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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Voluntary Request of Rocky Mountain Power for Approval of Resource Decision to Repower Wind Facilities	**Docket No. 17-035-39**

PREFILED SURREBUTTAL TESTIMONY AND EXHIBITS OF KEVIN C. HIGGINS

The Utah Association of Energy Users ("UAE") hereby submits the Prefiled Surrebuttal Testimony of Kevin C. Higgins in this docket.

DATED this 16th day of November 2017.

HATCH, JAMES & DODGE

/s/ _____
Phillip J. Russell
Attorneys for the Utah Association of Energy Users

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was served by email this 16th day of November 2017 on the following:

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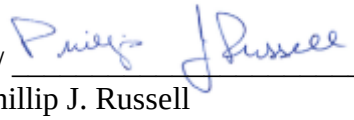
/s/ 
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BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Voluntary Request of Rocky Mountain Power for Approval of Resource Decision to Repower Wind Facilities	))))))	Docket No. 17-035-39

Surrebuttal Testimony of Kevin C. Higgins

On Behalf of the

Utah Association of Energy Users

November 16, 2017

I. INTRODUCTION AND SUMMARY

Q. Please state your name and business address.

A. My name is Kevin C. Higgins. My business address is 215 South State Street, Suite 200, Salt Lake City, Utah, 84111.

Q. By whom are you employed and in what capacity?

A. I am a Principal in the firm of Energy Strategies, LLC. Energy Strategies is a private consulting firm specializing in economic and policy analysis applicable to energy production, transportation, and consumption.

Q. Are you the same Kevin C. Higgins who previously filed Direct and Rebuttal Testimony in this proceeding on behalf of the Utah Association of Energy Users ("UAE")?

A. Yes, I am.

Q. What is the purpose of your Surrebuttal Testimony?

A. My Surrebuttal Testimony responds to a number of issues addressed in the rebuttal filing of Rocky Mountain Power ("RMP").

Q. Please provide a summary of the conclusions of your Surrebuttal Testimony.

A. RMP has revised its projections of the net benefits from repowering in its rebuttal filing. Although RMP's projections of the revised net benefits are improved relative to RMP's direct filing, the Company's projections remain subject to significant risk and uncertainty, and are particularly vulnerable to changes in the tax code. Nothing in the Company's rebuttal filing provides *assurances* of customer benefits in the magnitudes being projected by the

Company – or assurances of customer benefits of any magnitude. Given the significant uncertainties and risks associated with the Company's repowering proposal, I cannot recommend approval of any aspect of the proposal at this time.

In addition, I continue to recommend that if the Commission grants approval of any aspects of the wind repowering project, at a minimum it should be contingent on a 200 basis point reduction to the authorized rate of return on common equity applicable to the un-depreciated balance of the retired plant, as a way of better balancing the equities in this project.

Further, since this project is being justified by the Company solely on the grounds of potential customer benefits, I continue to believe it is important that there be a reasonable nexus between future cost recovery and the actual provision of net benefits. For that reason, I continue to recommend that the future cost recovery associated with the wind repowering project be conditioned on the Company's ability to demonstrate that construction costs have come in at or below its estimated costs in this case, and that, measured over a reasonable period of time, the megawatt-hours produced by the repowered facilities are equal to or greater than the forecasted production provided in this proceeding.

In its rebuttal filing, RMP includes analysis projecting that each repowering site would provide net benefits, based on the Company's rebuttal assumptions. However, the Company's presentation does not alleviate concerns about the portfolio of repowering sites. For instance, if corporate tax rates are reduced, the projected benefits calculated at each site would be significantly

reduced, making it likely that the more marginally-beneficial repowering sites (under the rebuttal assumptions) would no longer be projected to produce positive net benefits.

In light of the significant risks and uncertainties facing customers, I do not recommend approval of the repowering application. However, if the Commission is interested in considering approval of some aspects of the repowering proposal, I recommend that it make any such approval effective only after the end of this calendar year, and conditioned upon RMP first providing revised and updated calculations of projected customer benefits on a project-by-project basis using the most up-to-date information regarding corporate tax rates and other factors. This would allow the most cost-effective repowering sites to be identified. If individual components of the package do not provide net benefits to customers, then they should be removed from the portfolio. I also recommend that other parties be allowed to review and respond to the Company's updated projections, and that final determinations be made only after all parties have had a chance to weigh in.

Finally, I note that a denial of RMP's voluntary application for pre-approval of the wind repowering proposal would not necessarily mean that RMP cannot proceed with the project. If RMP feels strongly that customer benefits will materialize, and if the Company is willing to take the risk of prudence analysis of its decisions in future rate proceedings, my understanding is that the Company could proceed with the project without Commission approval.

II. RMP's RECALCULATION OF THE NET BENEFITS FROM REPOWERING

Q. Please describe the recalculation of the net benefits from the repowering project presented by RMP in the Company's rebuttal filing.

A. In his rebuttal testimony, RMP witness Rick T. Link presents a new calculation of the Company's projections of net benefits from repowering. As explained by Mr. Link, the Company's net benefits analysis was revised to account for several updates, including: (1) a projected reduction in capital costs; (2) a projected increase in wind output due to the planned use of longer rotors; (3) an updated load forecast; (4) the use of an updated official forward price curve ("OFPC") in the medium gas price scenario; and (5) the correction of a minor error. A summary of Mr. Link's revised net benefits calculation is presented in Table KCH-SR-1 below.

Table KCH-SR-1
Revised Net Benefits of Wind Repowering as Projected by RMP ($ millions)

2017-2036	SO Model PVRR(d)	PaR Stochastic-Mean PVRR(d)	PaR Risk Adjusted PVRR(d)
Low Gas, Zero CO2	($110)	($90)	($95)
Low Gas, Medium CO2	($125)	($108)	($113)
Low Gas, High CO2	($133)	($114)	($119)
Medium Gas, Zero CO2	($137)	($116)	($122)
Medium Gas, Medium CO2	($138)	($115)	($121)
Medium Gas, High CO2	($157)	($131)	($137)
High Gas, Zero CO2	($196)	($152)	($160)
High Gas, Medium CO2	($204)	($167)	($175)
High Gas, High CO2	($214)	($167)	($176)

Data Source: Rebuttal Testimony of Rick T. Link, p. 12, Table 1.
Note: Projected customer benefits are shown as negative entries.

Q. How different are the net benefit results compared to the Company's direct filing?

A. The revised net benefit projections are improved relative to RMP's direct filing. The increase in projected net benefits for the 20-year period ranges from $87 million to $143 million depending on the scenario. A summary of the change in net benefits between the Company's direct filing and its rebuttal filing is presented in Table KCH-SR-2 below.

Table KCH-SR-2
Change in Net Benefits of Wind Repowering as Projected by RMP ($ millions)

Price-Policy Scenario	SO Model PVRR(d)	PaR Stochastic-Mean PVRR(d)	PaR Risk Adjusted PVRR(d)
Low Gas, Zero CO2	($143)	($133)	($139)
Low Gas, Medium CO2	($125)	($117)	($121)
Low Gas, High CO2	($115)	($97)	($100)
Medium Gas, Zero CO2	($104)	($92)	($97)
Medium Gas, Medium CO2	($116)	($102)	($106)
Medium Gas, High CO2	($116)	($96)	($101)
High Gas, Zero CO2	($121)	($112)	($117)
High Gas, Medium CO2	($140)	($133)	($138)
High Gas, High CO2	($111)	($87)	($91)

Data Sources: Direct Testimony of Rick T. Link, p. 28, Table 2 and Rebuttal Testimony of Rick T. Link, p. 12, Table 1.
Note: Increases in projected customer benefits are shown as negative entries.

Q. Does RMP provide any information in its rebuttal filing regarding the impact of each change in assumptions on the change in projected net benefits?

A. No, in its rebuttal filing, the Company provides no insight into the relative contribution of each change in assumptions on the change in net benefits.

However, in discovery, RMP provided an itemized breakdown which is summarized (using RMP's descriptions) in Table KCH-SR-3, below.

Table KCH-SR-3
Incremental Impacts of RMP Rebuttal Assumptions vs.
RMP Direct Filing Assumptions
20-Year Medium Gas, Medium CO_2 Analysis
($ millions)

Step Changes	SO Model PVRR(d)	Notes
Testimony Filing - Repower MM	**(21.7)**	Refer to Table 2, Medium Gas, Medium CO2 Price-Policy Scenario of Repower Direct Testimony.
New Price Curve Sept 30 MM	(70.2)	Refer to Mr. Link's rebuttal testimony, rows 108-171.
Transmission Derate	(0.9)	Refer to Mr. Link's rebuttal testimony, rows 78-86.
Repower 91m/New Wind Shapes	(63.9)	Refer to Mr. Link's rebuttal testimony, rows 172-205.
Load Update (August 2017)	18.5	Refer to Mr. Link's rebuttal testimony, rows 87-107.
Rebuttal - Repower MM	**(138)**	Refer to Table 2, Medium Gas, Medium CO2 Price-Policy Scenario of Repower Rebuttal Testimony.

Data Source: RMP Response to UAE Data Request 3.1, Attachment UAE 3.1, attached as UAE Exhibit 1.1S.

Q. What are your observations regarding the drivers of the change in the Company's projected net benefits?

A. Among the primary drivers of the increase in forecasted net benefits are the projected reduction in capital costs and the projected increase in energy output in the Company's rebuttal filing, which RMP apparently combines into one line item (called Repower 91m/New Wind Shapes) in its data response. This combined change increases projected net benefits by $63.9 million.

The change in load forecast, which is primarily caused by a projected reduction in Utah and Wyoming load, reduces projected net benefits by $18.5 million.

The largest driver of the change in RMP's projection of benefits is the updated OFPC, which results in an increase in RMP's forecast of net benefits of $70.2 million, according to RMP's data response.

Q. Does this last impact make sense to you in the context of the Company's rebuttal filing?

A. No, it did not at first. In his rebuttal testimony, Mr. Link discusses the fact that the updated OFPC reflects an average *reduction* of 2.6% in the nominal levelized Henry Hub forecasted gas price over the period 2018 through 2036. In light of that discussion, I found the increase in projected benefits associated with the updated OFPC to be counterintuitive, since lower gas price projections generally *reduce* projected benefits from wind investments, a directional relationship that is also found throughout Mr. Link's analysis of the repowering project.

However, in follow-up discovery, RMP explained that the updated OFPC also includes increases in forecasted wholesale power prices relative to the Company's direct case.[1] It is this latter change that actually drives the OFPC-related increase in projected benefits in the Company's rebuttal case.

[1] *See* RMP Response to UAE 4.1(b), attached as UAE Exhibit 1.2S.

Q. Is there anything you find curious about the combination of OFPC changes in the Company's rebuttal filing?

A. Yes. In the Company's updated OFPC, gas price projections and wholesale power price projections are moving in opposite directions, whereas generally one would expect a positive correlation between the two. As explained by RMP in its Response to UAE Data Request 4.1(b):

> Although Henry Hub natural gas prices from the September 2017 OFPC are approximately 3.9 percent lower than the Henry Hub natural gas price assumptions used in the medium natural gas and medium CO_2 price-policy scenario used in Direct Testimony,[...] summer peak power prices at Palo Verde (PV), which reflect or are influenced by observed forward market prices through October 2024, trend higher in the September 2017 OFPC, particularly during summer months. This indicates that the implied market heat rate (calculated by dividing power prices by natural gas prices) in the September 2017 OFPC (used in Rebuttal Testimony) is higher than the forecasted implied heat rate assumed in the medium natural gas and medium CO_2 price-policy scenario (used in the Company's Direct Testimony).
>
> The presence of incremental energy output from repowered wind facilities causes the System Optimizer model (SO model) to select a different capacity expansion strategy to take greater advantage of seasonal variations in the September 2017 OFPC. This contributes to an improved optimization of system balancing purchases and sales and reduced Class 2 demand-side management (DSM) costs relative to a scenario without wind repowering.

Q. Do you have any concerns about the role of the updated OFPC in driving a significant portion of the improvement in RMP's forecast of net benefits?

A. Yes. I am concerned that the improved benefit projections arise from an anomalous combination: a reduction in forecasted gas prices combined with an increase in forecasted power prices. I do not dispute that market forecasts have moved in this direction since the time of RMP's direct filing. But as the Company notes in its data response, this opposite movement in two otherwise positively-

correlated variables indicates that the implied market heat rate in the September 2017 OFPC is higher than the forecasted implied heat rate used in the Company's direct filing. Whether this increase in the implied market heat rate is indicative of an underlying trend or is merely a one-off anomaly limited to the September 2017 OFPC remains to be seen. My inclination is to be very cautious in relying on this result for the purpose of making long-term investment decisions.

Q. What is your general response to RMP's updated projection of net benefits?

A. At a high level, the improvement in projected customer benefits is a positive development. But at the same time, the very significant change in RMP's benefit estimations in the relatively short 3½ months between the Company's direct and rebuttal filings underscores the fact that the benefits in question are long-term *projections* and that there is a substantial range of uncertainty surrounding their magnitude, as well as whether or not they will materialize.

Q. Do any of RMP's rebuttal revisions suggest there may be reduced uncertainty for any forecast variables relative to the Company's direct filing?

A. Yes. RMP identifies some specific steps the Company has taken to reduce and firm up its capital cost projections. The primary area in which uncertainty has been reduced results from firmed-up supply and installation contracts.

Q. Are there any areas in which there is greater uncertainty than at the time of the Company's direct filing?

A. Yes. The lynchpin to the repowering proposal, the Production Tax Credit ("PTC"), is now subject to even greater uncertainty, as the US House of Representatives has passed, and the Senate has drafted, new tax reform legislation that would significantly impact the projected benefits of repowering. At the time of this testimony, both the House and Senate versions of tax legislation would reduce the corporate tax rate from 35% to 20%, a change that would dramatically reduce – and potentially eliminate – the benefits projected by RMP from the repowering project. Moreover, the House legislation would reduce the value of the PTCs themselves, as well as change the safe harbor provisions applicable to the PTCs, further jeopardizing the economics of the project. My understanding is that the Senate version of the legislation maintains the current PTC valuations. Both the House and the Senate tax bills are, of course, subject to change at any time. One or the other, a combination of both, or neither may ultimately be passed into law. This significant uncertainty about potential tax law changes makes an order approving the Company's repowering request at this time highly risky and, in my opinion, not in the public interest.

In addition, the Company's rebuttal testimony demonstrates that there are also significant risks to the ultimate provision of customer benefits from variables such as the load forecast, which during the time between the Company's direct and rebuttal filings resulted in a net benefit reduction, in isolation, of $18.5 million in the Medium Gas, Medium CO_2 scenario.

Q. In your direct and rebuttal testimony, you recommend that if the Commission grants approval of any portions of the wind repowering project, at a minimum such approval should be contingent on a 200 basis point reduction to the authorized rate of return on common equity applicable to the un-depreciated balance of the retired plant, as a way of better balancing the equities in this project. In light of RMP's rebuttal filing, is this still your recommendation?

A. Yes. While RMP's rebuttal filing increases RMP's projections of customer benefits, the Company's projections remain subject to significant uncertainty. Nothing in the Company's proposal, including its rebuttal case, provides any *assurances* of customer benefits in the magnitudes being projected by the Company – or assurances of customer benefits of any magnitude.

Further, in its rebuttal filing RMP estimates that, under the Medium Gas, Medium CO_2 scenario, a reduction in the corporate income tax rate from 35% to 25% would reduce net customer benefits by around $93 million to $97 million in the 20-year measurement period.[2] A change of this magnitude would effectively wipe out the positive benefits to customers under the Company's Low Gas, Zero CO_2 scenario—a scenario that could well be close to actual results.

I want to emphasize that the repowering project is not needed to reliably serve customer load, but is being proposed solely as an investment that might result in lower future rates than would obtain otherwise. Making any potential

[2] Rebuttal Testimony of Rick T. Link, lines 691-703.

approval of any aspect of the repowering project contingent on a restructuring of projected benefits between RMP and customers as I am proposing helps increase the likelihood that customers will receive some benefit from the risks they would be assuming if any portion of the repowering project goes forward. RMP stands to benefit from approval of the repowering proposal regardless of the risks assigned to customers. Additional actions are necessary to increase the likelihood that customers will also receive at least some benefits.

Q. Have you updated the impact of your recommended 200 basis point adjustment using the net benefits estimated in RMP's rebuttal filing?

A. Yes. The updated range of potential Company-projected impacts across the range of scenarios evaluated by the Company are presented below in Table KCH-SR-4, which shows projected impacts on a Total Company basis, and Table KCH-SR-5, which shows projected impacts on a Utah-allocated basis.

Table KCH-SR-4
Summary of Benefits After 200 BP Adjustment to ROE on Retired Plant
Total Company

Projected Net Benefits to Customers and RMP Based on RMP's Proposal			
Timeframe	**Customer Benefit Range (Millions)**		**RMP Benefit (Millions)**
2017-2036	($90)	($214)	$178
2017-2050	($360)	($635)	$235

Projected Net Benefits to Customers and RMP Based on 200 BP Adjustment to ROE on Retired Plant			
Timeframe	**Customer Benefit Range (Millions)**		**RMP Benefit (Millions)**
2017-2036	($132)	($256)	$152
2017-2050	($416)	($691)	$201

Note: Projected customer benefits are shown as negative entries. RMP benefits are shown as positive entries.

Table KCH-SR-5
Summary of Benefits After 200 BP Adjustment to ROE on Retired Plant
Utah Allocated

Projected Net Benefits to Customers and RMP Based on RMP's Proposal			
Timeframe	**Customer Benefit Range (Millions)**		**RMP Benefit (Millions)**
2017-2036	($39)	($93)	$78
2017-2050	($157)	($278)	$103

Projected Net Benefits to Customers and RMP Based on 200 BP Adjustment to ROE on Retired Plant			
Timeframe	**Customer Benefit Range (Millions)**		**RMP Benefit (Millions)**
2017-2036	($58)	($112)	$66
2017-2050	($182)	($302)	$88

Note: Projected customer benefits are shown as negative entries. RMP benefits are shown as positive entries.

Q. In your rebuttal testimony you also recommended that the Commission expressly condition the Company's future cost recovery associated with the wind repowering project on the Company's ability to demonstrate that construction costs have come in at or below its estimated costs in this case, that the projects were completed as scheduled, and that, measured over a reasonable period of time, the megawatt-hours produced by the repowered facilities are equal to or greater than the forecasted production provided in this proceeding. Do you have any modifications to your recommendation in light of the Company's rebuttal filing?

A. Yes. In RMP's rebuttal filing, the Company provided evidence that it has taken steps to ensure completion of the projects within the necessary schedule to qualify for the PTCs under the current statutes and to provide financial remedies if the schedule is not met. Therefore, I am modifying my recommendation to remove the condition that projects are completed as scheduled. However, since this project is being justified by the Company solely on the grounds of potential customer benefits, I continue to believe it is important that there be a reasonable nexus between future cost recovery and the actual provision of net benefits. For that reason, I continue to recommend that the future cost recovery associated with the wind repowering project be conditioned on the Company's ability to demonstrate that construction costs have come in at or below its estimated costs in this case, and that, measured over a reasonable period of time, the megawatt-hours produced by the repowered facilities are equal to or greater than the

forecasted production provided in this proceeding. I note that in the case of the latter, I am recommending that the output of the facilities be measured over a reasonable period of time in order to capture the long-term output trends to avoid penalizing the Company for adverse short-term results. If those conditions are not satisfied, notwithstanding any determination in this proceeding, I recommend that the Commission expressly reserve the right in a future rate case to reduce the Company's recovery of costs associated with the repowering project to allow for a reasonable sharing of the risks and benefits of the project between the Company and customers.

III. PORTFOLIO OF REPOWERING SITES

Q. Has RMP responded to the concerns that have been raised by parties regarding the portfolio of repowering sites being proposed by the Company?

A. Yes. In his rebuttal testimony, Mr. Link provides a summary of projected net benefits that may be provided by each repowering site for the Medium Gas, Medium CO_2 scenario, using the Company's rebuttal filing assumptions—including a 35% corporate income tax rate. Based on those assumptions, Mr. Link's summary projects that each repowering site will provide some amount of positive net benefits over the 20-year measurement period, 2017-2036.[3]

Q. Do you have any observations regarding this new site-by-site information?

A. Yes. It is clear in Mr. Link's summary that RMP's projected positive net benefits at several of the repowering sites are very small. Given that Mr. Link's

[3] *Id.*, lines 516-547.

site-by-site analysis was run using the Company's newer, more favorable, rebuttal assumptions, I conclude that a number of these sites likely did not provide projected positive net benefits under the assumptions used in the Company's direct filing, consistent with the concerns raised by Division of Public Utilities witness Daniel Peaco and Office of Consumer Services witness Philip Hayet in their direct testimonies, even though RMP was not willing to confirm this point in discovery.

The fact that RMP's rebuttal analysis now projects that each repowering site will provide some amount of net benefits does not alleviate concerns about the portfolio of repowering sites. For instance, if corporate tax rates are reduced, the benefits calculated at each site would be significantly reduced or eliminated, making it likely that the more marginal repowering sites (even under the Company's other rebuttal assumptions) would no longer produce projected positive net benefits. My recommendation is that any approval of any aspect of the repowering proposal should be effective only after the end of this calendar year and made contingent upon an updated showing of projected customer benefits on a site-by-site basis using the most up-to-date information regarding corporate tax rates. If individual components of the package do not provide net benefits to customers, then they should be removed from the portfolio.

Q. Do you have any other observations about the Company's request for voluntary pre-approval of its wind repowering proposals at this time?

A. Yes. As I noted above, I cannot recommend approval of any aspect of the Company's application in this docket at this time in light of the significant uncertainties and risks. I am aware of no reason why approval of the repowering proposal cannot be delayed until some of the existing uncertainties can be clarified. If the Company nevertheless insists upon proceeding now despite these uncertainties, it is free to do so, but that should occur without any pre-approval from the Commission. It is my understanding that a Commission denial of RMP's voluntary application for pre-approval would not mean that RMP cannot proceed with the repowering project if the Company is comfortable that it can demonstrate prudence and customer benefits in future rate proceedings. If RMP desires to move forward notwithstanding the existing uncertainties and risks, it seems reasonable to me that the Company should be willing to do so without the recovery assurances that accompany pre-approval.

Q. Does this conclude your Surrebuttal Testimony?

A. Yes, it does.

Docket No. 17-035-39

EXHIBIT

UAE 1.1S

Rocky Mountain Power Response to UAE Data Request 3.1

UAE Data Request 3.1

Using the medium gas, medium CO2 scenario, please separately identify, for each assumption that RMP has corrected or updated in its rebuttal testimony relative its direct filing, the impact on net benefits as presented in the SO and PaR PVRR(d) (Link Direct Table 2) and Nominal Revenue Requirement (Link Direct Table 3).

This would be similar to the type of reconciliation RMP prepares in its general rate cases when the Company corrects and updates its net power costs during the proceeding. For example, see RMP updated net power cost filing made on April 10, 2014 in Utah Docket 14-035-184, which included a table detailing the incremental impact of each correction and update moving from the direct filing net power costs to the updated net power costs.

Response to UAE Data Request 3.1

The Company assumes that the reference to Utah Docket No. 14-035-184 is to the general rate case filing in Utah, Docket No. 13-035-184. Based on this assumption, the Company responds as follows:

Please refer to Attachment UAE 3.1, which reports the incremental impacts of updates in the Company's rebuttal testimony to assumptions used in the Company's direct testimony for the repowering scenario using medium natural gas prices and medium carbon dioxide (CO_2) prices.

Repower Incremental Update Impacts
(Benefit)/Cost ($ million)

Step Changes	SO Model PVRR(d)	Notes
Testimony Filing - Repower MM	**(21.7)**	Refer to Table 2, Medium Gas, Medium CO2 Price-Policy Scenario of Repower Direct Testimony.
New price Curve Sept 30 MM	(70.2)	Refer to Mr. Link's rebuttal testimony, rows 108-171.
Transmission Derate	(0.9)	Refer to Mr. Link's rebuttal testimony, rows 78-86.
Repower 91m/New Wind Shapes	(63.9)	Refer to Mr. Link's rebuttal testimony, rows 172-205.
Load Update (August 2017)	18.5	Refer to Mr. Link's rebuttal testimony, rows 87-107.
Rebuttal - Repower MM	**(138)**	Refer to Table 2, Medium Gas, Medium CO2 Price-Policy Scenario of Repower Rebuttal Testimony.

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EXHIBIT

UAE 1.2S

Rocky Mountain Power Response to UAE Data Request 4.1

UAE Data Request 4.1

Follow-up to RMP Response to UAE Data Request No. 3.1.

In his rebuttal testimony, RMP's witness Rick Link describes an update to RMP's official forward price curves (OFPC) used in the Company's cost/benefit analyses, updating them from the April 2017 OFPCs to the September 2017 OFPCs. Further, Mr. Link notes that the updated Henry Hub natural gas forward curve was 2.6% lower over the period from 2018 to 2036 time period compared to the April 2017 forward price curve.

(a) Please confirm that RMP also updated its medium forward price curves used in its rebuttal analysis from the medium price curves used in its direct testimony. If confirmed, please describe the directional difference in the curves and provide a graph similar to Figure 2 in Mr. Link's rebuttal testimony, showing the differences in the Henry Hub forward natural gas curve if any difference from Figure 2 exists. If no such difference exists, please explain why such updates were not included in RMP's rebuttal filing and why the response to UAE Data Request No. 3.1 indicates that these curves were updated.

(b) Assuming RMP confirms that it updated its medium forward price curve and that the update results in a lower forward price curve, please explain why the response provided to UAE Data Request No. 3.1 indicates that the updated forward price curve provides significant additional benefits to customers as compared to the benefits identified in Mr. Link's direct testimony. Specifically, please explain how lower natural gas prices would improve the economics of the wind repowering project. As part of the explanation, please contrast this result with the modeling results provided in Table 2 of Mr. Link's direct testimony, which indicates that as forward prices move from High to Low within a given CO2 scenario, customer benefits are reduced.

Response to UAE Data Request 4.1

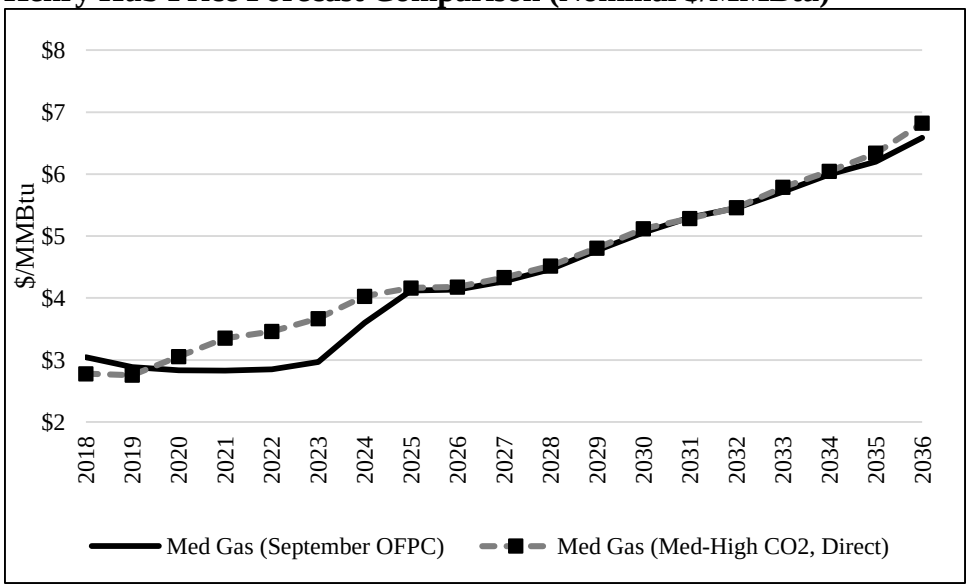
(a) The Company confirms that the medium natural gas price assumptions referenced in the Rebuttal Testimony of Company witness, Rick T. Link, were updated to the September 2017 official forward price curve (OFPC). In Mr. Link's Rebuttal Testimony, the September 2017 OFPC was used in the three price-policy scenarios that pair medium natural gas price assumptions with three different carbon dioxide (CO_2) price assumptions—zero, medium, and high.

In the economic analysis summarized in Mr. Link's Direct Testimony, the April 2017 OFPC was paired with zero CO_2 price assumptions, and medium natural gas price assumptions, derived entirely from a market-fundamentals forecast, were paired with medium and high CO_2 price assumptions.

Consequently, Figure 2 in Mr. Link's Rebuttal Testimony summarizes differences in Henry Hub natural gas price assumptions for the price-policy scenario that reflects medium natural gas prices and zero CO_2 prices. The figure below summarizes

difference in Henry Hub natural gas prices between the September 2017 OFPC (adopted in Rebuttal Testimony) and the price-policy scenario with medium natural gas price assumptions paired with medium and high CO_2 price assumptions (used in Direct Testimony).

Henry Hub Price Forecast Comparison (Nominal $/MMBtu)



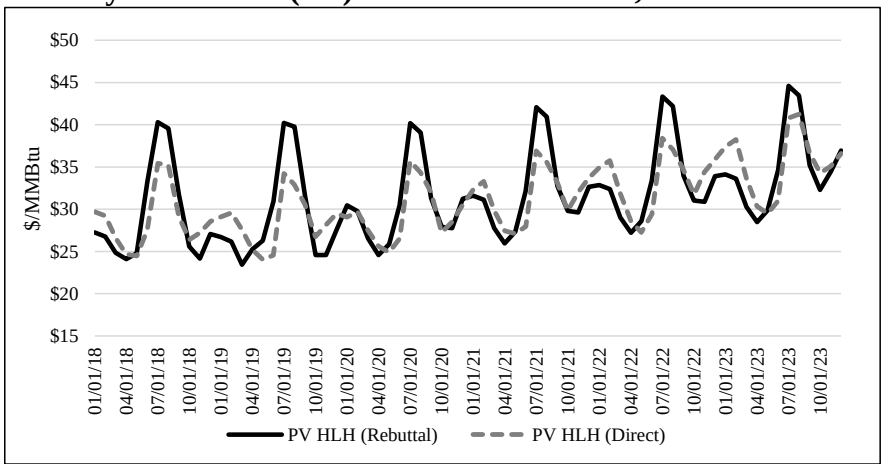
Over the period 2018 through2036, nominal levelized prices in the September 2017 OFPC are approximately 3.9 percent lower than the price assumptions used in Direct Testimony for the price-policy scenarios that pair medium natural gas prices with medium and high CO_2 prices

(b) The change in wholesale power prices assumed for the price-policy scenario reflecting medium natural gas prices and medium CO_2 prices between the Direct and Rebuttal economic analyses drive the additional benefits identified in the Company's response to UAE Data Request 3.1. Given the strong correlation between natural gas prices and power prices, the change in natural gas price assumptions often indicate a similar change in power prices. However, the change in wholesale power prices in the price-policy scenario assuming medium natural gas prices and medium CO_2 prices, which was used to calculate the benefits identified in the Company's response to UAE Data Request 3.1, differs from the observed change in Henry Hub natural gas price assumptions.

Although Henry Hub natural gas prices from the September 2017 OFPC are approximately 3.9 percent lower than the Henry Hub natural gas price assumptions used in the medium natural gas and medium CO_2 price-policy scenario used in Direct Testimony, as seen in the figure below, summer peak power prices at Palo Verde (PV), which reflect or are influenced by observed forward market prices through October 2024, trend higher in the September 2017 OFPC, particularly during summer

months. This indicates that the implied market heat rate (calculated by dividing power prices by natural gas prices) in the September 2017 OFPC (used in Rebuttal Testimony) is higher than the forecasted implied heat rate assumed in the medium natural gas and medium CO_2 price-policy scenario (used in the Company's Direct Testimony).

Monthly Palo Verde (PV) HLH Price Patterns, Direct and Rebuttal



The presence of incremental energy output from repowered wind facilities causes the System Optimizer model (SO model) to select a different capacity expansion strategy to take greater advantage of seasonal variations in the September 2017 OFPC. This contributes to an improved optimization of system balancing purchases and sales and reduced Class 2 demand-side management (DSM) costs relative to a scenario without wind repowering.

As noted, the economic results summarized in Table 2 of Mr. Link's Direct Testimony show that customer benefits are generally reduced with lower natural gas price assumptions and increased with higher natural gas price assumptions. In these price-policy scenarios, wholesale power prices follow the same trend as is observed in the natural gas price assumptions (wholesale power prices are lower when low natural gas price assumptions are applied and wholesale power prices are higher when high natural gas price assumptions are applied).