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April 9, 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 Administrator

Re: **Docket No. 03-035-14 – Quarterly Compliance Filing – 2019.Q4 Avoided Cost Input Changes**
Docket No. 19-035-18 – 2019.Q4 Avoided Cost Input Changes Quarterly Compliance Filing

PacifiCorp (“Rocky Mountain Power” or the “Company”) hereby respectfully submits its quarterly Schedule 38 compliance filing via electronic 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.

Rocky Mountain Power filed its previous compliance filing on January 10, 2020 (“2019.Q3 filing”). On January 30, 2020 Utah Clean Energy (“UCE”) filed a challenge to two main aspects of the 2019.Q3 filing, which specifically identified the modeling of the 2019 Integrated Resource Plan (“IRP”) and the Company’s proposed non-routine update to the assumed resource deferral for Utah wind Qualified Facilities (“QFs”). A procedural schedule has been established to review these issues and the Company is filing testimony on that matter concurrently with this update.

Routine Updates

Appendix A provides a summary of the assumptions used within the GRID model. 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 December 31, 2019 (1912 OFPC).
2. **Load Forecast**
Updates to reflect 20 year load forecast dated June 20, 2019.
3. **Generic Model Updates**
Correction to prices and volumes of certain dispatchable wind resources to ensure they are curtailed in economic merit order. Refinement of 2019 IRP battery shape optimization tool to prevent large swings unrelated to the QF resource being evaluated.
4. **Qualifying Facility (QF) Queue**
Update of signed contract queue and current potential QFs. The QF queue was revised to include 1,906 MW nameplate in this filing. The potential queue was 1,864 MW nameplate in the 2019.Q3 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 2020-2025, and the Naughton simple-cycle combustion turbine in 2026. The tracking solar QF resource partially displaces summer and winter FOTs during 2020-2023 and the Jim Bridger solar with storage resource in 2024. Consistent with the Company’s proposed non-routine change, the wind QF resource would partially displaces summer and winter FOTs during 2020-2022 and the Utah wind resource in 2023.
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 an 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

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. 19-035-18)

ROCKY MOUNTAIN POWER
DESCRIPTION OF AVOIDED COST INPUT CHANGES
2019.Q4 – MARCH 2020

Appendix A

PacifiCorp Avoided Cost (Partial Displacement Differential Revenue Requirement (“PDDRR”)) Model Updates through March 2020 Docket No. 19-035-18 / Docket No. 03-035-14

Assumptions that have changed since the 2019. Q3 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 December 31, 2020 OFPC (1912 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 2019.
- 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 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

- 6.92 percent discount rate - 2019 IRP
- Discount rate is consistent with the Commission’s order in Docket No. 11-035-T06.

Inflation Rates

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

Levelized Prices (Nominal) at 6.92 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 **1912 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 **January 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 **January 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 January 2020.

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 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 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
- 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 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)	4.9	80.0		6.1%	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
	Orem Family wind					

Total Signed MW		-9.28	42.00			
No.	Potential QF Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	Grass Butte Solar	4.52	40.0	29.1%	11.3%	2019 12 31
2	Sparrow Solar	4.52	40.0	31.0%	11.3%	2019 12 31
3	Ochoco Solar	2.26	20.0	27.9%	11.3%	2019 01 01
4	Tata Chemicals	0.00	30.0	85.0%	0.0%	2020 01 01
5	Apex Solar I	6.17	80.0	27.2%	7.7%	2022 06 01
6	Apex Solar II	6.17	80.0	27.2%	7.7%	2022 06 01
7	Foote Creek III Wind	1.56	24.8	33.1%	6.3%	2019 12 01
8	Foote Creek II Wind	0.11	1.8	34.5%	6.1%	2019 12 01
9	Palomino Solar I	6.03	80.0	28.6%	7.5%	2022 09 01
10	Palomino Solar II	6.03	80.0	28.6%	7.5%	2022 09 01
11	Kennecott Smelter Non Firm	0.00	31.8	58.2%	0.0%	2020 01 01
12	Kennecott Refinery Non Firm	0.00	6.2	85.0%	0.0%	2020 01 01
13	Tesoro Non Firm	0.00	25.0	85.0%	0.0%	2020 01 01
14	Hayden Mountain PV3-D	7.99	80.0	26.7%	10.0%	2022 12 01
15	Hayden Mountain PV3-E	7.99	80.0	26.7%	10.0%	2022 12 01
16	Harney Solar 4	8.61	80.0	26.7%	10.8%	2022 12 01
17	Harney Solar 5	8.61	80.0	26.7%	10.8%	2022 12 01
18	Exxon Mobil	0.00	98.0	75.0%	0.0%	2020 01 01
19	Foote Creek IV Wind	1.2	16.8	34.5%	7.3%	2020 11 01

20	Whiskey Creek Solar	4.5	78.0	29.9%	5.7%	2022 09 01
21	Get Along Solar IV_A	10.40	80.0	33.4%	13.0%	2023 10 01
22	Chevron Wind	1.67	16.5	29.5%	10.1%	2019 09 01
23	White Mesa Solar	2.32	35.0	34.5%	6.6%	2022 10 01
24	Skysol Solar	6.21	55.0	29.4%	11.3%	2021 01 01
25	Broadview Solar 1	51.72	80.0	38.6%	64.7%	2023 01 01
26	Lincoln Solar	6.54	80.0	26.7%	8.2%	2023 01 01
27	Lincoln Solar II	51.72	80.0	38.6%	64.7%	2023 01 01
28	Birch Creek Solar	48.20	80.0	38.6%	60.3%	2023 01 01
29	Birch Creek Solar II	48	80.0	38.6%	60.3%	2023 01 01
30	Raven Solar	29.3	50.0	31.7%	58.6%	2023 01 01
31	Glen Canyon A Solar	4.9	74.0	32.7%	6.6%	2023 02 01
32	Glen Canyon B Solar	1.4	21.0	32.8%	6.6%	2023 02 01
33	Linkville Solar	9.5	80.0	29.3%	11.9%	2023 01 01
Total Potential MW		348.36	1863.85			
Total Partial Displacement		339.08	1905.85			

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: **1,097** nameplate MW of solar resources are displaced by the QF queue. After degradation, the incremental solar QF displaces 25 MW of solar with storage resource located at Jim Bridger in 2024. The Company retains 100% of the RECs starting in 2024.
- Wind: 36 MW of wind resources are displaced by the QF queue. The incremental wind QF displaces 69 MW of Utah wind resource in 2023, The Company retains 100% of the RECs starting in 2023.

Base Case Displacement (Nameplate MW)							
Thermal	Battery	Solar	Wind	Wind	FOT Summer	FOT Winter	FOT Flat
-	-	-	-	-	2	2	-
-	-	-	-	-	15	15	-
-	-	-	-	-	22	22	-
-	-	7	-	-	34	34	-
-	-	7	-	-	338	314	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-
-	-	1,097	-	36	-	-	-

IRP Partial Displacements (Previous Filing)

Total partial displacement was 1,784 MW in the base case and 1,884 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
	n/a					

Total Signed MW		0.00	0.00			
No.	Potential QF Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	QF - 249 - OR - Solar	4.52	40.0	29.1%	11.3%	2019 12 31
2	QF - 279 - OR - Solar	4.52	40.0	31.0%	11.3%	2019 12 31
3	QF - 280 - OR - Solar	2.26	20.0	27.9%	11.3%	2019 01 01
4	QF - 514 - WY - Gas	0.00	30.0	85.0%	0.0%	2020 01 01
5	QF - 541 - WY - Solar	6.17	80.0	27.2%	7.7%	2022 06 01
6	QF - 542 - WY - Solar	6.17	80.0	27.2%	7.7%	2022 06 01
7	QF - 516 - WY - Wind	1.56	24.8	33.1%	6.3%	2019 12 01
8	QF - 517 - WY - Wind	0.11	1.8	34.5%	6.1%	2019 12 01
9	QF - 519 - WY - Solar	6.03	80.0	28.6%	7.5%	2022 09 01
10	QF - 520 - WY - Solar	6.03	80.0	28.6%	7.5%	2022 09 01
11	QF - 433 - UT - Gas	0.00	31.8	58.2%	0.0%	2020 01 01
12	QF - 434 - UT - Gas	0.00	6.2	85.0%	0.0%	2020 01 01
13	QF - 435 - UT - Gas	0.00	25.0	85.0%	0.0%	2020 01 01
14	QF - 521 - OR - Solar	7.99	80.0	26.7%	10.0%	2022 12 01
15	QF - 522 - OR - Solar	7.99	80.0	26.7%	10.0%	2022 12 01
16	QF - 523 - OR - Solar	8.61	80.0	26.7%	10.8%	2022 12 01
17	QF - 524 - OR - Solar	8.61	80.0	26.7%	10.8%	2022 12 01
18	QF - 525 - WY - Gas	0.00	98.0	75.0%	0.0%	2020 01 01
19	QF - 527 - WY - Wind	1.2	16.8	34.5%	7.3%	2020 11 01
20	QF - 528 - UT - Solar	4.5	78.0	29.9%	5.7%	2022 09 01
21	QF - 538 - OR - Solar	10.40	80.0	33.4%	13.0%	2023 10 01
22	QF - 537 - WY - Wind	1.67	16.5	29.5%	10.1%	2019 09 01
23	QF - 540 - UT - Solar	2.32	35.0	34.5%	6.6%	2022 10 01
24	QF - 254 - OR - Solar	6.21	55.0	29.4%	11.3%	2021 01 01
25	QF - 505 - WY - Solar	51.72	80.0	38.6%	64.7%	2023 01 01
26	QF - 442 - WY - Solar	6.54	80.0	26.7%	8.2%	2023 01 01
27	QF - 506 - WY - Solar	51.72	80.0	38.6%	64.7%	2023 01 01
28	QF - 507 - UT - Solar	48.20	80.0	38.6%	60.3%	2023 01 01
29	QF - 509 - UT - Solar	48	80.0	38.6%	60.3%	2023 01 01
30	QF - 508 - WY - Solar	29.3	50.0	31.7%	58.6%	2023 01 01
31	QF - 542 - UT - Solar	4.9	74.0	32.7%	6.6%	2023 02 01
32	QF - 543 - UT - Solar	1.4	21.0	32.8%	6.6%	2023 02 01
Total Potential MW		338.82	1783.85			

Total Partial Displacement	338.82	1783.85				
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33	Utah 2019.Q3	100.00	100.00	100.0%	100.0%	2020 01 01
Partial Displacement after QF		438.82	1883.85			

ROCKY MOUNTAIN POWER

UPDATE IMPACT – UPDATED AVOIDED COST STUDY

2019.Q4 – MARCH 2020

Appendix B.1
Avoided Cost Prices \$/MWh
Utah 2019.Q4 Sch 38

Year	Thermal	Solar Tracking	Wind	Thermal	Solar Tracking	Wind	Thermal	Solar Tracking	Wind
	UT 2019.Q4 100% CF (2)	UT 2019.Q4 31.1% CF (2)	UT 2019.Q4 31.0% CF (2)	UT 2019.Q3 100% CF (2)	UT 2019.Q3 31.1% CF (2)	UT 2019.Q3 31.0% CF (2)	Difference	Difference	Difference
2020	\$13.96	\$12.63	\$11.60	\$15.04	\$12.42	\$14.41	(\$1.08)	\$0.21	(\$2.81)
2021	\$12.90	\$10.04	\$10.34	\$13.78	\$12.59	\$14.34	(\$0.88)	(\$2.55)	(\$4.00)
2022	\$16.09	\$13.00	\$14.59	\$13.95	\$11.58	\$12.60	\$2.14	\$1.43	\$2.00
2023	\$14.01	\$11.19	\$23.79	\$9.63	\$11.43	\$25.36	\$4.38	(\$0.24)	(\$1.57)
2024	\$7.36	\$8.62	\$23.58	\$10.65	\$10.08	\$26.38	(\$3.29)	(\$1.46)	(\$2.80)
2025	\$8.35	\$9.26	\$24.00	\$27.01	\$10.28	\$26.69	(\$18.66)	(\$1.02)	(\$2.69)
2026	\$28.15	\$9.89	\$25.15	\$26.59	\$12.38	\$27.80	\$1.56	(\$2.49)	(\$2.65)
2027	\$29.32	\$10.80	\$25.62	\$33.51	\$9.28	\$28.14	(\$4.19)	\$1.53	(\$2.52)
2028	\$33.74	\$14.56	\$27.43	\$37.57	\$14.89	\$29.30	(\$3.83)	(\$0.33)	(\$1.87)
2029	\$36.24	\$16.58	\$28.23	\$36.41	\$14.99	\$29.79	(\$0.18)	\$1.59	(\$1.56)
2030	\$36.60	\$16.18	\$28.08	\$38.06	\$14.36	\$30.22	(\$1.46)	\$1.82	(\$2.13)
2031	\$40.94	\$19.18	\$29.76	\$43.45	\$15.93	\$31.44	(\$2.51)	\$3.25	(\$1.68)
2032	\$46.08	\$21.46	\$30.66	\$44.82	\$15.22	\$31.82	\$1.26	\$6.25	(\$1.16)
2033	\$46.91	\$22.13	\$54.09	\$46.37	\$20.76	\$58.97	\$0.53	\$1.37	(\$4.87)
2034	\$48.55	\$22.76	\$55.14	\$48.55	\$20.23	\$59.83	\$0.01	\$2.53	(\$4.69)

15-Year Levelized Prices (Nominal) @ 6.920% Discount Rate (1) (3)										
2020-2034	\$/MWh	\$24.25	\$13.40	\$24.39	\$24.08	\$13.04	\$26.60	\$0.17	\$0.36	(\$2.21)
							1%	3%		-8%

Footnotes:

- (1) Discount Rate - 2019 IRP
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2020 - 2034, levelized monthly

Table 1
Avoided Cost Prices
Utah 2019.Q4 - 100.0 MW and 100.0% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	100.0% Capacity Factor \$/MWh
2020	\$0.00	\$13.96	\$13.96
2021	\$0.00	\$12.90	\$12.90
2022	\$0.00	\$16.09	\$16.09
2023	\$0.00	\$14.01	\$14.01
2024	\$0.00	\$7.36	\$7.36
2025	\$0.00	\$8.35	\$8.35
2026	\$115.63	\$14.95	\$28.15
2027	\$118.28	\$15.82	\$29.32
2028	\$121.02	\$19.96	\$33.74
2029	\$123.80	\$22.10	\$36.24
2030	\$126.54	\$22.16	\$36.60
2031	\$129.32	\$26.18	\$40.94
2032	\$132.19	\$31.04	\$46.08
2033	\$134.94	\$31.50	\$46.91
2034	\$137.79	\$32.82	\$48.55
2035	\$140.67	\$34.70	\$50.76
2036	\$143.64	\$35.95	\$52.30
2037	\$146.64	\$38.19	\$54.93
2038	\$149.73	\$41.02	\$58.11
2039	\$152.85	\$41.88	\$59.33

15 Year Starting 2020

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$59.90	\$17.41	\$24.25
\$/MWh			

15 Year Starting 2022

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$80.25	\$19.79	\$28.95
\$/MWh			

15 Year Starting 2023

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$91.66	\$20.93	\$31.39
\$/MWh			

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2019.Q4 - 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													
2020	13.96	11.92	10.19	12.36	11.16	11.67	13.07	24.90	26.30	14.31	11.42	11.19	8.58
2021	12.90	19.38	10.59	10.04	9.00	10.13	9.86	20.15	17.47	14.47	10.75	10.14	12.34
2022	16.09	15.49	15.68	13.81	12.33	12.61	13.12	23.59	23.41	18.66	13.55	14.01	16.59
2023	14.01	13.64	13.22	10.57	9.27	11.12	12.13	20.27	19.96	16.02	12.16	13.35	16.11
2024	7.36	11.82	5.41	2.90	2.07	5.52	6.30	14.59	12.68	7.66	4.30	6.58	8.13
2025	8.35	11.74	8.02	3.71	2.60	5.04	6.49	16.05	15.34	8.39	5.86	7.67	9.01
2026	14.95	12.93	11.16	7.43	8.37	9.44	18.09	23.67	23.41	18.12	15.02	17.87	13.67
2027	15.82	14.45	12.20	8.27	7.83	10.66	18.02	25.83	25.81	19.18	18.34	13.20	15.50
2028	19.96	17.72	16.74	14.46	12.86	13.27	23.95	29.21	29.22	23.73	21.72	16.41	19.97
2029	22.10	18.96	18.96	16.53	16.55	14.91	25.61	30.51	31.10	26.13	24.28	19.32	22.05
2030	22.16	18.66	20.35	14.68	13.21	14.45	24.05	33.16	33.87	27.17	24.34	19.71	21.87
2031	26.18	21.79	24.34	18.79	18.94	17.65	27.17	36.86	37.86	31.02	27.99	23.76	27.65
2032	31.04	35.53	27.87	22.86	24.08	19.90	31.84	40.49	41.50	34.75	31.30	29.89	32.11
2033	31.50	36.47	28.00	23.54	23.49	20.13	32.26	40.91	42.24	34.67	31.52	30.00	34.25
2034	32.82	33.06	30.47	24.63	25.08	23.96	33.07	42.80	44.29	35.41	32.57	31.55	36.58
2035	34.70	35.68	33.09	26.54	26.90	22.51	33.39	44.67	45.75	37.56	33.70	40.18	36.25
2036	35.95	37.23	33.29	27.56	26.68	23.41	35.37	45.89	46.65	39.90	37.29	36.55	41.25
2037	38.19	40.95	38.07	29.92	28.48	25.40	37.31	49.75	50.42	40.04	35.55	37.98	44.14

Table 4
Burnertip Natural Gas Price Forecast
Utah 2019.Q4 - 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	\$2.24	\$2.25	\$2.35	\$1.84
2021	\$2.19	\$2.20	\$2.29	\$1.98
2022	\$2.19	\$2.20	\$2.27	\$2.01
2023	\$2.42	\$2.43	\$2.48	\$2.24
2024	\$2.66	\$2.67	\$2.70	\$2.48
2025	\$2.91	\$2.92	\$2.99	\$2.72
2026	\$3.08	\$3.09	\$3.02	\$2.89
2027	\$3.29	\$3.30	\$3.26	\$3.10
2028	\$3.60	\$3.61	\$3.60	\$3.41
2029	\$3.92	\$3.93	\$3.92	\$3.72
2030	\$4.18	\$4.19	\$4.19	\$3.98
2031	\$4.47	\$4.48	\$4.46	\$4.26
2032	\$4.73	\$4.74	\$4.69	\$4.52
2033	\$4.79	\$4.80	\$4.74	\$4.58
2034	\$5.03	\$5.04	\$5.04	\$4.82
2035	\$5.23	\$5.24	\$5.19	\$5.02
2036	\$5.29	\$5.30	\$5.19	\$5.07
2037	\$5.64	\$5.65	\$5.55	\$5.43
2038	\$5.91	\$5.92	\$5.80	\$5.69
2039	\$6.01	\$6.02	\$5.89	\$5.79
2040	\$6.28	\$6.29	\$6.14	\$6.06

Official Forward Price Curve Forecast dated Dec 31, 2019

Table 5

Utah 2019.Q4 - 100.0 MW and 100.0% CF

January 2020 through December 2034

Nominal Avoided Costs Calculated Monthly

15 Year Starting 2023	\$ 173,190,653	\$ 86,590,285	\$ 259,780,938	\$ 8,275,277	\$31.39
Nominal NPV at 6.92% Discount Rate					
15 Year Starting 2022	\$ 163,750,973	\$ 75,801,502	\$ 239,552,475	\$ 8,274,875	\$28.95
15 Year Starting 2020	\$ 144,108,714	\$ 56,583,954	\$ 200,692,668	\$ 8,275,707	\$24.25

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	100.0% CF	Dollars	MWH	100.0% CF
Jan-20	886,951	-	886,951	74,400	11.92
Feb-20	709,562	-	709,562	69,600	10.19
Mar-20	919,909	-	919,909	74,400	12.36
Apr-20	803,725	-	803,725	72,000	11.16
May-20	868,376	-	868,376	74,400	11.67
Jun-20	941,154	-	941,154	72,000	13.07
Jul-20	1,852,570	-	1,852,570	74,400	24.90
Aug-20	1,956,755	-	1,956,755	74,400	26.30
Sep-20	1,030,597	-	1,030,597	72,000	14.31
Oct-20	849,707	-	849,707	74,400	11.42
Nov-20	805,567	-	805,567	72,000	11.19
Dec-20	638,078	-	638,078	74,400	8.58
Jan-21	1,441,958	-	1,441,958	74,400	19.38
Feb-21	711,601	-	711,601	67,200	10.59
Mar-21	747,274	-	747,274	74,400	10.04
Apr-21	647,844	-	647,844	72,000	9.00
May-21	753,735	-	753,735	74,400	10.13
Jun-21	710,199	-	710,199	72,000	9.86
Jul-21	1,498,967	-	1,498,967	74,400	20.15
Aug-21	1,299,908	-	1,299,908	74,400	17.47
Sep-21	1,041,492	-	1,041,492	72,000	14.47
Oct-21	800,048	-	800,048	74,400	10.75
Nov-21	729,917	-	729,917	72,000	10.14
Dec-21	917,997	-	917,997	74,400	12.34
Jan-35	2,654,742	1,172,236	3,826,979	74,400	51.44
Feb-35	2,223,717	1,172,236	3,395,953	67,200	50.54
Mar-35	1,974,676	1,172,236	3,146,912	74,400	42.30
Apr-35	1,936,598	1,172,236	3,108,835	72,000	43.18
May-35	1,674,933	1,172,236	2,847,170	74,400	38.27
Jun-35	2,403,961	1,172,236	3,576,197	72,000	49.67
Jul-35	3,323,230	1,172,236	4,495,466	74,400	60.42
Aug-35	3,404,092	1,172,236	4,576,328	74,400	61.51
Sep-35	2,704,099	1,172,236	3,876,335	72,000	53.84
Oct-35	2,506,937	1,172,236	3,679,174	74,400	49.45
Nov-35	2,893,294	1,172,236	4,065,530	72,000	56.47
Dec-35	2,697,259	1,172,236	3,869,495	74,400	52.01

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

Year	Estimated Capital Cost	Capital Cost at Real Levelized Rate	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	Total Fixed Cost
	\$/kW	\$/kW-yr	\$/kW-yr	\$/MWh	\$/kW-yr	\$/kW-yr	\$/MMBtu	\$/MWh	\$/MWh	\$/kW-yr
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(i)

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

2016										
2017										\$0.00
2018				\$7.76						\$7.76
2019				\$7.90						\$7.90
2020				\$8.05						\$8.05
2021				\$8.21						\$8.21
2022				\$8.42						\$8.42
2023				\$8.63						\$8.63
2024				\$8.84						\$8.84
2025				\$9.04						\$9.04
2026	\$719	\$50.01	\$38.05	\$9.25	\$64.79	\$114.80	\$3.09	\$30.24	\$69.95	\$112.09
2027		\$51.16	\$38.93	\$9.46	\$66.28	\$117.44	\$3.30	\$32.29	\$72.92	\$114.67
2028		\$52.34	\$39.83	\$9.68	\$67.81	\$120.15	\$3.61	\$35.33	\$76.89	\$117.32
2029		\$53.54	\$40.75	\$9.90	\$69.37	\$122.91	\$3.93	\$38.46	\$80.98	\$120.02
2030		\$54.72	\$41.65	\$10.12	\$70.90	\$125.62	\$4.19	\$41.00	\$84.46	\$122.67
2031		\$55.92	\$42.57	\$10.34	\$72.46	\$128.38	\$4.48	\$43.84	\$88.25	\$125.37
2032		\$57.15	\$43.51	\$10.57	\$74.07	\$131.22	\$4.74	\$46.39	\$91.78	\$128.15
2033		\$58.35	\$44.42	\$10.79	\$75.61	\$133.96	\$4.80	\$46.97	\$93.31	\$130.82
2034		\$59.58	\$45.35	\$11.02	\$77.21	\$136.79	\$5.04	\$49.32	\$96.64	\$133.58
2035		\$60.83	\$46.30	\$11.25	\$78.82	\$139.65	\$5.24	\$51.28	\$99.59	\$136.37
2036		\$62.11	\$47.27	\$11.49	\$80.49	\$142.60	\$5.30	\$51.87	\$101.20	\$139.25
2037		\$63.41	\$48.26	\$11.73	\$82.17	\$145.58	\$5.65	\$55.29	\$105.65	\$142.16
2038		\$64.74	\$49.27	\$11.98	\$83.90	\$148.64	\$5.92	\$57.93	\$109.35	\$145.15
2039		\$66.10	\$50.30	\$12.23	\$85.65	\$151.75	\$6.02	\$58.91	\$111.40	\$148.18
2040		\$67.49	\$51.36	\$12.49	\$87.47	\$154.96	\$6.29	\$61.55	\$115.15	\$151.32
2041		\$68.91	\$52.44	\$12.75	\$89.30	\$158.21	\$6.42	\$62.83	\$117.56	\$154.49
2042		\$70.36	\$53.54	\$13.02	\$91.18	\$161.54	\$6.55	\$64.10	\$119.98	\$157.74

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
	-	0.0%	\$0	\$0.00
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
-	-	0.0%	-	0.0%	-	-
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
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	185	MW Plant Capacity
2018 \$	\$745	Plant Capacity Cost
2018 \$	\$17.01	Fixed O&M & Capitalized O&M
2018 \$	\$14.90	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 December 31, 2019					
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2017	2.0%	2026	2.3%	2035	2.1%
2018	2.4%	2027	2.3%	2036	2.1%
2019	1.8%	2028	2.3%	2037	2.1%
2020	1.9%	2029	2.3%	2038	2.1%
2021	2.0%	2030	2.2%	2039	2.1%
2022	2.5%	2031	2.2%	2040	2.1%
2023	2.5%	2032	2.2%	2041	2.1%
2024	2.4%	2033	2.1%	2042	2.1%
2025	2.3%	2034	2.1%	2043	2.1%

Table 1
Avoided Cost Prices
Utah 2019.Q4_Solar - 80.0 MW and 32.2% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	32.2% Capacity Factor \$/MWh
2020	\$0.00	\$12.63	\$12.63
2021	\$0.00	\$10.04	\$10.04
2022	\$0.00	\$13.00	\$13.00
2023	\$0.00	\$11.19	\$11.19
2024	\$27.94	(\$1.46)	\$8.62
2025	\$28.58	(\$1.13)	\$9.26
2026	\$29.24	(\$0.80)	\$9.89
2027	\$29.91	(\$0.18)	\$10.80
2028	\$30.60	\$3.30	\$14.56
2029	\$31.30	\$4.97	\$16.58
2030	\$31.99	\$4.26	\$16.18
2031	\$32.69	\$6.93	\$19.18
2032	\$33.41	\$8.91	\$21.46
2033	\$34.11	\$9.21	\$22.13
2034	\$34.83	\$9.51	\$22.76
2035	\$35.56	\$10.37	\$23.97
2036	\$36.31	\$12.00	\$25.92
2037	\$37.07	\$11.79	\$26.11
2038	\$37.85	\$15.57	\$30.26
2039	\$38.64	\$15.90	\$30.90

15 Year Starting 2020

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$19.97	\$6.32	\$13.40
\$/MWh			

15 Year Starting 2022

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$26.15		
\$/MWh		\$5.52	\$14.79

15 Year Starting 2023

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$29.65		
\$/MWh		\$4.91	\$15.43

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2019.Q4_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													
2020	12.63	15.35	10.40	11.66	10.31	10.42	10.65	18.30	19.58	9.20	11.70	12.67	7.77
2021	10.04	13.47	9.08	8.29	6.80	9.42	8.88	12.80	11.22	11.04	9.60	9.82	10.15
2022	13.00	13.59	13.27	10.73	9.03	10.82	12.15	17.42	17.63	13.50	10.80	12.31	13.83
2023	11.19	13.93	11.30	7.64	5.14	8.86	11.09	14.53	15.07	13.04	8.60	11.86	14.91
2024	(1.46)	(0.33)	(5.89)	(6.05)	(7.52)	(2.09)	(0.05)	4.96	2.69	(0.86)	(5.06)	(1.66)	0.44
2025	(1.13)	1.93	(5.09)	(4.51)	(7.05)	(2.72)	0.01	3.52	2.71	(0.14)	(4.42)	(1.13)	2.13
2026	(0.80)	1.54	(4.98)	(4.84)	(7.26)	(2.00)	0.47	3.90	4.29	(0.22)	(4.75)	(0.35)	3.20
2027	(0.18)	2.77	(4.58)	(4.34)	(6.52)	(1.27)	0.05	5.14	4.93	(0.71)	(2.78)	0.53	3.46
2028	3.30	6.79	1.96	1.02	(2.55)	1.27	2.89	8.51	7.78	2.47	0.28	3.81	6.03
2029	4.97	6.74	2.67	1.60	(1.33)	3.29	5.09	8.66	9.25	4.49	2.32	9.78	8.83
2030	4.26	6.34	4.80	1.19	0.02	2.38	3.87	7.58	7.25	4.32	2.11	5.20	8.23
2031	6.93	9.17	5.64	6.76	4.66	4.07	6.41	7.94	9.83	6.82	6.67	7.25	11.14
2032	8.91	9.65	6.81	7.46	5.17	3.61	8.68	14.85	13.74	8.69	8.53	7.59	12.58
2033	9.21	11.95	7.30	8.59	5.01	3.32	8.33	15.41	14.18	8.40	8.04	8.95	13.31
2034	9.51	11.29	8.30	8.48	5.47	3.70	8.66	15.09	14.53	8.77	8.35	10.69	13.35
2035	10.37	14.00	10.00	8.29	5.58	5.08	8.93	16.74	15.37	8.95	9.49	11.80	12.85
2036	12.00	15.47	9.47	10.12	5.87	5.72	9.99	17.72	17.86	12.25	10.62	16.73	16.73
2037	11.79	16.02	12.70	8.62	7.15	6.17	10.47	17.19	16.70	10.26	9.99	15.55	15.83

Table 3
2019 IRP Jim Bridger Solar with Storage
30% Capacity Factor

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

2019 IRP Jim Bridger Solar with Storage - 30% Capacity Factor

2016									
2017									
2018			\$24.57			\$0.00			\$24.57
2019			\$25.01			\$0.00			\$25.01
2020			\$25.49			\$0.00			\$25.49
2021			\$26.00			\$0.00			\$26.00
2022			\$26.65			\$0.00			\$26.65
2023			\$27.32			\$0.00			\$27.32
2024	\$1,228	\$62.44	\$27.98	\$0.00	\$34.29	\$0.00	\$34.29	\$90.42	\$90.42
2025		\$63.88	\$28.62	\$0.00	\$35.08	\$0.00	\$35.08	\$92.50	\$92.50
2026		\$65.35	\$29.28	\$0.00	\$35.89	\$0.00	\$35.89	\$94.63	\$94.63
2027		\$66.85	\$29.95	\$0.00	\$36.71	\$0.00	\$36.71	\$96.80	\$96.80
2028		\$68.39	\$30.64	\$0.00	\$37.56	\$0.00	\$37.56	\$99.03	\$99.03
2029		\$69.96	\$31.34	\$0.00	\$38.42	\$0.00	\$38.42	\$101.30	\$101.30
2030		\$71.50	\$32.03	\$0.00	\$39.26	\$0.00	\$39.26	\$103.53	\$103.53
2031		\$73.07	\$32.73	\$0.00	\$40.13	\$0.00	\$40.13	\$105.80	\$105.80
2032		\$74.68	\$33.45	\$0.00	\$41.01	\$0.00	\$41.01	\$108.13	\$108.13
2033		\$76.25	\$34.15	\$0.00	\$41.87	\$0.00	\$41.87	\$110.40	\$110.40
2034		\$77.85	\$34.87	\$0.00	\$42.75	\$0.00	\$42.75	\$112.72	\$112.72
2035		\$79.48	\$35.60	\$0.00	\$43.64	\$0.00	\$43.64	\$115.08	\$115.08
2036		\$81.15	\$36.35	\$0.00	\$44.56	\$0.00	\$44.56	\$117.50	\$117.50
2037		\$82.85	\$37.11	\$0.00	\$45.50	\$0.00	\$45.50	\$119.96	\$119.96
2038		\$84.59	\$37.89	\$0.00	\$46.45	\$0.00	\$46.45	\$122.48	\$122.48
2039		\$86.37	\$38.69	\$0.00	\$47.43	\$0.00	\$47.43	\$125.06	\$125.06
2040		\$88.18	\$39.50	\$0.00	\$48.42	\$0.00	\$48.42	\$127.68	\$127.68
2041		\$90.03	\$40.33	\$0.00	\$49.44	\$0.00	\$49.44	\$130.36	\$130.36
2042		\$91.92	\$41.18	\$0.00	\$50.48	\$0.00	\$50.48	\$133.10	\$133.10
2043		\$93.85	\$42.04	\$0.00	\$51.54	\$0.00	\$51.54	\$135.89	\$135.89

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
	(e)	= ((b) + (c)) / (8.76 x 30.1%)
	(g)	= (e) + (f)
	(i)	Plant Costs - 2019 IRP Update - Table 6.1 & 6.2

2019 IRP Jim Bridger Solar with Storage - 30% Capacity Factor
Wind Cost and Input Assumptions

2018 \$	\$1,609	Plant capacity cost	
2018 \$	\$24.57	Fixed O&M, plus on-going capital cost	
2018 \$	\$0.00	Wheeling (\$ MWh)	
		Variable O&M	
		Tax Credit \$/MWh	First Year real levelized
2024\$	-	Network Upgrade (\$/kw-yr)	Bridger - to - Bridger West, Recovered Transmission 2024
	5.085%	Payment Factor	includes 30% ITC
	30.1%	Capacity Factor	

COD
354.0 MW

Company Official Inflation Forecast Dated December 31, 2019

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

Table 4
Burnertip Natural Gas Price Forecast
Utah 2019.Q4_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	\$2.24	\$2.25	\$2.35	\$1.84
2021	\$2.19	\$2.20	\$2.29	\$1.98
2022	\$2.19	\$2.20	\$2.27	\$2.01
2023	\$2.42	\$2.43	\$2.48	\$2.24
2024	\$2.66	\$2.67	\$2.70	\$2.48
2025	\$2.91	\$2.92	\$2.99	\$2.72
2026	\$3.08	\$3.09	\$3.02	\$2.89
2027	\$3.29	\$3.30	\$3.26	\$3.10
2028	\$3.60	\$3.61	\$3.60	\$3.41
2029	\$3.92	\$3.93	\$3.92	\$3.72
2030	\$4.18	\$4.19	\$4.19	\$3.98
2031	\$4.47	\$4.48	\$4.46	\$4.26
2032	\$4.73	\$4.74	\$4.69	\$4.52
2033	\$4.79	\$4.80	\$4.74	\$4.58
2034	\$5.03	\$5.04	\$5.04	\$4.82
2035	\$5.23	\$5.24	\$5.19	\$5.02
2036	\$5.29	\$5.30	\$5.19	\$5.07
2037	\$5.64	\$5.65	\$5.55	\$5.43
2038	\$5.91	\$5.92	\$5.80	\$5.69
2039	\$6.01	\$6.02	\$5.89	\$5.79
2040	\$6.28	\$6.29	\$6.14	\$6.06

Official Forward Price Curve Forecast dated Dec 31, 2019

Table 5

**Utah 2019.Q4_Solar - 80.0 MW and 32.2% CF
January 2020 through December 2034
Nominal Avoided Costs Calculated Monthly**

15 Year Starting 2023	\$ 10,024,732	\$ 21,458,570	\$ 31,483,303	\$ 2,040,415	\$15.43
Nominal NPV at 6.92% Discount Rate					
15 Year Starting 2022	\$ 11,312,465	\$ 19,021,340	\$ 30,333,805	\$ 2,050,563	\$14.79
15 Year Starting 2020	\$ 13,091,478	\$ 14,672,648	\$ 27,764,126	\$ 2,071,444	\$13.40

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	31.8% CF	Dollars	MWH	31.8% CF
Jan-20	191,176	-	191,176	12,454	15.35
Feb-20	132,609	-	132,609	12,755	10.40
Mar-20	197,423	-	197,423	16,934	11.66
Apr-20	206,923	-	206,923	20,073	10.31
May-20	286,367	-	286,367	27,470	10.42
Jun-20	267,980	-	267,980	25,167	10.65
Jul-20	469,665	-	469,665	25,671	18.30
Aug-20	451,204	-	451,204	23,041	19.58
Sep-20	202,159	-	202,159	21,985	9.20
Oct-20	214,841	-	214,841	18,370	11.70
Nov-20	164,435	-	164,435	12,983	12.67
Dec-20	72,056	-	72,056	9,279	7.77
Jan-21	166,891	-	166,891	12,392	13.47
Feb-21	109,775	-	109,775	12,086	9.08
Mar-21	139,765	-	139,765	16,850	8.29
Apr-21	135,767	-	135,767	19,973	6.80
May-21	257,578	-	257,578	27,333	9.42
Jun-21	222,404	-	222,404	25,042	8.88
Jul-21	326,882	-	326,882	25,543	12.80
Aug-21	257,239	-	257,239	22,926	11.22
Sep-21	241,609	-	241,609	21,875	11.04
Oct-21	175,400	-	175,400	18,278	9.60
Nov-21	126,795	-	126,795	12,918	9.82
Dec-21	93,692	-	93,692	9,233	10.15
Jan-22	167,524	-	167,524	12,330	13.59
Feb-22	159,556	-	159,556	12,026	13.27
Mar-22	179,829	-	179,829	16,765	10.73
Apr-22	179,451	-	179,451	19,873	9.03
May-22	294,372	-	294,372	27,196	10.82
Jun-22	302,781	-	302,781	24,916	12.15
Jul-22	442,711	-	442,711	25,415	17.42
Aug-22	402,152	-	402,152	22,811	17.63
Sep-22	293,866	-	293,866	21,766	13.50
Oct-22	196,401	-	196,401	18,186	10.80
Nov-22	158,195	-	158,195	12,853	12.31
Dec-22	127,045	-	127,045	9,186	13.83
Jan-23	170,900	-	170,900	12,268	13.93
Feb-23	135,233	-	135,233	11,966	11.30
Mar-23	127,404	-	127,404	16,681	7.64
Apr-23	101,616	-	101,616	19,774	5.14
May-23	239,727	-	239,727	27,060	8.86
Jun-23	275,034	-	275,034	24,792	11.09
Jul-23	367,537	-	367,537	25,288	14.53
Aug-23	342,116	-	342,116	22,697	15.07
Sep-23	282,482	-	282,482	21,657	13.04
Oct-23	155,607	-	155,607	18,095	8.60
Nov-23	151,733	-	151,733	12,789	11.86
Dec-23	136,297	-	136,297	9,140	14.91
Jan-24	(4,056)	186,264	182,208	12,207	14.93
Feb-24	(73,632)	186,264	112,632	12,502	9.01
Mar-24	(100,353)	186,264	85,911	16,598	5.18
Apr-24	(147,971)	186,264	38,293	19,675	1.95
May-24	(56,259)	186,264	130,005	26,925	4.83

Jun-24	(1,258)	186,264	185,006	24,668	7.50
Jul-24	124,743	186,264	311,007	25,162	12.36
Aug-24	60,840	186,264	247,104	22,584	10.94
Sep-24	(18,623)	186,264	167,641	21,549	7.78
Oct-24	(91,085)	186,264	95,179	18,005	5.29
Nov-24	(21,125)	186,264	165,139	12,725	12.98
Dec-24	4,039	186,264	190,303	9,095	20.92
Jan-25	23,448	190,545	213,993	12,146	17.62
Feb-25	(60,273)	190,545	130,271	11,847	11.00
Mar-25	(74,404)	190,545	116,141	16,515	7.03
Apr-25	(138,003)	190,545	52,542	19,577	2.68
May-25	(72,753)	190,545	117,792	26,790	4.40
Jun-25	351	190,545	190,896	24,544	7.78
Jul-25	88,225	190,545	278,770	25,036	11.13
Aug-25	60,973	190,545	251,518	22,471	11.19
Sep-25	(2,925)	190,545	187,620	21,441	8.75
Oct-25	(79,269)	190,545	111,275	17,915	6.21
Nov-25	(14,343)	190,545	176,201	12,661	13.92
Dec-25	19,311	190,545	209,856	9,049	23.19
Jan-26	18,626	194,932	213,559	12,085	17.67
Feb-26	(58,705)	194,932	136,227	11,787	11.56
Mar-26	(79,533)	194,932	115,400	16,432	7.02
Apr-26	(141,423)	194,932	53,510	19,479	2.75
May-26	(53,350)	194,932	141,582	26,656	5.31
Jun-26	11,419	194,932	206,351	24,422	8.45
Jul-26	97,039	194,932	291,971	24,911	11.72
Aug-26	95,898	194,932	290,830	22,359	13.01
Sep-26	(4,713)	194,932	190,220	21,334	8.92
Oct-26	(84,712)	194,932	110,220	17,825	6.18
Nov-26	(4,362)	194,932	190,570	12,598	15.13
Dec-26	28,831	194,932	223,764	9,004	24.85
Jan-27	33,312	199,403	232,715	12,025	19.35
Feb-27	(53,711)	199,403	145,692	11,728	12.42
Mar-27	(70,962)	199,403	128,441	16,350	7.86
Apr-27	(126,462)	199,403	72,940	19,381	3.76
May-27	(33,633)	199,403	165,770	26,523	6.25
Jun-27	1,312	199,403	200,714	24,300	8.26
Jul-27	127,324	199,403	326,727	24,786	13.18
Aug-27	109,727	199,403	309,130	22,247	13.90
Sep-27	(15,007)	199,403	184,396	21,227	8.69
Oct-27	(49,288)	199,403	150,114	17,736	8.46
Nov-27	6,620	199,403	206,023	12,535	16.44
Dec-27	31,015	199,403	230,418	8,959	25.72
Jan-28	81,270	203,996	285,267	11,965	23.84
Feb-28	24,056	203,996	228,052	12,253	18.61
Mar-28	16,527	203,996	220,523	16,269	13.56
Apr-28	(49,196)	203,996	154,800	19,284	8.03
May-28	33,588	203,996	237,584	26,390	9.00
Jun-28	69,916	203,996	273,912	24,178	11.33
Jul-28	209,758	203,996	413,754	24,662	16.78
Aug-28	172,276	203,996	376,272	22,136	17.00
Sep-28	52,236	203,996	256,232	21,121	12.13
Oct-28	4,859	203,996	208,855	17,648	11.83
Nov-28	47,480	203,996	251,476	12,472	20.16
Dec-28	53,786	203,996	257,782	8,914	28.92
Jan-29	80,235	208,672	288,907	11,905	24.27
Feb-29	31,036	208,672	239,709	11,611	20.64
Mar-29	25,905	208,672	234,577	16,187	14.49
Apr-29	(25,592)	208,672	183,080	19,188	9.54
May-29	86,422	208,672	295,095	26,258	11.24
Jun-29	122,359	208,672	331,032	24,057	13.76
Jul-29	212,527	208,672	421,199	24,539	17.16
Aug-29	203,732	208,672	412,404	22,025	18.72
Sep-29	94,261	208,672	302,933	21,015	14.41
Oct-29	40,669	208,672	249,342	17,559	14.20

Nov-29	121,329	208,672	330,001	12,410	26.59
Dec-29	78,299	208,672	286,972	8,870	32.35
Jan-30	75,145	213,266	288,411	11,845	24.35
Feb-30	55,417	213,266	268,683	11,553	23.26
Mar-30	19,156	213,266	232,422	16,106	14.43
Apr-30	390	213,266	213,656	19,092	11.19
May-30	62,186	213,266	275,452	26,127	10.54
Jun-30	92,711	213,266	305,977	23,937	12.78
Jul-30	185,057	213,266	398,323	24,416	16.31
Aug-30	158,882	213,266	372,148	21,915	16.98
Sep-30	90,233	213,266	303,499	20,910	14.51
Oct-30	36,865	213,266	250,131	17,471	14.32
Nov-30	64,267	213,266	277,533	12,348	22.48
Dec-30	72,630	213,266	285,896	8,825	32.39
Jan-31	108,110	217,942	326,052	11,786	27.66
Feb-31	64,832	217,942	282,774	11,496	24.60
Mar-31	108,341	217,942	326,283	16,026	20.36
Apr-31	88,496	217,942	306,438	18,997	16.13
May-31	105,739	217,942	323,681	25,996	12.45
Jun-31	152,591	217,942	370,533	23,817	15.56
Jul-31	192,932	217,942	410,874	24,294	16.91
Aug-31	214,377	217,942	432,319	21,805	19.83
Sep-31	141,887	217,942	359,829	20,806	17.29
Oct-31	115,870	217,942	333,812	17,384	19.20
Nov-31	89,018	217,942	306,960	12,286	24.98
Dec-31	97,807	217,942	315,749	8,781	35.96
Jan-32	113,164	222,742	335,906	11,727	28.64
Feb-32	81,743	222,742	304,485	12,010	25.35
Mar-32	118,996	222,742	341,737	15,946	21.43
Apr-32	97,702	222,742	320,443	18,902	16.95
May-32	93,455	222,742	316,196	25,866	12.22
Jun-32	205,730	222,742	428,472	23,698	18.08
Jul-32	359,014	222,742	581,756	24,173	24.07
Aug-32	298,191	222,742	520,932	21,696	24.01
Sep-32	179,971	222,742	402,713	20,702	19.45
Oct-32	147,604	222,742	370,345	17,297	21.41
Nov-32	92,846	222,742	315,588	12,225	25.82
Dec-32	109,938	222,742	332,680	8,737	38.08
Jan-33	139,412	227,418	366,830	11,668	31.44
Feb-33	83,048	227,418	310,466	11,381	27.28
Mar-33	136,254	227,418	363,672	15,866	22.92
Apr-33	94,148	227,418	321,566	18,807	17.10
May-33	85,504	227,418	312,922	25,737	12.16
Jun-33	196,401	227,418	423,819	23,580	17.97
Jul-33	370,531	227,418	597,949	24,052	24.86
Aug-33	306,023	227,418	533,440	21,588	24.71
Sep-33	173,000	227,418	400,418	20,598	19.44
Oct-33	138,366	227,418	365,784	17,211	21.25
Nov-33	108,885	227,418	336,303	12,164	27.65
Dec-33	115,707	227,418	343,125	8,694	39.47
Jan-34	131,057	232,197	363,254	11,610	31.29
Feb-34	93,987	232,197	326,184	11,324	28.80
Mar-34	133,806	232,197	366,002	15,787	23.18
Apr-34	102,267	232,197	334,464	18,713	17.87
May-34	94,692	232,197	326,888	25,608	12.76
Jun-34	203,234	232,197	435,431	23,462	18.56
Jul-34	361,184	232,197	593,381	23,931	24.79
Aug-34	312,086	232,197	544,283	21,480	25.34
Sep-34	179,709	232,197	411,906	20,495	20.10
Oct-34	142,984	232,197	375,181	17,125	21.91
Nov-34	129,405	232,197	361,602	12,103	29.88
Dec-34	115,504	232,197	347,700	8,650	40.20
Jan-35	161,764	237,058	398,822	11,552	34.52
Feb-35	112,637	237,058	349,696	11,267	31.04
Mar-35	130,157	237,058	367,216	15,708	23.38

Apr-35	103,979	237,058	341,038	18,619	18.32
May-35	129,507	237,058	366,565	25,480	14.39
Jun-35	208,565	237,058	445,623	23,344	19.09
Jul-35	398,610	237,058	635,668	23,812	26.70
Aug-35	328,535	237,058	565,594	21,372	26.46
Sep-35	182,521	237,058	419,579	20,393	20.57
Oct-35	161,620	237,058	398,678	17,039	23.40
Nov-35	142,045	237,058	379,103	12,042	31.48
Dec-35	110,637	237,058	347,695	8,607	40.40
Jan-36	177,842	242,043	419,886	11,494	36.53
Feb-36	111,527	242,043	353,571	11,772	30.04
Mar-36	158,136	242,043	400,179	15,629	25.60
Apr-36	108,712	242,043	350,756	18,526	18.93
May-36	145,019	242,043	387,063	25,353	15.27
Jun-36	232,161	242,043	474,204	23,228	20.42
Jul-36	419,899	242,043	661,942	23,693	27.94
Aug-36	379,721	242,043	621,764	21,266	29.24
Sep-36	248,618	242,043	490,661	20,291	24.18
Oct-36	180,108	242,043	422,151	16,954	24.90
Nov-36	200,486	242,043	442,529	11,982	36.93
Dec-36	143,306	242,043	385,349	8,564	45.00
Jan-37	183,196	247,111	430,307	11,437	37.62
Feb-37	141,671	247,111	388,781	11,155	34.85
Mar-37	134,109	247,111	381,220	15,551	24.51
Apr-37	131,835	247,111	378,946	18,434	20.56
May-37	155,668	247,111	402,779	25,226	15.97
Jun-37	241,912	247,111	489,023	23,112	21.16
Jul-37	405,243	247,111	652,354	23,574	27.67
Aug-37	353,339	247,111	600,450	21,159	28.38
Sep-37	207,229	247,111	454,340	20,189	22.50
Oct-37	168,563	247,111	415,674	16,869	24.64
Nov-37	185,337	247,111	432,448	11,922	36.27
Dec-37	134,880	247,111	381,991	8,521	44.83
Jan-38	265,398	252,302	517,700	11,380	45.49
Feb-38	202,986	252,302	455,288	11,099	41.02
Mar-38	219,946	252,302	472,248	15,473	30.52
Apr-38	150,932	252,302	403,234	18,342	21.98
May-38	197,288	252,302	449,590	25,100	17.91
Jun-38	291,521	252,302	543,823	22,996	23.65
Jul-38	520,232	252,302	772,533	23,456	32.93
Aug-38	448,358	252,302	700,660	21,053	33.28
Sep-38	223,231	252,302	475,533	20,088	23.67
Oct-38	220,803	252,302	473,104	16,785	28.19
Nov-38	236,340	252,302	488,641	11,863	41.19
Dec-38	233,010	252,302	485,312	8,478	57.24
Jan-39	270,971	257,617	528,588	11,380	46.45
Feb-39	207,248	257,617	464,865	11,099	41.88
Mar-39	224,565	257,617	482,181	15,473	31.16
Apr-39	154,102	257,617	411,718	18,342	22.45
May-39	201,431	257,617	459,048	25,100	18.29
Jun-39	297,643	257,617	555,259	22,996	24.15
Jul-39	531,156	257,617	788,773	23,456	33.63
Aug-39	457,774	257,617	715,390	21,053	33.98
Sep-39	227,919	257,617	485,535	20,088	24.17
Oct-39	225,439	257,617	483,056	16,785	28.78
Nov-39	241,303	257,617	498,919	11,863	42.06
Dec-39	237,904	257,617	495,520	8,478	58.44

Table 1
Avoided Cost Prices
Utah 2019.Q4_Wind - 80.0 MW and 29.4% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	29.4% Capacity Factor \$/MWh
2020	\$0.00	\$11.60	\$11.60
2021	\$0.00	\$10.34	\$10.34
2022	\$0.00	\$14.59	\$14.59
2023	\$104.76	(\$16.81)	\$23.79
2024	\$107.24	(\$17.95)	\$23.58
2025	\$109.70	(\$18.52)	\$24.00
2026	\$112.22	(\$18.35)	\$25.15
2027	\$114.79	(\$18.88)	\$25.62
2028	\$117.43	(\$18.05)	\$27.43
2029	\$120.13	(\$18.33)	\$28.23
2030	\$122.79	(\$19.51)	\$28.08
2031	\$125.52	(\$18.89)	\$29.76
2032	\$128.31	(\$19.04)	\$30.66
2033	\$131.07	\$3.29	\$54.09
2034	\$133.89	\$3.25	\$55.14
2035	\$136.76	\$3.45	\$56.46
2036	\$139.70	\$3.80	\$57.90
2037	\$142.70	\$4.06	\$59.37
2038	\$145.77	\$4.93	\$61.43
2039	\$148.82	\$5.04	\$62.72

15 Year Starting 2020

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$82.89	(\$7.81)	\$24.39
\$/MWh			

15 Year Starting 2022

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$106.15	(\$11.11)	\$30.12
\$/MWh			

15 Year Starting 2023

Levelized Prices (Nominal) @ 6.92% Discount Rate (1) (3)			
\$/kW	\$119.18	(\$13.30)	\$32.98
\$/MWh			

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2019.Q4_Wind - 80.0 MW and 29.4% CF

Year	Annual	Winter Season					Summer Season				Winter Season		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Energy Only													
2020	11.60	8.74	9.11	11.76	10.44	10.64	11.47	19.21	20.80	12.09	11.53	11.48	9.67
2021	10.34	7.75	10.12	9.50	7.93	9.59	9.45	16.84	14.12	12.44	10.11	10.49	11.71
2022	14.59	15.63	15.23	13.40	10.79	12.00	13.11	20.85	21.08	16.97	12.87	13.89	16.19
2023	(16.81)	(16.47)	(16.71)	(17.22)	(17.70)	(17.06)	(16.88)	(16.12)	(16.16)	(16.39)	(17.14)	(16.62)	(16.27)
2024	(17.95)	(17.66)	(18.00)	(18.66)	(19.13)	(17.91)	(17.78)	(17.11)	(17.30)	(17.50)	(18.05)	(17.68)	(17.43)
2025	(18.52)	(18.08)	(18.26)	(18.87)	(19.84)	(18.74)	(18.61)	(17.49)	(17.40)	(18.57)	(18.61)	(18.52)	(18.05)
2026	(18.35)	(18.03)	(18.32)	(18.70)	(19.65)	(18.63)	(18.27)	(17.14)	(17.19)	(18.48)	(18.55)	(18.20)	(17.73)
2027	(18.88)	(18.53)	(18.86)	(19.23)	(20.31)	(19.06)	(19.01)	(17.38)	(17.35)	(19.54)	(19.00)	(18.59)	(18.25)
2028	(18.05)	(17.93)	(18.27)	(18.18)	(19.12)	(18.75)	(18.13)	(16.67)	(16.96)	(18.08)	(17.97)	(18.05)	(17.06)
2029	(18.33)	(18.37)	(18.33)	(18.75)	(19.18)	(19.10)	(18.38)	(16.75)	(16.84)	(18.18)	(18.35)	(18.01)	(17.92)
2030	(19.51)	(19.49)	(19.53)	(19.89)	(20.45)	(19.90)	(19.82)	(17.41)	(18.52)	(19.58)	(19.36)	(19.79)	(18.87)
2031	(18.89)	(18.70)	(18.79)	(19.23)	(19.87)	(19.73)	(19.18)	(17.21)	(17.65)	(19.10)	(18.69)	(18.53)	(18.52)
2032	(19.04)	(18.48)	(19.16)	(19.38)	(19.98)	(20.02)	(19.53)	(17.65)	(17.15)	(19.07)	(19.22)	(18.59)	(18.49)
2033	3.29	3.52	3.92	2.82	2.01	1.84	2.85	4.93	4.46	4.13	3.40	3.49	3.99
2034	3.25	3.90	3.27	2.93	2.24	2.14	3.00	4.58	4.07	2.82	3.28	3.72	4.20
2035	3.45	4.04	3.79	3.07	2.33	2.35	3.18	5.02	5.29	2.73	3.56	3.24	4.41
2036	3.80	4.96	3.55	2.99	2.22	2.32	3.36	5.30	4.41	4.00	4.54	4.55	5.04
2037	4.06	5.17	4.24	3.42	2.44	2.61	3.29	6.39	5.36	3.91	4.08	4.63	5.23

**Table 3
2019 IRP Utah Wind Resource
30% Capacity Factor**

Year	Estimated Capital Cost \$/kW (a)	Fixed Capital Cost at Real Levelized Rate \$/kW-yr (b)	Fixed O&M \$/kW-yr (c)	Network Upgrade \$/kW-yr (d)	Fixed Costs \$/MWh (e)	PTC & Variable O&M \$/MWh (f)	Total Resource Cost \$/MWh (g)	Total Resource Costs \$/kW-yr (h)	Total Fixed Cost \$/kW-yr (i)
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2019 IRP Utah Wind Resource - 30% Capacity Factor

2016									
2017									
2018						\$0.00			\$0.00
2019						\$0.00			\$0.00
2020						\$0.00			\$0.00
2021						\$0.00			\$0.00
2022						\$0.00			\$0.00
2023	\$1,266	\$87.31	\$32.33	1.47	\$46.87	(\$21.48)	\$25.39	\$65.60	\$121.11
2024		\$89.41	\$33.07	\$1.50	\$47.98	(\$21.48)	\$26.50	\$68.47	\$123.98
2025		\$91.47	\$33.83	\$1.53	\$49.08	(\$22.28)	\$26.80	\$69.26	\$126.83
2026		\$93.57	\$34.59	\$1.57	\$50.20	(\$22.28)	\$27.92	\$72.16	\$129.73
2027		\$95.72	\$35.38	\$1.61	\$51.35	(\$23.07)	\$28.28	\$73.09	\$132.71
2028		\$97.92	\$36.19	\$1.65	\$52.53	(\$23.07)	\$29.46	\$76.14	\$135.76
2029		\$100.17	\$37.01	\$1.69	\$53.74	(\$23.87)	\$29.87	\$77.19	\$138.87
2030		\$102.37	\$37.86	\$1.73	\$54.93	(\$24.67)	\$30.27	\$78.21	\$141.96
2031		\$104.62	\$38.72	\$1.77	\$56.15	(\$24.67)	\$31.49	\$81.37	\$145.11
2032		\$106.92	\$39.61	\$1.81	\$57.40	(\$25.46)	\$31.94	\$82.55	\$148.34
2033		\$109.17	\$40.51	\$1.85	\$58.64	\$0.00	\$58.64	\$151.53	\$151.53
2034		\$111.46	\$41.43	\$1.89	\$59.90	\$0.00	\$59.90	\$154.78	\$154.78
2035		\$113.80	\$42.38	\$1.93	\$61.18	\$0.00	\$61.18	\$158.11	\$158.11
2036		\$116.19	\$43.35	\$1.97	\$62.50	\$0.00	\$62.50	\$161.51	\$161.51
2037		\$118.63	\$44.33	\$2.01	\$63.84	\$0.00	\$63.84	\$164.97	\$164.97
2038		\$121.12	\$45.35	\$2.05	\$65.21	\$0.00	\$65.21	\$168.52	\$168.52
2039		\$123.66	\$46.30	\$2.09	\$66.58	\$0.00	\$66.58	\$172.05	\$172.05
2040		\$126.26	\$47.27	\$2.13	\$67.97	\$0.00	\$67.97	\$175.66	\$175.66
2041		\$128.91	\$48.26	\$2.17	\$69.40	\$0.00	\$69.40	\$179.34	\$179.34
2042		\$131.62	\$49.27	\$2.22	\$70.86	\$0.00	\$70.86	\$183.11	\$183.11
2043		\$134.38	\$50.30	\$2.27	\$72.34	\$0.00	\$72.34	\$186.95	\$186.95

Sources, Inputs and Assumptions

Source:	(c)(f)	Plant Costs - 2019 IRP Update - Table 6.1 & 6.2
	(a)	Plant capacity cost
	(b)	= (a) x 0.0689863805027125
	(e)	= ((b) + (c)) / (8.76 x 29.5%)
	(g)	= (e) + (f)
	(i)	Plant Costs - 2019 IRP Update - Table 6.1 & 6.2

2019 IRP Utah Wind Resource - 30% Capacity Factor	
Wind	Cost and Input Assumptions

2018 \$	\$1,301	Plant capacity cost
2018 \$	\$28.80	Fixed O&M, plus on-going capital cost
		Wheeling (\$ MWh)
2018 \$	\$0.00	Variable O&M
		Tax Credit \$/MWh
		First Year real levelized
2023\$	1.47	Network Upgrade (\$/kw-yr) Utah S, Transmission Integration 2023
	6.899%	Payment Factor
	29.5%	Capacity Factor

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

Table 4
Burnertip Natural Gas Price Forecast
Utah 2019.Q4_Wind - 80.0 MW and 29.4% 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	\$2.24	\$2.25	\$2.35	\$1.84
2021	\$2.19	\$2.20	\$2.29	\$1.98
2022	\$2.19	\$2.20	\$2.27	\$2.01
2023	\$2.42	\$2.43	\$2.48	\$2.24
2024	\$2.66	\$2.67	\$2.70	\$2.48
2025	\$2.91	\$2.92	\$2.99	\$2.72
2026	\$3.08	\$3.09	\$3.02	\$2.89
2027	\$3.29	\$3.30	\$3.26	\$3.10
2028	\$3.60	\$3.61	\$3.60	\$3.41
2029	\$3.92	\$3.93	\$3.92	\$3.72
2030	\$4.18	\$4.19	\$4.19	\$3.98
2031	\$4.47	\$4.48	\$4.46	\$4.26
2032	\$4.73	\$4.74	\$4.69	\$4.52
2033	\$4.79	\$4.80	\$4.74	\$4.58
2034	\$5.03	\$5.04	\$5.04	\$4.82
2035	\$5.23	\$5.24	\$5.19	\$5.02
2036	\$5.29	\$5.30	\$5.19	\$5.07
2037	\$5.64	\$5.65	\$5.55	\$5.43
2038	\$5.91	\$5.92	\$5.80	\$5.69
2039	\$6.01	\$6.02	\$5.89	\$5.79
2040	\$6.28	\$6.29	\$6.14	\$6.06

Official Forward Price Curve Forecast dated Dec 31, 2019

Table 5

**Utah 2019.Q4_Wind - 80.0 MW and 29.4% CF
January 2020 through December 2034
Nominal Avoided Costs Calculated Monthly**

15 Year Starting 2023	\$ (26,013,160)	\$ 90,497,447	\$ 64,484,286	\$ 1,955,289	\$32.98
Nominal NPV at 6.92% Discount Rate					
15 Year Starting 2022	\$ (21,714,176)	\$ 80,604,107	\$ 58,889,931	\$ 1,955,262	\$30.12
15 Year Starting 2020	\$ (15,262,607)	\$ 62,944,210	\$ 47,681,602	\$ 1,955,318	\$24.39

Month	Energy	Capacity \$	Total	Total	AC Price
	Avoided \$	29.4% CF	Dollars	MWH	29.4% CF
Jan-20	184,380	-	184,380	21,100	8.74
Feb-20	183,524	-	183,524	20,150	9.11
Mar-20	298,037	-	298,037	25,351	11.76
Apr-20	213,715	-	213,715	20,475	10.44
May-20	217,920	-	217,920	20,490	10.64
Jun-20	189,722	-	189,722	16,539	11.47
Jul-20	231,068	-	231,068	12,029	19.21
Aug-20	199,888	-	199,888	9,610	20.80
Sep-20	151,210	-	151,210	12,510	12.09
Oct-20	202,174	-	202,174	17,532	11.53
Nov-20	176,250	-	176,250	15,350	11.48
Dec-20	149,175	-	149,175	15,430	9.67
Jan-21	163,528	-	163,528	21,100	7.75
Feb-21	202,336	-	202,336	19,987	10.12
Mar-21	240,862	-	240,862	25,351	9.50
Apr-21	162,426	-	162,426	20,475	7.93
May-21	196,438	-	196,438	20,490	9.59
Jun-21	156,319	-	156,319	16,539	9.45
Jul-21	202,570	-	202,570	12,029	16.84
Aug-21	135,658	-	135,658	9,610	14.12
Sep-21	155,626	-	155,626	12,510	12.44
Oct-21	177,211	-	177,211	17,532	10.11
Nov-21	161,088	-	161,088	15,350	10.49
Dec-21	180,698	-	180,698	15,430	11.71
Jan-22	329,893	-	329,893	21,100	15.63
Feb-22	304,391	-	304,391	19,987	15.23
Mar-22	339,709	-	339,709	25,351	13.40
Apr-22	220,979	-	220,979	20,475	10.79
May-22	245,930	-	245,930	20,490	12.00
Jun-22	216,811	-	216,811	16,539	13.11
Jul-22	250,789	-	250,789	12,029	20.85
Aug-22	202,621	-	202,621	9,610	21.08
Sep-22	212,325	-	212,325	12,510	16.97
Oct-22	225,619	-	225,619	17,532	12.87
Nov-22	213,230	-	213,230	15,350	13.89
Dec-22	249,765	-	249,765	15,430	16.19
Jan-23	(347,468)	698,413	350,946	21,100	16.63
Feb-23	(334,034)	698,413	364,379	19,987	18.23
Mar-23	(436,427)	698,413	261,986	25,351	10.33
Apr-23	(362,337)	698,413	336,077	20,475	16.41
May-23	(349,489)	698,413	348,924	20,490	17.03
Jun-23	(279,225)	698,413	419,189	16,539	25.35
Jul-23	(193,946)	698,413	504,467	12,029	41.94
Aug-23	(155,344)	698,413	543,070	9,610	56.51
Sep-23	(205,056)	698,413	493,357	12,510	39.44
Oct-23	(300,416)	698,413	397,997	17,532	22.70
Nov-23	(255,087)	698,413	443,327	15,350	28.88
Dec-23	(250,982)	698,413	447,431	15,430	29.00
Jan-24	(372,553)	714,966	342,413	21,100	16.23
Feb-24	(362,776)	714,966	352,189	20,150	17.48
Mar-24	(473,073)	714,966	241,892	25,351	9.54
Apr-24	(391,660)	714,966	323,306	20,475	15.79
May-24	(366,892)	714,966	348,073	20,490	16.99

Jun-24	(294,027)	714,966	420,939	16,539	25.45
Jul-24	(205,781)	714,966	509,184	12,029	42.33
Aug-24	(166,233)	714,966	548,733	9,610	57.10
Sep-24	(218,968)	714,966	495,997	12,510	39.65
Oct-24	(316,416)	714,966	398,549	17,532	22.73
Nov-24	(271,331)	714,966	443,635	15,350	28.90
Dec-24	(268,963)	714,966	446,003	15,430	28.90
Jan-25	(381,416)	731,364	349,947	21,100	16.59
Feb-25	(365,055)	731,364	366,309	19,987	18.33
Mar-25	(478,395)	731,364	252,968	25,351	9.98
Apr-25	(406,284)	731,364	325,080	20,475	15.88
May-25	(384,047)	731,364	347,317	20,490	16.95
Jun-25	(307,741)	731,364	423,623	16,539	25.61
Jul-25	(210,386)	731,364	520,978	12,029	43.31
Aug-25	(167,260)	731,364	564,104	9,610	58.70
Sep-25	(232,300)	731,364	499,064	12,510	39.89
Oct-25	(326,282)	731,364	405,081	17,532	23.10
Nov-25	(284,348)	731,364	447,016	15,350	29.12
Dec-25	(278,457)	731,364	452,907	15,430	29.35
Jan-26	(380,352)	748,134	367,782	21,100	17.43
Feb-26	(366,135)	748,134	381,999	19,987	19.11
Mar-26	(474,101)	748,134	274,033	25,351	10.81
Apr-26	(402,329)	748,134	345,805	20,475	16.89
May-26	(381,703)	748,134	366,431	20,490	17.88
Jun-26	(302,217)	748,134	445,917	16,539	26.96
Jul-26	(206,142)	748,134	541,991	12,029	45.06
Aug-26	(165,196)	748,134	582,938	9,610	60.66
Sep-26	(231,143)	748,134	516,990	12,510	41.33
Oct-26	(325,156)	748,134	422,978	17,532	24.13
Nov-26	(279,334)	748,134	468,799	15,350	30.54
Dec-26	(273,555)	748,134	474,578	15,430	30.76
Jan-27	(390,932)	765,276	374,344	21,100	17.74
Feb-27	(376,860)	765,276	388,416	19,987	19.43
Mar-27	(487,440)	765,276	277,836	25,351	10.96
Apr-27	(415,867)	765,276	349,409	20,475	17.07
May-27	(390,519)	765,276	374,757	20,490	18.29
Jun-27	(314,410)	765,276	450,866	16,539	27.26
Jul-27	(209,037)	765,276	556,239	12,029	46.24
Aug-27	(166,744)	765,276	598,531	9,610	62.28
Sep-27	(244,401)	765,276	520,875	12,510	41.64
Oct-27	(333,061)	765,276	432,215	17,532	24.65
Nov-27	(285,400)	765,276	479,876	15,350	31.26
Dec-27	(281,596)	765,276	483,680	15,430	31.35
Jan-28	(378,250)	782,873	404,623	21,100	19.18
Feb-28	(368,066)	782,873	414,807	20,150	20.59
Mar-28	(460,817)	782,873	322,057	25,351	12.70
Apr-28	(391,561)	782,873	391,312	20,475	19.11
May-28	(384,124)	782,873	398,749	20,490	19.46
Jun-28	(299,827)	782,873	483,046	16,539	29.21
Jul-28	(200,498)	782,873	582,375	12,029	48.42
Aug-28	(162,997)	782,873	619,877	9,610	64.50
Sep-28	(226,162)	782,873	556,712	12,510	44.50
Oct-28	(315,089)	782,873	467,784	17,532	26.68
Nov-28	(277,139)	782,873	505,734	15,350	32.95
Dec-28	(263,271)	782,873	519,603	15,430	33.67
Jan-29	(387,668)	800,843	413,175	21,100	19.58
Feb-29	(366,391)	800,843	434,452	19,987	21.74
Mar-29	(475,353)	800,843	325,490	25,351	12.84
Apr-29	(392,709)	800,843	408,134	20,475	19.93
May-29	(391,268)	800,843	409,575	20,490	19.99
Jun-29	(304,003)	800,843	496,840	16,539	30.04
Jul-29	(201,482)	800,843	599,361	12,029	49.83
Aug-29	(161,825)	800,843	639,018	9,610	66.49
Sep-29	(227,441)	800,843	573,402	12,510	45.84
Oct-29	(321,784)	800,843	479,059	17,532	27.32

Nov-29	(276,410)	800,843	524,433	15,350	34.16
Dec-29	(276,501)	800,843	524,342	15,430	33.98
Jan-30	(411,141)	818,608	407,467	21,100	19.31
Feb-30	(390,259)	818,608	428,349	19,987	21.43
Mar-30	(504,140)	818,608	314,468	25,351	12.40
Apr-30	(418,648)	818,608	399,959	20,475	19.53
May-30	(407,758)	818,608	410,850	20,490	20.05
Jun-30	(327,816)	818,608	490,791	16,539	29.68
Jul-30	(209,467)	818,608	609,141	12,029	50.64
Aug-30	(177,992)	818,608	640,615	9,610	66.66
Sep-30	(244,971)	818,608	573,637	12,510	45.85
Oct-30	(339,452)	818,608	479,155	17,532	27.33
Nov-30	(303,852)	818,608	514,756	15,350	33.53
Dec-30	(291,129)	818,608	527,478	15,430	34.18
Jan-31	(394,553)	836,828	442,275	21,100	20.96
Feb-31	(375,645)	836,828	461,183	19,987	23.07
Mar-31	(487,603)	836,828	349,225	25,351	13.78
Apr-31	(406,773)	836,828	430,055	20,475	21.00
May-31	(404,366)	836,828	432,462	20,490	21.11
Jun-31	(317,135)	836,828	519,692	16,539	31.42
Jul-31	(207,018)	836,828	629,810	12,029	52.36
Aug-31	(169,575)	836,828	667,253	9,610	69.43
Sep-31	(238,890)	836,828	597,938	12,510	47.80
Oct-31	(327,678)	836,828	509,150	17,532	29.04
Nov-31	(284,471)	836,828	552,356	15,350	35.98
Dec-31	(285,719)	836,828	551,109	15,430	35.72
Jan-32	(389,831)	855,420	465,589	21,100	22.07
Feb-32	(385,985)	855,420	469,435	20,150	23.30
Mar-32	(491,269)	855,420	364,151	25,351	14.36
Apr-32	(409,059)	855,420	446,361	20,475	21.80
May-32	(410,192)	855,420	445,228	20,490	21.73
Jun-32	(323,037)	855,420	532,383	16,539	32.19
Jul-32	(212,298)	855,420	643,122	12,029	53.47
Aug-32	(164,833)	855,420	690,587	9,610	71.86
Sep-32	(238,511)	855,420	616,909	12,510	49.31
Oct-32	(336,975)	855,420	518,444	17,532	29.57
Nov-32	(285,285)	855,420	570,134	15,350	37.14
Dec-32	(285,311)	855,420	570,109	15,430	36.95
Jan-33	74,326	873,807	948,133	21,100	44.93
Feb-33	78,404	873,807	952,212	19,987	47.64
Mar-33	71,511	873,807	945,318	25,351	37.29
Apr-33	41,159	873,807	914,967	20,475	44.69
May-33	37,670	873,807	911,477	20,490	44.48
Jun-33	47,210	873,807	921,017	16,539	55.69
Jul-33	59,257	873,807	933,064	12,029	77.57
Aug-33	42,829	873,807	916,636	9,610	95.38
Sep-33	51,669	873,807	925,476	12,510	73.98
Oct-33	59,665	873,807	933,472	17,532	53.24
Nov-33	53,592	873,807	927,399	15,350	60.42
Dec-33	61,598	873,807	935,405	15,430	60.62
Jan-34	82,263	892,592	974,855	21,100	46.20
Feb-34	65,429	892,592	958,021	19,987	47.93
Mar-34	74,201	892,592	966,794	25,351	38.14
Apr-34	45,937	892,592	938,530	20,475	45.84
May-34	43,951	892,592	936,543	20,490	45.71
Jun-34	49,624	892,592	942,216	16,539	56.97
Jul-34	55,064	892,592	947,656	12,029	78.78
Aug-34	39,111	892,592	931,703	9,610	96.95
Sep-34	35,221	892,592	927,813	12,510	74.17
Oct-34	57,486	892,592	950,078	17,532	54.19
Nov-34	57,139	892,592	949,731	15,350	61.87
Dec-34	64,756	892,592	957,348	15,430	62.04
Jan-35	85,249	911,749	996,999	21,100	47.25
Feb-35	75,848	911,749	987,597	19,987	49.41
Mar-35	77,870	911,749	989,619	25,351	39.04

Apr-35	47,704	911,749	959,454	20,475	46.86
May-35	48,127	911,749	959,876	20,490	46.85
Jun-35	52,675	911,749	964,424	16,539	58.31
Jul-35	60,331	911,749	972,080	12,029	80.81
Aug-35	50,850	911,749	962,599	9,610	100.17
Sep-35	34,095	911,749	945,844	12,510	75.61
Oct-35	62,443	911,749	974,192	17,532	55.57
Nov-35	49,692	911,749	961,441	15,350	62.63
Dec-35	68,043	911,749	979,792	15,430	63.50
Jan-36	104,726	931,362	1,036,088	21,100	49.10
Feb-36	71,624	931,362	1,002,986	20,150	49.78
Mar-36	75,861	931,362	1,007,223	25,351	39.73
Apr-36	45,424	931,362	976,785	20,475	47.71
May-36	47,437	931,362	978,799	20,490	47.77
Jun-36	55,507	931,362	986,869	16,539	59.67
Jul-36	63,746	931,362	995,108	12,029	82.73
Aug-36	42,363	931,362	973,725	9,610	101.32
Sep-36	50,032	931,362	981,394	12,510	78.45
Oct-36	79,598	931,362	1,010,959	17,532	57.66
Nov-36	69,918	931,362	1,001,280	15,350	65.23
Dec-36	77,766	931,362	1,009,128	15,430	65.40
Jan-37	109,080	951,346	1,060,426	21,100	50.26
Feb-37	84,736	951,346	1,036,082	19,987	51.84
Mar-37	86,729	951,346	1,038,075	25,351	40.95
Apr-37	50,021	951,346	1,001,367	20,475	48.91
May-37	53,435	951,346	1,004,781	20,490	49.04
Jun-37	54,403	951,346	1,005,749	16,539	60.81
Jul-37	76,870	951,346	1,028,217	12,029	85.48
Aug-37	51,491	951,346	1,002,838	9,610	104.35
Sep-37	48,881	951,346	1,000,228	12,510	79.95
Oct-37	71,552	951,346	1,022,898	17,532	58.34
Nov-37	71,017	951,346	1,022,364	15,350	66.60
Dec-37	80,746	951,346	1,032,092	15,430	66.89
Jan-38	124,353	971,786	1,096,139	21,100	51.95
Feb-38	119,089	971,786	1,090,875	19,987	54.58
Mar-38	117,082	971,786	1,088,868	25,351	42.95
Apr-38	70,606	971,786	1,042,392	20,475	50.91
May-38	71,870	971,786	1,043,656	20,490	50.93
Jun-38	64,992	971,786	1,036,778	16,539	62.69
Jul-38	87,631	971,786	1,059,417	12,029	88.08
Aug-38	66,177	971,786	1,037,963	9,610	108.01
Sep-38	39,732	971,786	1,011,519	12,510	80.86
Oct-38	82,393	971,786	1,054,179	17,532	60.13
Nov-38	80,136	971,786	1,051,922	15,350	68.53
Dec-38	94,256	971,786	1,066,042	15,430	69.09
Jan-39	126,964	992,155	1,119,119	21,100	53.04
Feb-39	121,589	992,155	1,113,744	19,987	55.72
Mar-39	119,541	992,155	1,111,696	25,351	43.85
Apr-39	72,089	992,155	1,064,244	20,475	51.98
May-39	73,379	992,155	1,065,534	20,490	52.00
Jun-39	66,357	992,155	1,058,512	16,539	64.00
Jul-39	89,471	992,155	1,081,626	12,029	89.92
Aug-39	67,566	992,155	1,059,721	9,610	110.27
Sep-39	40,567	992,155	1,032,722	12,510	82.55
Oct-39	84,124	992,155	1,076,279	17,532	61.39
Nov-39	81,819	992,155	1,073,974	15,350	69.97
Dec-39	96,235	992,155	1,088,390	15,430	70.54

ROCKY MOUNTAIN POWER

STEP STUDY BETWEEN PRIOR FILING AND CURRENT FILING

2019.Q4 – MARCH 2020

2020 - 2034, Nominal Levelized Payment at 6.920% Discount Rate

	2020 - 2034	2021 - 2035	2022 - 2036
2019.Q3 As Filed	\$24.10	\$26.07	\$28.26
OFPC	-\$2.35	-\$2.32	-\$2.12
Load Fcst	\$1.76	\$1.79	\$1.83
Generic	\$0.77	\$0.93	\$1.02
2019.Q4 As Filed	\$24.28	\$26.47	\$28.99

Appendix C

Utah Quarterly Compliance Filing Step Study between 2019.Q4 and 2019.Q3 Compliance Filing Avoided Cost Impact of Changing Assumptions \$/MWH (1)

Year	OFPC (2)	Load Fcst (2)	Generic	Total Impact
2020	\$ (2.07)	\$ 1.44	\$ (0.45)	\$ (1.08)
2021	\$ (4.16)	\$ 1.54	\$ 0.34	\$ (2.28)
2022	\$ (2.01)	\$ 1.90	\$ 2.42	\$ 2.31
2023	\$ (2.63)	\$ 1.99	\$ 0.70	\$ 0.06
2024	\$ (4.62)	\$ 1.95	\$ 0.40	\$ (2.27)
2025	\$ (4.80)	\$ 2.13	\$ 0.38	\$ (2.29)
2026	\$ (1.05)	\$ 1.74	\$ 0.46	\$ 1.15
2027	\$ (0.09)	\$ 2.07	\$ 0.74	\$ 2.73
2028	\$ (2.75)	\$ 2.12	\$ 0.86	\$ 0.23
2029	\$ (4.17)	\$ 2.09	\$ 0.74	\$ (1.34)
2030	\$ (2.05)	\$ 1.19	\$ 1.04	\$ 0.19
2031	\$ 0.69	\$ 1.07	\$ 1.12	\$ 2.88
2032	\$ (0.05)	\$ 1.49	\$ 1.20	\$ 2.64
2033	\$ (0.97)	\$ 1.65	\$ 1.40	\$ 2.08
2034	\$ (0.93)	\$ 1.72	\$ 1.39	\$ 2.18
2035	\$ (0.98)	\$ 1.81	\$ 1.39	\$ 2.21
2036	\$ (2.05)	\$ 1.98	\$ 1.37	\$ 1.30

Nominal Levelized Payment at 6.920% Discount Rate (3)

2020 - 2034	\$ (2.35)	\$ 1.76	\$ 0.77	\$ 0.18
2021 - 2035	\$ (2.32)	\$ 1.79	\$ 0.93	\$ 0.40
2022 - 2036	\$ (2.12)	\$ 1.83	\$ 1.02	\$ 0.73

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

Appendix C

Utah Quarterly Compliance Filing Step Study between 2019.Q4 and 2019.Q3 Compliance Filing Total Avoided Cost Prices \$/MWH (1) (4)

Year	2019.Q3 As Filed	OFPC (2)	Load Fcst	Generic
2020	\$15.04	\$12.97	\$14.41	\$13.96
2021	\$15.18	\$11.02	\$12.56	\$12.90
2022	\$13.78	\$11.77	\$13.67	\$16.09
2023	\$13.95	\$11.31	\$13.30	\$14.01
2024	\$9.63	\$5.01	\$6.95	\$7.36
2025	\$10.65	\$5.84	\$7.98	\$8.35
2026	\$27.01	\$25.96	\$27.69	\$28.15
2027	\$26.59	\$26.51	\$28.58	\$29.32
2028	\$33.51	\$30.76	\$32.88	\$33.74
2029	\$37.57	\$33.41	\$35.50	\$36.24
2030	\$36.41	\$34.36	\$35.56	\$36.60
2031	\$38.06	\$38.75	\$39.82	\$40.94
2032	\$43.45	\$43.40	\$44.89	\$46.09
2033	\$44.82	\$43.85	\$45.51	\$46.91
2034	\$46.37	\$45.44	\$47.17	\$48.55
2035	\$48.55	\$47.56	\$49.37	\$50.76
2036	\$51.00	\$48.95	\$50.93	\$52.30

Nominal Levelized Payment at 6.920% Discount Rate (3)

2020 - 2034	\$24.10	\$21.75	\$23.51	\$24.28
2021 - 2035	\$26.07	\$23.75	\$25.54	\$26.47
2022 - 2036	\$28.26	\$26.14	\$27.97	\$28.99

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated December 2019
- (3) Discount Rate - 2019 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.Q4 and 2019.Q3 Compliance Filing GRID Calculated Energy Avoided Cost Prices \$/MWH (1)

Year	2019.Q3 As Filed	OFPC (2)	Load Fcst (2)	Generic (2)
2020	\$15.04	\$12.97	\$14.41	\$13.96
2021	\$15.18	\$11.02	\$12.56	\$12.90
2022	\$13.78	\$11.77	\$13.67	\$16.09
2023	\$13.95	\$11.31	\$13.30	\$14.01
2024	\$9.63	\$5.01	\$6.95	\$7.36
2025	\$10.65	\$5.84	\$7.98	\$8.35
2026	\$14.17	\$13.12	\$14.85	\$14.96
2027	\$13.47	\$13.38	\$15.45	\$15.82
2028	\$20.13	\$17.38	\$19.50	\$19.96
2029	\$23.85	\$19.68	\$21.77	\$22.10
2030	\$22.38	\$20.33	\$21.53	\$22.16
2031	\$23.73	\$24.42	\$25.49	\$26.18
2032	\$28.84	\$28.80	\$30.28	\$31.04
2033	\$29.87	\$28.89	\$30.55	\$31.50
2034	\$31.10	\$30.17	\$31.89	\$32.83
2035	\$32.95	\$31.97	\$33.78	\$34.70
2036	\$35.13	\$33.08	\$35.06	\$35.95

Nominal Levelized Payment at 6.92% Discount Rate (3)

2020 - 2034	\$17.46	\$15.11	\$16.87	\$17.44
2021 - 2035	\$18.35	\$16.02	\$17.81	\$18.52
2022 - 2036	\$19.36	\$17.25	\$19.08	\$19.83

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

Appendix C

Utah Quarterly Compliance Filing Step Study between 2019.Q4 and 2019.Q3 Compliance Filing Capacity Avoided Cost Prices

Year	\$/kW-Year		\$/MWH (1)	
	2019.Q3 (3)	2019.Q4 (3)	2019.Q3 (3)	2019.Q4 (3)
2020	-	-	-	-
2021	-	-	-	-
2022	-	-	-	-
2023	-	-	-	-
2024	-	-	-	-
2025	-	-	-	-
2026	\$ 112.48	\$ 115.63	\$ 12.84	\$ 13.20
2027	\$ 115.00	\$ 118.28	\$ 13.13	\$ 13.50
2028	\$ 117.55	\$ 121.02	\$ 13.38	\$ 13.78
2029	\$ 120.23	\$ 123.80	\$ 13.72	\$ 14.13
2030	\$ 122.91	\$ 126.54	\$ 14.03	\$ 14.44
2031	\$ 125.58	\$ 129.32	\$ 14.34	\$ 14.76
2032	\$ 128.28	\$ 132.19	\$ 14.60	\$ 15.05
2033	\$ 131.03	\$ 134.94	\$ 14.96	\$ 15.40
2034	\$ 133.79	\$ 137.79	\$ 15.27	\$ 15.73
2035	\$ 136.58	\$ 140.67	\$ 15.59	\$ 16.06
2036	\$ 139.44	\$ 143.64	\$ 15.87	\$ 16.35

Nominal Levelized Payment at 6.920% Discount Rate (2)

2020 - 2034	\$58.22	\$59.93	\$6.64	\$6.84
2021 - 2035	\$67.72	\$69.71	\$7.73	\$7.95
2022 - 2036	\$77.99	\$80.29	\$8.90	\$9.16

- (1) Capacity costs are allocated based on assumed 100% capacity factor.
- (2) Discount Rate - 2019 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 **2019.Q4 Avoided Cost Input Changes Quarterly Compliance Filing** in Docket No. 19-035-18 was served upon the following by email on April 9, 2020.

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A handwritten signature in black ink, appearing to read 'Mary Penfield', written in a cursive style.

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