

Corrected Supplemental Direct and Rebuttal Testimony

Rick T. Link

24 and McFadden Ridge II are company-built facilities, totaling 500 MW and 109 MW,
25 respectively.

26 The results of the 2017R RFP and the extensive modeling that supports it
27 confirm that the Combined Projects are the least-cost, least-risk path available to serve
28 the company's customers by meeting both near-term and long-term needs for additional
29 resources. My supplemental direct testimony explains the following:

- 30 • The Combined Projects provide net customer benefits under all scenarios
31 studied through 2036, and in seven of the nine scenarios through 2050.
- 32 • Customer benefits increase to \$151 million in the medium case through 2050
33 (as compared to \$137 million in the original filing), and range from
34 \$333 million to \$349 million in the medium case through 2036.
- 35 • The analysis reflects changes in federal tax law that were enacted in December
36 2017, and updated best-and-final pricing from bidders received December 21,
37 2017, after the federal tax law changes were known.
- 38 • The treatment of production tax credits ("PTCs") in the system modeling
39 scenarios extending out through 2036 has been changed to better reflect how
40 the PTCs will flow through to customers, which makes the treatment consistent
41 with the nominal revenue requirement results that extend out through 2050.
- 42 • Sensitivity analysis shows substantial benefits of the Combined Projects persist
43 when paired with PacifiCorp's wind repowering project and are not displaced
44 when considering the potential procurement of solar PPA bids submitted into
45 the on-going RFP for solar resources, the 2017S RFP.

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**Table 2-SD Updated SO Model and PaR PVRR(d)
(Benefit)/Cost of the Combined Projects (\$ million)**

Price-Policy Scenario	SO Model PVRR(d)	PaR Stochastic Mean PVRR(d)	PaR Risk-Adjusted PVRR(d)
Low Gas, Zero CO2	(\$145)	(\$126)	(\$131)
Low Gas, Medium CO2	(\$186)	(\$146)	(\$152)
Low Gas, High CO2	(\$297)	(\$280)	(\$294)
Medium Gas, Zero CO2	(\$306)	(\$268)	(\$280)
Medium Gas, Medium CO2	(\$343)	(\$333)	(\$349)
Medium Gas, High CO2	(\$430)	(\$409)	(\$428)
High Gas, Zero CO2	(\$619)	(\$531)	(\$557)
High Gas, Medium CO2	(\$636)	(\$561)	(\$588)
High Gas, High CO2	(\$696)	(\$627)	(\$658)

570 Over a 20-year period, the Combined Projects reduce customer costs in all nine
571 price-policy scenarios. This outcome is consistent in both the SO model and PaR
572 results. Under the central price-policy scenario, assuming medium natural-gas prices
573 and medium CO₂ prices, the PVRR(d) net benefits range between \$333 million, when
574 derived from PaR stochastic-mean results, and \$349 million, when derived from PaR
575 risk-adjusted results.

576 **Q. What trends do you observe in the modeling results across the different price-**
577 **policy scenarios?**

578 A. Projected system net benefits increase with higher natural-gas price assumptions, and
579 similarly, increase with higher CO₂ price assumptions. Conversely, system net benefits
580 decline when low natural-gas prices and low CO₂ prices are assumed. This trend holds

626 annual data over the period 2017 through 2050 that was used to calculate the PVRR(d)
 627 results shown in the table are provided as Exhibit RMP__(RTL-5SD).

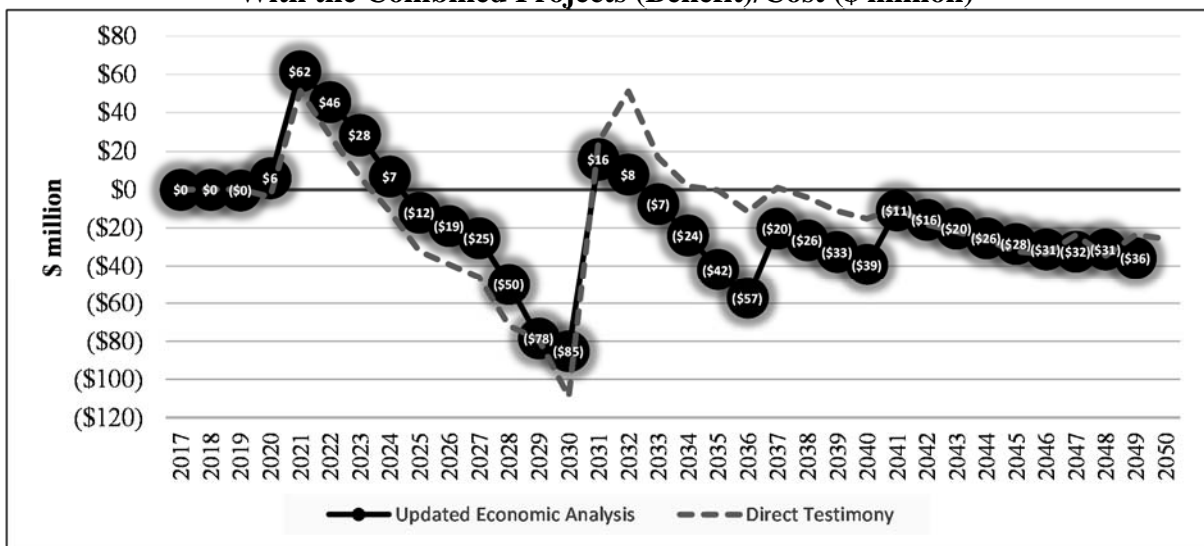
628 **Table 3-SD. Updated Nominal Revenue Requirement PVRR(d)**
 629 **(Benefit)/Cost of the Combined Projects (\$ million)**

Price-Policy Scenario	Annual Revenue Requirement PVRR(d)
Low Gas, Zero CO2	\$195
Low Gas, Medium CO2	\$159
Low Gas, High CO2	(\$79)
Medium Gas, Zero CO2	(\$34)
Medium Gas, Medium CO2	(\$151)
Medium Gas, High CO2	(\$275)
High Gas, Zero CO2	(\$411)
High Gas, Medium CO2	(\$453)
High Gas, High CO2	(\$559)

630 When system costs and benefits from the Combined Projects are extended out
 631 through 2050, covering the full depreciable life of the owned wind projects included in
 632 the 2017R RFP final shortlist, the Combined Projects reduce customer costs in seven
 633 out of nine price-policy scenarios. Customer benefits range from \$34 million in the
 634 medium natural-gas, zero CO₂ scenario, to \$559 million in the high natural-gas, high
 635 CO₂ scenario. Under the central price-policy scenario, assuming medium natural-gas
 636 prices and medium CO₂ prices, the PVRR(d) benefits of the Combined Projects are
 637 \$151 million. The Combined Projects provide significant customer benefits in all price-
 638 policy scenarios, and the net benefits are unfavorable only when low natural-gas prices

662 revenue requirement shown in the figure reflects updated costs, including capital
 663 revenue requirement (*i.e.*, depreciation, return, income taxes, and property taxes),
 664 O&M expenses, the Wyoming wind-production tax, and PTCs. The project costs are
 665 netted against updated system impacts from the Combined Projects, reflecting the
 666 change in NPC, emissions, non-NPC variable costs, and system fixed costs that are
 667 affected by, but not directly associated with, the Combined Projects.

668 **Figure 5-SD Updated Total-System Annual Revenue Requirement**
 669 **With the Combined Projects (Benefit)/Cost (\$ million)**



670 The data shown in this figure for the updated economic analysis have the same
 671 basic profile as the data from the original economic analysis summarized in my direct
 672 testimony. This profile shows that despite a reduction in PTC benefits associated with
 673 changes in federal tax law, the reduced costs from winning bids from the 2017R RFP
 674 continue to generate substantial near-term customer benefits, reduce the magnitude and
 675 shorten the duration over which costs increase after federal PTCs for new wind
 676 resources expire, and continue to contribute to customer benefits over the long term.

677 The year-on-year reduction in net benefits from 2036 to 2037 is driven by the
 678 company's conservative approach to extrapolate benefits from 2037 through 2050

702 scenarios. The results are shown alongside the benchmark study in which the Combined
 703 Projects were evaluated without solar PPA bids.

704 **Table 4-SD Solar Sensitivity with Solar PPAs Included**
 705 **in lieu of the Combined Projects (Benefit)/Cost (\$ million)**

	Sensitivity PVRR(d)	Benchmark PVRR(d)	Change in PVRR(d)
Medium Gas, Medium CO2			
SO Model	(\$334)	(\$343)	\$9
PaR Stochastic Mean	(\$222)	(\$333)	\$111
PaR Risk Adjusted	(\$233)	(\$349)	\$116
Low Gas, Zero CO2			
SO Model	(\$206)	(\$145)	(\$61)
PaR Stochastic Mean	(\$141)	(\$126)	(\$15)
PaR Risk Adjusted	(\$148)	(\$131)	(\$17)

706 In the medium natural gas, medium CO₂ price-policy scenario, a portfolio with
 707 the Combined Projects delivers greater customer benefits relative to a portfolio that
 708 adds solar PPA bids without the Combined Projects. Customer benefits are greater
 709 when the resource portfolio includes the Combined Projects without solar PPA bids by
 710 \$116 million in the medium natural gas, medium CO₂ price-policy scenario based on
 711 the risk-adjusted PaR results. In the low natural gas, zero CO₂ price-policy scenario,
 712 the portfolio with solar PPA bids and without the Combined Projects has higher net
 713 customer benefits relative to a portfolio containing just the Combined Projects. The
 714 increase in net benefits in the solar PPA portfolio is \$17 million based on the risk-
 715 adjusted PaR results.

716 **Q. What were the results of the solar sensitivity where solar PPA bids are pursued**
 717 **with the Combined Projects?**

718 A. Table 5-SD summarizes PVRR(d) results for the solar sensitivity where solar PPA bids
 719 are assumed to be pursued along with the proposed investments in the Combined
 720 Projects. This sensitivity was developed using SO model and PaR simulations through
 721 2036 for the medium natural gas, medium CO₂ and the low natural gas, zero CO₂ price-
 722 policy scenarios. The results are shown alongside the benchmark study in which the
 723 Combined Projects were evaluated without solar PPA bids.

724 **Table 5-SD Solar Sensitivity with Solar PPAs Included**
 725 **With the Combined Projects (Benefit)/Cost (\$ million)**

	Sensitivity PVRR(d)	Benchmark PVRR(d)	Change in PVRR(d)
Medium Gas, Medium CO2			
SO Model	(\$602)	(\$343)	(\$259)
PaR Stochastic Mean	(\$482)	(\$333)	(\$149)
PaR Risk Adjusted	(\$504)	(\$349)	(\$155)
Low Gas, Zero CO2			
SO Model	(\$286)	(\$145)	(\$141)
PaR Stochastic Mean	(\$217)	(\$126)	(\$91)
PaR Risk Adjusted	(\$227)	(\$131)	(\$96)

726 When the solar PPAs are pursued in addition to the Combined Projects, the total
 727 benefits increase, but are diluted (*i.e.*, the aggregate net benefits are less than the sum
 728 of the benefits for the cases where Combined Projects or solar PPAs are pursued
 729 independently).

730 **Q. What conclusions can you draw from these solar sensitivity analyses?**

731 A. These sensitivities demonstrate that should the company choose to pursue solar bids

755 facilities assuming they continue to operate within the limits of their large generator
 756 interconnection agreements (“LGIAs”).

757 **Q. What were the results of the wind-repowering sensitivity?**

758 A. Table 6-SD summarizes PVRR(d) results for this wind-repowering sensitivity. This
 759 sensitivity was developed using SO model and PaR simulations through 2036 for the
 760 medium natural-gas, medium CO₂ and the low natural-gas, zero CO₂ price-policy
 761 scenarios. The results are shown alongside the benchmark study in which the Combined
 762 Projects were evaluated without wind repowering.

763 **Table 6-SD Wind-Repowering**
 764 **Sensitivity (Benefit)/Cost (\$ million)**

	Sensitivity PVRR(d)	Benchmark PVRR(d)	Change in PVRR(d)
Medium Gas, Medium CO2			
SO Model	(\$541)	(\$343)	(\$198)
PaR Stochastic Mean	(\$497)	(\$333)	(\$164)
PaR Risk Adjusted	(\$520)	(\$349)	(\$171)
Low Gas, Zero CO2			
SO Model	(\$313)	(\$145)	(\$169)
PaR Stochastic Mean	(\$277)	(\$126)	(\$152)
PaR Risk Adjusted	(\$290)	(\$131)	(\$159)

765 In the wind-repowering sensitivity, customer benefits increase significantly
 766 when the wind repowering project is implemented with the Combined Projects in both
 767 the medium natural-gas, medium CO₂, and the low natural-gas, zero CO₂ price-policy
 768 scenarios. These results demonstrate that customer benefits not only persist, but also
 769 increase, if both the wind-repowering project and the Combined Projects are
 770 completed.

1112 will likely be different from the forward price curve, but if the forecast is unbiased, *i.e.*,
1113 that it is equally likely that the actual future prices are higher or lower than the
1114 forecasted prices, [] the best approach is to simply act today on its forecast as the best
1115 indicator of future outcomes.” *In the Matter of the Voluntary Request of Rocky*
1116 *Mountain Power for Approval of Resource Decision to Acquire Natural Gas Resources,*
1117 *Docket No. 12-035-102, Pre-Filed Direct Testimony of Douglas D. Wheelwright on*
1118 *Behalf of Utah Division of Public Utilities at lines 326-330 (Mar. 5, 2013). DPU noted*
1119 *that if “one had information today that the longer-term future was likely to be different*
1120 *from the above forecast, then the above analysis could be invalidated by the additional*
1121 *information.” Id. at 330-332. In this case, however, there is no additional information*
1122 *indicating that the longer-term future is likely to be different from the OFPC and*
1123 *therefore, according to the DPU’s prior analysis, the “best approach” is to act today*
1124 *based on the OFPC.*

1125 **Q. How does the company use each of the price-policy scenarios in its analysis?**

1126 A. The price-policy scenario assuming medium natural-gas prices and medium CO₂ prices
1127 represents the central forecast, around which the impact of lower or higher price
1128 assumptions can be evaluated. In the company’s updated economic analysis, the
1129 PVRR(d) net benefit of the Combined Projects derived from the central price-policy
1130 scenario is \$151 million when calculated from projected nominal system costs through
1131 2050. This outcome indicates that, when central price-policy assumptions are used,
1132 there is a reasonably sized cushion in the PVRR(d) results allowing for some erosion
1133 of the favorable economics should long-term natural-gas prices and CO₂ prices end up
1134 lower than what is assumed in this scenario. The other price-policy scenarios are useful

1307 **Q. Mr. Peaco claims that the expected customer benefits are modest relative to the**
1308 **overall project costs and that there is very little certainty that customers will see**
1309 **significant, if any, cost savings. (Peaco Direct, line 316-318.) Mr. Hayet criticizes**
1310 **the Combined Projects because, under most scenarios, he claims they present**
1311 **modest benefits relative to the company's total revenue requirement. (Hayet**
1312 **Direct, lines 284-297.) Please respond.**

1313 A. First, Mr. Peaco mischaracterizes the relationship between the cost and benefits of the
1314 Combined Projects by comparing the up-front investment cost to the *net* benefits of the
1315 project. This artificially makes it appear that customer benefits are relatively small in
1316 relation to the investment required to deliver those benefits, when in fact, the gross
1317 benefits from the projects are actually greater than total project costs.

1318 For instance, in the updated economic analysis, the PVRR(d) results calculated
1319 from the change in system costs through 2050 assuming medium natural-gas and
1320 medium CO₂ prices show a \$151 million *net* customer benefit from the Combined
1321 Projects. This is based on present-value project costs, including changes to run-rate
1322 operating costs, totaling \$1.50 billion. The present value of customer benefits,
1323 including federal PTC benefits, for this price-policy scenario is \$1.65 billion, which is
1324 \$151 million greater than the present value of project costs. In fact, the present value
1325 of customer benefits among all nine price-policy scenarios ranges between \$1.30
1326 billion and \$2.06 billion. In nearly all scenarios, the present value of customer benefits
1327 exceed the present value of customer costs.

1328 Second, the fact the total expected benefits are small relative to the company's
1329 total revenue requirement means little in this case. It is hard to imagine a resource

24 and McFadden Ridge II are company-built facilities, totaling 500 MW and 109 MW,
25 respectively.

26 The results of the 2017R RFP and the extensive modeling that supports it
27 confirm that the Combined Projects are the least-cost, least-risk path available to serve
28 the company's customers by meeting both near-term and long-term needs for additional
29 resources. My supplemental direct testimony explains the following:

- 30 • The Combined Projects provide net customer benefits under all scenarios
31 studied through 2036, and in seven of the nine scenarios through 2050.
- 32 • Customer benefits increase to ~~\$177-151~~ million in the medium case through
33 2050 (as compared to \$137 million in the original filing), and range from
34 ~~\$311-333~~ million to ~~\$343-349~~ million in the medium case through 2036.
- 35 • The analysis reflects changes in federal tax law that were enacted in December
36 2017, and updated best-and-final pricing from bidders received December 21,
37 2017, after the federal tax law changes were known.
- 38 • The treatment of production tax credits ("PTCs") in the system modeling
39 scenarios extending out through 2036 has been changed to better reflect how
40 the PTCs will flow through to customers, which makes the treatment consistent
41 with the nominal revenue requirement results that extend out through 2050.
- 42 • Sensitivity analysis shows substantial benefits of the Combined Projects persist
43 when paired with PacifiCorp's wind repowering project and are not displaced
44 when considering the potential procurement of solar PPA bids submitted into
45 the on-going RFP for solar resources, the 2017S RFP.

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**Table 2-SD Updated SO Model and PaR PVRR(d)
(Benefit)/Cost of the Combined Projects (\$ million)**

Price-Policy Scenario	SO Model PVRR(d)	PaR Stochastic Mean PVRR(d)	PaR Risk-Adjusted PVRR(d)
Low Gas, Zero CO2	(\$145)	(\$104126)	(\$109131)
Low Gas, Medium CO2	(\$186)	(\$124146)	(\$131152)
Low Gas, High CO2	(\$297)	(\$258280)	(\$272294)
Medium Gas, Zero CO2	(\$306)	(\$246268)	(\$258280)
Medium Gas, Medium CO2	(\$343)	(\$311333)	(\$327349)
Medium Gas, High CO2	(\$430)	(\$388409)	(\$406428)
High Gas, Zero CO2	(\$619)	(\$509531)	(\$535557)
High Gas, Medium CO2	(\$636)	(\$539561)	(\$567588)
High Gas, High CO2	(\$696)	(\$605627)	(\$636658)

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Over a 20-year period, the Combined Projects reduce customer costs in all nine

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price-policy scenarios. This outcome is consistent in both the SO model and PaR

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results. Under the central price-policy scenario, assuming medium natural-gas prices

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and medium CO₂ prices, the PVRR(d) net benefits range between ~~\$311-333~~ million,

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when derived from PaR stochastic-mean results, and ~~\$343-349~~ million, when derived

575

from ~~SO model~~ PaR risk-adjusted results.

576

Q. What trends do you observe in the modeling results across the different price-policy scenarios?

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578

A. Projected system net benefits increase with higher natural-gas price assumptions, and

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similarly, increase with higher CO₂ price assumptions. Conversely, system net benefits

580

decline when low natural-gas prices and low CO₂ prices are assumed. This trend holds

626 annual data over the period 2017 through 2050 that was used to calculate the PVRR(d)
 627 results shown in the table are provided as Exhibit RMP__(RTL-5SD).

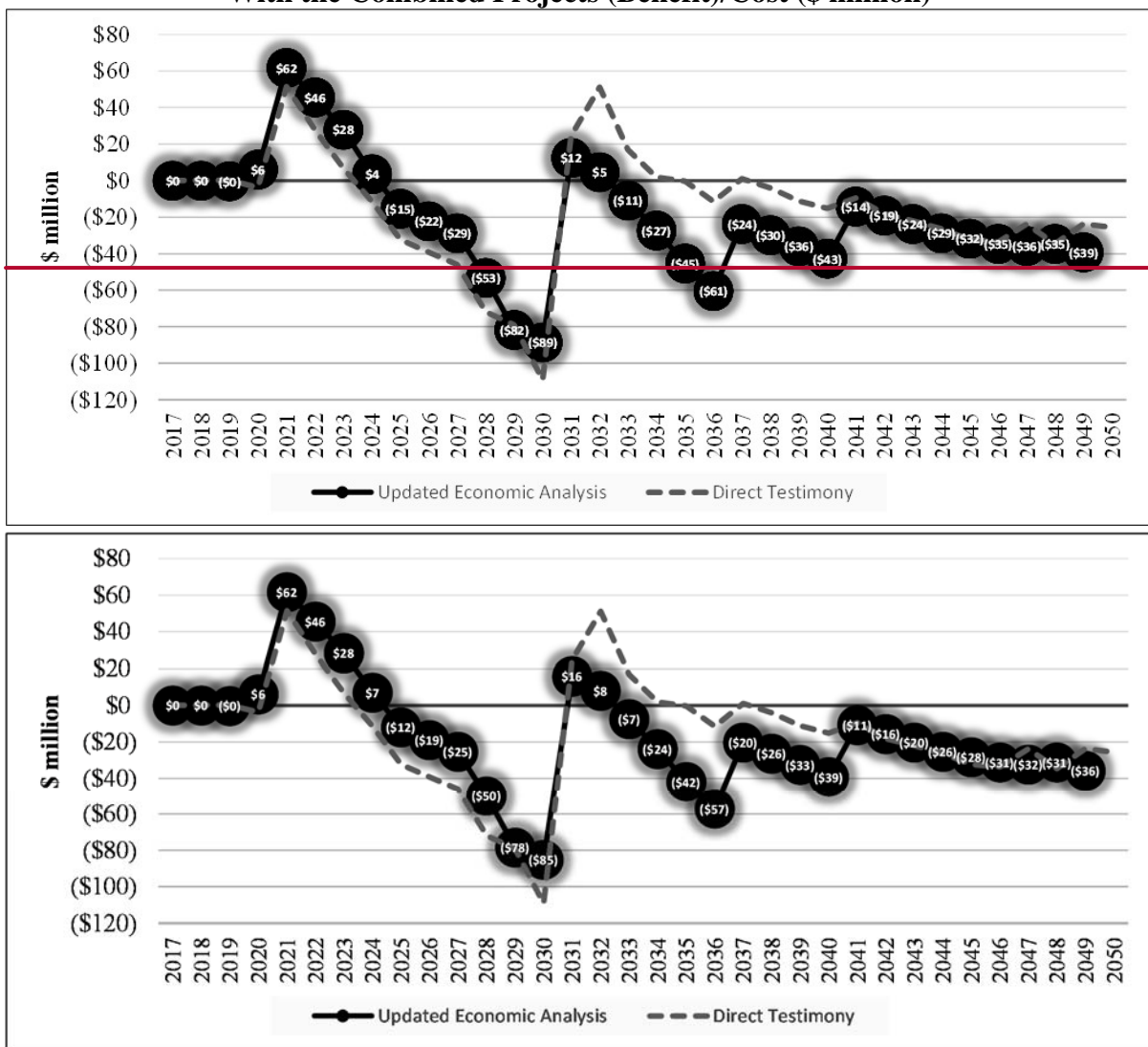
628 **Table 3-SD. Updated Nominal Revenue Requirement PVRR(d)**
 629 **(Benefit)/Cost of the Combined Projects (\$ million)**

Price-Policy Scenario	Annual Revenue Requirement PVRR(d)
Low Gas, Zero CO2	\$169 <u>195</u>
Low Gas, Medium CO2	\$133 <u>159</u>
Low Gas, High CO2	(\$105) <u>79</u>
Medium Gas, Zero CO2	(\$60) <u>34</u>
Medium Gas, Medium CO2	(\$177) <u>151</u>
Medium Gas, High CO2	(\$30) <u>275</u>
High Gas, Zero CO2	(\$437) <u>411</u>
High Gas, Medium CO2	(\$479) <u>453</u>
High Gas, High CO2	(\$585) <u>559</u>

630 When system costs and benefits from the Combined Projects are extended out
 631 through 2050, covering the full depreciable life of the owned wind projects included in
 632 the 2017R RFP final shortlist, the Combined Projects reduce customer costs in seven
 633 out of nine price-policy scenarios. Customer benefits range from ~~\$60~~34 million in the
 634 medium natural-gas, zero CO₂ scenario, to ~~\$585~~559 million in the high natural-gas,
 635 high CO₂ scenario. Under the central price-policy scenario, assuming medium natural-
 636 gas prices and medium CO₂ prices, the PVRR(d) benefits of the Combined Projects are
 637 ~~\$177~~151 million. The Combined Projects provide significant customer benefits in all
 638 price-policy scenarios, and the net benefits are unfavorable only when low natural-gas

662 revenue requirement shown in the figure reflects updated costs, including capital
 663 revenue requirement (*i.e.*, depreciation, return, income taxes, and property taxes),
 664 O&M expenses, the Wyoming wind-production tax, and PTCs. The project costs are
 665 netted against updated system impacts from the Combined Projects, reflecting the
 666 change in NPC, emissions, non-NPC variable costs, and system fixed costs that are
 667 affected by, but not directly associated with, the Combined Projects.

668 **Figure 5-SD Updated Total-System Annual Revenue Requirement**
 669 **With the Combined Projects (Benefit)/Cost (\$ million)**



670 The data shown in this figure for the updated economic analysis have the same
 671 basic profile as the data from the original economic analysis summarized in my direct

694 MW and 1,315 MW of solar PPA bids, from new projects all located in Utah, are added
 695 to the system by the SO model.

696 **Q. What were the results of the solar sensitivity where solar PPA bids are assumed to**
 697 **be pursued in lieu of the Combined Projects?**

698 A. Table 4-SD summarizes PVRR(d) results for the solar sensitivity where solar PPA bids
 699 are assumed to be pursued without any investments in the Combined Projects. This
 700 sensitivity was developed using SO model and PaR simulations through 2036 for the
 701 medium natural gas, medium CO₂ and the low natural gas, zero CO₂ price-policy
 702 scenarios. The results are shown alongside the benchmark study in which the Combined
 703 Projects were evaluated without solar PPA bids.

704 **Table 4-SD Solar Sensitivity with Solar PPAs Included**
 705 **in lieu of the Combined Projects (Benefit)/Cost (\$ million)**

	Sensitivity PVRR(d)	Benchmark PVRR(d)	Change in PVRR(d)
Medium Gas, Medium CO₂			
SO Model	(\$334)	(\$343)	\$9
PaR Stochastic Mean	(\$203222)	(\$311333)	\$108111
PaR Risk Adjusted	(\$213233)	(\$327349)	\$114116
Low Gas, Zero CO₂			
SO Model	(\$206)	(\$145)	(\$61)
PaR Stochastic Mean	(\$126141)	(\$104126)	(\$2215)
PaR Risk Adjusted	(\$133148)	(\$109131)	(\$2417)

706 In the medium natural gas, medium CO₂ price-policy scenario, a portfolio with
 707 the Combined Projects delivers greater customer benefits relative to a portfolio that
 708 adds solar PPA bids without the Combined Projects. Customer benefits are greater

709 when the resource portfolio includes the Combined Projects without solar PPA bids by
710 \$~~114-116~~ million in the medium natural gas, medium CO₂ price-policy scenario based
711 on the risk-adjusted PaR results. In the low natural gas, zero CO₂ price-policy scenario,
712 the portfolio with solar PPA bids and without the Combined Projects has higher net
713 customer benefits relative to a portfolio containing just the Combined Projects. The
714 increase in net benefits in the solar PPA portfolio is \$~~24-17~~ million based on the risk-
715 adjusted PaR results.

716 **Q. What were the results of the solar sensitivity where solar PPA bids are pursued**
717 **with the Combined Projects?**

718 A. Table 5-SD summarizes PVRR(d) results for the solar sensitivity where solar PPA bids
719 are assumed to be pursued along with the proposed investments in the Combined
720 Projects. This sensitivity was developed using SO model and PaR simulations through
721 2036 for the medium natural gas, medium CO₂ and the low natural gas, zero CO₂ price-
722 policy scenarios. The results are shown alongside the benchmark study in which the
723 Combined Projects were evaluated without solar PPA bids.

724 **Table 5-SD Solar Sensitivity with Solar PPAs Included**
725 **With the Combined Projects (Benefit)/Cost (\$ million)**

	Sensitivity PVRR(d)	Benchmark PVRR(d)	Change in PVRR(d)
Medium Gas, Medium CO2			
SO Model	(\$602)	(\$343)	(\$259)
PaR Stochastic Mean	(\$442482)	(\$311333)	(\$131149)
PaR Risk Adjusted	(\$464504)	(\$327349)	(\$137155)
Low Gas, Zero CO2			
SO Model	(\$286)	(\$145)	(\$141)
PaR Stochastic Mean	(\$185217)	(\$104126)	(\$8191)
PaR Risk Adjusted	(\$195227)	(\$109131)	(\$8696)

726 When the solar PPAs are pursued in addition to the Combined Projects, the total
727 benefits increase, but are diluted (*i.e.*, the aggregate net benefits are less than the sum
728 of the benefits for the cases where Combined Projects or solar PPAs are pursued
729 independently).

730 **Q. What conclusions can you draw from these solar sensitivity analyses?**

731 A. These sensitivities demonstrate that should the company choose to pursue solar bids
732 through the 2017S RFP, the resulting solar PPAs would not displace the Combined
733 Projects as an alternative means to deliver economic savings for customers.

734 While the sensitivity with a portfolio containing solar PPAs without the
735 Combined Projects produces a PVRR(d) with net benefits that are slightly higher than
736 a portfolio without the solar PPAs in the low natural-gas, zero CO₂ price-policy
737 scenario, both portfolios deliver customer benefits. This sensitivity does not support an
738 alternative resource procurement strategy to pursue solar PPA bids in lieu of the
739 Combined Projects. This would leave the significant benefits from the Combined
740 Projects, which include building a much-needed transmission line, on the table.
741 Importantly, the sensitivity that evaluates the Combined Projects with the solar PPAs

	Sensitivity PVRR(d)	Benchmark PVRR(d)	Change in PVRR(d)
Medium Gas, Medium CO2			
SO Model	(\$541)	(\$343)	(\$198)
PaR Stochastic Mean	(\$475497)	(\$311333)	(\$164)
PaR Risk Adjusted	(\$498520)	(\$327349)	(\$171)
Low Gas, Zero CO2			
SO Model	(\$313)	(\$145)	(\$169)
PaR Stochastic Mean	(\$255277)	(\$104126)	(\$152)
PaR Risk Adjusted	(\$268290)	(\$109131)	(\$159)

765 In the wind-repowering sensitivity, customer benefits increase significantly
766 when the wind repowering project is implemented with the Combined Projects in both
767 the medium natural-gas, medium CO₂, and the low natural-gas, zero CO₂ price-policy
768 scenarios. These results demonstrate that customer benefits not only persist, but also
769 increase, if both the wind-repowering project and the Combined Projects are
770 completed.

771 **REBUTTAL TESTIMONY RESOURCE NEED**

772 **Q. Dr. Zenger, Mr. Vastag, and Mr. Mullins argue that the Combined Projects are not**
773 **774 tied to a specific resource need. (Zenger Direct, pages 9-11; Vastag Direct lines 53-**
64; Mullins Direct, page 10, lines 17-20.) Do you agree?

775 A. No. The Combined Projects meet both near-term and long-term resource needs
776 identified in the company's 2017 IRP. The Combined Projects leverage federal PTCs
777 to provide least-cost resources that meet these needs, and do so with substantial savings
778 to customers.

779 **Q. How does the company develop its forecast of resource need?**

1120 from the above forecast, then the above analysis could be invalidated by the additional
1121 information.” *Id.* at 330-332. In this case, however, there is no additional information
1122 indicating that the longer-term future is likely to be different from the OFPC and
1123 therefore, according to the DPU’s prior analysis, the “best approach” is to act today
1124 based on the OFPC.

1125 **Q. How does the company use each of the price-policy scenarios in its analysis?**

1126 A. The price-policy scenario assuming medium natural-gas prices and medium CO₂ prices
1127 represents the central forecast, around which the impact of lower or higher price
1128 assumptions can be evaluated. In the company’s updated economic analysis, the
1129 PVRR(d) net benefit of the Combined Projects derived from the central price-policy
1130 scenario is \$~~177~~151 million when calculated from projected nominal system costs
1131 through 2050. This outcome indicates that, when central price-policy assumptions are
1132 used, there is a reasonably sized cushion in the PVRR(d) results allowing for some
1133 erosion of the favorable economics should long-term natural-gas prices and CO₂ prices
1134 end up lower than what is assumed in this scenario. The other price-policy scenarios
1135 are useful in quantifying how sensitive the PVRR(d) results are to these key
1136 assumptions and provide a foundation for judging risk. Importantly, however, the
1137 company’s updated analysis now shows robust customer benefits in nearly all price-
1138 policy scenarios without even accounting for potential upside benefits not reflected in
1139 the economic analysis.

1140 **Q. Mr. Peaco compares the company’s natural-gas price forecasts with NYMEX**
1141 **Henry Hub natural-gas futures through 2029 as of November 28, 2017, and**

1307 **Q. Mr. Peaco claims that the expected customer benefits are modest relative to the**
1308 **overall project costs and that there is very little certainty that customers will see**
1309 **significant, if any, cost savings. (Peaco Direct, line 316-318.) Mr. Hayet criticizes**
1310 **the Combined Projects because, under most scenarios, he claims they present**
1311 **modest benefits relative to the company's total revenue requirement. (Hayet**
1312 **Direct, lines 284-297.) Please respond.**

1313 A. First, Mr. Peaco mischaracterizes the relationship between the cost and benefits of the
1314 Combined Projects by comparing the up-front investment cost to the *net* benefits of the
1315 project. This artificially makes it appear that customer benefits are relatively small in
1316 relation to the investment required to deliver those benefits, when in fact, the gross
1317 benefits from the projects are actually greater than total project costs.

1318 For instance, in the updated economic analysis, the PVRR(d) results calculated
1319 from the change in system costs through 2050 assuming medium natural-gas and
1320 medium CO₂ prices show a \$~~177-151~~ million *net* customer benefit from the Combined
1321 Projects. This is based on present-value project costs, including changes to run-rate
1322 operating costs, totaling \$~~1.471.50~~ billion. The present value of customer benefits,
1323 including federal PTC benefits, for this price-policy scenario is \$1.65 billion, which is
1324 \$~~177-151~~ million greater than the present value of project costs. In fact, the present
1325 value of customer benefits among all nine price-policy scenarios ranges between \$1.30
1326 billion and \$2.06 billion. In nearly all scenarios, the present value of customer benefits
1327 exceed the present value of customer costs.

1328 Second, the fact the total expected benefits are small relative to the company's
1329 total revenue requirement means little in this case. It is hard to imagine a resource