

March 26, 2024

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 – 2023.Q4 Avoided Cost Input Changes**
Docket 23-035-28 – 2023.Q4 Avoided Cost Input Changes Quarterly Compliance Filing

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

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

Non-Routine Update

The Company proposes that Energy Exemplar's PLEXOS model,¹ which is used for the Company's Integrated Resource Plan (IRP), replace the GRID model as the production cost simulation model used in calculations of avoided costs. The Company is not proposing any changes to the PDDRR methodology itself, and partial displacements will be unchanged by the change in models. A description of the major differences and impacts associated with this non-routine change is provided following the details on the routine updates. To simplify the interpretation of the results, the impacts of the non-routine change have been isolated from the routine updates.

Routine Updates

Since the 2023.Q3 Filing, the Company has updated the following assumptions:

1. **Official Forward Price Curve** – Update to the December 29, 2023, OFPC.
2. **Qualifying Facility (QF) Queue** – Update of signed contract queue and current potential QFs.

¹ <https://www.energyexemplar.com/plexos>

Avoided Cost Impact of Routine Updates

The following table summarizes the avoided cost results for a thermal QF associated with the routine updates described above, as modeled in GRID.

Proposed Term:	Indicative Thermal QF Avoided Cost, \$/MWH					
	2024 - 2038		2025 - 2039		2026 - 2040	
2023.Q3 As Filed	\$37.38		\$36.95		\$38.58	
Queue		\$0.47		\$0.36		\$0.35
OFPC		-\$0.12		\$0.24		\$0.41
2023.Q4 As Filed	\$37.73		\$37.55		\$39.34	

Nominal Levelized Payment at 6.770% Discount Rate

Additional Routine Update 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 2023 IRP filed with the Commission on May 31, 2023. The 2023 IRP preferred portfolio includes cost-effective solar with storage, wind, wind with storage, stand-alone storage and thermal resources. The thermal QF resource partially displaces summer and winter front office transactions (FOTs) during 2024-2029, and the Utah North non-emitting peaking resource in 2030. The tracking solar QF resource partially displaces summer and winter FOTs during 2024 and the Utah South solar resource in 2025. The wind QF resource partially displaces summer and winter FOTs during 2024 and a Utah North wind resource in 2025.
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 32.2 percent capacity factor single-axis tracking solar QF resource.
 - c. Avoided costs presented in **Appendix B.3** were calculated assuming an 80 MW 29.5 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

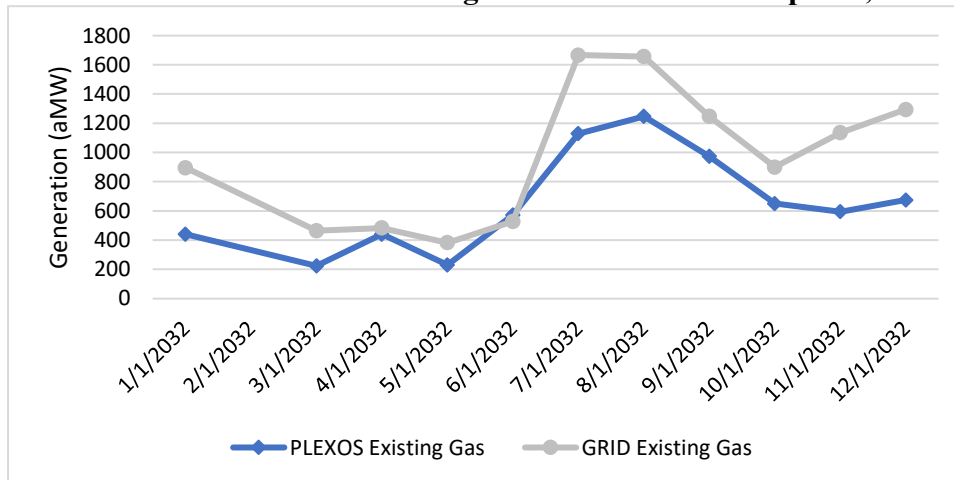
The Company has also provided calculations with additional details on the following:

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

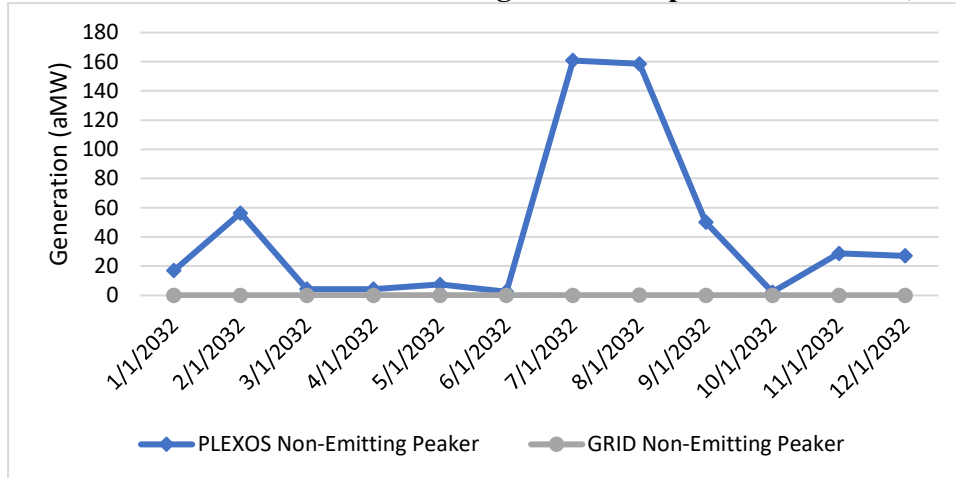
Major Differences Between the PLEXOS and GRID Production Cost Models

1. **Gas Unit Commitment:** PLEXOS uses a mixed integer algorithm to determine when each unit should be online or offline, with multi-hour startup and shutdown sequences when changing states. PLEXOS is also currently configured to evaluate optimal startups and shutdowns over a seven-day horizon based on the marginal system costs over that period. The GRID model has a limited look-ahead of around one day at a time and makes startup and shutdown decisions using market prices to approximate marginal system costs, even though these may not align with system costs due to congestion. The Company has “screened” to improve gas unit commitment for use in the GRID model to make it more cost-effective, but this is time-consuming and not as effective as the PLEXOS model. As a result, sometimes GRID starts too many resources, which suppresses avoided costs, and sometimes GRID does not start enough resources, which results in overstated avoided costs.

PLEXOS versus GRID: Existing Natural Gas Plant Dispatch, 2032

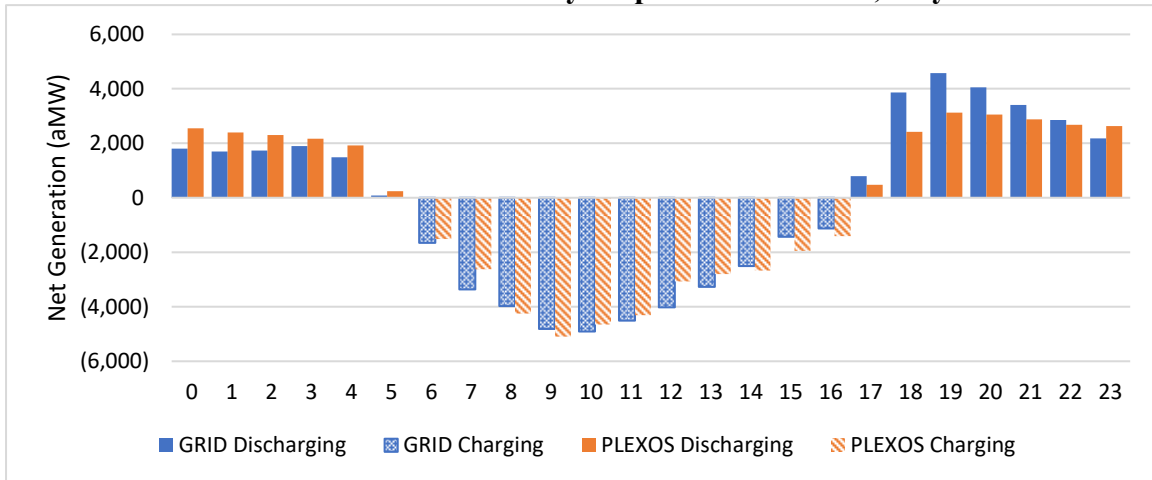


PLEXOS versus GRID: Non-Emitting Peaker Dispatch Differences, 2023



- Energy Storage Dispatch:** PLEXOS Production Cost Model Runs (“PLEXOS Runs”) can reoptimize energy storage charge/discharge values for each study, including between the base run without a QF and the avoided cost study with the incremental QF being evaluated. GRID does not have functionality to reoptimize the battery discharge/charge values, so inputs have been fixed at the charge/discharge levels calculated by PLEXOS for the filed 2023 IRP Preferred Portfolio. By responding to the specific generation profile of a QF, reoptimizing the battery storage resources within the portfolio can increase the value of the QF’s output. This generally results in higher avoided costs, though for solar resources this may be offset by the higher value of displaced proxy solar and storage resources, which are also more valuable when reoptimized. In addition, battery charge/discharge values used in GRID are based on the filed 2023IRP Preferred Portfolio, which included constraints related to the Ozone Transport Rule (“OTR”). Since the OTR is not in effect, neither GRID nor the current PLEXOS model include OTR restrictions on thermal units, however, the associated impact on battery dispatch remains in GRID. In contrast, PLEXOS has reoptimized battery dispatch, and as shown below, economically shifts a portion of the battery discharge from the evening to overnight in the summer, relative to what was identified in the 2023 IRP and used in GRID.

PLEXOS versus GRID: Battery Dispatch Differences, July 2022



3. **Negative Dispatch Price:** PLEXOS allows for negative dispatch prices to reflect curtailment cost (e.g. lost production tax credits). GRID does not allow for negative dispatch prices, so curtailment cost inputs have been scaled to be positive values between \$0/MWh and \$1/MWh. While this allows GRID to identify the correct order to curtail resources with different curtailment costs, it does not provide the model with the full cost of curtailment and out of the model calculations are required to adjust curtailment costs back from scaled values to the correct negative prices. As discussed above, GRID largely ignores system dispatch costs when committing gas units, since it uses market prices. While GRID has some commitment logic functionality to correct overcommitment of gas units, the inability to input negative dispatch prices prevents the model from seeing the full impact of overcommitment of gas units and may result in higher curtailment, which tends to understate avoided costs for QFs, though this impact is offset to the extent that the value of displaced proxy resources are also understated.

4. **Administrative Benefits:** PLEXOS is the model used to develop the IRP and to evaluate potential resource options in Request For Proposals (RFPs), and most inputs and assumptions can be used directly for avoided cost calculations. The GRID model previously was used for Regulatory Net Power Cost filings, but is no longer being used, so additional effort is required to convert inputs to GRID formats for avoided cost calculations.

Avoided Cost Impact of Production Cost Models

The following table presents avoided cost results for PLEXOS and GRID, with inputs for both models based on the 2023.Q3 compliance filing.

Avoided Cost Prices \$/MWh

Year	PLEXOS			GRID			PLEXOS minus GRID		
	Thermal	Solar Tracking	Wind	Thermal	Solar Tracking	Wind	Thermal	Solar Tracking	Wind
2024	\$55.61	\$28.70	\$35.52	\$48.64	\$31.54	\$46.92	\$6.97	(\$2.84)	(\$11.40)
2025	\$37.99	\$11.60	\$19.32	\$31.24	\$12.13	\$19.69	\$6.75	(\$0.53)	(\$0.37)
2026	\$32.61	\$11.32	\$17.69	\$24.55	\$11.45	\$17.72	\$8.07	(\$0.12)	(\$0.03)
2027	\$33.41	\$11.62	\$18.69	\$28.50	\$11.79	\$18.00	\$4.91	(\$0.17)	\$0.68
2028	\$30.09	\$32.01	\$19.49	\$26.66	\$32.42	\$18.32	\$3.43	(\$0.40)	\$1.17
2029	\$27.31	\$29.83	\$21.81	\$23.71	\$32.91	\$20.87	\$3.60	(\$3.08)	\$0.94
2030	\$46.43	\$32.58	\$23.27	\$45.97	\$37.84	\$22.14	\$0.46	(\$5.26)	\$1.13
2031	\$49.67	\$36.04	\$23.44	\$50.97	\$41.74	\$21.11	(\$1.30)	(\$5.71)	\$2.33
2032	\$38.71	\$29.69	\$26.12	\$31.29	\$31.35	\$17.30	\$7.42	(\$1.66)	\$8.83
2033	\$38.65	\$29.56	\$25.71	\$35.90	\$25.55	\$16.16	\$2.75	\$4.01	\$9.55
2034	\$39.48	\$26.76	\$26.14	\$36.61	\$25.20	\$16.11	\$2.87	\$1.56	\$10.03
2035	\$46.00	\$62.92	\$63.50	\$45.26	\$56.75	\$55.80	\$0.74	\$6.17	\$7.70
2036	\$47.66	\$67.46	\$66.01	\$48.64	\$65.02	\$59.65	(\$0.98)	\$2.43	\$6.36
2037	\$49.45	\$69.57	\$68.08	\$51.68	\$66.34	\$63.04	(\$2.22)	\$3.23	\$5.04
2038	\$51.95	\$72.34	\$70.07	\$53.65	\$68.36	\$63.94	(\$1.70)	\$3.99	\$6.13
2039	\$54.60	\$74.13	\$71.36	\$56.87	\$70.34	\$65.73	(\$2.27)	\$3.79	\$5.63
2040	\$63.04	\$77.29	\$73.91	\$62.00	\$72.79	\$66.88	\$1.05	\$4.50	\$7.03

15-Year Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

2024-2038	\$40.86	\$31.87	\$31.10	\$37.18	\$32.14	\$29.00	\$3.68	(\$0.27)	\$2.10
2025-2039	\$39.81	\$33.82	\$32.18	\$36.96	\$33.74	\$28.84	\$2.85	\$0.08	\$3.34
2026-2040	\$40.94	\$38.00	\$35.27	\$38.22	\$37.73	\$30.85	\$2.72	\$0.27	\$4.42

Avoided costs are generally slightly higher using PLEXOS than GRID. The impacts vary through time and by resource type, as the major model differences described above interact with the composition of the preferred portfolio, as well as with the QF generation profile and displaced proxy resources specific to each resource type. For example, the 2023 IRP preferred portfolio has approximately 7,500 MW of battery storage added between 2025 and 2029, so the impact of optimizing battery dispatch grows over this time frame. In that same time frame, the 2023 IRP preferred portfolio adds over 10,000 MW of wind and solar resources that qualify for production tax credits and have negative dispatch costs that are more accurately represented in the PLEXOS model. The presence of significant battery storage and renewable resources in turn impacts the economics of startup and shutdown decisions on a daily basis for thermal resources in PLEXOS. This shows up in the avoided costs for the thermal QF, as the non-emitting peaking resource added in 2030 operates and creates more value in PLEXOS, resulting in lower avoided costs when it is displaced by the thermal QF, offsetting impacts related to battery storage optimization and natural gas plant starts and shutdowns.

Additional Non-Routine Update Details

Additional detail is provided below:

Impact to Avoided Cost Prices (\$/MWh) – Provided as **Appendix D** is the \$/MWh impact of the proposed non-routine update to PLEXOS modeling on avoided costs, compared to the previous compliance filing.

- a. Avoided costs presented in **Appendix D.1** were calculated assuming a 100 MW 100 percent capacity factor thermal QF resource.
- b. Avoided costs presented in **Appendix D.2** were calculated assuming an 80 MW 32.2 percent capacity factor single-axis tracking solar QF resource.
- c. Avoided costs presented in **Appendix D.3** were calculated assuming an 80 MW 29.5 percent capacity factor wind QF resource.

Conclusion

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
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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
Senior Vice President, Regulation/Customer and Community Relations

cc: Service List (Docket No. 03-035-14)
Service List (Docket No. 23-035-28)

CERTIFICATE OF SERVICE

Docket No. 23-035-28/ Docket No. 03-035-14

I hereby certify that on March 26, 2024, a true and correct copy of the foregoing was served by electronic mail to the following:

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Coordinator, Regulatory Operations

ROCKY MOUNTAIN POWER
DESCRIPTION OF AVOIDED COST INPUT CHANGES
2023.Q4 – March 2024

Appendix A

PacifiCorp Avoided Cost Partial Displacement Differential Revenue Requirement (“PDDRR”) Model Updates through March 2024 Docket 23-035-28 / Docket 03-035-14

Assumptions that have changed since the 2023.Q3 compliance filing are in **bold and underline**.

GRID Scenario Study Period

- January 1, 2024 through December 31, 2038 - 15-year study.
- Avoided cost prices starting in January 2024.

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

- PacifiCorp’s **December 29, 2023 OFPC (“2312 OFPC”)**
- Hourly Market Price Scalars consistent with 2023 Integrated Resource Plan (“IRP”)

Fuel Prices (Coal)

- Average and incremental coal costs consistent with **PLEXOS database used for** 2023 Integrated Resource Plan (“IRP”).

IRP Resources

- 2023 IRP filed with the Public Service Commission of Utah (“UPSC”) on May 31, 2023.²
- New solar, wind, battery storage, and thermal resources; as well as front office transactions (“FOT”), consistent with 2023 IRP.
- Existing plant retirements consistent with 2023 IRP.
- Transmission investment and capacity changes consistent with 2023 IRP (Table 1.1 and 1.2).

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.

²2023 IRP, Volume I. page 12-13: Table 1.1-1.2

Hydro Resources

- Hydro forecast **consistent with PLEXOS Database used for 2023 IRP.**

Discount Rate

- 6.77 percent discount rate - 2023 IRP
- Discount rate is consistent with the Commission's order in Docket 11-035-T06.

Inflation Rates

- 2.27% percent inflation rate - 2023 IRP

Levelized Prices (Nominal) at 6.77 percent Discount Rate

- 15 years 2024 through 2038.
- Levelized prices are for illustrative purposes only.

Load Forecast (Retail)

- 20-year load forecast dated June 21, 2023.

Long-Term Contracts

- Long-term contracts consistent with the **PLEXOS database used for the 2023 IRP .**
- Qualifying Facility (QF) power purchase agreements (PPA) are **consistent with PLEXOS database used for the 2023 IRP.**
- Incorporates signed PPAs.

Market Capacity

- Capacity set at 48-month average of all short-term firm ("STF") sales ended March 2023.
- 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 December 31, 2021.

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 2023 IRP.
- The Company's 2023 IRP included a study of wind and solar integration requirements, and was used to develop a portfolio-specific reserve requirement. The resulting regulation

reserve requirements from the 2023 IRP were incorporated in the **PLEXOS** model. As a result, the cost of reserve requirements is incorporated in the net power cost result.

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 2023.

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 32.2 percent capacity factor and is located in the Utah North transmission bubble.
- The avoided cost wind resource is 80 MW with a 29.5 percent capacity factor and is located in the Utah North transmission bubble.

Thermal Resources

- Thermal resource operating characteristics updated to be consistent with PLEXOS database used for 2023 IRP.
- Forced outage and planned outages are consistent with PLEXOS database used for 2023 IRP.

Wind and Solar Resources

- Wind and solar generation shapes are consistent with PLEXOS database used for the 2023 IRP.^{2,3}
- Non-PTC and PTC wind and solar resources can be curtailed on an economic basis within the **PLEXOS** model.⁴
- 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 2021 IRP (2021 IRP, Vol II, Appendix K: Capacity Contribution).

² 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.

³ In the 2021 IRP, wind and solar profiles were aligned with load based on the historical relationship, see 2021 IRP, Vol II, Appendix K: Capacity Contribution.

⁴ Wind dispatch was identified as a non-routine change in the 2018.Q2 compliance filing.

Transmission

- Transmission investment and capacity changes are consistent with PLEXOS database used for 2023 IRP.

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 2023 IRP.

Contracts Queue						
No.	Signed Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
	PV_QF.SOR._.CSP.Round_Lake_Solar	0.15	0.98		15.3%	2023 12 01
	PV_QF.SOR._.CSP.Sunset_Ridge_Solar	0.29	2.25		12.9%	2024 08 01
	PV_QF.SOR._.CSP.Antelope_Creek_Solar	0.29	2.25		12.9%	2024 05 01
	PV_QF.SOR._.CSP.Cherry_Creek_Solar	0.05	0.4		13.9%	2023 06 01
	PV_QF.SOR._.CSP.Hay_Creek_Solar	0.07	0.6		12.3%	2023 08 01
	PV_QF.SOR._.CSP.7_Mile_Solar	0.12	0.98		12.2%	2023 10 01
	PV_QF.SOR._.CSP.Pine_Grove_Solar	0.19	1.4		13.6%	2024 02 01
	PV_QF.SOR._.CSP.Whisky_Creek_Solar	0.02	0.2		12.1%	2023 08 01
	PV_QF.WMV._.CSP.Orchard_Knob_Solar	0.23	2.3		10.2%	2024 03 01
	PV_QF.SOR._.CSP.Wocus_Marsh_Solar	0.12	0.9		13.6%	2023 08 01
	PV_QF.WOR._.CSP.Buckaroo_Solar_1	0.27	2.4		11.3%	2024 01 01
	PV_QF.WOR._.CSP.Buckaroo_Solar_2	0.34	3.0		11.4%	2024 01 01
	PV_QF.WOR._.CSP.Pilot_Rock_Solar_1	0.23	2.0		11.6%	2025 10 01
	PV_QF.WOR._.CSP.Pilot_Rock_Solar_2	0.23	3.0		7.7%	2025 10 01
	PV_QF.SOR._.CSP.Linkville_Solar	0.36	2.8		12.9%	2023 10 01
	PV_QF.WOR._.CSP.Tutuilla_Solar	0.18	1.6		11.5%	2025 10 01
	Glen Canyon Solar	(13.34)	-95.0		14.0%	2024 01 01
	Schumann Wind QF	2.63	8.00		32.9%	2024 01 01

Total Signed MW		-7.57	-60.20			
No.	Potential QF Contracts	Partial Displacement	Name plate	CF	Capacity Contribution	Start Date
1	QF - 526 - WY - Gas	0.00	13.30	85.0%	0.0%	2024 01 01
2	QF - 433 - UT - Gas	0.00	31.80	58.2%	0.0%	2024 01 01
3	QF - 434 - UT - Gas	0.00	6.20	85.0%	0.0%	2024 01 01
4	QF - 675 - WY - Gas	0.00	98.00	75.0%	0.0%	2024 01 01
5	QF - 671 - WY - Solar	29.81	74.90	32.8%	39.8%	2027 01 01
6	QF - 658 - UT - Solar	12.05	80.00	29.9%	15.1%	2026 01 01
7	QF - 667 - OR - Solar	7.23	50.00	30.9%	14.5%	2026 07 01
8	QF - 673 - OR - Solar	11.61	80.00	30.3%	14.5%	2026 07 01
Total Potential MW		60.70	434.20			
Total Partial Displacement		53.13	374.00			
9	Utah 2023.Q4	100.00	100.00	100.0%	100.0%	2024 01 01
Partial Displacement after QF		153.13	474.00			

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 **2024-2029** and Utah North non-emitting peaking resource in **2030**.
- Tracking Solar: **94** MW nameplate of solar resources are displaced by the QF queue. After degradation and accounting for capacity contribution, the incremental solar QF displaces **79** MW of solar resource located in **Utah South in 2025** from the **2023 IRP** preferred portfolio. The Company retains 100% of the RECs starting in **2025**.
- Wind: **9** MW nameplate of wind resources are displaced by the QF queue. The incremental wind QF displaces the **49** MW of **2025** wind resource located in **western Wyoming (Utah North transmission area)** from the **2023 IRP** preferred portfolio. The Company retains 100% of the RECs starting in **2025**.

IRP Partial Displacements (Previous Filing)

Contracts Queue					
No.	Signed Contracts	Partial Displacement	Name plate	Capacity Contribution	Start Date
Total Signed MW		0.00	0.00		
No.	Potential QF Contracts	Partial Displacement	Name plate	Capacity Contribution	Start Date
1	QF - 670 - WA - Gas	4.68	9.50	49.3%	2026 01 01
2	QF - 656 - UT - Solar	12.88	60.00	21.5%	2024 01 01
3	QF - 526 - WY - Gas	0.00	13.30	0.0%	2024 01 01
4	QF - 433 - UT - Gas	0.00	31.80	0.0%	2024 01 01
5	QF - 434 - UT - Gas	0.00	6.20	0.0%	2024 01 01
6	QF - 435 - WY - Gas	0.00	98.00	0.0%	2024 01 01
7	QF - 671 - WY - Solar	29.81	74.90	39.8%	2027 01 01
8	QF - 658 - UT - Solar	12.05	80.00	15.1%	2026 01 01
9	QF - 667 - OR - Solar	7.23	50.00	14.5%	2026 07 01
10	QF - 673 - OR - Solar	11.61	80.00	14.5%	2026 07 01
Total Potential MW		78.26	503.70		
Total Partial Displacement		78.26	503.70		
11	Utah 2023.Q3	100.00	100.00	100.0%	2024 01 01
Partial Displacement after QF		178.26	603.70		

ROCKY MOUNTAIN POWER

UPDATE IMPACT – UPDATED AVOIDED COST STUDY

2023.Q4 – MARCH 2024

Table 1
Avoided Cost Prices
Utah 2023.Q4 - 80.0 MW and 32.2% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	32.2% Capacity Factor \$/MWh
2024	\$0.00	\$31.19	\$31.19
2025	\$132.53	(\$34.96)	\$12.19
2026	\$135.54	(\$36.92)	\$11.55
2027	\$138.62	(\$37.82)	\$12.00
2028	\$141.77	(\$18.71)	\$32.35
2029	\$144.99	(\$19.85)	\$32.78
2030	\$148.27	(\$16.33)	\$37.77
2031	\$151.64	(\$14.19)	\$41.41
2032	\$155.09	(\$25.38)	\$31.61
2033	\$158.60	(\$33.13)	\$25.61
2034	\$162.21	(\$35.11)	\$25.27
2035	\$165.89	(\$4.92)	\$57.13
2036	\$169.66	\$1.55	\$65.16
2037	\$173.51	\$0.82	\$66.38
2038	\$177.45	\$1.11	\$68.49
2039	\$181.48	\$1.16	\$70.43
2040	\$185.59	\$1.89	\$72.89
2041	\$189.80	\$1.99	\$75.16
2042	\$194.11	\$26.88	\$102.08

15 Year Starting 2024

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$138.95		
\$/MWh		(\$16.89)	\$32.31

15 Year Starting 2025

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$156.74		
\$/MWh		(\$21.57)	\$33.92

15 Year Starting 2026

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$161.08		
\$/MWh		(\$19.16)	\$37.86

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2023.Q4 - 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													
2024	31.19	45.23	27.63	20.33	13.56	16.07	22.46	68.41	43.91	27.17	21.34	26.82	43.95
2025	(34.96)	(35.39)	(35.50)	(35.51)	(35.66)	(35.58)	(35.47)	(30.91)	(34.91)	(35.58)	(35.62)	(35.52)	(35.72)
2026	(36.92)	(36.81)	(36.86)	(37.00)	(37.07)	(37.03)	(37.04)	(36.64)	(36.98)	(36.96)	(36.94)	(36.79)	(36.63)
2027	(37.82)	(38.08)	(37.87)	(38.24)	(38.38)	(38.35)	(38.38)	(36.64)	(37.78)	(37.85)	(37.88)	(37.40)	(36.16)
2028	(18.71)	(23.60)	(29.30)	(33.92)	(35.82)	(25.12)	(12.84)	6.50	(3.03)	(12.26)	(25.14)	(28.53)	(26.76)
2029	(19.85)	(25.06)	(27.49)	(34.36)	(35.70)	(29.67)	(14.74)	5.81	(1.91)	(13.38)	(27.01)	(29.54)	(29.49)
2030	(16.33)	(20.60)	(27.94)	(31.68)	(36.21)	(28.18)	(13.59)	13.18	0.73	(3.47)	(21.24)	(26.76)	(26.33)
2031	(14.19)	(18.79)	(29.94)	(33.15)	(34.42)	(19.72)	(10.84)	14.68	5.59	(1.96)	(19.41)	(27.64)	(29.86)
2032	(25.38)	(25.79)	(27.70)	(35.10)	(36.91)	(35.49)	(27.99)	(6.83)	(8.60)	(20.25)	(29.86)	(29.47)	(32.14)
2033	(33.13)	(32.63)	(36.84)	(39.49)	(40.78)	(39.99)	(34.25)	(20.59)	(25.14)	(27.55)	(35.37)	(34.93)	(37.94)
2034	(35.11)	(37.06)	(37.97)	(41.92)	(42.90)	(41.15)	(36.16)	(22.41)	(28.16)	(28.90)	(37.17)	(35.97)	(40.20)
2035	(4.92)	3.95	5.25	(3.07)	(13.17)	(22.91)	(8.92)	(0.40)	1.23	(4.87)	(2.29)	3.37	3.34
2036	1.55	5.06	2.59	(0.25)	(1.76)	(2.30)	0.45	5.53	5.44	1.50	0.75	2.10	0.59
2037	0.82	1.20	(0.00)	0.08	(0.22)	(1.72)	0.20	3.85	1.90	2.51	0.58	0.46	0.04
2038	1.11	1.34	0.88	0.05	0.18	(0.65)	0.14	4.11	2.64	2.47	0.23	0.21	0.53
2039	1.16	1.48	0.47	0.32	0.15	(0.47)	0.23	3.83	2.28	2.62	0.36	1.39	0.49
2040	1.89	0.76	0.65	0.18	0.13	0.38	0.56	7.39	3.13	3.71	0.96	0.92	0.82
2041	1.99	3.16	0.72	0.04	0.11	(0.02)	0.41	7.64	2.97	3.79	0.54	1.60	1.15

Table 4
Burnertip Natural Gas Price Forecast
Utah 2023.Q4 - 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
2021	\$4.18	\$4.15	\$4.03	\$6.38
2022	\$8.21	\$8.15	\$8.48	\$6.13
2023	\$4.52	\$4.49	\$4.59	\$2.27
2024	\$3.06	\$3.12	\$3.30	\$2.47
2025	\$4.06	\$4.04	\$4.19	\$3.33
2026	\$4.13	\$4.11	\$4.36	\$3.64
2027	\$4.52	\$4.49	\$4.75	\$4.09
2028	\$4.97	\$4.92	\$5.11	\$4.53
2029	\$5.33	\$5.28	\$5.49	\$4.89
2030	\$5.42	\$5.36	\$5.58	\$4.97
2031	\$5.54	\$5.48	\$5.68	\$5.09
2032	\$5.68	\$5.63	\$5.80	\$5.24
2033	\$5.93	\$5.86	\$6.07	\$5.48
2034	\$6.15	\$6.08	\$6.25	\$5.70
2035	\$6.29	\$6.22	\$6.27	\$5.84
2036	\$6.45	\$6.38	\$6.38	\$6.00
2037	\$6.82	\$6.74	\$6.70	\$6.36
2038	\$7.06	\$6.98	\$6.93	\$6.60
2039	\$7.46	\$7.36	\$7.28	\$6.99
2040	\$7.89	\$7.79	\$7.84	\$7.42
2041	\$8.30	\$8.19	\$8.22	\$7.82
2042	\$8.71	\$8.59	\$8.64	\$8.23

Official Forward Price Curve Forecast dated Dec 29, 2023

Table 5

Utah 2023.Q4 - 80.0 MW and 32.2% CF
January 2024 through December 2038
Nominal Avoided Costs Calculated Monthly

15 Year Starting 2026	\$ (39,707,778)	\$ 118,171,714	\$ 78,463,936	2,072,279	\$37.86
15 Year Starting 2025	\$ (44,922,396)	\$ 115,548,314	\$ 70,625,918	2,082,382	\$33.92

Nominal NPV at 6.77% Discount Rate

15 Year Starting 2024	\$ (35,347,673)	\$ 102,975,489	\$ 67,627,816	2,093,380	\$32.31
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Month	Energy		Capacity		Total		AC Price	
	Avoided \$	31.8% CF	Dollars	MWH	Dollars	MWH	31.8% CF	
Jan-24	563,248	-	563,248	12,454	563,248	12,454	45.23	
Feb-24	352,741	-	352,741	12,766	352,741	12,766	27.63	
Mar-24	346,255	-	346,255	17,034	346,255	17,034	20.33	
Apr-24	272,123	-	272,123	20,073	272,123	20,073	13.56	
May-24	441,526	-	441,526	27,470	441,526	27,470	16.07	
Jun-24	565,341	-	565,341	25,167	565,341	25,167	22.46	
Jul-24	1,756,227	-	1,756,227	25,671	1,756,227	25,671	68.41	
Aug-24	1,011,688	-	1,011,688	23,041	1,011,688	23,041	43.91	
Sep-24	597,385	-	597,385	21,985	597,385	21,985	27.17	
Oct-24	392,003	-	392,003	18,370	392,003	18,370	21.34	
Nov-24	348,177	-	348,177	12,983	348,177	12,983	26.82	
Dec-24	421,364	-	421,364	9,588	421,364	9,588	43.95	
Jan-38	15,518	1,182,979	1,198,496	11,610	1,198,496	11,610	103.23	
Feb-38	9,969	1,182,979	1,192,948	11,324	1,192,948	11,324	105.35	
Mar-38	759	1,182,979	1,183,737	15,879	1,183,737	15,879	74.55	
Apr-38	3,404	1,182,979	1,186,383	18,713	1,186,383	18,713	63.40	
May-38	(16,537)	1,182,979	1,166,442	25,608	1,166,442	25,608	45.55	
Jun-38	3,350	1,182,979	1,186,329	23,462	1,186,329	23,462	50.56	
Jul-38	98,314	1,182,979	1,281,293	23,931	1,281,293	23,931	53.54	
Aug-38	56,687	1,182,979	1,239,666	21,480	1,239,666	21,480	57.71	
Sep-38	50,725	1,182,979	1,233,704	20,495	1,233,704	20,495	60.19	
Oct-38	3,959	1,182,979	1,186,937	17,125	1,186,937	17,125	69.31	
Nov-38	2,491	1,182,979	1,185,470	12,103	1,185,470	12,103	97.95	
Dec-38	4,775	1,182,979	1,187,754	8,938	1,187,754	8,938	132.88	

Study Name:

Start	45,292	Utah 2023.Q4
End	Jan-24 Dec-38	Resource Capacity
		80.0 MW
		32.25% CF
Discount Rate - 2023 IRP	6.77%	0.547%

15 Year Starting 2027	15 Year Starting 2026	15 Year Starting 2025	15 Year Starting 2024
49	37	25	13
228	216	204	192

Offset	Year	Date Test	Offset
1	2024	Jan-24	418 Net Power Cost
2	2024	Feb-24	537 QF - Sch38 - UT - Solar T
3	2024	Mar-24	
4	2024	Apr-24	2024 7,068,077
5	2024	May-24	2025 (7,861,260)
6	2024	Jun-24	2026 (8,259,416)
7	2024	Jul-24	2027 (8,418,887)
8	2024	Aug-24	2028 (4,155,307)
9	2024	Sep-24	2029 (4,374,354)
10	2024	Oct-24	2030 (3,580,328)
11	2024	Nov-24	2031 (3,096,270)
12	2024	Dec-24	2032 (5,524,734)
53	2038	Jan-38	
54	2038	Feb-38	
55	2038	Mar-38	
56	2038	Apr-38	
57	2038	May-38	
58	2038	Jun-38	
59	2038	Jul-38	
60	2038	Aug-38	
61	2038	Sep-38	
62	2038	Oct-38	
63	2038	Nov-38	
64	2038	Dec-38	

Total	energy	capacity
226,602	31.19	31.19
224,854	12.19	(34.96)
223,730	11.55	(36.92)
222,611	12.00	(37.82)
222,104	32.35	(18.71)
220,390	32.78	(19.85)
219,289	37.77	(16.33)
218,192	41.41	(14.19)
217,695	31.61	(25.38)

Table 1
Avoided Cost Prices
Utah 2023.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
2024	\$0.00	\$46.57	\$46.57
2025	\$0.00	\$30.26	\$30.26
2026	\$0.00	\$24.00	\$24.00
2027	\$0.00	\$29.73	\$29.73
2028	\$0.00	\$28.40	\$28.40
2029	\$0.00	\$24.57	\$24.57
2030	\$153.59	\$29.52	\$47.05
2031	\$157.08	\$34.20	\$52.13
2032	\$160.64	\$13.91	\$32.20
2033	\$164.28	\$17.93	\$36.68
2034	\$168.02	\$18.27	\$37.45
2035	\$171.83	\$26.35	\$45.96
2036	\$175.74	\$29.31	\$49.32
2037	\$179.72	\$31.69	\$52.21
2038	\$183.80	\$33.08	\$54.06
2039	\$187.97	\$35.60	\$57.06
2040	\$192.24	\$40.33	\$62.21
2041	\$196.61	\$43.02	\$65.46
2042	\$201.07	\$45.55	\$68.50
2043			
2044			
2045			

15 Year Starting 2024

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)			
	\$/kW	\$80.04	
	\$/MWh	\$28.51	\$37.65

15 Year Starting 2025

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)			
	\$/kW	\$93.09	
	\$/MWh	\$26.85	\$37.47

15 Year Starting 2026

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)			
	\$/kW	\$107.16	
	\$/MWh	\$27.01	\$39.25

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2023.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													
2024	46.57	52.52	43.37	35.14	24.89	23.65	31.35	92.27	68.86	43.80	36.44	40.21	64.60
2025	30.26	44.15	26.26	20.59	13.68	14.19	20.89	112.98	27.49	19.03	16.39	20.23	25.39
2026	24.00	22.72	19.52	9.55	2.57	1.53	11.24	115.21	20.82	14.40	15.10	23.05	30.45
2027	29.73	40.74	26.10	15.36	5.50	2.49	12.84	88.01	31.66	23.33	25.71	36.44	46.91
2028	28.40	44.06	34.68	17.88	7.52	5.05	17.31	37.25	33.33	26.19	29.78	38.22	49.16
2029	24.57	32.90	33.40	11.89	5.44	1.72	15.47	32.19	33.91	24.85	26.04	34.09	43.24
2030	29.52	38.51	39.72	18.15	7.58	3.90	19.38	37.38	37.79	33.65	31.33	39.12	48.07
2031	34.20	43.38	43.13	23.65	14.81	11.12	23.91	39.76	43.59	37.09	37.22	42.92	50.12
2032	13.91	23.84	24.19	4.67	(4.20)	(5.59)	2.78	18.49	22.38	17.70	12.30	19.18	31.24
2033	17.93	34.26	31.96	7.75	(3.51)	(9.75)	(0.73)	17.98	24.46	22.35	17.36	28.74	44.80
2034	18.27	34.68	36.21	8.06	(3.40)	(9.18)	0.82	17.88	22.73	20.37	18.38	29.20	44.36
2035	26.35	38.83	41.92	17.50	9.00	1.79	11.44	24.71	31.63	26.28	26.91	37.58	49.41
2036	29.31	38.34	40.43	16.34	13.10	9.63	15.99	29.19	35.45	32.10	30.50	39.63	51.23
2037	31.69	38.97	42.96	20.14	15.36	9.36	17.72	33.15	39.92	36.34	31.03	41.34	54.54
2038	33.08	42.33	47.77	20.45	14.86	10.83	18.33	34.02	40.72	37.14	32.68	42.08	56.54
2039	35.60	44.23	47.88	23.11	15.98	13.18	20.39	37.40	44.55	39.37	33.61	47.34	60.71
2040	40.33	49.53	50.67	24.97	16.63	16.29	22.41	47.09	55.35	43.49	38.16	53.43	65.77
2041	43.02	51.99	58.45	26.77	20.04	16.72	24.61	50.71	57.39	48.79	37.85	56.25	67.38

Table 4
Burnertip Natural Gas Price Forecast
Utah 2023.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
2024	\$3.06	\$3.12	\$3.30	\$2.47
2025	\$4.06	\$4.04	\$4.19	\$3.33
2026	\$4.13	\$4.11	\$4.36	\$3.64
2027	\$4.52	\$4.49	\$4.75	\$4.09
2028	\$4.97	\$4.92	\$5.11	\$4.53
2029	\$5.33	\$5.28	\$5.49	\$4.89
2030	\$5.42	\$5.36	\$5.58	\$4.97
2031	\$5.54	\$5.48	\$5.68	\$5.09
2032	\$5.68	\$5.63	\$5.80	\$5.24
2033	\$5.93	\$5.86	\$6.07	\$5.48
2034	\$6.15	\$6.08	\$6.25	\$5.70
2035	\$6.29	\$6.22	\$6.27	\$5.84
2036	\$6.45	\$6.38	\$6.38	\$6.00
2037	\$6.82	\$6.74	\$6.70	\$6.36
2038	\$7.06	\$6.98	\$6.93	\$6.60
2039	\$7.46	\$7.36	\$7.28	\$6.99
2040	\$7.89	\$7.79	\$7.84	\$7.42
2041	\$8.30	\$8.19	\$8.22	\$7.82
2042	\$8.71	\$8.59	\$8.64	\$8.23

Official Forward Price Curve Forecast dated Dec 29, 2023

Table 5

Utah 2023.Q4 - 100.0 MW and 100.0% CF
January 2024 through December 2038
Nominal Avoided Costs Calculated Monthly

15 Year Starting 2026	\$ 225,532,561	\$ 102,126,051	\$ 327,658,612	8,348,655	\$39.25
15 Year Starting 2025	\$ 224,087,286	\$ 88,703,996	\$ 312,791,282	8,347,394	\$37.47
Nominal NPV at 6.77% Discount Rate					
15 Year Starting 2024	\$ 238,049,294	\$ 76,287,365	\$ 314,336,659	8,349,476	\$37.65

Study Name: Utah 2023.Q4

Start	45,292	Jan-24
End	Dec-38	
Resource Capacity	100.0	MW
	100.00%	CF

Discount Rate - 2023 IRP
 6.77% 0.547%

15 Year Starting 2027	15 Year Starting 2026	15 Year Starting 2025	15 Year Starting 2024
49	37	25	13
228	216	204	192

Month	Energy		Capacity		Total		AC Price	
	Avoided \$	100.0% CF	Dollars	MWH	Dollars	MWH	100.0% CF	
Jan-24	3,907,208	-	3,907,208	74,400	3,907,208	74,400	52.52	
Feb-24	3,018,230	-	3,018,230	69,600	3,018,230	69,600	43.37	
Mar-24	2,614,275	-	2,614,275	74,400	2,614,275	74,400	35.14	
Apr-24	1,792,101	-	1,792,101	72,000	1,792,101	72,000	24.89	
May-24	1,759,401	-	1,759,401	74,400	1,759,401	74,400	23.65	
Jun-24	2,257,450	-	2,257,450	72,000	2,257,450	72,000	31.35	
Jul-24	6,865,000	-	6,865,000	74,400	6,865,000	74,400	92.27	
Aug-24	5,123,388	-	5,123,388	74,400	5,123,388	74,400	68.96	
Sep-24	3,153,679	-	3,153,679	72,000	3,153,679	72,000	43.80	
Oct-24	2,711,285	-	2,711,285	74,400	2,711,285	74,400	36.44	
Nov-24	2,895,413	-	2,895,413	72,000	2,895,413	72,000	40.21	
Dec-24	4,805,903	-	4,805,903	74,400	4,805,903	74,400	64.60	
Jan-38	3,149,520	1,531,674	4,681,194	74,400	4,681,194	74,400	62.92	
Feb-38	3,210,361	1,531,674	4,742,035	67,200	4,742,035	67,200	70.57	
Mar-38	1,521,682	1,531,674	3,053,356	74,400	3,053,356	74,400	41.04	
Apr-38	1,070,041	1,531,674	2,601,715	72,000	2,601,715	72,000	36.13	
May-38	805,664	1,531,674	2,337,338	74,400	2,337,338	74,400	31.42	
Jun-38	1,319,899	1,531,674	2,851,573	72,000	2,851,573	72,000	39.61	
Jul-38	2,530,984	1,531,674	4,062,658	74,400	4,062,658	74,400	54.61	
Aug-38	3,029,203	1,531,674	4,560,877	74,400	4,560,877	74,400	61.30	
Sep-38	2,674,170	1,531,674	4,205,844	72,000	4,205,844	72,000	58.41	
Oct-38	2,431,489	1,531,674	3,963,162	74,400	3,963,162	74,400	53.27	
Nov-38	3,029,664	1,531,674	4,561,338	72,000	4,561,338	72,000	63.35	
Dec-38	4,206,707	1,531,674	5,738,381	74,400	5,738,381	74,400	77.13	

Offset	Year	Date Test	Offset	Total	energy	capacity
1	2024	Jan-24	418	Net Power Cost		
2	2024	Feb-24	537	Avoided Cost Resource		
3	2024	Mar-24				
4	2024	Apr-24	2024	40,903,334	-	878,400
5	2024	May-24	2025	26,511,219	-	876,000
6	2024	Jun-24	2026	21,026,533	-	876,000
7	2024	Jul-24	2027	26,044,235	-	876,000
8	2024	Aug-24	2028	24,946,709	-	878,400
9	2024	Sep-24	2029	21,525,546	-	876,000
10	2024	Oct-24	2030	25,855,926	15,358,672	876,000
11	2024	Nov-24	2031	29,961,435	15,707,709	876,000
12	2024	Dec-24	2032	12,222,099	16,064,240	878,400
53	2038	Jan-38				
54	2038	Feb-38				
55	2038	Mar-38				
56	2038	Apr-38				
57	2038	May-38				
58	2038	Jun-38				
59	2038	Jul-38				
60	2038	Aug-38				
61	2038	Sep-38				
62	2038	Oct-38				
63	2038	Nov-38				
64	2038	Dec-38				

Table 1
Avoided Cost Prices
Utah 2023.Q4_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
2024	\$0.00	\$44.64	\$44.64
2025	\$132.53	(\$26.75)	\$24.61
2026	\$135.54	(\$29.30)	\$23.23
2027	\$138.62	(\$30.10)	\$23.62
2028	\$141.77	(\$30.84)	\$23.94
2029	\$144.99	(\$29.41)	\$26.78
2030	\$148.27	(\$29.35)	\$28.12
2031	\$151.64	(\$31.48)	\$27.29
2032	\$155.09	(\$36.38)	\$23.54
2033	\$158.60	(\$38.97)	\$22.50
2034	\$162.21	(\$40.14)	\$22.73
2035	\$165.89	(\$1.71)	\$62.59
2036	\$169.66	\$0.95	\$66.50
2037	\$173.51	\$2.53	\$69.77
2038	\$177.45	\$1.80	\$70.57
2039	\$181.48	\$2.41	\$72.74
2040	\$185.59	\$2.60	\$74.31
2041	\$189.80	\$3.18	\$76.74
2042	\$194.11	\$29.20	\$104.43

15 Year Starting 2024

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$134.64		
\$/MWh		(\$17.96)	\$34.20

15 Year Starting 2025

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$151.12		
\$/MWh		(\$23.92)	\$34.63

15 Year Starting 2026

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$154.53		
\$/MWh		(\$22.54)	\$37.33

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Utah 2023.Q4_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													
2024	44.64	64.39	40.02	32.43	21.27	22.45	27.69	116.33	68.36	46.71	35.14	36.69	68.03
2025	(26.75)	(41.94)	(27.27)	(20.12)	(18.26)	(15.61)	(16.79)	(8.67)	(31.91)	(23.04)	(22.66)	(49.31)	(49.88)
2026	(29.30)	(45.90)	(29.42)	(23.46)	(21.71)	(18.71)	(16.47)	(5.35)	(27.82)	(22.59)	(24.00)	(55.55)	(60.04)
2027	(30.10)	(49.28)	(30.26)	(23.04)	(21.82)	(19.13)	(16.15)	(1.59)	(24.77)	(21.17)	(23.75)	(60.25)	(67.18)
2028	(30.84)	(49.80)	(31.79)	(24.30)	(21.76)	(18.87)	(15.31)	(3.02)	(26.78)	(21.60)	(23.72)	(59.43)	(71.79)
2029	(29.41)	(48.45)	(30.53)	(24.40)	(21.74)	(19.40)	(13.81)	(0.80)	(23.96)	(21.49)	(23.26)	(57.26)	(63.14)
2030	(29.35)	(48.86)	(28.16)	(24.90)	(20.84)	(17.87)	(14.90)	(0.98)	(25.24)	(20.04)	(21.10)	(58.45)	(67.55)
2031	(31.48)	(52.93)	(29.62)	(25.89)	(20.81)	(18.54)	(16.45)	(2.23)	(28.17)	(21.51)	(25.46)	(62.78)	(71.31)
2032	(36.38)	(47.56)	(32.82)	(37.24)	(29.39)	(23.98)	(24.70)	(9.41)	(37.03)	(26.98)	(33.67)	(62.16)	(69.51)
2033	(38.97)	(51.97)	(31.97)	(36.95)	(29.63)	(27.95)	(27.38)	(11.05)	(42.31)	(27.98)	(33.85)	(68.43)	(79.26)
2034	(40.14)	(53.88)	(34.71)	(37.01)	(30.61)	(28.53)	(29.45)	(10.57)	(42.56)	(28.58)	(34.65)	(71.35)	(80.39)
2035	(1.71)	(2.75)	4.71	(1.73)	(3.44)	(6.12)	1.52	15.07	(2.67)	4.95	2.94	(12.47)	(16.80)
2036	0.95	(4.07)	3.92	1.94	3.49	2.91	5.67	17.62	2.13	9.27	4.86	(14.66)	(18.89)
2037	2.53	(1.89)	4.25	4.63	5.30	4.59	6.81	20.02	4.55	10.48	5.73	(13.18)	(18.22)
2038	1.80	(4.64)	3.64	4.04	6.13	4.60	7.38	19.02	4.23	9.61	6.40	(20.61)	(15.84)
2039	2.41	(2.78)	6.00	4.27	6.77	6.33	8.57	21.03	2.95	5.03	5.83	(15.96)	(19.14)
2040	2.60	(5.87)	3.41	4.58	6.22	6.75	9.49	22.80	7.16	12.89	6.65	(16.08)	(21.78)
2041	3.18	(7.32)	5.28	4.89	7.54	7.15	9.41	29.10	7.44	14.53	6.21	(15.37)	(23.87)

Table 4
Burnertip Natural Gas Price Forecast
Utah 2023.Q4_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
2021	\$4.18	\$4.15	\$4.03	\$6.38
2022	\$8.21	\$8.15	\$8.48	\$6.13
2023	\$4.52	\$4.49	\$4.59	\$2.27
2024	\$3.06	\$3.12	\$3.30	\$2.47
2025	\$4.06	\$4.04	\$4.19	\$3.33
2026	\$4.13	\$4.11	\$4.36	\$3.64
2027	\$4.52	\$4.49	\$4.75	\$4.09
2028	\$4.97	\$4.92	\$5.11	\$4.53
2029	\$5.33	\$5.28	\$5.49	\$4.89
2030	\$5.42	\$5.36	\$5.58	\$4.97
2031	\$5.54	\$5.48	\$5.68	\$5.09
2032	\$5.68	\$5.63	\$5.80	\$5.24
2033	\$5.93	\$5.86	\$6.07	\$5.48
2034	\$6.15	\$6.08	\$6.25	\$5.70
2035	\$6.29	\$6.22	\$6.27	\$5.84
2036	\$6.45	\$6.38	\$6.38	\$6.00
2037	\$6.82	\$6.74	\$6.70	\$6.36
2038	\$7.06	\$6.98	\$6.93	\$6.60
2039	\$7.46	\$7.36	\$7.28	\$6.99
2040	\$7.89	\$7.79	\$7.84	\$7.42
2041	\$8.30	\$8.19	\$8.22	\$7.82
2042	\$8.71	\$8.59	\$8.64	\$8.23

Official Forward Price Curve Forecast dated Dec 29, 2023

Table 5

Utah 2023.Q4_Wind - 80.0 MW and 29.5% CF
January 2024 through December 2038
Nominal Avoided Costs Calculated Monthly

15 Year Starting 2026	\$ (44,493,695)	\$ 118,171,714	\$ 73,678,019	1,973,774	\$37.33
15 Year Starting 2025	\$ (47,204,772)	\$ 115,548,314	\$ 68,343,542	1,973,446	\$34.63
Nominal NPV at 6.77% Discount Rate					
15 Year Starting 2024	\$ (35,461,861)	\$ 102,975,489	\$ 67,513,627	1,973,988	\$34.20

Start	45,292	Utah 2023.Q4_Wind	15 Year Starting 2027	49	15 Year Starting 2026	37	15 Year Starting 2025	25	15 Year Starting 2024	13
End	Jan-24	Resource Capacity	start	228	end	216	204	192		
	Dec-38	80.0 MW								
		29.46% CF								
Discount Rate - 2023 IRP										
	6.77%	0.547%								

Month	Energy		Capacity \$		Total		AC Price	
	Avoided \$	29.5% CF	Dollars	MWH	Dollars	MWH	29.5% CF	
Jan-24	1,346,222	-	1,346,222	20,908	1,346,222	20,908	64.39	
Feb-24	819,949	-	819,949	20,490	819,949	20,490	40.02	
Mar-24	819,446	-	819,446	25,269	819,446	25,269	32.43	
Apr-24	434,323	-	434,323	20,415	434,323	20,415	21.27	
May-24	461,155	-	461,155	20,545	461,155	20,545	22.45	
Jun-24	461,208	-	461,208	16,657	461,208	16,657	27.69	
Jul-24	1,423,587	-	1,423,587	12,238	1,423,587	12,238	116.33	
Aug-24	671,098	-	671,098	9,818	671,098	9,818	68.36	
Sep-24	591,530	-	591,530	12,664	591,530	12,664	46.71	
Oct-24	615,321	-	615,321	17,510	615,321	17,510	35.14	
Nov-24	559,076	-	559,076	15,239	559,076	15,239	36.69	
Dec-24	1,040,395	-	1,040,395	15,292	1,040,395	15,292	68.03	
Jan-38	(96,956)	1,182,979	1,086,022	20,908	1,086,022	20,908	51.94	
Feb-38	72,361	1,182,979	1,255,340	19,864	1,255,340	19,864	63.20	
Mar-38	102,012	1,182,979	1,284,991	25,269	1,284,991	25,269	50.85	
Apr-38	125,153	1,182,979	1,308,132	20,415	1,308,132	20,415	64.08	
May-38	94,478	1,182,979	1,277,456	20,545	1,277,456	20,545	62.18	
Jun-38	122,994	1,182,979	1,305,972	16,657	1,305,972	16,657	78.40	
Jul-38	232,751	1,182,979	1,415,729	12,238	1,415,729	12,238	115.69	
Aug-38	41,495	1,182,979	1,224,474	9,818	1,224,474	9,818	124.72	
Sep-38	121,649	1,182,979	1,304,628	12,664	1,304,628	12,664	103.02	
Oct-38	111,991	1,182,979	1,294,970	17,510	1,294,970	17,510	73.95	
Nov-38	(314,075)	1,182,979	868,903	15,239	868,903	15,239	57.02	
Dec-38	(242,186)	1,182,979	940,793	15,292	940,793	15,292	61.52	

Offset	Year	Date Test	Offset
1	2024	Jan-24	418 Net Power Cost
2	2024	Feb-24	537 QF - Sch38 - UT - Wind
3	2024	Mar-24	
4	2024	Apr-24	2024 9,243,311
5	2024	May-24	2025 (5,522,307)
6	2024	Jun-24	2026 (6,048,603)
7	2024	Jul-24	2027 (6,213,163)
8	2024	Aug-24	2028 (6,385,696)
9	2024	Sep-24	2029 (6,071,095)
10	2024	Oct-24	2030 (6,057,860)
11	2024	Nov-24	2031 (6,498,455)
12	2024	Dec-24	2032 (7,532,125)
53	2038	Jan-38	
54	2038	Feb-38	
55	2038	Mar-38	
56	2038	Apr-38	
57	2038	May-38	
58	2038	Jun-38	
59	2038	Jul-38	
60	2038	Aug-38	
61	2038	Sep-38	
62	2038	Oct-38	
63	2038	Nov-38	
64	2038	Dec-38	

Total	energy	capacity
207,045	44.64	44.64
206,420	24.61	(26.75)
206,420	23.23	(29.30)
206,420	23.62	(30.10)
207,045	23.94	(30.84)
206,420	26.78	(29.41)
206,420	28.12	(29.35)
206,420	27.29	(31.48)
207,045	23.54	(36.38)

Indicative Thermal QF Avoided Cost, \$/MWH

Proposed Term:	2024 - 2038	2025 - 2039	2026 - 2040
2023.Q3 As Filed	\$37.38	\$36.95	\$38.58
Queue	\$0.47	\$0.36	\$0.35
OFPC	-\$0.12	\$0.24	\$0.41
2023.Q4 As Filed	\$37.73	\$37.55	\$39.34

Nominal Levelized Payment at 6.770% Discount Rate

Appendix C

**Utah Quarterly Compliance Filing
Step Study between 2023.Q4 and 2023.Q3 Compliance Filing
Avoided Cost Impact of Changing Assumptions \$/MWH (1)**

Year	Queue (2)	OFPC	Total Impact
2024	\$ 1.32	\$ (3.40)	\$ (2.07)
2025	\$ 0.42	\$ (1.40)	\$ (0.98)
2026	\$ 0.42	\$ (0.96)	\$ (0.54)
2027	\$ 0.52	\$ 0.70	\$ 1.23
2028	\$ 0.34	\$ 1.40	\$ 1.74
2029	\$ 0.34	\$ 0.53	\$ 0.86
2030	\$ 0.30	\$ 0.78	\$ 1.08
2031	\$ 0.32	\$ 0.85	\$ 1.17
2032	\$ 0.41	\$ 0.50	\$ 0.92
2033	\$ 0.41	\$ 0.37	\$ 0.78
2034	\$ 0.45	\$ 0.38	\$ 0.83
2035	\$ 0.34	\$ 0.36	\$ 0.70
2036	\$ 0.25	\$ 0.43	\$ 0.67
2037	\$ 0.29	\$ 0.24	\$ 0.53
2038	\$ 0.24	\$ 0.18	\$ 0.41
2039	\$ 0.13	\$ 0.06	\$ 0.19
2040	\$ 0.13	\$ 0.09	\$ 0.22
2041	\$ 0.09	\$ 0.15	\$ 0.24

Nominal Levelized Payment at 6.770% Discount Rate (3)

2024 - 2038	\$ 0.47	\$ (0.12)	\$ 0.35
2025 - 2039	\$ 0.36	\$ 0.24	\$ 0.60
2026 - 2040	\$ 0.35	\$ 0.41	\$ 0.76

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- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated December 2023
- (3) Discount Rate - 2023 IRP - Calculated Annually
- (4) Capacity costs are allocated based on assumed 100% capacity factor.
- (5) Avoided Capacity costs are based on Partial Displacement of non-emitting Peaker in 2030 from 2023 IRP Preferred Portfolio.

Appendix C

**Utah Quarterly Compliance Filing
Step Study between 2023.Q4 and 2023.Q3 Compliance Filing
Total Avoided Cost Prices \$/MWH (1) (4)**

Year	2023.Q3 As Filed	Queue (2)	OFPC (5)
2024	\$48.64	\$49.96	\$46.57
2025	\$31.24	\$31.66	\$30.26
2026	\$24.55	\$24.96	\$24.00
2027	\$28.50	\$29.03	\$29.73
2028	\$26.66	\$27.00	\$28.40
2029	\$23.71	\$24.05	\$24.57
2030	\$45.97	\$46.27	\$47.05
2031	\$50.97	\$51.28	\$52.13
2032	\$31.29	\$31.70	\$32.20
2033	\$35.90	\$36.31	\$36.68
2034	\$36.61	\$37.07	\$37.45
2035	\$45.26	\$45.60	\$45.96
2036	\$48.64	\$48.89	\$49.32
2037	\$51.68	\$51.97	\$52.21
2038	\$53.65	\$53.89	\$54.06
2039	\$56.87	\$57.00	\$57.06
2040	\$62.00	\$62.12	\$62.21
2041	\$65.22	\$65.31	\$65.46

Nominal Levelized Payment at 6.770% Discount Rate (3)

2024 - 2038	\$37.38	\$37.85	\$37.73
2025 - 2039	\$36.95	\$37.31	\$37.55
2026 - 2040	\$38.58	\$38.93	\$39.34

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated December 2023
- (3) Discount Rate - 2023 IRP - Calculated Annually
- (4) Capacity costs are allocated based on assumed 100% capacity factor.
- (5) Avoided Capacity costs are based on Partial Displacement of non-emitting Peaker in 2030 from 2023 IRP Preferred Portfolio.

Discount Rate - 2023 IRP
6.770%

Appendix C

Utah Quarterly Compliance Filing Step Study between 2023.Q4 and 2023.Q3 Compliance Filing GRID Calculated Energy Avoided Cost Prices \$/MWH (1)

Year	2023.Q3 As Filed	Queue (2)	OFPC (4)
2024	\$48.64	\$49.96	\$46.57
2025	\$31.24	\$31.66	\$30.26
2026	\$24.55	\$24.96	\$24.00
2027	\$28.50	\$29.03	\$29.73
2028	\$26.66	\$27.00	\$28.40
2029	\$23.71	\$24.05	\$24.57
2030	\$28.44	\$28.73	\$29.52
2031	\$33.04	\$33.35	\$34.20
2032	\$13.00	\$13.41	\$13.91
2033	\$17.15	\$17.56	\$17.93
2034	\$17.43	\$17.89	\$18.27
2035	\$25.64	\$25.99	\$26.35
2036	\$28.64	\$28.88	\$29.31
2037	\$31.16	\$31.45	\$31.69
2038	\$32.67	\$32.91	\$33.08
2039	\$35.41	\$35.54	\$35.60
2040	\$40.11	\$40.24	\$40.33
2041	\$42.78	\$42.86	\$43.02

Nominal Levelized Payment at 6.77% Discount Rate (3)

2024 - 2038	\$28.24	\$28.71	\$28.59
2025 - 2039	\$26.33	\$26.69	\$26.93
2026 - 2040	\$26.35	\$26.70	\$27.11

- (1) Studies are sequential. The order of the studies would affect the price impact.
- (2) Official Forward Price Curve Dated December 2023
- (3) Discount Rate - 2023 IRP - Calculated Annually

Appendix C
Utah Quarterly Compliance Filing
Step Study between 2023.Q4 and 2023.Q3 Compliance Filing
Capacity Avoided Cost Prices

Year	\$/kW-Year			\$/MWH (1)		
	2023.Q3	Queue	2023.Q4	2023.Q3	Queue	2023.Q4
2024	-	-	-	-	-	-
2025	-	-	-	-	-	-
2026	-	-	-	-	-	-
2027	-	-	-	-	-	-
2028	-	-	-	-	-	-
2029	-	-	-	-	-	-
2030	\$ 153.59	\$ 153.59	\$ 153.59	\$ 17.53	\$ 17.53	\$ 17.53
2031	\$ 157.08	\$ 157.08	\$ 157.08	\$ 17.93	\$ 17.93	\$ 17.93
2032	\$ 160.64	\$ 160.64	\$ 160.64	\$ 18.29	\$ 18.29	\$ 18.29
2033	\$ 164.28	\$ 164.28	\$ 164.28	\$ 18.75	\$ 18.75	\$ 18.75
2034	\$ 168.02	\$ 168.02	\$ 168.02	\$ 19.18	\$ 19.18	\$ 19.18
2035	\$ 171.83	\$ 171.83	\$ 171.83	\$ 19.62	\$ 19.62	\$ 19.62
2036	\$ 175.74	\$ 175.74	\$ 175.74	\$ 20.01	\$ 20.01	\$ 20.01
2037	\$ 179.72	\$ 179.72	\$ 179.72	\$ 20.52	\$ 20.52	\$ 20.52
2038	\$ 183.80	\$ 183.80	\$ 183.80	\$ 20.98	\$ 20.98	\$ 20.98
2039	\$ 187.97	\$ 187.97	\$ 187.97	\$ 21.46	\$ 21.46	\$ 21.46
2040	\$ 192.24	\$ 192.24	\$ 192.24	\$ 21.88	\$ 21.88	\$ 21.88
2041	\$ 196.61	\$ 196.61	\$ 196.61	\$ 22.44	\$ 22.44	\$ 22.44

Nominal Levelized Payment at 6.770% Discount Rate (2)

2024 - 2038	\$80.09	\$80.09	\$80.09	\$9.14	\$9.14	\$9.14
2025 - 2039	\$93.13	\$93.13	\$93.13	\$10.62	\$10.62	\$10.62
2026 - 2040	\$107.22	\$107.22	\$107.22	\$12.23	\$12.23	\$12.23

- (1) Capacity costs are allocated based on assumed 100% capacity factor.
- (2) Official Forward Price Curve Dated December 2023
- (3) No Capacity costs - No deferrable thermal resources

ROCKY MOUNTAIN POWER

**NON-ROUTINE UPDATE RESULTS
2023.Q4 – MARCH 2024**

Appendix D

Avoided Cost Prices \$/MWh

Year	PLEXOS			GRID			PLEXOS minus GRID		
	Thermal	Solar Tracking	Wind	Thermal	Solar Tracking	Wind	Thermal	Solar Tracking	Wind
2024	\$55.61	\$28.70	\$35.52	\$48.64	\$31.54	\$46.92	\$6.97	(\$2.84)	(\$11.40)
2025	\$37.99	\$11.60	\$19.32	\$31.24	\$12.13	\$19.69	\$6.75	(\$0.53)	(\$0.37)
2026	\$32.61	\$11.32	\$17.69	\$24.55	\$11.45	\$17.72	\$8.07	(\$0.12)	(\$0.03)
2027	\$33.41	\$11.62	\$18.69	\$28.50	\$11.79	\$18.00	\$4.91	(\$0.17)	\$0.68
2028	\$30.09	\$32.01	\$19.49	\$26.66	\$32.42	\$18.32	\$3.43	(\$0.40)	\$1.17
2029	\$27.31	\$29.83	\$21.81	\$23.71	\$32.91	\$20.87	\$3.60	(\$3.08)	\$0.94
2030	\$46.43	\$32.58	\$23.27	\$45.97	\$37.84	\$22.14	\$0.46	(\$5.26)	\$1.13
2031	\$49.67	\$36.04	\$23.44	\$50.97	\$41.74	\$21.11	(\$1.30)	(\$5.71)	\$2.33
2032	\$38.71	\$29.69	\$26.12	\$31.29	\$31.35	\$17.30	\$7.42	(\$1.66)	\$8.83
2033	\$38.65	\$29.56	\$25.71	\$35.90	\$25.55	\$16.16	\$2.75	\$4.01	\$9.55
2034	\$39.48	\$26.76	\$26.14	\$36.61	\$25.20	\$16.11	\$2.87	\$1.56	\$10.03
2035	\$46.00	\$62.92	\$63.50	\$45.26	\$56.75	\$55.80	\$0.74	\$6.17	\$7.70
2036	\$47.66	\$67.46	\$66.01	\$48.64	\$65.02	\$59.65	(\$0.98)	\$2.43	\$6.36
2037	\$49.45	\$69.57	\$68.08	\$51.68	\$66.34	\$63.04	(\$2.22)	\$3.23	\$5.04
2038	\$51.95	\$72.34	\$70.07	\$53.65	\$68.36	\$63.94	(\$1.70)	\$3.99	\$6.13
2039	\$54.60	\$74.13	\$71.36	\$56.87	\$70.34	\$65.73	(\$2.27)	\$3.79	\$5.63
2040	\$63.04	\$77.29	\$73.91	\$62.00	\$72.79	\$66.88	\$1.05	\$4.50	\$7.03

15-Year Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

2024-2038	\$/MWh	\$40.86	\$31.87	\$31.10	\$37.18	\$32.14	\$29.00	\$3.68	(\$0.27)	\$2.10
2025-2039	\$/MWh	\$39.81	\$33.82	\$32.18	\$36.96	\$33.74	\$28.84	\$2.85	\$0.08	\$3.34
2026-2040	\$/MWh	\$40.94	\$38.00	\$35.27	\$38.22	\$37.73	\$30.85	\$2.72	\$0.27	\$4.42

Footnotes:

- (1) Discount Rate - 2023 IRP
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2024 - 2038, levelized monthly

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
Avoided Cost Resource - 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													
2024	\$ 55.61	\$ 77.75	\$ 61.21	\$ 39.03	\$ 41.82	\$ 33.62	\$ 42.82	\$ 93.23	\$ 115.51	\$ 60.84	\$ 41.36	\$ 5.07	\$ 53.01
2025	\$ 37.99	\$ 47.53	\$ 38.95	\$ 27.41	\$ 20.24	\$ 22.57	\$ 29.70	\$ 90.70	\$ 46.13	\$ 35.51	\$ 28.18	\$ 28.41	\$ 39.42
2026	\$ 32.61	\$ 35.04	\$ 34.35	\$ 20.00	\$ 11.83	\$ 7.81	\$ 22.54	\$ 120.96	\$ 29.28	\$ 24.75	\$ 21.48	\$ 28.81	\$ 33.31
2027	\$ 33.41	\$ 36.96	\$ 33.15	\$ 22.31	\$ 15.43	\$ 15.76	\$ 21.71	\$ 82.62	\$ 37.02	\$ 33.00	\$ 28.38	\$ 35.45	\$ 38.43
2028	\$ 30.09	\$ 38.97	\$ 34.87	\$ 23.33	\$ 15.52	\$ 14.87	\$ 24.12	\$ 36.93	\$ 38.88	\$ 34.18	\$ 25.61	\$ 34.87	\$ 39.47
2029	\$ 27.31	\$ 32.07	\$ 35.11	\$ 20.14	\$ 15.38	\$ 13.88	\$ 17.04	\$ 33.48	\$ 39.53	\$ 31.47	\$ 24.59	\$ 29.01	\$ 36.54
2030	\$ 28.84	\$ 33.05	\$ 34.79	\$ 19.87	\$ 16.07	\$ 13.31	\$ 20.16	\$ 38.48	\$ 40.44	\$ 32.07	\$ 27.98	\$ 33.69	\$ 36.62
2031	\$ 31.69	\$ 36.09	\$ 37.54	\$ 25.17	\$ 17.60	\$ 17.42	\$ 24.51	\$ 41.45	\$ 40.80	\$ 37.47	\$ 30.45	\$ 34.36	\$ 37.78
2032	\$ 20.32	\$ 24.30	\$ 24.31	\$ 12.78	\$ 8.02	\$ 3.55	\$ 11.92	\$ 31.77	\$ 33.21	\$ 24.43	\$ 18.79	\$ 23.79	\$ 27.26
2033	\$ 19.84	\$ 26.51	\$ 26.68	\$ 6.10	\$ 4.13	\$ (4.13)	\$ 6.57	\$ 32.30	\$ 34.94	\$ 27.97	\$ 20.24	\$ 26.70	\$ 30.65
2034	\$ 20.25	\$ 24.83	\$ 28.77	\$ 8.83	\$ 3.41	\$ (4.36)	\$ 6.59	\$ 32.05	\$ 34.70	\$ 28.77	\$ 19.84	\$ 28.84	\$ 31.44
2035	\$ 26.33	\$ 29.35	\$ 31.85	\$ 16.78	\$ 11.85	\$ 8.26	\$ 15.44	\$ 34.60	\$ 39.75	\$ 34.52	\$ 28.40	\$ 31.63	\$ 33.88
2036	\$ 27.54	\$ 30.28	\$ 31.09	\$ 16.25	\$ 14.87	\$ 10.54	\$ 17.31	\$ 35.20	\$ 42.02	\$ 33.82	\$ 29.67	\$ 34.43	\$ 35.47
2037	\$ 28.88	\$ 33.69	\$ 35.22	\$ 16.49	\$ 15.48	\$ 9.51	\$ 18.24	\$ 38.02	\$ 43.10	\$ 38.02	\$ 29.37	\$ 32.04	\$ 37.95
2038	\$ 30.91	\$ 35.81	\$ 36.75	\$ 17.58	\$ 16.23	\$ 11.36	\$ 17.79	\$ 41.36	\$ 45.30	\$ 39.28	\$ 32.61	\$ 35.52	\$ 41.82
2039	\$ 33.08	\$ 37.97	\$ 38.12	\$ 19.80	\$ 16.79	\$ 10.87	\$ 20.57	\$ 43.38	\$ 47.67	\$ 42.10	\$ 34.67	\$ 39.11	\$ 46.37
2040	\$ 41.04	\$ 48.58	\$ 48.98	\$ 22.89	\$ 20.96	\$ 12.98	\$ 24.59	\$ 54.83	\$ 58.92	\$ 51.87	\$ 40.41	\$ 50.10	\$ 58.42
2041	\$ 46.89	\$ 53.98	\$ 62.43	\$ 24.57	\$ 23.18	\$ 15.54	\$ 25.66	\$ 62.71	\$ 70.56	\$ 57.45	\$ 43.89	\$ 55.26	\$ 68.82

Appendix D
Avoided Cost Prices \$/MWh

Utah 2023.Q3 Sch 38

Year	PLEXOS Thermal	PLEXOS Solar Tracking	PLEXOS Wind	GRID Thermal	GRID Solar Tracking	GRID Wind	Thermal Plexos vs GRID	Solar Tracking Plexos vs GRID	Wind Plexos vs GRID
	UT 2023.Q3 100% CF (2)	UT 2023.Q3 32.25% CF (2)	UT 2023.Q3 29.5% CF (2)	UT 2023.Q3 100% CF (2)	UT 2023.Q3 32.25% CF (2)	UT 2023.Q3 29.5% CF (2)	Difference	Difference	Difference
2024	\$55.61	\$28.70	\$35.52	\$48.64	\$31.54	\$46.92	\$6.97	(\$2.84)	(\$11.40)
2025	\$37.99	\$11.60	\$19.32	\$31.24	\$12.13	\$19.69	\$6.75	(\$0.53)	(\$0.37)
2026	\$32.61	\$11.32	\$17.69	\$24.55	\$11.45	\$17.72	\$8.07	(\$0.12)	(\$0.03)
2027	\$33.41	\$11.62	\$18.69	\$28.50	\$11.79	\$18.00	\$4.91	(\$0.17)	\$0.68
2028	\$30.09	\$32.01	\$19.49	\$26.66	\$32.42	\$18.32	\$3.43	(\$0.40)	\$1.17
2029	\$27.31	\$29.83	\$21.81	\$23.71	\$32.91	\$20.87	\$3.60	(\$3.08)	\$0.94
2030	\$46.43	\$32.58	\$23.27	\$45.97	\$37.84	\$22.14	\$0.46	(\$5.26)	\$1.13
2031	\$49.67	\$36.04	\$23.44	\$50.97	\$41.74	\$21.11	(\$1.30)	(\$5.71)	\$2.33
2032	\$38.71	\$29.69	\$26.12	\$31.29	\$31.35	\$17.30	\$7.42	(\$1.66)	\$8.83
2033	\$38.65	\$29.56	\$25.71	\$35.90	\$25.55	\$16.16	\$2.75	\$4.01	\$9.55
2034	\$39.48	\$26.76	\$26.14	\$36.61	\$25.20	\$16.11	\$2.87	\$1.56	\$10.03
2035	\$46.00	\$62.92	\$63.50	\$45.26	\$56.75	\$55.80	\$0.74	\$6.17	\$7.70
2036	\$47.66	\$67.46	\$66.01	\$48.64	\$65.02	\$59.65	(\$0.98)	\$2.43	\$6.36
2037	\$49.45	\$69.57	\$68.08	\$51.68	\$66.34	\$63.04	(\$2.22)	\$3.23	\$5.04
2038	\$51.95	\$72.34	\$70.07	\$53.65	\$68.36	\$63.94	(\$1.70)	\$3.99	\$6.13
2039	\$54.60	\$74.13	\$71.36	\$56.87	\$70.34	\$65.73	(\$2.27)	\$3.79	\$5.63
2040	\$63.04	\$77.29	\$73.91	\$62.00	\$72.79	\$66.88	\$1.05	\$4.50	\$7.03

15-Year Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

2024-2038	\$/MWh	\$40.86	\$31.87	\$31.10	\$37.18	\$32.14	\$29.00	\$3.68	(\$0.27)	\$2.10
2025-2039	\$/MWh	\$39.81	\$33.82	\$32.18	\$36.96	\$33.74	\$28.84	\$2.85	\$0.08	\$3.34
2026-2040	\$/MWh	\$40.94	\$38.00	\$35.27	\$38.22	\$37.73	\$30.85	\$2.72	\$0.27	\$4.42

Footnotes:

- (1) Discount Rate - 2023 IRP
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2024 - 2038, levelized monthly

Table 1
Avoided Cost Prices
QF - Sch38 - UT - Solar T - 80.0 MW and 32.1% CF

Total Price @

Year	Capacity Price \$/kW-yr	Energy Only Price \$/MWh ⁽²⁾	32.1% Capacity Factor \$/MWh
2024	\$0.00	\$28.70	\$28.70
2025	\$132.37	(\$35.56)	\$11.60
2026	\$135.38	(\$37.15)	\$11.32
2027	\$138.45	(\$38.21)	\$11.62
2028	\$141.60	(\$19.24)	\$32.01
2029	\$144.81	(\$22.81)	\$29.83
2030	\$148.09	(\$21.52)	\$32.58
2031	\$151.46	(\$19.58)	\$36.04
2032	\$154.90	(\$27.51)	\$29.69
2033	\$158.41	(\$29.19)	\$29.56
2034	\$162.01	(\$33.63)	\$26.76
2035	\$165.69	\$0.85	\$62.92
2036	\$169.46	\$3.61	\$67.46
2037	\$173.30	\$3.99	\$69.57
2038	\$177.23	\$4.94	\$72.34
2039	\$181.26	\$4.85	\$74.13
2040	\$185.37	\$6.03	\$77.29
2041	\$189.58	\$6.66	\$79.85
2042	\$193.88	\$7.53	\$82.75

15 Year Starting 2024

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$138.44		
\$/MWh		(\$17.38)	\$31.87

15 Year Starting 2025

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$156.11		
\$/MWh		(\$21.71)	\$33.82

15 Year Starting 2026

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$160.46		
\$/MWh		(\$19.09)	\$38.00

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
QF - Sch38 - UT - Solar T - 80.0 MW and 32.1% CF

Year	Annual	Winter Season					Summer Season				Winter Season		
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Energy Only													
2024	\$28.70	\$62.56	\$36.71	\$33.83	\$24.83	\$24.56	\$29.77	\$74.82	\$90.58	\$15.34	\$37.16	(\$156.81)	(\$26.85)
2025	(\$35.56)	(\$35.30)	(\$36.96)	(\$34.95)	(\$36.99)	(\$35.11)	(\$35.21)	(\$35.24)	(\$35.84)	(\$35.45)	(\$35.71)	(\$35.34)	(\$34.93)
2026	(\$37.15)	(\$38.12)	(\$37.57)	(\$37.19)	(\$36.94)	(\$36.71)	(\$36.26)	(\$37.65)	(\$37.44)	(\$37.18)	(\$37.40)	(\$37.40)	(\$36.42)
2027	(\$38.21)	(\$37.86)	(\$38.11)	(\$40.11)	(\$38.92)	(\$38.55)	(\$38.61)	(\$38.99)	(\$32.68)	(\$39.80)	(\$38.26)	(\$37.90)	(\$39.76)
2028	(\$19.24)	(\$24.63)	(\$38.02)	(\$32.94)	(\$35.58)	(\$28.50)	(\$12.62)	\$5.59	(\$1.10)	(\$5.57)	(\$25.16)	(\$32.39)	(\$33.81)
2029	(\$22.81)	(\$37.12)	(\$24.87)	(\$31.38)	(\$36.74)	(\$31.74)	(\$27.26)	\$2.36	(\$4.55)	(\$8.50)	(\$27.35)	(\$38.34)	(\$34.84)
2030	(\$21.52)	(\$33.19)	(\$37.46)	(\$40.48)	(\$29.03)	(\$29.54)	(\$22.33)	\$8.93	(\$2.09)	(\$9.88)	(\$27.72)	(\$35.50)	(\$36.28)
2031	(\$19.58)	(\$28.17)	(\$35.29)	(\$33.54)	(\$36.23)	(\$24.63)	(\$20.80)	\$13.39	(\$3.01)	(\$3.62)	(\$27.46)	(\$35.62)	(\$39.62)
2032	(\$27.51)	(\$40.30)	(\$37.84)	(\$38.13)	(\$38.21)	(\$39.20)	(\$27.91)	(\$1.29)	(\$6.21)	(\$18.96)	(\$32.15)	(\$37.89)	(\$40.80)
2033	(\$29.19)	(\$41.76)	(\$35.97)	(\$40.42)	(\$38.58)	(\$36.40)	(\$27.89)	(\$3.05)	(\$16.70)	(\$21.12)	(\$32.86)	(\$39.93)	(\$44.90)
2034	(\$33.63)	(\$50.92)	(\$38.16)	(\$40.82)	(\$40.95)	(\$38.97)	(\$33.52)	(\$11.36)	(\$18.79)	(\$28.06)	(\$38.61)	(\$43.59)	(\$47.72)
2035	\$0.85	(\$1.03)	\$1.78	(\$2.88)	(\$11.20)	(\$10.84)	(\$4.27)	\$14.19	\$14.14	\$2.94	\$4.16	\$1.57	\$1.05
2036	\$3.61	(\$0.64)	(\$0.40)	\$0.95	\$0.04	(\$2.03)	\$1.69	\$11.02	\$16.59	\$2.11	\$5.58	\$1.19	(\$0.70)
2037	\$3.99	(\$0.70)	(\$0.82)	\$1.53	\$1.19	(\$2.94)	\$1.10	\$11.74	\$15.26	\$7.74	\$5.11	\$1.54	(\$1.54)
2038	\$4.94	(\$0.46)	(\$0.54)	\$2.04	\$1.27	\$0.19	\$1.45	\$13.68	\$19.70	\$6.94	\$4.80	(\$0.30)	(\$1.72)
2039	\$4.85	(\$0.78)	\$0.39	\$0.97	\$0.95	(\$1.08)	\$2.19	\$14.15	\$18.30	\$6.32	\$6.95	\$0.53	(\$2.09)
2040	\$6.03	(\$0.29)	(\$2.69)	\$2.57	\$0.90	\$0.09	\$2.79	\$18.65	\$18.86	\$10.82	\$6.66	\$0.74	(\$2.33)
2041	\$6.66	(\$0.71)	\$0.20	\$1.43	\$2.66	(\$0.04)	\$2.29	\$21.32	\$21.69	\$8.83	\$7.96	\$1.40	(\$3.28)

Appendix D
Avoided Cost Prices \$/MWh

Utah 2023.Q3 Sch 38

Year	PLEXOS Thermal	PLEXOS Solar Tracking	PLEXOS Wind	GRID Thermal	GRID Solar Tracking	GRID Wind	Thermal Plexos vs GRID	Solar Tracking Plexos vs GRID	Wind Plexos vs GRID
	UT 2023.Q3 100% CF (2)	UT 2023.Q3 32.25% CF (2)	UT 2023.Q3 29.5% CF (2)	UT 2023.Q3 100% CF (2)	UT 2023.Q3 32.25% CF (2)	UT 2023.Q3 29.5% CF (2)	Difference	Difference	Difference
2024	\$55.61	\$28.70	\$35.52	\$48.64	\$31.54	\$46.92	\$6.97	(\$2.84)	(\$11.40)
2025	\$37.99	\$11.60	\$19.32	\$31.24	\$12.13	\$19.69	\$6.75	(\$0.53)	(\$0.37)
2026	\$32.61	\$11.32	\$17.69	\$24.55	\$11.45	\$17.72	\$8.07	(\$0.12)	(\$0.03)
2027	\$33.41	\$11.62	\$18.69	\$28.50	\$11.79	\$18.00	\$4.91	(\$0.17)	\$0.68
2028	\$30.09	\$32.01	\$19.49	\$26.66	\$32.42	\$18.32	\$3.43	(\$0.40)	\$1.17
2029	\$27.31	\$29.83	\$21.81	\$23.71	\$32.91	\$20.87	\$3.60	(\$3.08)	\$0.94
2030	\$46.43	\$32.58	\$23.27	\$45.97	\$37.84	\$22.14	\$0.46	(\$5.26)	\$1.13
2031	\$49.67	\$36.04	\$23.44	\$50.97	\$41.74	\$21.11	(\$1.30)	(\$5.71)	\$2.33
2032	\$38.71	\$29.69	\$26.12	\$31.29	\$31.35	\$17.30	\$7.42	(\$1.66)	\$8.83
2033	\$38.65	\$29.56	\$25.71	\$35.90	\$25.55	\$16.16	\$2.75	\$4.01	\$9.55
2034	\$39.48	\$26.76	\$26.14	\$36.61	\$25.20	\$16.11	\$2.87	\$1.56	\$10.03
2035	\$46.00	\$62.92	\$63.50	\$45.26	\$56.75	\$55.80	\$0.74	\$6.17	\$7.70
2036	\$47.66	\$67.46	\$66.01	\$48.64	\$65.02	\$59.65	(\$0.98)	\$2.43	\$6.36
2037	\$49.45	\$69.57	\$68.08	\$51.68	\$66.34	\$63.04	(\$2.22)	\$3.23	\$5.04
2038	\$51.95	\$72.34	\$70.07	\$53.65	\$68.36	\$63.94	(\$1.70)	\$3.99	\$6.13
2039	\$54.60	\$74.13	\$71.36	\$56.87	\$70.34	\$65.73	(\$2.27)	\$3.79	\$5.63
2040	\$63.04	\$77.29	\$73.91	\$62.00	\$72.79	\$66.88	\$1.05	\$4.50	\$7.03

15-Year Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

2024-2038	\$/MWh	\$40.86	\$31.87	\$31.10	\$37.18	\$32.14	\$29.00	\$3.68	(\$0.27)	\$2.10
2025-2039	\$/MWh	\$39.81	\$33.82	\$32.18	\$36.96	\$33.74	\$28.84	\$2.85	\$0.08	\$3.34
2026-2040	\$/MWh	\$40.94	\$38.00	\$35.27	\$38.22	\$37.73	\$30.85	\$2.72	\$0.27	\$4.42

Footnotes:

- (1) Discount Rate - 2023 IRP
- (2) Total Avoided Costs with Capacity, based on stated CF
- (3) 15-Years: 2024 - 2038, levelized monthly

Table 1
Avoided Cost Prices
QF - Sch38 - UT - 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
2024	\$0.00	\$35.52	\$35.52
2025	\$118.77	(\$26.97)	\$19.32
2026	\$121.46	(\$29.65)	\$17.69
2027	\$124.22	(\$29.73)	\$18.69
2028	\$127.04	(\$29.74)	\$19.49
2029	\$129.92	(\$28.83)	\$21.81
2030	\$132.87	(\$28.52)	\$23.27
2031	\$135.89	(\$29.52)	\$23.44
2032	\$138.97	(\$27.72)	\$26.12
2033	\$142.13	(\$29.68)	\$25.71
2034	\$145.35	(\$30.51)	\$26.14
2035	\$148.65	\$5.56	\$63.50
2036	\$152.03	\$7.10	\$66.01
2037	\$155.48	\$7.48	\$68.08
2038	\$159.01	\$8.09	\$70.07

15 Year Starting 2024

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$120.87		
\$/MWh		(\$15.87)	\$31.10

15 Year Starting 2025

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$135.70		
\$/MWh		(\$20.54)	\$32.18

15 Year Starting 2026

Levelized Prices (Nominal) @ 6.77% Discount Rate (1) (3)

\$/kW	\$138.74		
\$/MWh		(\$18.64)	\$35.27

Table 2
Avoided Energy Costs - Scheduled Hours (\$/MWh)
QF - Sch38 - UT - 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													
2024	\$35.52	\$89.76	\$55.14	\$40.48	\$35.77	\$30.30	\$25.58	\$65.63	\$111.79	\$46.08	\$37.97	(\$122.24)	\$14.05
2025	(\$26.97)	(\$41.34)	(\$24.64)	(\$17.90)	(\$17.51)	(\$14.75)	(\$15.14)	(\$10.23)	(\$36.79)	(\$23.66)	(\$23.74)	(\$50.55)	(\$59.82)
2026	(\$29.65)	(\$44.47)	(\$25.18)	(\$22.12)	(\$26.30)	(\$15.80)	(\$16.44)	(\$12.73)	(\$30.14)	(\$22.84)	(\$25.61)	(\$53.05)	(\$68.18)
2027	(\$29.73)	(\$47.42)	(\$28.33)	(\$21.29)	(\$18.44)	(\$14.86)	(\$16.29)	(\$10.02)	(\$18.02)	(\$23.85)	(\$27.66)	(\$58.75)	(\$76.10)
2028	(\$29.74)	(\$51.90)	(\$29.34)	(\$21.61)	(\$19.23)	(\$14.61)	(\$14.47)	(\$2.38)	(\$29.74)	(\$22.41)	(\$24.36)	(\$57.52)	(\$74.83)
2029	(\$28.83)	(\$46.93)	(\$26.16)	(\$20.79)	(\$19.26)	(\$14.81)	(\$12.60)	(\$8.77)	(\$26.52)	(\$24.15)	(\$25.39)	(\$57.09)	(\$70.40)
2030	(\$28.52)	(\$48.01)	(\$31.48)	(\$19.56)	(\$18.06)	(\$13.58)	(\$14.80)	(\$6.10)	(\$26.44)	(\$21.45)	(\$21.05)	(\$56.11)	(\$71.23)
2031	(\$29.52)	(\$49.51)	(\$28.77)	(\$20.86)	(\$18.88)	(\$16.42)	(\$16.09)	(\$6.41)	(\$26.78)	(\$22.92)	(\$21.06)	(\$57.52)	(\$74.88)
2032	(\$27.72)	(\$44.95)	(\$24.53)	(\$21.97)	(\$20.78)	(\$22.11)	(\$14.69)	(\$2.72)	(\$20.28)	(\$20.97)	(\$24.33)	(\$50.92)	(\$63.48)
2033	(\$29.68)	(\$45.92)	(\$27.02)	(\$25.54)	(\$22.36)	(\$24.22)	(\$18.30)	(\$3.63)	(\$23.51)	(\$26.76)	(\$19.70)	(\$52.78)	(\$65.71)
2034	(\$30.51)	(\$51.42)	(\$23.66)	(\$24.15)	(\$25.10)	(\$22.46)	(\$20.04)	(\$5.63)	(\$20.95)	(\$23.01)	(\$24.28)	(\$54.58)	(\$69.13)
2035	\$5.56	\$4.05	\$10.28	\$6.53	(\$0.62)	\$0.73	\$3.45	\$26.28	\$12.89	\$9.60	\$6.67	\$0.33	(\$4.48)
2036	\$7.10	\$2.70	\$10.33	\$7.14	\$6.21	\$4.34	\$8.67	\$20.85	\$18.73	\$4.79	\$10.29	(\$0.39)	(\$1.75)
2037	\$7.48	\$1.46	\$11.89	\$8.02	\$6.36	\$4.38	\$6.77	\$24.63	\$12.21	\$12.61	\$10.78	\$1.55	(\$4.17)
2038	\$8.09	\$1.38	\$13.95	\$9.28	\$6.85	\$5.71	\$8.51	\$24.44	\$23.15	\$12.81	\$10.79	\$0.70	(\$11.79)
2039	\$7.98	\$0.61	\$14.51	\$10.20	\$6.65	\$3.81	\$10.43	\$26.84	\$14.83	\$12.74	\$12.81	(\$2.39)	(\$9.37)
2040	\$9.46	\$1.05	\$19.65	\$10.35	\$7.15	\$6.85	\$11.50	\$32.31	\$16.60	\$16.85	\$12.19	(\$2.38)	(\$12.55)
2041	\$10.48	\$0.90	\$21.99	\$11.08	\$9.39	\$6.18	\$11.73	\$40.06	\$17.28	\$18.10	\$13.83	(\$3.04)	(\$13.03)