



1407 W. North Temple
Salt Lake City, Utah 84116

December 30, 2020

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 03-035-14 – Quarterly Compliance Filing – 2020.Q3 Avoided Cost Input Changes**
Docket 20-035-30 – 2020.Q3 Avoided Cost Input Changes Quarterly Compliance Filing

PacifiCorp (dba Rocky Mountain Power) hereby respectfully submits its quarterly Schedule 38 compliance filing. An electronic copy of this filing will be provided to psc@utah.gov.

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.

Routine Updates

Appendix A provides a summary of the assumptions used within the GRID model. In addition to the input changes described below, the contract term used in this compliance filing has been rolled forward by one year to January 1, 2021 through December 31, 2035. The Company identifies the following routine updates to its avoided cost inputs since the previous filing:

1. **Official Forward Price Curve (OFPC)**
Update to prices dated September 30, 2020 (2009 OFPC).

2. Qualifying Facility (QF) Queue

Update of signed contract queue and current potential QFs. The QF queue was revised to include 1,968 MW nameplate in this filing. The potential queue was 2,020 MW nameplate in the 2020.Q2 filing.

Additional Details

Additional detail is provided below:

1. **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 2019 Integrated Resource Plan (IRP) filed with the Commission on October 18, 2019. The 2019 IRP preferred portfolio includes cost-effective solar with storage, wind, wind with storage, stand storage and thermal resources. The thermal QF resource partially displaces summer and winter front office transactions (FOT) during 2021-2025, and the Naughton simple-cycle combustion turbine in 2026. The tracking solar QF resource partially displaces summer and winter FOTs during 2021-2023 and the Utah North and Utah South solar with storage resources in 2024. The wind QF resource partially displaces summer and winter FOTs during 2021-2022 and a Utah wind proxy in 2023, in accordance with the Commission’s August 20, 2020 order in docket 19-035-18.
2. **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 32.3 percent capacity factor single-axis tracking solar QF resource.
 - c. Avoided costs presented in **Appendix B.3** were calculated assuming a 80 MW 29.4 percent capacity factor wind QF resource.
3. **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

Public Service Commission of Utah

December 30, 2020

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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. 03-035-14)
 Service List (Docket No. 20-035-30)

ROCKY MOUNTAIN POWER
DESCRIPTION OF AVOIDED COST INPUT CHANGES
2020.Q3 – DECEMBER 2020

Appendix A

PacifiCorp Avoided Cost (Partial Displacement Differential Revenue Requirement (“PDDRR”)) Model Updates through December 2020 Docket 20-035-30 / Docket 03-035-14

Assumptions that have changed since the 2020.Q2 compliance filing are in **bold and underline**.

GRID Scenario Study Period

- January 1, **2021** through December 31, **2035** - 15-year study.
- Avoided cost prices starting in January **2021**.

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

- **Updated to PacifiCorp’s September 30, 2020 OFPC (2009 OFPC)**
- Hourly Market Price Scalars consistent with 2019 Integrated Resource Plan (“IRP”)

Fuel Prices (Coal)

- Average and incremental coal costs based on forecast dated August 2020.
- Coal burn expense reflects incremental coal costs and coal take or pay minimum burn levels.

IRP Resources

- 2019 IRP filed with the Public Service Commission of Utah (“UPSC”) on October 18, 2019.
- New solar, wind, battery storage, and thermal resources; as well as front office transactions (“FOT”), consistent with 2019 IRP (2019 IRP, Vol 1, Chapter 8).
- Existing plant retirement consistent with 2019 IRP (2019 IRP, Vol 1, Chapter 8).
- Transmission investment and capacity changes consistent with 2019 IRP (2019 IRP, Vol 1, Table 8.16).

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 June 2020.
- 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

- 6.92 percent discount rate - 2019 IRP
- Discount rate is consistent with the Commission’s order in Docket 11-035-T06.

Inflation Rates

- Company’s inflation rate forecast dated September 2020.

Levelized Prices (Nominal) at 6.92 percent Discount Rate

- 15 years 2021 through 2035.
- Levelized prices are for illustrative purposes only.

Load Forecast (Retail)

- 20-year load forecast dated June 20, 2020.

Long-Term Contracts

- Long-term contracts which have prices that are indexed to market are consistent with the 2009 OFPC.
- Contracts are modeled based on 48 months ended December 2019.
- 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 September 2020.
- 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 September 2020.

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 2019 IRP Flexible Reserve Study.

- Regulation reserve requirements are modified to account for the incremental integration costs specific to the QF and preferred portfolio displacement being evaluated, consistent with the methodology used in the 2019 IRP.

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 September 2020.

Size of the Avoided Cost Resource

- The avoided cost thermal resource is 100 megawatts (“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 32.3 percent capacity factor and is located in the Utah North transmission bubble.
- The avoided cost wind resource is 80 MW with a 29.4 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 2019.

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
- Resource-specific capacity contribution values are calculated for proxy resources and QFs, based on their expected output and the final loss of load probability results in the 2019 IRP.

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.

Transmission

- Short-term transmission modeled based on 48 months ended December 2018.
- Transmission investment and capacity changes consistent with 2019 IRP (2019 IRP, Vol 1, Table 8.16).

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 2019 IRP.

Contracts Queue						
No.	Signed Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Cypress Creek - Merrill Solar LLC	-1.5	-10.0		14.9%	2020 01 01
2	OR Solar 7, LLC (Jacksonville)	-1.5	-10.0		14.9%	2020 01 01
3	Graphite Solar I	5.7	80.0		7.1%	2022 01 01
4	Mariah Wind	-5.8	-10.0		57.5%	2020 01 01
5	Orem Family wind	-5.8	-10.0		57.5%	2020 01 01
6	Horseshoe Solar	6.2	75.0		8.3%	2022 11 01
7	Rocket Solar	6.6	80.0		8.2%	2022 11 01
8	Skysol Solar QF	6.4	55.0		11.6%	2023 03 01
9	Appaloosa Solar I-A	8.5	120.0		7.1%	2023 10 01
10	Appaloosa Solar I-B	5.7	80.0		7.1%	2023 10 01
11	Birch Creek Hydro QF PPA (pending commission approval)	1.4	2.7		53.1%	2022 04 01
12	Fall Creek Rural Electric Co-op QF PPA (pending commission approval)	4.0	7.5		53.1%	2021 04 01
13	Captain Jack Solar QF PPA	0.4	2.7		14.8%	2021 10 01
14	Elektron Solar PPA 1	1.0	10.2		10.0%	2022 12 31
15	Elektron Solar PPA 2	6.9	69.8		9.9%	2022 12 31
16	Castle Solar, LLC, PPA	2.0	20.0		10.0%	2021 12 31

Total Signed MW		40.23	562.80			
No.	Potential QF Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	QF - 548 - OR - Solar	2.67	20.00	33.0%	13.4%	2023 07 01
2	QF - 549 - OR - Solar	2.57	20.00	31.6%	12.9%	2023 07 01
3	QF - 550 - OR - Solar	8.16	80.00	29.1%	10.2%	2023 07 01
4	QF - 551 - OR - Solar	4.24	33.00	32.0%	12.8%	2023 07 01
5	QF - 552 - OR - Solar	5.75	50.00	27.5%	11.5%	2023 04 01
6	QF - 553 - WA - Solar	1.60	80.00	0.0%	2.0%	2023 12 01

7	QF - 561 - WA - Solar	0.10	4.99	32.1%	2.0%	2023 01 01
8	QF - 562 - OR - Solar	8.99	40.00	30.6%	22.5%	2023 09 01
9	QF - 563 - OR - Solar	8.99	40.00	30.6%	22.5%	2023 09 01
10	QF - 435 - UT - Gas	0.00	25.00	85.0%	0.0%	2021 01 01
11	QF - 433 - UT - Gas	0.00	31.80	58.2%	0.0%	2021 01 01
12	QF - 434 - UT - Gas	0.00	6.20	85.0%	0.0%	2021 01 01
13	QF - 525 - WY - Gas	0.00	98.00	75.0%	0.0%	2020 01 01
14	QF - 568 - WY - Solar	8.43	74.90	30.6%	11.3%	2023 10 01
15	QF - 569 - UT - Gas	0.00	36.00	85.0%	0.0%	2021 01 01
16	QF - 583 - WY - Solar	1.8	20.00	29.3%	8.9%	2024 01 01
17	QF - 584 - WY - Solar	1.8	20.00	29.3%	8.9%	2024 01 01
18	QF - 577 - WY - Solar	1.60	20.00	32.3%	8.0%	2024 01 01
19	QF - 578 - WY - Solar	1.60	20.00	32.3%	8.0%	2024 01 01
20	QF - 579 - WY - Solar	1.60	20.00	32.3%	8.0%	2024 01 01
21	QF - 580 - WY - Solar	1.60	20.00	32.3%	8.0%	2024 01 01
22	QF - 581 - WY - Solar	1.60	20.00	32.3%	8.0%	2024 01 01
23	QF - 582 - WY - Solar	1.60	20.00	32.3%	8.0%	2024 01 01
24	QF - 544 - OR - Solar	9.8	80.00	29.2%	12.2%	2024 01 01
25	QF - 587 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
26	QF - 588 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
27	QF - 589 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
28	QF - 590 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
29	QF - 591 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
30	QF - 592 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
31	QF - 593 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
32	QF - 594 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
33	QF - 595 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
34	QF - 596 - UT - Solar	16.25	52.50	25.5%	31.0%	2023 12 01
Total Potential MW		236.90	1404.89			

Total Partial Displacement		277.13	1967.69			
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35	Utah 2020.Q3	100.00	100.0	100.0%	100.0%	2021 01 01
Partial Displacement after QF		377.13	2067.69			

After accounting for the QF queue, the capacity displacement associated with the proxy avoided cost resources in this filing were as follows:

- Thermal: Incremental Thermal QF resource displaces FOTs for 2020-2025 and Naughton simple cycle combustion turbine in 2026.

- Tracking Solar: **908** nameplate MW of solar resources are displaced by the QF queue. After degradation and accounting for capacity contribution, the incremental solar QF displaces 29MW of solar with storage resource located at Utah South in 2024. The Company retains 100% of the RECs starting in 2024.
- Wind: **0** MW of wind resources are displaced by the QF queue. The incremental wind QF displaces a Utah wind resource in 2023, and the Company retains 100% of the RECs starting in 2023.

	Base Case Displacement (Nameplate MW)							
Year	Thermal	Battery	SolarwB	WindwB	Wind	FOT Summer	FOT Winter	FOT Flat
2019	-	-	-	-	-	-	-	-
2020	-	-	-	-	-	-	-	-
2021	-	-	-	-	-	4	4	-
2022	-	-	16	-	-	6	6	-
2023	-	-	19	-	-	36	36	-
2024	-	-	908	-	-	5	5	-
2025	-	-	908	-	-	5	5	-
2026	6	-	908	-	-	-	-	-
2027	6	-	908	-	-	-	-	-
2028	6	-	908	-	-	-	-	-
2029	6	-	908	-	-	-	-	-
2030	6	-	908	-	-	-	-	-
2031	6	-	908	-	-	-	-	-
2032	6	-	908	-	-	-	-	-
2033	6	-	908	-	-	-	-	-
2034	6	-	908	-	-	-	-	-
2035	6	-	908	-	-	-	-	-
2036	6	-	908	-	-	-	-	-
2037	6	-	908	-	-	-	-	-
2038	6	-	908	-	-	-	-	-

IRP Partial Displacements (Previous Filing)

Total partial displacement was 294.45 MW in the base case and 394.45 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	Cypress Creek Renewables - Merrill Solar LLC	-1.5	-10.0		14.9%	2020 01 01
2	OR Solar 5, LLC (Merrill Solar) (ORSOLAR5 PPA	-1.2	-8.0		14.9%	2020 01 01
3	QF)	5.7	80.0		7.1%	2022 01 01
4	Graphite Solar I	-5.8	-10.0		57.5%	2020 01 01
5	Mariah Wind	-5.8	-10.0		57.5%	2020 01 01
6	Orem Family wind	6.2	75.0	29.2%	8.3%	2022 11 01
7	Horseshoe Solar	6.6	80.0	29.2%	8.2%	2022 11 01
8	Rocket Solar	6.4	55.0		11.6%	2023 03 01
8	Skysol Solar QF					

Total Signed MW		10.67	252.00			
No.	Potential QF Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	QF - 538 - OR - Solar	10.70	80.0	33.4%	13.4%	2023 10 01
2	QF - 505 - WY - Solar	57.70	80.0	38.6%	72.1%	2023 01 01
3	QF - 544 - OR - Solar	9.8	80.0	29.3%	12.2%	2023 01 01
4	QF - 545 - WY - Solar	3.1	20.0	31.5%	15.5%	2023 06 01
5	QF - 546 - WY - Solar	3.1	20.0	31.5%	15.5%	2023 06 01
6	QF - 548 - OR - Solar	2.67	20.0	33.0%	13.4%	2023 07 01
7	QF - 549 - OR - Solar	2.57	20.0	31.6%	12.9%	2023 07 01
8	QF - 550 - OR - Solar	8.16	80.0	29.1%	10.2%	2023 07 01
9	QF - 551 - OR - Solar	4.24	33.0	32.0%	12.8%	2023 07 01
10	QF - 552 - OR - Solar	5.75	50.0	27.5%	11.5%	2023 04 01
11	QF - 553 - WA - Solar	1.60	80.0	0.0%	2.0%	2023 12 01
12	QF - 555 - WY - Solar	4.10	20.0	35.3%	20.5%	2023 08 01
13	QF - 556 - WY - Solar	4.10	20.0	35.3%	20.5%	2023 08 01
14	QF - 557 - WY - Solar	4.10	20.0	35.3%	20.5%	2023 08 01
15	QF - 558 - WY - Solar	4.10	20.0	35.3%	20.5%	2023 08 01
16	QF - 559 - WY - Solar	4.10	20.0	35.3%	20.5%	2023 08 01
17	QF - 560 - WY - Solar	4.10	20.0	35.3%	20.5%	2023 08 01
18	QF - 561 - WA - Solar	0.10	5.0	32.1%	2.0%	2023 01 01
19	QF - 562 - OR - Solar	8.99	40.0	30.6%	22.5%	2023 09 01
20	QF - 563 - OR - Solar	8.99	40.0	30.6%	22.5%	2023 09 01
21	QF - 528 - UT - Solar	5.46	78.0	29.9%	7.0%	2023 09 01
22	QF - 435 - UT - Gas	0.00	25.0	85.0%	0.0%	2021 01 01
23	QF - 433 - UT - Gas	0.00	31.8	58.2%	0.0%	2021 01 01
24	QF - 434 - UT - Gas	0.00	6.2	85.0%	0.0%	2021 01 01
25	QF - 566 - UT - Wind	10.84	79.2	27.7%	13.7%	2022 04 01

26	QF - 567 - UT - Wind	6.24	45.6	27.7%	13.7%	2022 05 01
27	QF - 525 - WY - Gas	0.00	98.0	75.0%	0.0%	2020 01 01
28	QF - 568 - WY - Solar	8.43	74.9	30.6%	11.3%	2023 10 01
29	QF - 569 - UT - Gas	0.00	36.0	85.0%	0.0%	2021 01 01
30	QF - 570 - UT - Solar	9.26	80.0	26.1%	11.6%	2023 11 01
31	QF - 571 - UT - Solar	25.36	80.0	25.9%	31.7%	2023 11 01
32	QF - 572 - UT - Solar	24.81	80.0	28.2%	31.0%	2023 11 01
33	QF - 573 - UT - Solar	11.63	80.0	28.4%	14.5%	2023 11 01
34	QF - 574 - UT - Solar	8.71	80.0	28.5%	10.9%	2023 11 01
35	QF - 575 - UT - Solar	14.37	80.0	28.5%	18.0%	2023 11 01
36	QF - 576 - UT - Solar	6.66	45.0	26.1%	14.8%	2023 11 01
Total Potential MW		283.78	1767.69			

Total Partial Displacement	294.45	2019.69
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37	Utah 2020.Q2	100.00	100.0	100.0%	100.0%	2020 01 01
Partial Displacement after QF		394.45	2119.69			

ROCKY MOUNTAIN POWER

UPDATE IMPACT – UPDATED AVOIDED COST STUDY

2020.Q3 – DECEMBER 2020

Appendix B.1
Avoided Cost Prices \$/MWh
Utah 2020.Q3 Sch 38

Year	Thermal	Solar Tracking	Wind (Defers UT	Thermal	Solar Tracking	Wind (Defers UT	Thermal	Solar Tracking	Wind (Defers UT
	UT 2020.Q3 100% CF (2)	UT 2020.Q3 31.1% CF (2)	W) UT 2020.Q3 31.0% CF (2)	UT 2020.Q2 100% CF (2)	UT 2020.Q2 31.1% CF (2)	W) UT 2020.Q2 31.0% CF (2)	Difference	Difference	Difference
2021	\$20.69	\$17.21	\$17.53	\$19.21	\$16.15	\$16.39	\$1.48	\$1.05	\$1.14
2022	\$20.40	\$17.08	\$17.96	\$19.42	\$16.35	\$16.96	\$0.98	\$0.72	\$0.99
2023	\$19.59	\$16.06	\$25.28	\$18.91	\$15.97	\$23.88	\$0.67	\$0.09	\$1.40
2024	\$15.82	\$14.69	\$26.33	\$14.49	\$13.44	\$24.98	\$1.33	\$1.25	\$1.35
2025	\$17.92	\$15.81	\$26.55	\$16.01	\$14.32	\$24.90	\$1.92	\$1.49	\$1.65
2026	\$33.01	\$16.43	\$27.70	\$30.26	\$14.53	\$25.80	\$2.75	\$1.90	\$1.90
2027	\$34.23	\$17.42	\$28.20	\$31.93	\$15.86	\$25.96	\$2.30	\$1.55	\$2.24
2028	\$38.14	\$20.62	\$29.09	\$35.98	\$19.18	\$26.30	\$2.17	\$1.44	\$2.79
2029	\$40.39	\$22.19	\$29.76	\$37.44	\$21.07	\$26.06	\$2.96	\$1.12	\$3.70
2030	\$40.42	\$20.72	\$30.19	\$37.79	\$19.63	\$26.96	\$2.63	\$1.09	\$3.23
2031	\$43.00	\$22.25	\$31.73	\$40.16	\$21.56	\$27.96	\$2.84	\$0.69	\$3.77
2032	\$44.71	\$22.74	\$32.48	\$42.02	\$22.27	\$28.43	\$2.69	\$0.47	\$4.05
2033	\$45.88	\$23.14	\$59.32	\$43.43	\$22.35	\$54.94	\$2.45	\$0.79	\$4.39
2034	\$47.54	\$24.33	\$60.53	\$45.15	\$23.81	\$56.27	\$2.39	\$0.51	\$4.26
2035	\$49.07	\$25.05	\$61.81	\$47.11	\$24.88	\$56.96	\$1.96	\$0.17	\$4.85

15-Year Levelized Prices (Nominal) @ 6.920% Discount Rate (1) (3)										
2021-2034	\$/MWh	\$30.92	\$18.79	\$30.22	\$28.96	\$17.79	\$27.81	\$1.96	\$1.00	\$2.41
							7%	6%	9%	

Footnotes:
(1) Discount Rate - 2019 IRP
(2) Total Avoided Costs with Capacity, based on stated CF
(3) 15-Years: 2021 - 2035, levelized monthly

Table 1
Avoided Cost Prices
Utah 2020.Q3 - 100.0 MW and 100.0% CF

				Total Price @
Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	100.0% Capacity Factor \$/MWh	
2021	\$0.00	\$20.69	\$20.69	
2022	\$0.00	\$20.40	\$20.40	0.00
2023	\$0.00	\$19.59	\$19.59	0.00
2024	\$0.00	\$15.82	\$15.82	0.00
2025	\$0.00	\$17.92	\$17.92	0.00
2026	\$114.67	\$19.92	\$33.01	13.09
2027	\$117.44	\$20.83	\$34.23	13.41
2028	\$120.37	\$24.44	\$38.14	13.70
2029	\$123.27	\$26.32	\$40.39	14.07
2030	\$126.22	\$26.01	\$40.42	14.41
2031	\$128.99	\$28.28	\$43.00	14.73
2032	\$131.82	\$29.70	\$44.71	15.01
2033	\$134.59	\$30.51	\$45.88	15.36
2034	\$137.42	\$31.86	\$47.54	15.69
2035	\$140.33	\$33.05	\$49.07	16.02
2036	\$143.27	\$35.10	\$51.41	16.31
2037	\$146.29	\$36.05	\$52.75	16.70
2038	\$149.36	\$38.32	\$55.37	17.05

15 Year

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)

\$/kW	\$69.39		
\$/MWh		\$23.00	\$30.92

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2020.Q3 - 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													
2021	20.69	28.78	18.85	18.97	15.38	14.16	16.34	34.23	26.50	20.25	16.85	17.62	19.74
2022	20.40	27.40	20.36	18.72	15.22	14.60	15.94	32.67	25.13	19.64	17.07	17.65	20.03
2023	19.59	19.08	20.00	17.67	14.49	14.58	15.44	32.35	24.95	19.28	16.56	19.20	21.14
2024	15.82	20.37	14.90	10.43	8.39	9.90	12.28	35.76	21.65	14.33	10.90	13.41	17.03
2025	17.92	22.42	15.72	13.17	10.72	11.20	15.03	39.21	25.38	16.26	12.89	14.31	18.07
2026	19.92	17.38	17.40	14.61	11.43	14.09	23.12	29.52	29.08	21.35	19.04	21.32	20.36
2027	20.83	17.74	19.22	16.01	12.97	14.67	23.25	30.36	30.39	23.61	21.59	18.16	21.63
2028	24.44	22.74	23.06	19.39	16.52	17.71	26.39	33.30	33.50	27.30	25.06	22.40	25.67
2029	26.32	24.81	25.14	21.08	19.27	17.52	27.33	36.00	36.52	28.09	25.70	25.04	29.10
2030	26.01	24.68	24.89	18.96	17.45	16.81	25.99	36.76	37.54	28.49	25.85	25.22	29.18
2031	28.28	26.50	27.83	20.62	18.76	18.52	27.55	38.31	39.43	29.44	27.95	29.23	34.87
2032	29.70	30.67	27.68	20.78	21.20	17.34	28.88	38.61	39.77	30.96	30.90	32.22	37.13
2033	30.51	32.17	29.83	22.42	20.20	18.29	29.02	39.59	40.56	33.34	33.25	30.30	36.83
2034	31.86	33.86	30.91	23.62	21.03	20.01	30.24	41.23	42.07	33.31	32.52	34.44	38.65
2035	33.05	34.86	32.12	25.36	22.96	19.84	30.95	41.97	43.49	35.46	33.63	37.17	38.51
2036	35.10	36.54	33.96	25.81	23.48	20.95	32.74	44.57	45.08	39.60	38.07	38.11	41.96
2037	36.05	40.33	36.31	27.60	24.81	22.12	32.85	45.49	46.74	38.49	34.78	38.41	44.36
2038	38.32	43.21	38.10	31.19	27.41	21.73	33.44	48.78	50.32	36.86	38.62	41.73	48.03

Table 4
Burnertip Natural Gas Price Forecast
Utah 2020.Q3 - 100.0 MW and 100.0% CF

Year	PacifiCorp			
	Delivered IRP - Utah Greenfield Fuel Cost	Delivered Naughton Fuel Cost	Delivered IRP West Side Fuel Cost	Delivered IRP - Wyo NE Fuel Cost
2019	\$2.42	\$2.43	\$4.31	\$2.09
2020	\$1.92	\$1.93	\$2.15	\$1.78
2021	\$2.90	\$2.91	\$3.03	\$2.67
2022	\$2.52	\$2.53	\$2.63	\$2.35
2023	\$2.44	\$2.45	\$2.52	\$2.30
2024	\$2.97	\$2.98	\$2.89	\$2.82
2025	\$3.44	\$3.45	\$3.24	\$3.29
2026	\$3.57	\$3.58	\$3.39	\$3.43
2027	\$3.66	\$3.67	\$3.52	\$3.51
2028	\$3.86	\$3.87	\$3.70	\$3.71
2029	\$4.14	\$4.15	\$4.00	\$3.98
2030	\$4.44	\$4.45	\$4.32	\$4.28
2031	\$4.62	\$4.64	\$4.46	\$4.47
2032	\$4.66	\$4.67	\$4.52	\$4.50
2033	\$4.77	\$4.78	\$4.66	\$4.61
2034	\$4.93	\$4.94	\$4.76	\$4.77
2035	\$5.05	\$5.06	\$4.89	\$4.88
2036	\$5.20	\$5.21	\$5.07	\$5.03
2037	\$5.21	\$5.22	\$5.11	\$5.05
2038	\$5.58	\$5.59	\$5.41	\$5.42
2039	\$6.10	\$6.11	\$5.90	\$5.93
2040	\$6.46	\$6.47	\$6.29	\$6.28

Official Forward Price Curve Forecast dated Sep 30, 2020

Table 3
2019 IRP SCCT Resource Costs
Naughton - 185 MW - SCCT Frame "F" x1 - East Side Resource (6,050')

Year	Estimated Capital Cost	Fixed Capital Cost at Real Levelized	Fixed O&M	Variable O&M	Total O&M at Expected CF	Total Resource Fixed Costs	Fuel Cost	Total Resource Energy Cost	Total Resource Costs
	\$/kW	\$/kW-yr	\$/kW-yr	\$/MWh	\$/kW-yr	\$/kW-yr	\$/MMBtu	\$/MWh	\$/MWh
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)

Naughton - 185 MW - SCCT Frame "F" x1 - East Side Resource (6,050')

2016									
2017									
2018				\$7.76					
2019				\$7.90					
2020				\$7.99					
2021				\$8.14					
2022				\$8.30					
2023				\$8.46					
2024				\$8.63					
2025				\$8.81					
2026	\$719	\$50.01	\$38.05	\$9.01	\$64.10	\$114.11	\$3.58	\$35.03	\$74.50
2027		\$51.21	\$38.97	\$9.23	\$65.65	\$116.86	\$3.67	\$35.91	\$76.33
2028		\$52.49	\$39.94	\$9.46	\$67.29	\$119.78	\$3.87	\$37.87	\$79.30
2029		\$53.75	\$40.90	\$9.69	\$68.91	\$122.66	\$4.15	\$40.61	\$83.04
2030		\$55.04	\$41.88	\$9.92	\$70.56	\$125.60	\$4.45	\$43.55	\$87.00
2031		\$56.25	\$42.80	\$10.14	\$72.11	\$128.36	\$4.64	\$45.41	\$89.81
2032		\$57.49	\$43.74	\$10.36	\$73.69	\$131.18	\$4.67	\$45.70	\$91.08
2033		\$58.70	\$44.66	\$10.58	\$75.24	\$133.94	\$4.78	\$46.78	\$93.11
2034		\$59.93	\$45.60	\$10.80	\$76.82	\$136.75	\$4.94	\$48.34	\$95.65
2035		\$61.19	\$46.56	\$11.03	\$78.45	\$139.64	\$5.06	\$49.52	\$97.82
2036		\$62.47	\$47.54	\$11.26	\$80.09	\$142.56	\$5.21	\$50.99	\$100.31
2037		\$63.78	\$48.54	\$11.50	\$81.78	\$145.56	\$5.22	\$51.08	\$101.43
2038		\$65.12	\$49.56	\$11.74	\$83.50	\$148.62	\$5.59	\$54.70	\$106.11
2039		\$66.49	\$50.60	\$11.99	\$85.26	\$151.75	\$6.11	\$59.79	\$112.28
2040		\$67.89	\$51.66	\$12.24	\$87.04	\$154.93	\$6.47	\$63.32	\$116.91
2041		\$69.32	\$52.74	\$12.50	\$88.88	\$158.20	\$6.61	\$64.69	\$119.42
2042		\$70.78	\$53.85	\$12.76	\$90.74	\$161.52	\$6.75	\$66.06	\$121.93

Sources, Inputs and Assumptions

- Source: (a)(c)(d) Plant Costs - 2019 IRP - Table 6.1 & 6.2
- (b) = (a) x 0.0695884915153164
 - (e) = (d) x (8.76 x 33.0%) + (c)
 - (f) = (b) + (e)
 - (g) Table 4 - Burnertip Natural Gas Price Forecast
 - (h) = 9,786 MMBtu/MWH x \$/MMBtu
 - (i) = (f) / (8.76 x 'Capacity Factor') + (h)

Table 3
2019 IRP SCCT Resource Costs
Naughton - 185 MW - SCCT Frame "F" x1 - East Side Resource (6,050')

Naughton - 185 MW - SCCT Frame "F" x1 - East Side Resource (6,050')						
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CCCT Statistics	MW	Percent	Cap Cost	Fixed
SCCT Dry "F" - Turbine	185	100.0%	\$745	\$31.91
	<u>-</u>	<u>0.0%</u>	<u>\$0</u>	<u>\$0.00</u>
Capacity Weighted	185	100.0%	\$745	\$31.91

CCCT Statistics	MW	CF	aMW	Percent	Variable	Heat Rate
SCCT Dry "F" - Turbine	185	33.0%	61.1	100.0%	\$7.76	9,786
	<u>-</u>	<u>0.0%</u>	<u>-</u>	<u>0.0%</u>	<u>-</u>	<u>-</u>
Energy Weighted	185	33.0%	61.1	100.0%	\$7.76	9,786

Rounded

	SCCT	Duct Firing	Plant Costs - 2019 IRP - Table 6.1 & 6.2			
	185					MW Plant Capacity
2018 \$	\$745					Plant Capacity Cost
2018 \$	\$17.01					Fixed O&M & Capitalized O&M
2018 \$	<u>\$14.90</u>					Fixed Pipeline
2018 \$	\$31.91					Fixed O&M Including Fixed Pipeline & Capitalized O&M (\$/kW-Yr)
2018 \$	\$7.76					Variable O&M Costs & Capitalized Variable O&M (\$/MWh)
	9,786					Heat Rate in btu/kWh
	6.959%					Payment Factor
	33%					Capacity Factor
		33.0%				Energy Weighted Capacity Factor

Company Official Inflation Forecast Dated September 30, 2020					
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2017	2.0%	2026	2.3%	2035	2.1%
2018	2.4%	2027	2.4%	2036	2.1%
2019	1.8%	2028	2.5%	2037	2.1%
2020	1.1%	2029	2.4%	2038	2.1%
2021	1.9%	2030	2.4%	2039	2.1%
2022	2.0%	2031	2.2%	2040	2.1%
2023	1.9%	2032	2.2%	2041	2.1%

Appendix B.2

**Avoided Cost Prices \$/MWh
Utah 2020.Q3 Sch 38**

Year	Thermal	Solar Tracking	Wind (Defers UT W)	Thermal	Solar Tracking	Wind (Defers UT W)	Thermal	Solar Tracking	Wind (Defers UT W)
	UT 2020.Q3 100% CF (2)	UT 2020.Q3 31.1% CF (2)	UT 2020.Q3 31.0% CF (2)	UT 2020.Q2 100% CF (2)	UT 2020.Q2 31.1% CF (2)	UT 2020.Q2 31.0% CF (2)	Difference	Difference	Difference
2021	\$20.69	\$17.21	\$17.53	\$19.21	\$16.15	\$16.39	\$1.48	\$1.05	\$1.14
2022	\$20.40	\$17.08	\$17.96	\$19.42	\$16.35	\$16.96	\$0.98	\$0.72	\$0.99
2023	\$19.59	\$16.06	\$25.28	\$18.91	\$15.97	\$23.88	\$0.67	\$0.09	\$1.40
2024	\$15.82	\$14.69	\$26.33	\$14.49	\$13.44	\$24.98	\$1.33	\$1.25	\$1.35
2025	\$17.92	\$15.81	\$26.55	\$16.01	\$14.32	\$24.90	\$1.92	\$1.49	\$1.65
2026	\$33.01	\$16.43	\$27.70	\$30.26	\$14.53	\$25.80	\$2.75	\$1.90	\$1.90
2027	\$34.23	\$17.42	\$28.20	\$31.93	\$15.86	\$25.96	\$2.30	\$1.55	\$2.24
2028	\$38.14	\$20.62	\$29.09	\$35.98	\$19.18	\$26.30	\$2.17	\$1.44	\$2.79
2029	\$40.39	\$22.19	\$29.76	\$37.44	\$21.07	\$26.06	\$2.96	\$1.12	\$3.70
2030	\$40.42	\$20.72	\$30.19	\$37.79	\$19.63	\$26.96	\$2.63	\$1.09	\$3.23
2031	\$43.00	\$22.25	\$31.73	\$40.16	\$21.56	\$27.96	\$2.84	\$0.69	\$3.77
2032	\$44.71	\$22.74	\$32.48	\$42.02	\$22.27	\$28.43	\$2.69	\$0.47	\$4.05
2033	\$45.88	\$23.14	\$59.32	\$43.43	\$22.35	\$54.94	\$2.45	\$0.79	\$4.39
2034	\$47.54	\$24.33	\$60.53	\$45.15	\$23.81	\$56.27	\$2.39	\$0.51	\$4.26
2035	\$49.07	\$25.05	\$61.81	\$47.11	\$24.88	\$56.96	\$1.96	\$0.17	\$4.85

2020-2034	15-Year Levelized Prices (Nominal) @ 6.920% Discount Rate (1) (3)									
	\$/MWh	\$30.92	\$18.79	\$30.22	\$28.96	\$17.79	\$27.81	\$1.96	\$1.00	\$2.41
							7%	6%	9%	

Footnotes:

- (1) Discount Rate - 2019 IRP
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2021 - 2035, levelized monthly

Table 1
Avoided Cost Prices
Utah 2020.Q3_Solar - 80.0 MW and 32.2% CF

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	32.2% Capacity Factor \$/MWh	Total Price @
2021	\$0.00	\$17.21	\$17.21	
2022	\$0.00	\$17.08	\$17.08	
2023	\$0.00	\$16.06	\$16.06	
2024	\$32.76	\$2.92	\$14.69	
2025	\$33.45	\$3.71	\$15.81	
2026	\$34.22	\$3.98	\$16.43	
2027	\$35.04	\$4.61	\$17.42	
2028	\$35.91	\$7.46	\$20.62	
2029	\$36.78	\$8.61	\$22.19	
2030	\$37.66	\$6.75	\$20.72	
2031	\$38.49	\$7.90	\$22.25	
2032	\$39.34	\$8.04	\$22.74	
2033	\$40.17	\$8.01	\$23.14	
2034	\$41.01	\$8.80	\$24.33	
2035	\$41.87	\$9.12	\$25.05	
2036	\$42.75	\$11.30	\$27.60	
2037	\$43.65	\$11.30	\$28.07	
2038	\$44.56	\$13.59	\$30.80	

15 Year

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)

\$/kW	\$26.81		
\$/MWh		\$9.28	\$18.79

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2020.Q3_Solar - 80.0 MW and 32.2% CF

Year	Annual	Winter Season					Summer Season				Winter Season		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Energy Only													
2021	17.21	22.14	15.97	16.51	13.00	12.77	15.03	23.75	22.40	17.20	14.63	15.40	18.21
2022	17.08	21.57	16.85	16.55	12.56	12.76	14.53	23.63	21.89	17.02	15.06	15.39	18.19
2023	16.06	17.00	16.67	15.12	11.70	12.51	13.66	22.89	20.36	15.78	13.13	15.75	19.47
2024	2.92	3.72	3.40	(0.55)	(3.81)	1.52	3.36	9.05	7.70	2.42	(0.61)	1.38	6.65
2025	3.71	3.63	3.21	1.06	(2.26)	1.33	4.49	9.54	9.29	3.55	(0.06)	1.89	7.53
2026	3.98	3.48	3.42	1.76	(2.25)	3.00	5.14	9.01	9.07	2.64	0.47	3.01	7.65
2027	4.61	3.14	4.20	3.07	(1.38)	2.67	5.05	9.22	10.89	2.81	1.86	4.76	8.56
2028	7.46	8.08	7.37	4.97	0.98	4.60	7.79	12.98	13.58	6.31	4.08	7.67	11.56
2029	8.61	9.86	8.38	5.06	3.56	4.97	8.60	14.21	15.53	7.74	5.55	8.66	10.86
2030	6.75	6.80	6.19	5.30	3.02	3.78	6.84	10.82	11.23	5.71	4.37	7.55	10.25
2031	7.90	8.35	7.36	6.77	4.35	3.80	7.66	12.17	12.98	7.12	6.68	7.52	10.86
2032	8.04	7.15	5.66	6.22	4.82	3.62	7.04	13.11	13.85	8.96	6.19	8.09	11.58
2033	8.01	9.80	7.01	6.64	4.32	3.19	7.04	12.46	13.65	6.00	6.94	9.70	12.53
2034	8.80	9.94	8.29	6.43	4.53	4.27	7.38	14.06	15.44	7.21	7.07	9.86	13.45
2035	9.12	9.92	9.05	7.53	4.26	4.10	7.71	15.40	15.76	7.02	7.77	9.59	13.26
2036	11.30	13.50	9.78	8.86	5.76	5.15	9.25	17.10	20.26	11.29	7.27	13.96	16.66
2037	11.30	16.20	14.08	9.18	6.69	5.32	9.92	16.13	16.35	9.78	9.21	12.91	15.96
2038	13.59	15.44	15.53	10.61	7.51	5.56	9.41	18.84	22.67	13.90	11.18	19.00	21.71

Table 4
Burnertip Natural Gas Price Forecast
Utah 2020.Q3_Solar - 80.0 MW and 32.2% CF

Year	PacifiCorp			
	Delivered IRP - Utah Greenfield Fuel Cost	Delivered Naughton Fuel Cost	Delivered IRP West Side Fuel Cost	Delivered IRP - Wyo NE Fuel Cost
2019	\$2.42	\$2.43	\$4.31	\$2.09
2020	\$1.92	\$1.93	\$2.15	\$1.78
2021	\$2.90	\$2.91	\$3.03	\$2.67
2022	\$2.52	\$2.53	\$2.63	\$2.35
2023	\$2.44	\$2.45	\$2.52	\$2.30
2024	\$2.97	\$2.98	\$2.89	\$2.82
2025	\$3.44	\$3.45	\$3.24	\$3.29
2026	\$3.57	\$3.58	\$3.39	\$3.43
2027	\$3.66	\$3.67	\$3.52	\$3.51
2028	\$3.86	\$3.87	\$3.70	\$3.71
2029	\$4.14	\$4.15	\$4.00	\$3.98
2030	\$4.44	\$4.45	\$4.32	\$4.28
2031	\$4.62	\$4.64	\$4.46	\$4.47
2032	\$4.66	\$4.67	\$4.52	\$4.50
2033	\$4.77	\$4.78	\$4.66	\$4.61
2034	\$4.93	\$4.94	\$4.76	\$4.77
2035	\$5.05	\$5.06	\$4.89	\$4.88
2036	\$5.20	\$5.21	\$5.07	\$5.03
2037	\$5.21	\$5.22	\$5.11	\$5.05
2038	\$5.58	\$5.59	\$5.41	\$5.42
2039	\$6.10	\$6.11	\$5.90	\$5.93
2040	\$6.46	\$6.47	\$6.29	\$6.28

Official Forward Price Curve Forecast dated Sep 30, 2020

**Table 3
2019 IRP Utah South Solar with Storage
33% Capacity Factor**

Year	Estimated Capital Cost \$/kW	Fixed Capital Cost at Real Levelized Rate \$/kW-yr	Fixed O&M \$/kW-yr	Network Upgrade \$/kW-yr	Fixed Costs \$/MWh	Variable O&M \$/MWh	Total Resource Cost \$/MWh	Total Resource Costs \$/kW-yr	Total Fixed Cost \$/kW-yr
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
2016									
2017									
2018			\$24.57			\$0.00			\$24.57
2019			\$25.01			\$0.00			\$25.01
2020			\$25.29			\$0.00			\$25.29
2021			\$25.77			\$0.00			\$25.77
2022			\$26.29			\$0.00			\$26.29
2023			\$26.79			\$0.00			\$26.79
2024	\$1,230	\$62.55	\$27.33	\$1.50	\$32.09	\$0.00	\$32.09	\$91.37	\$91.37
2025		\$63.86	\$27.90	\$1.53	\$32.77	\$0.00	\$32.77	\$93.29	\$93.29
2026		\$65.33	\$28.54	\$1.57	\$33.52	\$0.00	\$33.52	\$95.44	\$95.44
2027		\$66.90	\$29.22	\$1.61	\$34.33	\$0.00	\$34.33	\$97.73	\$97.73
2028		\$68.57	\$29.95	\$1.65	\$35.18	\$0.00	\$35.18	\$100.17	\$100.17
2029		\$70.22	\$30.67	\$1.69	\$36.03	\$0.00	\$36.03	\$102.58	\$102.58
2030		\$71.91	\$31.41	\$1.73	\$36.90	\$0.00	\$36.90	\$105.05	\$105.05
2031		\$73.49	\$32.10	\$1.77	\$37.71	\$0.00	\$37.71	\$107.36	\$107.36
2032		\$75.11	\$32.81	\$1.81	\$38.54	\$0.00	\$38.54	\$109.73	\$109.73
2033		\$76.69	\$33.50	\$1.85	\$39.35	\$0.00	\$39.35	\$112.04	\$112.04
2034		\$78.30	\$34.20	\$1.89	\$40.18	\$0.00	\$40.18	\$114.39	\$114.39
2035		\$79.94	\$34.92	\$1.93	\$41.02	\$0.00	\$41.02	\$116.79	\$116.79
2036		\$81.62	\$35.65	\$1.97	\$41.88	\$0.00	\$41.88	\$119.24	\$119.24
2037		\$83.33	\$36.40	\$2.01	\$42.76	\$0.00	\$42.76	\$121.74	\$121.74
2038		\$85.08	\$37.16	\$2.05	\$43.66	\$0.00	\$43.66	\$124.29	\$124.29
2039		\$86.87	\$37.94	\$2.09	\$44.57	\$0.00	\$44.57	\$126.90	\$126.90
2040		\$88.69	\$38.74	\$2.13	\$45.51	\$0.00	\$45.51	\$129.56	\$129.56
2041		\$90.55	\$39.55	\$2.17	\$46.46	\$0.00	\$46.46	\$132.27	\$132.27
2042		\$92.45	\$40.38	\$2.22	\$47.44	\$0.00	\$47.44	\$135.05	\$135.05
2043		\$94.39	\$41.23	\$2.27	\$48.43	\$0.00	\$48.43	\$137.89	\$137.89

Sources, Inputs and Assumptions

- Source: (c)(f) Plant Costs - 2019 IRP Update - Table 6.1 & 6.2
 (a) Plant capacity cost
 (b) = (a) x 0.05085
 (d) = ((b) + (c)) / (8.76 x 32.5%)
 (g) = (e) + (f)
 (h) Plant Costs - 2019 IRP Update - Table 6.1 & 6.2

2019 IRP Utah South Solar with Storage - 33% Capacity Factor		
Wind	Cost and Input Assumptions	
2018 \$	\$1,612	Plant capacity cost
2018 \$	\$24.57	Fixed O&M, plus on-going capital cost
2018 \$	\$0.00	Wheeling (\$/MWh) Variable O&M
2023S	1.47	Tax Credit \$/MWh Network Upgrade (\$/kw-yr) Utah S, Transmission Integration 2023
	5.085%	Payment Factor includes 30% ITC
	32.5%	Capacity Factor

COD
230.8 MW

Company Official Inflation Forecast Dated September 30, 2020					
2017	2.0%	2026	2.3%	2035	2.1%
2018	2.4%	2027	2.4%	2036	2.1%
2019	1.8%	2028	2.5%	2037	2.1%
2020	1.1%	2029	2.4%	2038	2.1%
2021	1.9%	2030	2.4%	2039	2.1%
2022	2.0%	2031	2.2%	2040	2.1%
2023	1.9%	2032	2.2%	2041	2.1%
2024	2.0%	2033	2.1%	2042	2.1%
2025	2.1%	2034	2.1%	2043	2.1%

Appendix B.3

**Avoided Cost Prices \$/MWh
Utah 2020.Q3 Sch 38**

Year	Thermal	Solar Tracking	Wind (Defers UT	Thermal	Solar Tracking	Wind (Defers UT	Thermal	Solar Tracking	Wind (Defers UT
	UT 2020.Q3 100% CF (2)	UT 2020.Q3 31.1% CF (2)	W) UT 2020.Q3 31.0% CF (2)	UT 2020.Q2 100% CF (2)	UT 2020.Q2 31.1% CF (2)	W) UT 2020.Q2 31.0% CF (2)	Difference	Difference	Difference
2021	\$20.69	\$17.21	\$17.53	\$19.21	\$16.15	\$16.39	\$1.48	\$1.05	\$1.14
2022	\$20.40	\$17.08	\$17.96	\$19.42	\$16.35	\$16.96	\$0.98	\$0.72	\$0.99
2023	\$19.59	\$16.06	\$25.28	\$18.91	\$15.97	\$23.88	\$0.67	\$0.09	\$1.40
2024	\$15.82	\$14.69	\$26.33	\$14.49	\$13.44	\$24.98	\$1.33	\$1.25	\$1.35
2025	\$17.92	\$15.81	\$26.55	\$16.01	\$14.32	\$24.90	\$1.92	\$1.49	\$1.65
2026	\$33.01	\$16.43	\$27.70	\$30.26	\$14.53	\$25.80	\$2.75	\$1.90	\$1.90
2027	\$34.23	\$17.42	\$28.20	\$31.93	\$15.86	\$25.96	\$2.30	\$1.55	\$2.24
2028	\$38.14	\$20.62	\$29.09	\$35.98	\$19.18	\$26.30	\$2.17	\$1.44	\$2.79
2029	\$40.39	\$22.19	\$29.76	\$37.44	\$21.07	\$26.06	\$2.96	\$1.12	\$3.70
2030	\$40.42	\$20.72	\$30.19	\$37.79	\$19.63	\$26.96	\$2.63	\$1.09	\$3.23
2031	\$43.00	\$22.25	\$31.73	\$40.16	\$21.56	\$27.96	\$2.84	\$0.69	\$3.77
2032	\$44.71	\$22.74	\$32.48	\$42.02	\$22.27	\$28.43	\$2.69	\$0.47	\$4.05
2033	\$45.88	\$23.14	\$59.32	\$43.43	\$22.35	\$54.94	\$2.45	\$0.79	\$4.39
2034	\$47.54	\$24.33	\$60.53	\$45.15	\$23.81	\$56.27	\$2.39	\$0.51	\$4.26
2035	\$49.07	\$25.05	\$61.81	\$47.11	\$24.88	\$56.96	\$1.96	\$0.17	\$4.85

2020-2034	15-Year Levelized Prices (Nominal) @ 6.920% Discount Rate (1) (3)									
	\$/MWh	\$30.92	\$18.79	\$30.22	\$28.96	\$17.79	\$27.81	\$1.96	\$1.00	\$2.41
							7%	6%	9%	

Footnotes:

- (1) Discount Rate - 2019 IRP
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2021 - 2035, leveled monthly

Table 1
Avoided Cost Prices
Utah 2020.Q3_Wind - 80.0 MW and 29.5% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	29.5% Capacity Factor \$/MWh
2021	\$0.00	\$17.53	\$17.53
2022	\$0.00	\$17.96	\$17.96
2023	\$122.85	(\$22.33)	\$25.28
2024	\$125.41	(\$22.23)	\$26.33
2025	\$128.10	(\$23.09)	\$26.55
2026	\$131.04	(\$23.08)	\$27.70
2027	\$134.14	(\$23.78)	\$28.20
2028	\$137.41	(\$24.12)	\$29.09
2029	\$140.67	(\$24.75)	\$29.76
2030	\$143.99	(\$25.61)	\$30.19
2031	\$147.20	(\$25.32)	\$31.73
2032	\$150.47	(\$25.79)	\$32.48
2033	\$153.70	(\$0.25)	\$59.32
2034	\$157.01	(\$0.32)	\$60.53
2035	\$160.38	(\$0.34)	\$61.81
2036	\$163.83	(\$0.40)	\$63.05
2037	\$167.34	(\$0.45)	\$64.40
2038	\$170.94	(\$0.43)	\$65.82

15 Year

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)

\$/kW \$110.37

\$/MWh (\$12.55) \$30.22

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2020.Q3_Wind - 80.0 MW and 29.5% CF

Year	Annual	Winter Season					Summer Season				Winter Season		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Energy Only													
2021	17.53	17.58	17.98	18.13	14.21	13.54	15.49	22.44	27.36	18.26	15.68	17.51	19.40
2022	17.96	19.95	19.95	18.22	13.93	13.73	15.86	22.96	24.28	18.20	16.40	17.17	19.90
2023	(22.33)	(22.34)	(22.28)	(22.24)	(22.23)	(22.22)	(22.29)	(22.43)	(22.53)	(22.47)	(22.30)	(22.44)	(22.50)
2024	(22.23)	(22.30)	(22.24)	(22.00)	(21.99)	(22.14)	(22.20)	(22.34)	(22.39)	(22.25)	(22.23)	(22.52)	(22.47)
2025	(23.09)	(23.18)	(23.04)	(22.96)	(22.92)	(23.00)	(23.12)	(23.20)	(23.29)	(23.14)	(23.13)	(23.15)	(23.25)
2026	(23.08)	(23.12)	(23.03)	(23.00)	(22.93)	(22.99)	(23.09)	(23.20)	(23.42)	(23.08)	(23.04)	(23.18)	(23.25)
2027	(23.78)	(23.87)	(23.88)	(23.81)	(23.75)	(23.80)	(23.89)	(23.95)	(22.11)	(23.94)	(23.90)	(23.70)	(24.14)
2028	(24.12)	(24.05)	(24.02)	(23.83)	(23.81)	(23.82)	(23.88)	(24.10)	(27.13)	(24.08)	(23.96)	(24.11)	(24.27)
2029	(24.75)	(24.69)	(24.60)	(24.65)	(24.66)	(24.39)	(24.76)	(24.95)	(24.93)	(24.86)	(24.79)	(25.01)	(25.16)
2030	(25.61)	(25.73)	(25.59)	(25.44)	(25.42)	(25.41)	(25.63)	(25.69)	(25.98)	(25.66)	(25.58)	(25.70)	(25.89)
2031	(25.32)	(25.34)	(25.28)	(25.32)	(25.26)	(25.21)	(25.24)	(25.29)	(25.07)	(25.54)	(25.56)	(25.30)	(25.32)
2032	(25.79)	(26.18)	(26.14)	(26.06)	(26.04)	(25.99)	(26.07)	(26.20)	(26.17)	(20.80)	(26.15)	(26.14)	(26.22)
2033	(0.25)	(0.45)	(0.36)	(0.29)	(0.18)	(0.14)	(0.29)	(0.38)	0.07	(0.10)	(0.40)	(0.05)	(0.19)
2034	(0.32)	(0.27)	(0.40)	(0.40)	(0.18)	(0.26)	(0.29)	(0.71)	0.40	(0.60)	(0.29)	(0.31)	(0.42)
2035	(0.34)	(0.39)	(0.33)	(0.34)	(0.32)	(0.15)	(0.33)	(0.09)	(0.39)	(0.25)	(0.42)	(0.47)	(0.61)
2036	(0.40)	(0.53)	(0.19)	(0.27)	(0.28)	(0.20)	(0.13)	(1.04)	(0.84)	(0.57)	(0.38)	(0.29)	(0.58)
2037	(0.45)	(0.53)	(0.53)	(0.51)	(0.24)	(0.28)	(0.40)	(0.64)	(0.79)	(0.27)	(0.24)	(0.81)	(0.40)
2038	(0.43)	(0.49)	(0.40)	(0.39)	(0.31)	(0.14)	(0.29)	(0.61)	(0.82)	(0.08)	(0.23)	(0.51)	(1.14)

Table 4
Burnertip Natural Gas Price Forecast
Utah 2020.Q3_Wind - 80.0 MW and 29.5% CF

Year	PacifiCorp			
	Delivered IRP - Utah Greenfield Fuel Cost	Delivered Naughton Fuel Cost	Delivered IRP West Side Fuel Cost	Delivered IRP - Wyo NE Fuel Cost
2019	\$2.42	\$2.43	\$4.31	\$2.09
2020	\$1.92	\$1.93	\$2.15	\$1.78
2021	\$2.90	\$2.91	\$3.03	\$2.67
2022	\$2.52	\$2.53	\$2.63	\$2.35
2023	\$2.44	\$2.45	\$2.52	\$2.30
2024	\$2.97	\$2.98	\$2.89	\$2.82
2025	\$3.44	\$3.45	\$3.24	\$3.29
2026	\$3.57	\$3.58	\$3.39	\$3.43
2027	\$3.66	\$3.67	\$3.52	\$3.51
2028	\$3.86	\$3.87	\$3.70	\$3.71
2029	\$4.14	\$4.15	\$4.00	\$3.98
2030	\$4.44	\$4.45	\$4.32	\$4.28
2031	\$4.62	\$4.64	\$4.46	\$4.47
2032	\$4.66	\$4.67	\$4.52	\$4.50
2033	\$4.77	\$4.78	\$4.66	\$4.61
2034	\$4.93	\$4.94	\$4.76	\$4.77
2035	\$5.05	\$5.06	\$4.89	\$4.88
2036	\$5.20	\$5.21	\$5.07	\$5.03
2037	\$5.21	\$5.22	\$5.11	\$5.05
2038	\$5.58	\$5.59	\$5.41	\$5.42
2039	\$6.10	\$6.11	\$5.90	\$5.93
2040	\$6.46	\$6.47	\$6.29	\$6.28

Official Forward Price Curve Forecast dated Sep 30, 2020

ROCKY MOUNTAIN POWER

STEP STUDY BETWEEN PRIOR FILING AND CURRENT FILING

2020.Q3 – DECEMBER 2020

2021 - 2035, Nominal Levelized Payment at 6.920% Discount Rate

	2021 - 2035	2022 - 2036	2023 - 2037
2020.Q2 As Filed	\$28.99	\$30.87	\$32.97
OFPC	\$1.90	\$1.96	\$2.03
Queue	\$0.06	\$0.06	\$0.05
2020.Q3 As Filed	\$30.95	\$32.89	\$35.05

Appendix C

Utah Quarterly Compliance Filing Step Study between 2020.Q3 and 2020.Q2 Compliance Filing Avoided Cost Impact of Changing Assumptions \$/MWH (1)

Year	OFPC (2)	Queue	Total Impact
2021	\$ 1.46	\$ 0.02	\$ 1.48
2022	\$ 0.85	\$ 0.14	\$ 0.98
2023	\$ 0.47	\$ 0.20	\$ 0.67
2024	\$ 1.28	\$ 0.06	\$ 1.33
2025	\$ 1.91	\$ 0.01	\$ 1.92
2026	\$ 2.59	\$ 0.17	\$ 2.75
2027	\$ 2.14	\$ 0.16	\$ 2.30
2028	\$ 2.04	\$ 0.13	\$ 2.17
2029	\$ 2.93	\$ 0.03	\$ 2.96
2030	\$ 2.63	\$ (0.01)	\$ 2.63
2031	\$ 2.89	\$ (0.05)	\$ 2.85
2032	\$ 2.73	\$ (0.03)	\$ 2.69
2033	\$ 2.49	\$ (0.04)	\$ 2.45
2034	\$ 2.42	\$ (0.03)	\$ 2.39
2035	\$ 1.99	\$ (0.03)	\$ 1.96
2036	\$ 2.09	\$ (0.07)	\$ 2.03
2037	\$ 0.91	\$ (0.21)	\$ 0.70

Nominal Levelized Payment at 6.920% Discount Rate (3)

2021 - 2035	\$ 1.90	\$ 0.06	\$ 1.96
2022 - 2036	\$ 1.96	\$ 0.06	\$ 2.02
2023 - 2037	\$ 2.03	\$ 0.05	\$ 2.08

- (1) Studies are sequential. The order of the studies would affect
- (2) Official Forward Price Curve Dated September 2020
- (3) Discount Rate - 2019 IRP - Calculated Annually

Appendix C

Utah Quarterly Compliance Filing Step Study between 2020.Q3 and 2020.Q2 Compliance Filing Total Avoided Cost Prices \$/MWH (1) (4)

Year	2020.Q2 As Filed	OFPC (2)	Queue
2021	\$19.21	\$20.67	\$20.69
2022	\$19.42	\$20.27	\$20.40
2023	\$18.91	\$19.38	\$19.59
2024	\$14.49	\$15.77	\$15.83
2025	\$16.01	\$17.92	\$17.93
2026	\$30.26	\$32.84	\$33.01
2027	\$31.93	\$34.07	\$34.23
2028	\$35.98	\$38.02	\$38.15
2029	\$37.44	\$40.37	\$40.40
2030	\$37.80	\$40.43	\$40.42
2031	\$40.16	\$43.05	\$43.00
2032	\$42.02	\$44.74	\$44.71
2033	\$43.43	\$45.92	\$45.88
2034	\$45.15	\$47.57	\$47.54
2035	\$47.11	\$49.10	\$49.07
2036	\$49.38	\$51.47	\$51.41
2037	\$52.05	\$52.96	\$52.75

Nominal Levelized Payment at 6.920% Discount Rate (3)

2021 - 2035	\$28.99	\$30.89	\$30.95
2022 - 2036	\$30.87	\$32.83	\$32.89
2023 - 2037	\$32.97	\$35.00	\$35.05

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated September 2020
- (3) Discount Rate - 2019 IRP - Calculated Annually
- (4) Capacity costs are allocated based on assumed 100% capacity factor.

Appendix C

Utah Quarterly Compliance Filing Step Study between 2020.Q3 and 2020.Q2 Compliance Filing GRID Calculated Energy Avoided Cost Prices \$/MWH (1)

Year	2020.Q2 As Filed	OFPC (2)	Queue
2021	\$19.21	\$20.67	\$20.69
2022	\$19.42	\$20.27	\$20.40
2023	\$18.91	\$19.38	\$19.59
2024	\$14.49	\$15.77	\$15.83
2025	\$16.01	\$17.92	\$17.93
2026	\$17.34	\$19.75	\$19.92
2027	\$18.70	\$20.66	\$20.83
2028	\$22.46	\$24.31	\$24.44
2029	\$23.58	\$26.29	\$26.32
2030	\$23.63	\$26.02	\$26.01
2031	\$25.68	\$28.32	\$28.28
2032	\$27.26	\$29.74	\$29.70
2033	\$28.32	\$30.55	\$30.51
2034	\$29.73	\$31.89	\$31.86
2035	\$31.36	\$33.08	\$33.05
2036	\$33.34	\$35.16	\$35.10
2037	\$35.61	\$36.26	\$36.05

Nominal Levelized Payment at 6.92% Discount Rate (3)

2021 - 2035	\$21.19	\$22.97	\$23.03
2022 - 2036	\$21.89	\$23.71	\$23.77
2023 - 2037	\$22.71	\$24.58	\$24.63

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated September 2020
- (3) Discount Rate - 2019 IRP - Calculated Annually

Appendix C

Utah Quarterly Compliance Filing Step Study between 2020.Q3 and 2020.Q2 Compliance Filing Capacity Avoided Cost Prices

Year	\$/kW-Year		\$/MWH (1)	
	2020.Q2 (3)	2020.Q3 (3)	2020.Q2 (3)	2020.Q3 (3)
2021	-	-	-	-
2022	-	-	-	-
2023	-	-	-	-
2024	-	-	-	-
2025	-	-	-	-
2026	\$ 113.18	\$ 114.67	\$ 12.92	\$ 13.09
2027	\$ 115.91	\$ 117.44	\$ 13.23	\$ 13.41
2028	\$ 118.70	\$ 120.37	\$ 13.51	\$ 13.70
2029	\$ 121.44	\$ 123.27	\$ 13.86	\$ 14.07
2030	\$ 124.10	\$ 126.22	\$ 14.17	\$ 14.41
2031	\$ 126.84	\$ 128.99	\$ 14.48	\$ 14.73
2032	\$ 129.62	\$ 131.82	\$ 14.76	\$ 15.01
2033	\$ 132.36	\$ 134.59	\$ 15.11	\$ 15.36
2034	\$ 135.12	\$ 137.42	\$ 15.42	\$ 15.69
2035	\$ 137.97	\$ 140.33	\$ 15.75	\$ 16.02
2036	\$ 140.85	\$ 143.27	\$ 16.04	\$ 16.31
2037	\$ 143.96	\$ 146.29	\$ 16.43	\$ 16.70

Nominal Levelized Payment at 6.920% Discount Rate (2)

2021 - 2035	\$68.35	\$69.41	\$7.80	\$7.92
2022 - 2036	\$78.72	\$79.95	\$8.98	\$9.12
2023 - 2037	\$89.93	\$91.34	\$10.26	\$10.42

- (1) Capacity costs are allocated based on assumed 100% capacity factor.
- (2) Discount Rate - 2019 IRP
- (3) No Capacity costs - No deferrable thermal resources

CERTIFICATE OF SERVICE

Docket Nos. 20-035-30/03-035-14

I hereby certify that a true and correct copy of the foregoing **2020.Q3 Avoided Cost Input Changes Quarterly Compliance Filing** was served upon the following by email on December 30, 2020.

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