun 28, 2019

Table 5

Utah 2019.Q2_Wind - 80.0 MW and 31.0% CF
 January 2019 through December 2038
 Nominal Avoided Costs Calculated Monthly

Nominal NPV at 6.91% Discount Rate

15 Year Starting 2019	\$ 31,875,308	\$ 20,794,736	\$ 52,670,045	\$ 2,048,464	\$25.71
15 Year Starting 2020	\$ 29,732,700	\$ 27,194,914	\$ 56,927,613	\$ 2,048,500	\$27.79
15 Year Starting 2021	\$ 28,053,608	\$ 34,146,441	\$ 62,200,049	\$ 2,048,326	\$30.37

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	31.0% CF	Dollars	MWH	31.0% CF
Jan-19	321,788	-	321,788	16,505	19.50
Feb-19	475,857	-	475,857	13,802	34.48
Mar-19	349,831	-	349,831	16,868	20.74
Apr-19	224,779	-	224,779	14,505	15.50
May-19	175,532	-	175,532	14,310	12.27
Jun-19	231,238	-	231,238	17,935	12.89
Jul-19	489,421	-	489,421	20,620	23.74
Aug-19	476,041	-	476,041	21,503	22.14
Sep-19	245,122	-	245,122	21,047	11.65
Oct-19	215,505	-	215,505	20,215	10.66
Nov-19	210,046	-	210,046	20,132	10.43
Dec-19	253,039	-	253,039	19,837	12.76
Jan-20	247,671	-	247,671	16,505	15.01
Feb-20	133,884	-	133,884	14,003	9.56
Mar-20	216,758	-	216,758	16,868	12.85
Apr-20	171,090	-	171,090	14,505	11.80
May-20	187,877	-	187,877	14,310	13.13
Jun-20	247,332	-	247,332	17,935	13.79
Jul-20	528,297	-	528,297	20,620	25.62
Aug-20	447,609	-	447,609	21,503	20.82
Sep-20	219,216	-	219,216	21,047	10.42
Oct-20	218,787	-	218,787	20,215	10.82
Nov-20	203,401	-	203,401	20,132	10.10
Dec-20	254,591	-	254,591	19,837	12.83
Jan-21	259,833	-	259,833	16,505	15.74
Feb-21	156,463	-	156,463	13,802	11.34
Mar-21	235,610	-	235,610	16,868	13.97
Apr-21	212,230	-	212,230	14,505	14.63
May-21	192,941	-	192,941	14,310	13.48
Jun-21	262,414	-	262,414	17,935	14.63
Jul-21	435,717	-	435,717	20,620	21.13
Aug-21	358,689	-	358,689	21,503	16.68
Sep-21	246,714	-	246,714	21,047	11.72
Oct-21	249,337	-	249,337	20,215	12.33
Nov-21	230,275	-	230,275	20,132	11.44
Dec-21	236,005	-	236,005	19,837	11.90
Jan-22	240,048	-	240,048	16,505	14.54
Feb-22	192,076	-	192,076	13,802	13.92
Mar-22	273,800	-	273,800	16,868	16.23
Apr-22	226,843	-	226,843	14,505	15.64
May-22	189,608	-	189,608	14,310	13.25
Jun-22	239,149	-	239,149	17,935	13.33
Jul-22	477,260	-	477,260	20,620	23.15
Aug-22	464,651	-	464,651	21,503	21.61
Sep-22	267,818	-	267,818	21,047	12.72
Oct-22	263,902	-	263,902	20,215	13.05
Nov-22	260,139	-	260,139	20,132	12.92
Dec-22	232,471	-	232,471	19,837	11.72
Jan-23	254,797	-	254,797	16,505	15.44

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	31.0% CF	Dollars	MWH	31.0% CF
Feb-23	186,108	-	186,108	13,802	13.48
Mar-23	315,363	-	315,363	16,868	18.70
Apr-23	239,798	-	239,798	14,505	16.53
May-23	210,317	-	210,317	14,310	14.70
Jun-23	293,874	-	293,874	17,935	16.39
Jul-23	478,887	-	478,887	20,620	23.22
Aug-23	507,980	-	507,980	21,503	23.62
Sep-23	266,312	-	266,312	21,047	12.65
Oct-23	336,743	-	336,743	20,215	16.66
Nov-23	273,717	-	273,717	20,132	13.60
Dec-23	267,757	-	267,757	19,837	13.50
Jan-24	245,421	-	245,421	16,505	14.87
Feb-24	187,892	-	187,892	14,003	13.42
Mar-24	311,025	-	311,025	16,868	18.44
Apr-24	237,971	-	237,971	14,505	16.41
May-24	238,341	-	238,341	14,310	16.66
Jun-24	320,556	-	320,556	17,935	17.87
Jul-24	558,208	-	558,208	20,620	27.07
Aug-24	588,845	-	588,845	21,503	27.38
Sep-24	371,307	-	371,307	21,047	17.64
Oct-24	318,809	-	318,809	20,215	15.77
Nov-24	321,685	-	321,685	20,132	15.98
Dec-24	306,896	-	306,896	19,837	15.47
Jan-25	318,740	-	318,740	16,505	19.31
Feb-25	268,937	-	268,937	13,802	19.49
Mar-25	365,458	-	365,458	16,868	21.67
Apr-25	297,575	-	297,575	14,505	20.52
May-25	280,891	-	280,891	14,310	19.63
Jun-25	378,035	-	378,035	17,935	21.08
Jul-25	621,506	-	621,506	20,620	30.14
Aug-25	748,840	-	748,840	21,503	34.82
Sep-25	488,560	-	488,560	21,047	23.21
Oct-25	424,509	-	424,509	20,215	21.00
Nov-25	382,999	-	382,999	20,132	19.02
Dec-25	367,856	-	367,856	19,837	18.54
Jan-26	400,652	-	400,652	16,505	24.28
Feb-26	322,070	-	322,070	13,802	23.34
Mar-26	369,386	-	369,386	16,868	21.90
Apr-26	326,641	-	326,641	14,505	22.52
May-26	327,862	-	327,862	14,310	22.91
Jun-26	447,645	-	447,645	17,935	24.96
Jul-26	750,474	-	750,474	20,620	36.40
Aug-26	775,973	-	775,973	21,503	36.09
Sep-26	531,555	-	531,555	21,047	25.26
Oct-26	471,522	-	471,522	20,215	23.33
Nov-26	454,852	-	454,852	20,132	22.59
Dec-26	470,137	-	470,137	19,837	23.70
Jan-27	419,637	-	419,637	16,505	25.43
Feb-27	345,877	-	345,877	13,802	25.06
Mar-27	429,901	-	429,901	16,868	25.49
Apr-27	374,015	-	374,015	14,505	25.78
May-27	337,986	-	337,986	14,310	23.62
Jun-27	486,912	-	486,912	17,935	27.15
Jul-27	768,905	-	768,905	20,620	37.29
Aug-27	730,388	-	730,388	21,503	33.97
Sep-27	560,759	-	560,759	21,047	26.64
Oct-27	503,206	-	503,206	20,215	24.89
Nov-27	482,296	-	482,296	20,132	23.96
Dec-27	485,424	-	485,424	19,837	24.47
Jan-28	413,351	-	413,351	16,505	25.04

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	31.0% CF	Dollars	MWH	31.0% CF
Feb-28	330,059	-	330,059	14,003	23.57
Mar-28	449,754	-	449,754	16,868	26.66
Apr-28	383,313	-	383,313	14,505	26.43
May-28	348,020	-	348,020	14,310	24.32
Jun-28	498,817	-	498,817	17,935	27.81
Jul-28	988,852	-	988,852	20,620	47.96
Aug-28	1,128,512	-	1,128,512	21,503	52.48
Sep-28	626,324	-	626,324	21,047	29.76
Oct-28	518,953	-	518,953	20,215	25.67
Nov-28	522,479	-	522,479	20,132	25.95
Dec-28	543,588	-	543,588	19,837	27.40
Jan-29	451,070	-	451,070	16,505	27.33
Feb-29	346,289	-	346,289	13,802	25.09
Mar-29	536,627	-	536,627	16,868	31.81
Apr-29	396,803	-	396,803	14,505	27.36
May-29	368,995	-	368,995	14,310	25.79
Jun-29	550,430	-	550,430	17,935	30.69
Jul-29	1,116,730	-	1,116,730	20,620	54.16
Aug-29	1,472,285	-	1,472,285	21,503	68.47
Sep-29	741,524	-	741,524	21,047	35.23
Oct-29	517,409	-	517,409	20,215	25.60
Nov-29	543,150	-	543,150	20,132	26.98
Dec-29	572,594	-	572,594	19,837	28.87
Jan-30	(174,728)	999,612	824,884	16,505	49.98
Feb-30	(254,336)	999,612	745,276	13,802	54.00
Mar-30	(286,169)	999,612	713,443	16,868	42.30
Apr-30	(282,623)	999,612	716,989	14,505	49.43
May-30	(120,913)	999,612	878,699	14,310	61.40
Jun-30	(60,472)	999,612	939,140	17,935	52.36
Jul-30	30,743	999,612	1,030,355	20,620	49.97
Aug-30	415,877	999,612	1,415,490	21,503	65.83
Sep-30	117,840	999,612	1,117,452	21,047	53.09
Oct-30	(354)	999,612	999,258	20,215	49.43
Nov-30	(249,980)	999,612	749,632	20,132	37.24
Dec-30	(241,617)	999,612	757,995	19,837	38.21
Jan-31	(261,488)	1,022,646	761,158	16,505	46.12
Feb-31	(348,392)	1,022,646	674,255	13,802	48.85
Mar-31	(368,989)	1,022,646	653,657	16,868	38.75
Apr-31	(328,612)	1,022,646	694,034	14,505	47.85
May-31	(122,228)	1,022,646	900,419	14,310	62.92
Jun-31	(69,432)	1,022,646	953,214	17,935	53.15
Jul-31	76,171	1,022,646	1,098,817	20,620	53.29
Aug-31	436,539	1,022,646	1,459,185	21,503	67.86
Sep-31	110,169	1,022,646	1,132,815	21,047	53.82
Oct-31	46	1,022,646	1,022,692	20,215	50.59
Nov-31	(269,086)	1,022,646	753,561	20,132	37.43
Dec-31	(258,348)	1,022,646	764,298	19,837	38.53
Jan-32	(257,299)	1,046,130	788,832	16,505	47.79
Feb-32	(365,099)	1,046,130	681,032	14,003	48.64
Mar-32	(458,459)	1,046,130	587,671	16,868	34.84
Apr-32	(359,883)	1,046,130	686,248	14,505	47.31
May-32	(133,129)	1,046,130	913,001	14,310	63.80
Jun-32	(99,859)	1,046,130	946,271	17,935	52.76
Jul-32	102,248	1,046,130	1,148,379	20,620	55.69
Aug-32	380,401	1,046,130	1,426,531	21,503	66.34
Sep-32	104,331	1,046,130	1,150,462	21,047	54.66
Oct-32	(4,030)	1,046,130	1,042,100	20,215	51.55
Nov-32	(293,882)	1,046,130	752,249	20,132	37.37
Dec-32	(275,534)	1,046,130	770,596	19,837	38.85
Jan-33	(299,290)	1,069,148	769,858	16,505	46.64

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	31.0% CF	Dollars	MWH	31.0% CF
Feb-33	(405,994)	1,069,148	663,154	13,802	48.05
Mar-33	(330,107)	1,069,148	739,041	16,868	43.81
Apr-33	(328,806)	1,069,148	740,342	14,505	51.04
May-33	(118,986)	1,069,148	950,162	14,310	66.40
Jun-33	(73,454)	1,069,148	995,694	17,935	55.52
Jul-33	140,933	1,069,148	1,210,081	20,620	58.69
Aug-33	451,359	1,069,148	1,520,507	21,503	70.71
Sep-33	151,393	1,069,148	1,220,541	21,047	57.99
Oct-33	33,234	1,069,148	1,102,382	20,215	54.53
Nov-33	(291,664)	1,069,148	777,484	20,132	38.62
Dec-33	(284,614)	1,069,148	784,534	19,837	39.55
Jan-34	(316,645)	1,092,649	776,004	16,505	47.02
Feb-34	(416,777)	1,092,649	675,872	13,802	48.97
Mar-34	(382,917)	1,092,649	709,732	16,868	42.08
Apr-34	(349,192)	1,092,649	743,457	14,505	51.25
May-34	(135,337)	1,092,649	957,312	14,310	66.90
Jun-34	(96,824)	1,092,649	995,824	17,935	55.52
Jul-34	130,768	1,092,649	1,223,417	20,620	59.33
Aug-34	516,501	1,092,649	1,609,150	21,503	74.83
Sep-34	158,142	1,092,649	1,250,790	21,047	59.43
Oct-34	39,200	1,092,649	1,131,849	20,215	55.99
Nov-34	(293,489)	1,092,649	799,159	20,132	39.70
Dec-34	(291,757)	1,092,649	800,892	19,837	40.37
Jan-35	(324,581)	1,116,666	792,086	16,505	47.99
Feb-35	(417,789)	1,116,666	698,877	13,802	50.64
Mar-35	(406,168)	1,116,666	710,499	16,868	42.12
Apr-35	(391,873)	1,116,666	724,794	14,505	49.97
May-35	(150,237)	1,116,666	966,430	14,310	67.53
Jun-35	(101,651)	1,116,666	1,015,015	17,935	56.59
Jul-35	124,310	1,116,666	1,240,976	20,620	60.18
Aug-35	567,756	1,116,666	1,684,422	21,503	78.33
Sep-35	178,331	1,116,666	1,294,998	21,047	61.53
Oct-35	38,423	1,116,666	1,155,090	20,215	57.14
Nov-35	(296,741)	1,116,666	819,925	20,132	40.73
Dec-35	(289,270)	1,116,666	827,396	19,837	41.71
Jan-36	(328,901)	1,141,217	812,316	16,505	49.22
Feb-36	(439,329)	1,141,217	701,888	14,003	50.13
Mar-36	(400,102)	1,141,217	741,115	16,868	43.94
Apr-36	(376,032)	1,141,217	765,185	14,505	52.75
May-36	(146,844)	1,141,217	994,373	14,310	69.49
Jun-36	(103,509)	1,141,217	1,037,708	17,935	57.86
Jul-36	68,011	1,141,217	1,209,228	20,620	58.64
Aug-36	600,732	1,141,217	1,741,949	21,503	81.01
Sep-36	156,280	1,141,217	1,297,498	21,047	61.65
Oct-36	26,758	1,141,217	1,167,975	20,215	57.78
Nov-36	(300,922)	1,141,217	840,295	20,132	41.74
Dec-36	(347,598)	1,141,217	793,619	19,837	40.01

Table 3
2017 IRP Update Wyoming DJ Wind Resource
41% Capacity Factor

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

2017 IRP Update Wyoming DJ Wind Resource - 41% Capacity Factor

2016									
2017			\$37.57	\$10.38	\$0.65	\$0.00	\$11.03	\$39.92	\$0.59
2018			\$38.43	\$10.62	\$0.66	\$0.00	\$11.28	\$40.82	\$0.60
2019			\$39.16	\$10.82	\$0.67	\$0.00	\$11.49	\$41.58	\$0.61
2020			\$40.02	\$11.06	\$0.68	\$0.00	\$11.74	\$42.48	\$0.62
2021			\$40.90	\$11.30	\$0.69	\$0.00	\$11.99	\$43.40	\$0.63
2022			\$41.84	\$11.56	\$0.71	\$0.00	\$12.27	\$44.41	\$0.64
2023			\$42.76	\$11.82	\$0.73	\$0.00	\$12.55	\$45.40	\$0.65
2024			\$43.70	\$12.08	\$0.75	\$0.00	\$12.83	\$46.41	\$0.66
2025			\$44.66	\$12.34	\$0.77	\$0.00	\$13.11	\$47.45	\$0.67
2026			\$45.64	\$12.62	\$0.79	\$0.00	\$13.41	\$48.50	\$0.68
2027			\$46.64	\$12.89	\$0.81	\$0.00	\$13.70	\$49.57	\$0.69
2028			\$47.71	\$13.19	\$0.83	\$0.00	\$14.02	\$50.71	\$0.71
2029			\$48.81	\$13.49	\$0.85	\$0.00	\$14.34	\$51.89	\$0.73
2030	\$1,353	\$96.16	\$49.93	\$40.38	\$0.87	\$0.00	\$41.25	\$149.24	\$0.75
2031		\$98.38	\$51.08	\$41.31	\$0.89	\$0.00	\$42.20	\$152.68	\$0.77
2032		\$100.64	\$52.25	\$42.26	\$0.91	\$0.00	\$43.17	\$156.18	\$0.79
2033		\$102.85	\$53.40	\$43.19	\$0.93	\$0.00	\$44.12	\$159.61	\$0.81
2034		\$105.11	\$54.57	\$44.14	\$0.95	\$0.00	\$45.09	\$163.12	\$0.83
2035		\$107.42	\$55.77	\$45.11	\$0.97	\$0.00	\$46.08	\$166.70	\$0.85
2036		\$109.78	\$57.00	\$46.10	\$0.99	\$0.00	\$47.09	\$170.36	\$0.87
2037		\$112.20	\$58.25	\$47.11	\$1.01	\$0.00	\$48.12	\$174.10	\$0.89
2038		\$114.67	\$59.53	\$48.15	\$1.03	\$0.00	\$49.18	\$177.93	\$0.91
2039		\$117.19	\$60.84	\$49.21	\$1.05	\$0.00	\$50.26	\$181.83	\$0.93
2040		\$119.77	\$62.18	\$50.29	\$1.07	\$0.00	\$51.36	\$185.82	\$0.95
2041		\$122.40	\$63.55	\$51.40	\$1.09	\$0.00	\$52.49	\$189.89	\$0.97
2042		\$125.22	\$65.01	\$52.58	\$1.12	\$0.00	\$53.70	\$194.28	\$0.99

Sources, Inputs and Assumptions

Source:	(c)(f)	Plant Costs - 2017 IRP Update - Table 5.4 & 5.5
	(a)	Plant capacity cost
	(b)	= (a) x 0.0710599128799291
	(d)	= ((b) + (c)) / (8.76 x 41.3%)
	(g)	= (d) + (f)
	(i)	Plant Costs - 2017 IRP Update - Table 5.4 & 5.5

2017 IRP Update Wyoming DJ Wind Resource - 41% Capacity Factor

Wind Cost and Input Assumptions

2030 \$	\$1,353	Plant capacity cost	\$/kW-yr
2017 \$	\$37.57	Fixed O&M, plus on-going capital cost	\$/kW-yr
2017 \$	0.59	Integration Cost	\$/MWH
2017 \$	\$0.65	Variable O&M	\$/MWH
2017 \$		Tax Credit \$/MWh	\$/MWH

7.106% Payment Factor

43% Capacity Factor

41% Supply Side tables

Company Official Inflation Forecast Dated June 28, 2019

2017	2.0%	2026	2.2%	2035	2.2%
2018	2.3%	2027	2.2%	2036	2.2%
2019	1.9%	2028	2.3%	2037	2.2%
2020	2.2%	2029	2.3%	2038	2.2%
2021	2.2%	2030	2.3%	2039	2.2%
2022	2.3%	2031	2.3%	2040	2.2%
2023	2.2%	2032	2.3%	2041	2.2%
2024	2.2%	2033	2.2%	2042	2.3%
2025	2.2%	2034	2.2%	2043	2.3%

Table 3
2017 IRP Update ID Wind Resource
38% Capacity Factor

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

2017 IRP Update ID Wind Resource - 38% Capacity Factor

2016									
2017			\$37.57	\$11.29	\$0.00	-	\$11.29	\$37.57	\$0.59
2018			\$38.43	\$11.54	\$0.00	\$0.00	\$11.54	\$38.43	\$0.60
2019			\$39.16	\$11.76	\$0.00	\$0.00	\$11.76	\$39.16	\$0.61
2020			\$40.02	\$12.02	\$0.00	\$0.00	\$12.02	\$40.02	\$0.62
2021			\$40.90	\$12.29	\$0.00	\$0.00	\$12.29	\$40.90	\$0.63
2022			\$41.84	\$12.57	\$0.00	\$0.00	\$12.57	\$41.84	\$0.64
2023			\$42.76	\$12.85	\$0.00	\$0.00	\$12.85	\$42.76	\$0.65
2024			\$43.70	\$13.13	\$0.00	\$0.00	\$13.13	\$43.70	\$0.66
2025			\$44.66	\$13.42	\$0.00	\$0.00	\$13.42	\$44.66	\$0.67
2026			\$45.64	\$13.71	\$0.00	\$0.00	\$13.71	\$45.64	\$0.68
2027			\$46.64	\$14.01	\$0.00	\$0.00	\$14.01	\$46.64	\$0.69
2028			\$47.71	\$14.33	\$0.00	\$0.00	\$14.33	\$47.71	\$0.71
2029			\$48.81	\$14.66	\$0.00	\$0.00	\$14.66	\$48.81	\$0.73
2030	\$1,411	\$100.24	\$49.93	\$45.11	\$0.00	\$0.00	\$45.11	\$150.17	\$0.75
2031		\$102.55	\$51.08	\$46.15	\$0.00	\$0.00	\$46.15	\$153.63	\$0.77
2032		\$104.91	\$52.25	\$47.21	\$0.00	\$0.00	\$47.21	\$157.16	\$0.79
2033		\$107.22	\$53.40	\$48.25	\$0.00	\$0.00	\$48.25	\$160.62	\$0.81
2034		\$109.58	\$54.57	\$49.31	\$0.00	\$0.00	\$49.31	\$164.15	\$0.83
2035		\$111.99	\$55.77	\$50.40	\$0.00	\$0.00	\$50.40	\$167.76	\$0.85
2036		\$114.45	\$57.00	\$51.51	\$0.00	\$0.00	\$51.51	\$171.45	\$0.87
2037		\$116.97	\$58.25	\$52.64	\$0.00	\$0.00	\$52.64	\$175.22	\$0.89
2038		\$119.54	\$59.53	\$53.79	\$0.00	\$0.00	\$53.79	\$179.07	\$0.91
2039		\$122.17	\$60.84	\$54.98	\$0.00	\$0.00	\$54.98	\$183.01	\$0.93
2040		\$124.86	\$62.18	\$56.19	\$0.00	\$0.00	\$56.19	\$187.04	\$0.95
2041		\$127.61	\$63.55	\$57.43	\$0.00	\$0.00	\$57.43	\$191.16	\$0.97
2042		\$130.55	\$65.01	\$58.75	\$0.00	\$0.00	\$58.75	\$195.56	\$0.99

Sources, Inputs and Assumptions

Source:	(c)(f)	Plant Costs - 2017 IRP Update - Table 5.4 & 5.5
	(a)	Plant capacity cost
	(b)	= (a) x 0.0710599128799291
	(d)	= ((b) + (c)) / (8.76 x 38.0%)
	(g)	= (d) + (f)
	(h)	Plant Costs - 2017 IRP Update - Table 5.4 & 5.5

2017 IRP Update ID Wind Resource - 38% Capacity Factor	
Wind	Cost and Input Assumptions

2030 \$	\$1,411	Plant capacity cost	\$/kW-yr
2017 \$	\$37.57	Fixed O&M, plus on-going capital cost	\$/kW-yr
2017 \$	0.59	Integration Cost	\$/MWH
2017 \$	\$0.00	Variable O&M	\$/MWH
2017 \$		Tax Credit \$/MWh	\$/MWH
	7.106%	Payment Factor	
	38%	Capacity Factor	

Company Official Inflation Forecast Dated June 28, 2019					
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2017	2.0%	2026	2.2%	2035	2.2%
2018	2.3%	2027	2.2%	2036	2.2%
2019	1.9%	2028	2.3%	2037	2.2%
2020	2.2%	2029	2.3%	2038	2.2%
2021	2.2%	2030	2.3%	2039	2.2%
2022	2.3%	2031	2.3%	2040	2.2%
2023	2.2%	2032	2.3%	2041	2.2%
2024	2.2%	2033	2.2%	2042	2.3%
2025	2.2%	2034	2.2%	2043	2.3%

ROCKY MOUNTAIN POWER

STEP STUDY BETWEEN PRIOR FILING AND CURRENT FILING

2019.Q2 – September 2019

2020 - 2034, Nominal Levelized Payment at 6.910% Discount Rate

	2020 - 2034	2021 - 2035	2022 - 2036
2019.Q1 As Filed	\$28.18	\$30.09	\$32.60
OFPC	\$0.01	\$0.02	-\$0.04
Generic	-\$1.40	-\$1.06	-\$0.83
Queue	\$0.59	\$0.49	\$0.40
Load Fcst	\$2.00	\$2.27	\$2.48
2019.Q2 As Filed	\$29.38	\$31.81	\$34.61

Appendix C

Utah Quarterly Compliance Filing Step Study between 2019.Q2 and 2019.Q1 Compliance Filing Avoided Cost Impact of Changing Assumptions \$/MWH (1)

Year	OFPC (2)	Generic	Queue	Load Fcst	Total Impact
2020	\$ (0.16)	\$ (3.86)	\$ 1.21	\$ 0.03	\$ (2.78)
2021	\$ 0.61	\$ (2.70)	\$ 1.09	\$ 0.75	\$ (0.24)
2022	\$ (2.33)	\$ (1.56)	\$ 1.16	\$ 3.39	\$ 0.67
2023	\$ (2.29)	\$ 0.62	\$ (1.67)	\$ 4.95	\$ 1.61
2024	\$ 0.22	\$ (3.90)	\$ 0.38	\$ 1.27	\$ (2.04)
2025	\$ 2.26	\$ (3.81)	\$ 1.30	\$ (0.04)	\$ (0.29)
2026	\$ 0.98	\$ (0.64)	\$ 0.69	\$ 1.73	\$ 2.77
2027	\$ 1.57	\$ (0.23)	\$ 0.35	\$ 1.87	\$ 3.56
2028	\$ 0.09	\$ 0.29	\$ 0.35	\$ 2.28	\$ 3.00
2029	\$ (0.07)	\$ (1.24)	\$ 0.95	\$ 2.49	\$ 2.13
2030	\$ 0.29	\$ (0.70)	\$ 0.77	\$ 2.11	\$ 2.46
2031	\$ 0.05	\$ (0.10)	\$ 1.28	\$ 2.26	\$ 3.50
2032	\$ (0.06)	\$ 0.40	\$ 0.95	\$ 2.69	\$ 3.98
2033	\$ 0.17	\$ 0.75	\$ (0.40)	\$ 2.95	\$ 3.46
2034	\$ (0.12)	\$ 0.57	\$ 0.00	\$ 3.26	\$ 3.72
2035	\$ (0.24)	\$ 0.46	\$ (0.12)	\$ 3.29	\$ 3.39
2036	\$ 0.25	\$ 0.22	\$ (0.19)	\$ 3.30	\$ 3.58

Nominal Levelized Payment at 6.910% Discount Rate (3)

2020 - 2034	\$ 0.01	\$ (1.40)	\$ 0.59	\$ 2.00	\$ 1.20
2021 - 2035	\$ 0.02	\$ (1.06)	\$ 0.49	\$ 2.27	\$ 1.72
2022 - 2036	\$ (0.04)	\$ (0.83)	\$ 0.40	\$ 2.48	\$ 2.01

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated June 2019
- (3) Discount Rate - 2017 IRP Update - Calculated Annually

Appendix C

Utah Quarterly Compliance Filing Step Study between 2019.Q2 and 2019.Q1 Compliance Filing Total Avoided Cost Prices \$/MWH (1) (4)

Year	2019.Q1 As Filed	OFPC (2)	Generic	Queue	Load Fcst
2020	\$21.07	\$20.91	\$17.06	\$18.27	\$18.30
2021	\$17.47	\$18.08	\$15.38	\$16.47	\$17.22
2022	\$17.99	\$15.67	\$14.11	\$15.27	\$18.66
2023	\$17.84	\$15.56	\$16.17	\$14.50	\$19.45
2024	\$23.57	\$23.79	\$19.89	\$20.26	\$21.53
2025	\$24.45	\$26.71	\$22.90	\$24.20	\$24.16
2026	\$25.88	\$26.86	\$26.22	\$26.92	\$28.65
2027	\$26.50	\$28.07	\$27.84	\$28.19	\$30.06
2028	\$30.32	\$30.41	\$30.70	\$31.05	\$33.32
2029	\$35.12	\$35.05	\$33.81	\$34.75	\$37.24
2030	\$39.43	\$39.71	\$39.01	\$39.78	\$41.89
2031	\$42.21	\$42.26	\$42.17	\$43.45	\$45.71
2032	\$43.93	\$43.88	\$44.28	\$45.23	\$47.92
2033	\$50.00	\$50.17	\$50.92	\$50.52	\$53.47
2034	\$52.36	\$52.25	\$52.82	\$52.82	\$56.08
2035	\$56.51	\$56.27	\$56.73	\$56.61	\$59.90
2036	\$58.32	\$58.57	\$58.80	\$58.60	\$61.91

Nominal Levelized Payment at 6.910% Discount Rate (3)

2020 - 2034	\$28.18	\$28.19	\$26.79	\$27.38	\$29.38
2021 - 2035	\$30.09	\$30.11	\$29.05	\$29.54	\$31.81
2022 - 2036	\$32.60	\$32.56	\$31.73	\$32.13	\$34.61

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated June 2019
- (3) Discount Rate - 2017 IRP Update - Calculated Annually
- (4) Capacity costs are allocated based on assumed 100% capacity factor.

Appendix C

Utah Quarterly Compliance Filing Step Study between 2019.Q2 and 2019.Q1 Compliance Filing GRID Calculated Energy Avoided Cost Prices \$/MWH (1)

Year	2019.Q1 As Filed	OFPC (2)	Generic	Queue	Load Fcst
2020	\$21.07	\$20.91	\$17.06	\$18.27	\$18.30
2021	\$17.47	\$18.08	\$15.38	\$16.47	\$17.22
2022	\$17.99	\$15.67	\$14.11	\$15.27	\$18.66
2023	\$17.84	\$15.56	\$16.17	\$14.50	\$19.45
2024	\$23.57	\$23.79	\$19.89	\$20.26	\$21.53
2025	\$24.45	\$26.71	\$22.90	\$24.20	\$24.16
2026	\$25.88	\$26.86	\$26.22	\$26.92	\$28.65
2027	\$26.50	\$28.07	\$27.84	\$28.19	\$30.06
2028	\$30.32	\$30.41	\$30.70	\$31.05	\$33.32
2029	\$35.12	\$35.05	\$33.81	\$34.75	\$37.24
2030	\$39.43	\$39.71	\$39.01	\$39.78	\$41.89
2031	\$42.21	\$42.26	\$42.17	\$43.45	\$45.71
2032	\$43.93	\$43.88	\$44.28	\$45.23	\$47.92
2033	\$50.00	\$50.17	\$50.92	\$50.52	\$53.47
2034	\$52.36	\$52.25	\$52.82	\$52.82	\$56.08
2035	\$56.51	\$56.27	\$56.73	\$56.61	\$59.90
2036	\$58.32	\$58.57	\$58.80	\$58.60	\$61.91

Nominal Levelized Payment at 6.91% Discount Rate (3)

2020 - 2034	\$28.18	\$28.19	\$26.79	\$27.38	\$29.38
2021 - 2035	\$30.09	\$30.11	\$29.05	\$29.54	\$31.81
2022 - 2036	\$32.60	\$32.56	\$31.73	\$32.14	\$34.61

(1) Studies are sequential. The order of the studies would affect the price impact.

(2) Official Forward Price Curve Dated June 2019

(3) Discount Rate - 2017 IRP Update - Calculated Annually

Appendix C

**Utah Quarterly Compliance Filing
Step Study between 2019.Q2 and 2019.Q1 Compliance Filing
Capacity Avoided Cost Prices**

Year	\$/kW-Year		\$/MWH (1)	
	2019.Q1 (3)	2019.Q2 (3)	2019.Q1 (3)	2019.Q2 (3)
2020	-	-	-	-
2021	-	-	-	-
2022	-	-	-	-
2023	-	-	-	-
2024	-	-	-	-
2025	-	-	-	-
2026	-	-	-	-
2027	-	-	-	-
2028	-	-	-	-
2029	-	-	-	-
2030	-	-	-	-
2031	-	-	-	-
2032	-	-	-	-
2033	-	-	-	-
2034	-	-	-	-
2035	-	-	-	-
2036	-	-	-	-

Nominal Levelized Payment at 6.910% Discount Rate (2)

2020 - 2034	\$0.00	\$0.00	\$0.00	\$0.00
2021 - 2035	\$0.00	\$0.00	\$0.00	\$0.00
2022 - 2036	\$0.00	\$0.00	\$0.00	\$0.00

- (1) Capacity costs are allocated based on assumed 100% capacity factor.
- (2) Discount Rate - 2017 IRP Update
- (3) No Capacity costs - No deferrable thermal resources

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing **Quarterly Compliance Filing – Avoided Cost Input Changes** in Docket No. 19-035-18 was served upon the following by email on September 30, 2019.

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