

**CONFIDENTIAL-SUBJECT TO UTAH PUBLIC SERVICE COMMISSION RULES
R746-1-602 and 603**

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1 **I. Introduction**

2 **Q. Are you the same Daniel Peaco who previously provided direct testimony in this**
3 **case on behalf of the Utah Division of Public Utilities?**

4 A. Yes, I submitted direct testimony on September 20, 2017 on behalf of the Division as
5 DPU Confidential Exhibit 2.0 DIR.

6 **Q. What is the purpose of your surrebuttal testimony?**

7 A. The purpose of my surrebuttal testimony is to examine the new and updated information
8 contained in the Company's October 19, 2017 rebuttal testimony and associated
9 discovery responses regarding the economics, reliability, and risks of the 12 repowering
10 projects proposed by the Company. The assessments included in my surrebuttal
11 testimony focus on (a) whether any or all of the repowering projects, as represented in the
12 Company's rebuttal testimony, are likely to be lowest reasonable cost resources, (b) the
13 short-term and long-term impacts on Utah ratepayers, and (c) the resulting economic
14 risks to Utah ratepayers. This surrebuttal testimony follows the structure of my direct
15 testimony.

16 The Company has included substantial new project information and economic analysis
17 that were not part of its original application or filing, which my direct testimony was
18 based on. Thus, this testimony provides my evaluation of the Company's new project
19 proposal along with my response to specific elements of the Company's rebuttal
20 testimony that addressed my direct testimony.

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21 In particular, my surrebuttal testimony, like my direct testimony, addresses the following
22 issues:

- 23 • For each of the projects, does the Company's analysis demonstrate that repowering
24 will deliver cost-effective energy to Utah ratepayers?
- 25 • Is the Company's modeling analysis sound, and does it provide an accurate
26 representation of the economic benefits of each of the 12 projects to Utah ratepayers?
- 27 • Does the Company's analysis of the repowering projects reasonably consider all of
28 the uncertainties that have bearing on the risk to Utah ratepayers that the projects may
29 not deliver cost-effective energy?

30

31 **II. Summary of Conclusions**

32 **Q. Please summarize your conclusions and recommendations regarding the issues**
33 **addressed in your testimony.**

34 A. Based upon my review, I offer the following conclusions:

- 35 • The Company has proposed a number of changes to the repowering projects,
36 including changes in turbines, project costs, supply agreements, and risk
37 management.
- 38 • The Company's analysis has a number of problems that I discuss, as well as
39 limited treatment of several important issues. As a result, the Company has not
40 demonstrated that the projects have a high likelihood of providing net benefits to
41 customers.

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42 • The Company's analysis does confirm that a project-by-project consideration is
43 necessary.

44 • The Company has taken a number of steps to mitigate risks of project
45 development; however, the Company continues to require that ratepayers bear a
46 number of significant economic risks and uncertainties.

47 Based upon these conclusions, I find that:

48 • The Company's most recent analysis of the economic benefit to ratepayers is not
49 a sound basis for determining the merits of any of the 12 projects.

50 • The Company's analysis does not address the full range of risks that the Company
51 is asking its ratepayers to bear.

52 • While it is possible that some of the projects could be beneficial to customers,
53 there is a significant probability that multiple projects are not.

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54 **III. The Company's Rebuttal Has Not Demonstrated Lowest Reasonable**
55 **Cost Energy Benefits**

56 **A. Changes in the Repowering Projects**

57 **Q. Please briefly describe the changes in RMP's proposal for the wind repowering**
58 **projects contained in its rebuttal testimony, as compared to its Application and**
59 **direct filing.**

60 A. The Company introduced several changes to the repowering projects as initially
61 described in the Company's June 30, 2017 Application and direct testimony. These
62 changes were not part of the Company's Application, but were first presented in the
63 Company's October 19, 2017 rebuttal filing. The changes include:

- 64 1) A change in the wind turbine generator equipment associated with the projects
65 that will utilize GE equipment;¹
- 66 2) Updated energy production estimates associated with the change in turbine
67 technology;²
- 68 3) Completed negotiations with GE on a master retrofit agreement and with
69 Vestas on a turbine supply agreement.³
- 70 4) Updated cost estimates for the repowering projects, with an aggregate capital
71 cost of \$1.083 billion, a reduction of \$45 million (approximately 4%);⁴

¹ Rebuttal Testimony of Timothy Hemstreet, lines 110-115.

² Id. at lines 133-139.

³ Id. at lines 51-53 and 97.

⁴ Id. at lines 157-160; Rebuttal Testimony of Rick T. Link, line 185.

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72 5) Updated permitting status, with major permit authorizations for 10 of the 12
73 projects now complete;⁵

74 6) Completed negotiations [REDACTED]

75 [REDACTED]

76 [REDACTED];⁶

77 7) Higher O&M costs and lower capital expenditures associated with the
78 negotiated agreements.⁷

79 **Q. How does the change to the wind turbine selection affect the power output increases**
80 **from repowering these facilities?**

81 A. The Company in its rebuttal testimonies explains that, rather than upgrade its GE wind
82 turbine generators with the [REDACTED] turbine components that the Company stated it was
83 going to use in its Application and direct testimonies, it will repower its [REDACTED]
84 [REDACTED] with a newly-designed, [REDACTED] turbine rotor. The Company indicates that, on
85 average, the energy production on those facilities to be repowered with GE turbines will
86 result in a 22.4 percent increase over existing production, which compares to a 13.3
87 percent increase included in the direct testimony.⁸ These values reflect operations under
88 the current large generator interconnection agreement (LGIA) limits.

⁵ Rebuttal Testimony of Timothy Hemstreet, lines 395-396.

⁶ Id. at lines 172-180.

⁷ Id. at lines 191-192.

⁸ Id. at lines 132-139.

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89 **Q. How do these changes affect the Company's calculations of the costs to repower**
90 **these [REDACTED]?**

91 A. These changes modify the Company's cost estimates for the initial capital investment
92 (lower), ongoing capital expenditures (lower) and O&M costs (higher).⁹

93

94 **B. The Company's Economic Benefits Approach Remains Flawed**

95 **Q. Has the Company provided new economic analysis of the benefits of the repowering**
96 **projects?**

97 A. Yes. Mr. Link has provided an updated analysis of the economics of the repowering
98 projects, in the aggregate, using the nine price and policy case approach presented in his
99 direct testimony, including both the 20-year results from the SO and PaR models and the
100 30-year results derived by extrapolating those model results. Mr. Link indicates that he
101 has updated these analyses to include more current information on the cost and
102 performance of the repowering projects, as well as updated load forecast, natural gas
103 price forecast, and transmission capacity.

104 In addition, he provides additional sensitivity tests, including:

- 105 • A project-by-project analysis for one price-policy case (Medium Gas,
106 Medium CO₂), presenting both the 20- and 30-year model results;
- 107 • An alternative 30-year extrapolation method for one price-policy case
108 (Medium Gas, Medium CO₂);

⁹ Id. at lines 159-160, 191-195.

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- 109 • A federal tax policy sensitivity for one price-policy case (Medium Gas,
110 Medium CO₂), presenting the 20-year model results; and
111 • A turbine equipment sensitivity for one price-policy case (Medium Gas,
112 Medium CO₂), presenting the 20-year model results.

113 **Q. What is the Company's position on the economic value of these projects to**
114 **ratepayers?**

115 A. Mr. Link concludes that his analysis of the bundled projects shows significant net
116 benefits in all of the scenarios that he analyzed.¹⁰ Ms. Crane asserts that Mr. Link has
117 captured a wide range of conditions and circumstances and that the Company has
118 demonstrated a high likelihood that the repowering project will be beneficial to
119 customers.¹¹

120 **Q. Do you agree with the Company's position?**

121 A. No, I do not. Contrary to Ms. Crane's assertion in her rebuttal testimony, the Company
122 has not demonstrated a high likelihood that the repowering project will be beneficial to
123 customers. This is merely an assertion that is not supported by a proper analysis of the
124 full range of possible outcomes for customers.

125 The Company's analysis does not capture the wide range of conditions and circumstances
126 that Ms. Crane asserts. Mr. Link provided an updated set of nine price-policy analyses for
127 the aggregate set of 12 repowering projects, based on the Company's assumptions.

128 However, all of the sensitivity tests conducted were based on the Medium Gas,

¹⁰ Rebuttal Testimony of Rick Link, lines 845-846.

¹¹ Rebuttal Testimony of Cindy A. Crane, lines 53-58.

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129 Medium CO₂ case. As a result, there is no information in the record on the economics of
130 the aggregate projects, or importantly the individual projects, in the Low Gas cases
131 assuming the current federal tax reform proposal is enacted. In fact, Ms. Crane
132 acknowledges that fact in her rebuttal testimony in her offer to refresh the economics and
133 come back to the Commission in early 2018 if circumstances change.¹²
134 The Company was asked to provide an analysis of the Low Gas, Zero CO₂ case for the
135 individual projects using a 20 percent federal corporate tax rate and the Company
136 responded that it did not conduct that analysis.¹³ The Company was asked for all tax
137 policy analysis conducted and for any analysis conducted assuming a federal corporate
138 tax rate of less than 25 percent and it responded that the only analysis conducted was the
139 one case included in Mr. Link's testimony.¹⁴ The Company was asked for all project-by-
140 project analysis conducted for any of the other eight price-policy scenarios and it
141 responded that the only analysis conducted was the one case included in Mr. Link's
142 testimony.¹⁵
143 Ms. Crane has made clear that the Company is not willing to take risks that are beyond its
144 control,¹⁶ which means the ratepayers are left to assume those risks. Such risks include
145 the uncertainties of the outcome of the discussion on changes to the federal tax code and
146 the uncertainties regarding natural gas prices and future greenhouse gas emissions
147 policies. The Company's position effectively asks the Commission to make a risk-taking

¹² Rebuttal Testimony of Cindy A. Crane, lines 117-119.

¹³ Company response to DPU Data Request 13.9.

¹⁴ Company response to OCS Data Request 9.2.

¹⁵ Company response to OCS Data Request 9.3.

¹⁶ Rebuttal Testimony of Cindy A. Crane, lines 103-105.

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148 decision on behalf of ratepayers without the Company providing other parties and, most
149 importantly, the Commission the benefit of the analysis to quantify the magnitude of
150 those risks.

151 **Q. What are the risk considerations that are specific to this case that make it important**
152 **to have the analysis you have described?**

153 A. This proposal has been offered as a unique opportunity for the Company to repower these
154 projects, resulting in lower costs to customers. There is no resource need for these
155 projects; they do not serve to address any identified need from a reliability or public
156 policy requirement. The sole justification of these projects provided by the Company is
157 to lower cost to customers.

158 However, in the Company's October 19, 2017 rebuttal testimony, the Company has
159 improperly characterized the projects in terms of a resource planning proposition.

160 Ms. Crane makes the following statements:

161 *"The repowering project is the least-cost, least-risk path available to*
162 *serve the Company's customers."*¹⁷

163 *While all resource decisions inherently include some risk, the Company*
164 *has demonstrated a high likelihood that the repowering project will be*
165 *beneficial to customers."*¹⁸

166 Her characterization of this proposal as part of a path to serve customers and a resource
167 decision that is inherently risky is not applicable in this case. Resource decisions, based

¹⁷ Rebuttal Testimony of Cindy A. Crane, lines 26-27.

¹⁸ Id. at lines 56-58.

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168 on resource planning, are typically framed as a choice among alternative resource options
169 or paths to meet identified need. In this case, the only alternative to the repowering
170 projects is not repowering the project. There is no need to act to meet a resource need,
171 only to act if there is, to use Ms. Crane’s words, a “high likelihood that the repowering
172 project will be beneficial to customers.”

173 **Q. How did Ms. Crane reach her determination on the likelihood of benefits?**

174 A. Ms. Crane points to the scenario analysis presented by Mr. Link.
175 Mr. Link argues against assigning probabilities to the Company’s nine price-policy
176 scenarios, arguing “that would be a highly subjective exercise largely informed by
177 individual opinion.”¹⁹ However, he asserts that:

178 *“The price-policy scenario assuming medium natural-gas and medium*
179 *CO₂ prices represents a central forecast, around which the impact of*
180 *lower or higher price assumptions can be evaluated.”²⁰*

181 Thus, Mr. Link and Ms. Crane have engaged in the very subjective exercise that Mr. Link
182 argues against. Ms. Crane has concluded that “a high likelihood” of customer benefits
183 exists without describing the basis for her assessment of likelihood. Mr. Link’s
184 characterization of the Medium Gas, Medium CO₂ scenario as the central forecast quite
185 clearly implies that it is the most likely case and that the Company considers it to be the
186 expected value from a range of uncertain values. Further, implicit in these statements is
187 the judgment that none of the low natural gas price scenarios are sufficiently likely to

¹⁹ Rebuttal Testimony of Rick Link, lines 767-768.

²⁰ Id. at lines 769-771.

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188 even warrant examination prior to Ms. Crane and Mr. Link making their judgments on
189 risk.

190 **Q. Did the Company offer any explanation for not including the low natural gas price**
191 **analysis?**

192 A. Mr. Link did offer rebuttal to my discussion of the Low Gas, Zero CO₂ scenario in my
193 direct testimony. His rebuttal testimony incorrectly asserts that I described this as the
194 most likely scenario²¹ and then proceeds to rebut that assertion rather than my testimony.
195 In my direct testimony, I did argue that the Low Gas, Zero CO₂ scenario is the one that
196 most closely resembles current market expectations in this case and that the Company
197 should demonstrate benefits to customers under this scenario.
198 To be clear, the reason for my focus on this case is to help establish an analytical basis
199 for the “high likelihood of benefits to customers” standard that Ms. Crane asserts. Ms.
200 Crane does not put a number on “high likelihood.” However, in the context of this case, a
201 50/50 proposition is not acceptable. A serious examination of the adverse outcomes is
202 necessary to provide assurance of a much higher probability of benefits to customers. The
203 repowering projects should be sufficiently robust to be beneficial across the full possible
204 range of market and policy outcomes.

205 I agree with Mr. Link’s testimony that this is not the *most likely* scenario and his
206 testimony that it is *possible*.²² However, I reject his apparent conclusion that it is such a

²¹ Id. at lines 785 - 794.

²² Id. at lines 791 - 794.

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207 low probability that it would not inform the Commission in making judgments about the
208 high likelihood of customer benefits in this case.

209 **Q. What is your conclusion regarding the Company's economic analysis methodology?**

210 A. The Company has not provided sufficient analysis to give the Commission the proper
211 basis to make its judgments as to whether any or all of the projects have a high likelihood
212 of customer benefits. The judgments on this made by Ms. Crane and Mr. Link do not
213 consider a sufficient range of scenarios and sensitivities to be transparent or credible.
214 The methodology employed by the Company is not designed to demonstrate the *high*
215 *likelihood of customer benefits* that the Company purports to do in this case. It is
216 particularly important to explore the magnitude of any potential downside risk that the
217 customers are being asked to assume if these projects are to proceed, an analysis that I
218 specifically called for in my direct testimony and again in discovery on the Company's
219 rebuttal testimony. The Company has not provided essential information to support its
220 assertion of a high likelihood of ratepayer benefits. Therefore, I cannot conclude that any
221 or all of the repowering projects are lowest reasonable cost resources or that the resulting
222 economic risks to Utah ratepayers is reasonable.

223 **C. The Company's Economic Benefits Results**

224 **Q. What does the Company claim are the benefits of the repowering projects for RMP**
225 **ratepayers as presented in its rebuttal testimony?**

226 A. The net customer benefits of the combined projects for the nine price-policy scenarios
227 range from \$90 million to \$167 million in the 20-year PaR stochastic mean analysis. In

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228 the 30-year analysis, the net customer benefits of the combined projects range from \$360
229 million to \$635 million.

230 The Company provided a sensitivity analysis isolating the benefits of each of the twelve
231 projects using one price-policy, the Medium Gas, Medium CO₂ scenario. The Company's
232 estimates of net benefits for the projects in aggregate in that scenario are \$117 million in
233 the 20-year analysis and \$477 million in the 30-year analysis. The Company's analysis
234 shows each of the projects with positive benefits in this analysis, with some projects more
235 beneficial than others. I have included the Company's project-by-project benefits
236 resulting from that analysis and the ratio of the gross benefits to costs in the table below.

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Project	Net Benefits (\$M)		Benefit/Cost	
	20 – yr (PaR)	30 -yr	20 – yr (PaR)	30 -yr
Seven Mile Hill II	■	■	■	■
Marengo I	■	■	■	■
Goodnoe Hills	■	■	■	■
Seven Mile Hill I	■	■	■	■
Glenrock I	■	■	■	■
Dunlap I	■	■	■	■
Marengo II	■	■	■	■
Glenrock III	■	■	■	■
Rolling Hills	■	■	■	■
McFadden Ridge	■	■	■	■
High Plains	■	■	■	■
Leaning Juniper	■	■	■	■
Aggregate 12-project total ²³	\$115	\$471	■	■

Table 1. Project-by-Project Net Benefits and Benefit Cost Ratios: Medium Gas, Medium CO₂ Scenario²⁴

237
238

239 **Q. Do you agree with the Company that these results demonstrate a high likelihood of**
240 **customer net benefits from each of the repowering projects?**

241 A. No, I do not. While these particular results show positive results in all nine price-policy
242 scenarios for the projects in aggregate and for each individual project for one scenario,
243 there are a number of problems with this analysis, including:

- 244 • Methodology issues with these new results, including issues that I discussed in
245 my direct testimony that persist in this analysis;

²³ Aggregate totals do not equal sum of individual project benefits due to modeling results.

²⁴ Calculated from Link Rebuttal workpapers, “ [REDACTED] ”

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- 246 • An incomplete treatment of the project-by-project analysis. The Company's
247 results verify that there are distinct differences in the economics by project.
248 • An incomplete treatment of the key uncertainties that put the customers'
249 benefits at risk.

250

251 **IV. The Company's Modeling Does Not Provide Reasonable Results**

252 **Q. Please describe your concerns with the results of the Company's modeling analysis.**

253 A. The modeling analysis included in the Company's rebuttal testimony is problematic in
254 several respects, including the following issues:

- 255 • The Company has not conducted the project-by-project analysis for the range
256 of the price-policy cases, in particular, those cases including the low natural
257 gas price forecast;
258 • The Company did not update the low gas price forecast; and
259 • The extrapolation methodology used by the Company in this analysis
260 produces some very anomalous results, as was the case in its direct testimony;

261 Because the Company's rebuttal includes a complete revision to the case filed in its direct
262 case, I have had limited time to conduct discovery and review the modeling results
263 presented in that testimony. The issues I discuss herein are those that I have identified
264 thus far. This listing is not necessarily complete at this point and is not intended to imply
265 that I am in agreement with any other aspects of the Company's analysis that are not
266 specifically mentioned here.

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267

268 **A. Project-by-Project Analysis**

269 **Q. Did the Company address your concerns regarding the lack of project-by-project**
270 **analysis in its direct testimony?**

271 A. The Company does acknowledge that the economics of the repowering differs from
272 project to project. Mr. Link does provide an analysis of the economics on a project-by-
273 project basis in his rebuttal testimony, but only for one price-policy scenario. That
274 analysis does confirm that under that one price-policy scenario, the economic value of the
275 twelve projects varies significantly, as I described in my direct testimony.

276 The Company's analysis is limited by not including any project-by-project analysis for
277 any other price-policy scenarios, in particular, the low natural gas price scenarios. The
278 significant variance in the results presented for the Medium Gas, Medium CO₂ price
279 scenario point to the potential for some of the twelve projects to perform poorly even if
280 the projects, in aggregate, show positive benefits in these scenarios. Each of the twelve
281 projects should be shown to provide a high likelihood of net benefits individually. The
282 Company has not provided that analysis, and I cannot confirm that the repowering
283 projects collectively or individually will provide benefits to customers.

284

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285 **B. Low Natural Gas Price Forecast**

286 **Q. Did the Company update the Low, Medium, and High fuel price assumptions used**
287 **in the price-policy scenario analysis for the Rebuttal testimony?**

288 A. The Company updated the Official Forward Price Curve (OFPC) gas price, which is used
289 for the Medium Gas price-policy scenarios, reflecting more recent forecasts provided by
290 external vendors.²⁵ The Company did not similarly update the low and high gas price
291 forecasts because it claimed that the third-party forecasts “are not materially different”
292 than the forecasts used for the direct testimony.²⁶

293 **Q. Do you agree with the Company’s conclusion regarding the low and high natural**
294 **gas price forecasts?**

295 A. No, I do not. The Company provided the updated forecasts from its third-party sources,
296 and the low and high forecasts exhibit [REDACTED]. In fact, these updated
297 forecasts have [REDACTED] the OFPC forecast. Over the 2020 to
298 2036 period, the medium price forecast values’ average [REDACTED]
299 [REDACTED] and the low and high forecast values’ average [REDACTED]
300 [REDACTED] respectively.²⁷ These changes,
301 particularly the low price forecast changes, are material to the analysis used in support of
302 the projects in this case.

²⁵ Rebuttal Testimony of Rick Link, lines 108-122.

²⁶ Id. at lines 163-171.

²⁷ Sources: Rebuttal Testimony of Rick Link, Figure 2. Attachment to OCS 9.22 “[REDACTED]”.

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303

304 **C. Methodological Issues with the Company's Modeling**

305 **Q. In your direct testimony, you identified methodological issues with the Company's**
306 **20-yr and 30-yr economic analysis of the projects. Has the Company addressed**
307 **those issues?**

308 A. No. The Company's economic modeling methodology used in the rebuttal testimony
309 employs the same extrapolation methodology to extend the 20-year modeling analysis to
310 a 30-year analysis. Mr. Link did, however, include a sensitivity analysis in which he
311 substituted forecasts of market prices for the extrapolation results for the 2037 to 2050
312 period for one policy-price scenario, Medium Gas, Medium CO₂. Using this sensitivity,
313 Mr. Link concludes the results of the analysis of the projects under that one price-policy
314 case are not sensitive to the extrapolation methodology.²⁸ The methodology issues were
315 not otherwise addressed.

316 **Q. Do you continue to have concerns with the methodology?**

317 A. Yes. In my direct testimony, I pointed to the inconsistencies in results across the price-
318 policy scenario results.²⁹ In my review of the revised analysis, I find additional
319 anomalous results, which leaves me concerned that the modeling methodology is not
320 providing reliable results.

²⁸ Rebuttal Testimony of Rick Link, lines 441-477.

²⁹ Direct Testimony of Daniel Peaco, lines 364-385.

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321 **Q. What anomalous results have you observed in the analysis contained in the results**
322 **presented in the Company’s rebuttal testimony?**

323 A. I did a comparison of the change in the net benefit values from the Company’s direct to
324 the rebuttal case and found the implications were significantly different across the nine
325 price-policy scenarios. The same changes were made in each of the nine cases,
326 principally a lower load forecast and an increase in repowering energy production
327 associated with the new turbine configuration.
328 Specifically, the change in value associated with the extrapolation period were very
329 different. The increase in net benefits in years 2037 to 2050 in the Low Gas, Zero CO₂
330 scenario is exceeded by only one other scenario and is much higher than all other
331 scenarios. This means the results are indicating that the increase in energy production is
332 much more valuable in the low-price scenario than in virtually any other scenario, by a
333 substantial margin. Also, in two scenarios, the added repowering energy actually
334 degrades the value of the projects in those extrapolation years. These results are clearly
335 nonsensical and suggest problems with the modeling used to develop these results. I
336 present those values in Table 2.

	Zero CO₂	Med CO₂	High CO₂
Low Gas	(173)	(105)	(20)
Med Gas	(16)	3	(23)
High Gas	(31)	(217)	69

337 **Table 2. Changes in 2037-2050 Net (Benefit)/Cost in RMP Rebuttal Analysis**
338 **(\$ Millions)**

339 The 20-year values generated using the SO and PaR models (but not the extrapolation
340 process) show unusual changes in value, as well. Comparing the results presented in the

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341 rebuttal testimony to the direct testimony, the Low Gas, Zero CO₂ scenario shows the
342 highest increase in value of the incremental repowering energy production of any of the
343 nine scenarios. While the variation between results is not as pronounced as seen in the
344 extrapolation period, they are nevertheless nonsensical. I present those values in the table
345 below.

	Zero CO₂	Med CO₂	High CO₂
Low Gas	(133)	(117)	(97)
Med Gas	(92)	(102)	(96)
High Gas	(112)	(133)	(87)

346 **Table 3. Changes in 20-year PaR stochastic mean Net (Benefit)/Cost in RMP Rebuttal**
347 **Analysis (\$ Millions)**

348 **Q. Do you know why these anomalous results occur?**

349 A. I did offer some suggestions in my direct testimony.³⁰ Mr. Link did confirm my
350 observation that the discrete options in SO introduce non-linearity problems in that
351 model.³¹ I do not have further information on the causes at this point.

352

353 **V. The Company's Analysis Does Not Reasonably Address Risk**

354 **A. Significant Risks to Customers Remain Unaddressed**

355 **Q. Please describe your remaining concerns regarding the treatment of risk in the**
356 **Company's analysis.**

357 A. Company witness Ms. Crane makes clear there are limits on the Company's willingness
358 to assume risk in these projects. Despite her assertion that the Company has demonstrated

³⁰ Direct Testimony of Daniel Peaco, lines 468-486 and 515-534.

³¹ Rebuttal Testimony of Rick Link, lines 466-470.

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359 “that it has recognized and reasonably managed all of the potential risks and concerns”³²

360 (emphasis added), she makes clear that the Company will not absorb risks beyond its
361 control and is prepared to accept risks associated with the Company’s performance.³³

362 There are important risks that the Company is not assuming, such as natural gas prices,
363 carbon policy, and change in federal tax law that may occur after the commitment to the
364 projects is made. Risks remain in other aspects of these projects that have not been fully
365 assumed or mitigated by the Company.

366 For those risks that the Company will not absorb, the only alternative is for the customers
367 to absorb those risks. All of the risks that are beyond the Company’s control are also
368 beyond the ratepayers’ control. The ratepayers are in no better position to assume those
369 risks than the Company, yet the Company expects the ratepayers to assume important
370 risks beyond the Company’s control in its proposal.

371 As I have previously discussed, the Company has not provided the analysis necessary to
372 demonstrate the high likelihood of customer benefits and, further, the analysis presented
373 continues to have a number of problems. In addition, the Company’s position asks the
374 Commission to approve a risk-taking decision on behalf of ratepayers without the benefit
375 of the analysis to quantify the magnitude of those risks.

376 The two risk factors assessed in the Company’s nine price-policy scenarios (fuel price
377 and carbon price), represent the only explicit treatment of risk factors in the Company’s

³² Rebuttal Testimony of Cindy A. Crane, lines 15-16, emphasis added.

³³ Id. at lines 103-106.

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378 analysis, and, as I have stated, I have concerns with the Company's treatment of those
379 risks.

380

381 **B. The Company's Rebuttal Attempts to Mitigate Some Important Risks**

382 **Q. In your direct testimony, you identified a number of concerns regarding the**
383 **economic risks being borne by ratepayers in the Company's repowering proposal.**
384 **How has the Company addressed your concerns in this regard?**

385 A. The Company's rebuttal testimony addresses a number of the risk issues I identified,
386 which does mitigate some of the significant risks inherent in the proposed projects as
387 presented in its direct testimony. However, a number of important risks to customers
388 remain in the proposal, even as amended in the Company's rebuttal testimony.

389 **Q. Please describe the risks that the Company has addressed and the extent to which it**
390 **claims the risks to customers have been mitigated.**

391 A. In my direct testimony, I discussed a number of project-specific risk factors that could
392 reduce or eliminate project benefits to ratepayers, including:

- 393 • PTC qualification
- 394 • Corporate tax rate
- 395 • Project costs
- 396 • Production estimates
- 397 • Project life

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398 The Company's rebuttal testimony offers mitigation or otherwise discusses each of these
399 risks.

400 **Q. How has the Company responded to your concerns with respect to the risks**
401 **associated with PTC Qualification?**

402 A. In my direct testimony, I raised the concerns regarding three aspects of the PTC
403 qualification risk. Mr. Hemstreet offered responses to each concern.

404 First, I expressed concern that the investments made in 2016 to meet the five percent Safe
405 Harbor requirement in the event the eventual project costs increased to the point where
406 the five percent requirement would not be met. In his rebuttal, Mr. Hemstreet expressed
407 his belief that the Company has the ability to address these risks and offered a number of
408 steps that Company has subsequently taken or can take to manage this risk,³⁴ including:

- 409 • Completion of the negotiation of turbine supply agreements with terms to fix
410 much of the project cost, removing uncertainty in most of the ultimate project
411 costs that factor into the Safe Harbor test;
- 412 • Pursuit of fixed price contracts for the remaining elements of the projects;
- 413 • Reallocation of Safe Harbor equipment to specific facilities to assure all or
414 most facilities each meet the requirement;
- 415 • Removing any facilities from the project that do not meet the requirement; and
- 416 • Tracking and forecasting processes to monitor actual spending.

³⁴ Rebuttal Testimony of Timothy Hemstreet, lines 230 – 323.

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417 Second, I expressed concern that PTC qualification would be at risk in the event that the
418 projects fail to meet the requirement to be in service by the end of 2020. In response, Mr.
419 Hemstreet expressed his belief that the risk of missing the in-service date requirement is
420 not significant and offered a number of steps that the Company has subsequently taken or
421 can take to manage this risk,³⁵ including:

- 422 • Completion of negotiation of turbine supply agreements on a turn-key basis
423 assuring turbine equipment availability and including schedule performance
424 guarantees and incentive mechanisms included in liquidated damages
425 provisions;
- 426 • Scheduling most of the projects to be completed in 2019;
- 427 • Confirmation that permit changes are not required in Wyoming and in
428 Columbia County, Washington, providing major permit authorizations for 10
429 of the 12 projects; and
- 430 • Provisions in the turbine supply agreements that allow deferral of commitment
431 to turbines until necessary permits have been received.

432 Third, I expressed concern that PTC qualification would be at risk in the event that the
433 projects' costs and existing assets' valuation cause the facilities to fail to meet the 80/20
434 new investment requirement for repowering projects. In response, Mr. Hemstreet
435 expressed his confidence that the risk of not meeting the 80/20 requirement is minimal

³⁵ Id. at lines 324 – 405.

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436 and offered a number of steps that the Company has subsequently taken or can take to
437 manage this risk,³⁶ including:

- 438 • Completion of the negotiation of turbine supply agreements with terms to fix
439 much of the project cost, removing uncertainty in most of the ultimate project
440 cost relative to expected valuation of the existing assets to be used;
- 441 • Obtained a preliminary valuation opinion from Ernst & Young.

442 **Q. Please describe any risk issues with respect to PTC qualification that remain a**
443 **concern.**

444 A. Mr. Hemstreet's rebuttal testimony provides significant additional information on the
445 Company's progress in mitigating the risks I discussed in my direct testimony. The
446 information he provides contains a much better assessment of the risks in these areas and
447 the measures that the Company is taking or plan to take to manage these risks.

448 However, there are some remaining areas of concern.

449 The PTC qualification risks are examples that are largely within the Company's control
450 to manage. Mr. Hemstreet has provided a clearer definition on how the Company will
451 manage those risks and has expressed his confidence in the Company's ability to manage
452 the risk. However, his testimony stops short of offering that the Company will assume the
453 remaining risks associated with its management of the PTC qualification for the projects.

454 I have only received the agreements that the Company has negotiated. While I have
455 reviewed Mr. Hemstreet's descriptions of the key features of those agreements and the

³⁶ Id. at lines 406 - 429.

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456 agreement documents provided, I have not conducted an analysis of the terms and
457 conditions of these agreements to assess the implications for customers for the range of
458 outcomes contemplated in those agreements.

459 I have only recently received the Ernst & Young preliminary valuation reports.³⁷ I have
460 not reviewed them in any detail and, further, these are offered as preliminary estimates of
461 a determination that will ultimately be made at a later date subject to IRS review. I would
462 note that some of the projects are [REDACTED] based on the
463 Company's current information. For example, a [REDACTED]
464 [REDACTED]
465 [REDACTED].

466 Finally, there is emerging risk to PTC qualification and revenue related to proposed tax
467 law changes. Recently proposed H.R. 1 (the *Tax Cuts and Jobs Act*), released by
468 Republicans in the U.S. House of Representatives, includes a reduction in PTC level to
469 remove the statutory escalation in the rate. This would reduce the PTC level from the
470 escalated 2.4¢/kWh assumed in the Company's economic analysis to a level of
471 1.5¢/kWh. The bill also includes a provision that could potentially eliminate the 5% safe
472 harbor for the continuous construction efforts that the Company is relying on for PTC
473 qualification under current 2016 levels. While there is no certainty that either of these
474 changes will be included in final legislation, the inclusion in the draft bill indicates that
475 there is a risk that PTC revenue for the repower projects could be diminished or

³⁷ Company Supplemental Response to DPU 13.6, dated November 2, 2017. Each report is [REDACTED].

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476 potentially eliminated. Under the Company's proposal, this would be a risk that
477 customers would bear.

478 The Company has made clear that it is only willing to assume risks associated with PTC
479 qualification to the extent that any failures are due to the Company's performance.³⁸ In
480 the event failure occurs for other reasons, the Company clearly expects those risks to be
481 borne by its customers.

482 **Q. How has the Company responded to your concerns with respect to potential changes**
483 **in the corporate tax rate?**

484 A. Nikki Kobliha offered rebuttal testimony regarding the Company's perspective on federal
485 corporate income tax reform. Ms. Kobliha expressed her pessimism on action on tax
486 reform, including observations that:³⁹

- 487 • There is very little certainty that Congress will act on tax reform;
- 488 • Congress is not considering specific legislative proposals;
- 489 • It is unlikely that Congress will pass a budget or that a proposal that would
490 meet the deficit increase limitations would allow the use of the budget
491 reconciliation process in the Senate;
- 492 • Due to deep political divisions, a compromise corporate tax rate of 25 percent
493 is the only sensitivity warranted.

494 Mr. Link conducted a sensitivity analysis on one price-policy scenario (Medium Gas,
495 Medium CO₂) using the 25 percent corporate tax rate offered by Ms. Kobliha, which

³⁸ Company response to DPU Data Request 13.1.

³⁹ Rebuttal Testimony of Nikki L. Kobliha, lines 198 – 242.

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496 reduced the PaR Stochastic Mean 20-year net customer benefit of \$115 million by \$93
497 million to a value of \$23 million.⁴⁰ Mr. Link concludes from this analysis that the
498 repowering projects still produce economic benefit for customers.

499 Ms. Crane proposes to seek Commission review of the economics of the projects in early
500 2018 in the event of a material adverse change in federal tax law.⁴¹ She indicates an
501 expectation that there will be time in early 2018 to conduct the review and still exercise
502 “off-ramps” to discontinue the projects. However, she also indicates that if a change in
503 tax law occurs after the off-ramps expire, that the Company would not assume that risk.⁴²

504 **Q. Please describe any risk issues with respect to changes in the corporate tax rate that**
505 **remain a concern.**

506 A. The Company’s response to the concerns raised in my testimony and in the testimony of
507 other parties on this issue is problematic.

508 First, Ms. Kobliha’s testimony has proven to be overly pessimistic about the politics of
509 tax reform. The House and Senate⁴³ now have versions of tax reform legislation under
510 consideration that include a corporate tax rate of 20 percent. While there is no certainty
511 on tax reform, many actions have occurred that make budget reconciliation the likely path
512 forward and there is considerable focus on the 20 percent rate as a key goal.

513 Second, Mr. Link’s limited focus on his sensitivity analysis to one price-policy case does
514 not provide any information on performance of the projects under other scenarios and

⁴⁰ Rebuttal Testimony of Rick Link, lines 691 – 703.

⁴¹ Rebuttal Testimony of Cindy Crane, lines 88-96.

⁴² Id. at lines 123 – 130; Company response to DPU Data Request 13.1.

⁴³ On November 9, 2017, the Joint Committee on Taxation released the Chairman’s Mark of the *Tax Cuts and Jobs Act*. The Senate Committee on Finance began markup of the legislation on November 13, 2017.

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515 does not demonstrate that the impact of a tax rate change would not be adverse to the
516 projects in other scenarios. In fact, the one test conducted on a corporate tax rate of 25
517 percent nearly eliminates the customer benefit in that case, which suggests that other,
518 lower value scenarios would not show positive benefits. As discussed earlier, this is short
519 of a demonstration of high likelihood of customer benefits.

520 Third, Ms. Crane's proposal to defer presenting an economic analysis of the impact on
521 tax rate changes until 2018 would not be necessary if the Company presented a robust
522 sensitivity analysis of tax rate changes in the case now. This is particularly important as
523 the Company has made clear it does not expect to take the risk that any rate change may
524 occur after the off-ramps expire. It is important for the Commission to understand how
525 the economics of the projects might change to assess whether there is a high likelihood of
526 customer benefits.

527 Overall, the Company has not been reasonably responsive to the interests of the parties to
528 understand the potential implications of the federal tax reform changes currently being
529 discussed. The Company has not adequately addressed the short-term and long-term
530 impacts that federal tax policy might have on Utah ratepayers.

531 **Q. Please summarize the aspect of uncertainties in project costs that the Company**
532 **addressed in its rebuttal.**

533 A. Mr. Hemstreet offered new information on two aspects of the project cost issue that I
534 raised in my direct testimony.

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535 With respect to the up-front capital investment in the equipment to be deployed in the
536 repowering projects, he describes [REDACTED]⁴⁴ [REDACTED]
537 [REDACTED]. Under the terms
538 negotiated, the costs would be fixed at a total cost of \$1.083 billion, which is \$45 million
539 less than previously estimated by the Company. As is described by Mr. Hemstreet, these
540 terms establish firm pricing and lower costs.

541 Mr. Hemstreet also describes the [REDACTED]
542 [REDACTED]
543 [REDACTED]
544 [REDACTED] with
545 O&M costs being higher than originally assumed and certain capital costs being lower
546 than assumed.⁴⁵

547 **Q. Please describe any issues with respect to project costs that remain a concern.**

548 A. The accounting of net project capital costs consists of two components, the capital
549 expenditures on the repowered projects, and the avoided capital expenditures that would
550 have been made on the existing projects. While the Company has taken steps to mitigate
551 uncertainty related to the capital costs for new projects, the Company has not addressed
552 the uncertainties associated with the consideration of avoided capital expenditures.

⁴⁴ The Company has provided copies of the negotiated agreements in response to DPU Data Request 3.23 Supplemental. However, the agreements provided [REDACTED] In response [REDACTED]

⁴⁵ Rebuttal Testimony of Timothy Hemstreet, lines 172 – 195.

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553 The Company's calculation of avoided capital expenditures consists of [REDACTED]
554 [REDACTED]
555 [REDACTED]
556 [REDACTED]
557 [REDACTED]
558 [REDACTED]
559 [REDACTED]

560 These avoided costs are not certain; they are based on the Company's forecast of
561 potential capital expenditures to maintain the existing projects in working order, a
562 forecast that is not well documented in the Company's testimony. This remains as a
563 significant component of the remaining uncertainty in the project costs that has not been
564 mitigated.

565 **Q. Please summarize the aspect of uncertainties in project production estimates that**
566 **the Company addressed in its rebuttal.**

567 A. In my direct testimony, I described the risks that customers would bear in the Company's
568 proposal associated with the uncertainty and variability of energy production from the
569 repowered facilities.

570 Mr. Hemstreet disagrees with my representation of the methodology used by the
571 Company to develop the energy production values as presented in his Confidential
572 Exhibit RMP_(TJH-1R) and provides an explanation of the methodology used to develop

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573 those values. He asserts that my testimony does not consider the potential for the
574 production to be higher than the values in his exhibit.⁴⁶

575 **Q. Please describe any issues with respect to project production estimates that remain a**
576 **concern.**

577 A. Despite Mr. Hemstreet's objections to my analysis and the conclusions detailed in my
578 direct testimony, the testimony in his rebuttal actually supports the point of my direct
579 testimony on this issue.

580 First, Mr. Hemstreet includes a single incremental energy production value for each of
581 the twelve projects in his exhibit. Regardless of the methodology used to derive that
582 value, the method is a means to estimate a single value of production that is used as an
583 assumption in the economic analysis of the projects. Further, he indicates that this is not a
584 P50 value, just that it is based on actual history. In fact, it is based on [REDACTED]

585 [REDACTED].⁴⁷ It is clear from that data that [REDACTED]

586 [REDACTED]
587 [REDACTED] There is no information in that analysis that indicates that the values
588 resulting from the period of data evaluated is consistent with the long-term average
589 production levels or any other representation of how this period is a proper basis for a
590 long-term average value to use for the economic analysis.

591 However, the risk issue I raised in my direct testimony and continue to raise here is that
592 the Company is not providing the ratepayers any assurances that they will receive the

⁴⁶ Rebuttal Testimony of Timothy Hemstreet, lines 484 – 542.

⁴⁷ Company response to DPU Data Response 13.8, attached workpapers.

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593 energy and PTC benefits associated with the values in Mr. Hemstreet's exhibit. The
594 customers may see an upside if, in fact, Mr. Hemstreet's estimate proves to be
595 conservative. However, it is my purpose to point out if the value in his exhibit is high, or
596 the PTC period has several years that are below average, the downside will also be seen
597 by the ratepayers. As with other risks I have discussed, the goal is to have a high
598 likelihood of customer benefits. Mr. Hemstreet offers no basis for me to conclude that the
599 likelihood that energy production benefits will be at or above those he has presented, and
600 he offers no production guarantees to the customers.

601 **Q. Please summarize the aspect of uncertainties in project life that the Company**
602 **addressed in its rebuttal.**

603 A. Mr. Hemstreet responds to my observation that the assumption on project life is a risk to
604 customers by asserting that he views the assumption as reasonable.

605 **Q. Please describe any issues with respect to project life that remain a concern.**

606 A. Mr. Hemstreet's opinion on the reasonableness of the assumption does not give the
607 ratepayers any protection against the possibility that the economic (rather than book) life
608 of those assets prove to be less than that assumption. As proposed, that is a risk that is
609 borne by the customers.

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610 **VI. The Company Has Not Demonstrated Need for the Reliability**

611 **Components of the Projects**

612 **Q. In your direct testimony, you recommended that the reliability components of the**
613 **proposed projects be denied. Did the Company address this in its rebuttal?**

614 A. Not directly. However, Mr. Hemstreet indicates that [REDACTED]

615 [REDACTED]

616 [REDACTED]

617 **Q. What is your recommendation regarding these reliability components?**

618 A. Because the Company has not provided any evidence of [REDACTED]

619 [REDACTED]

620 [REDACTED]

621 **VII. Conclusions and Recommendations**

622 **Q. Does the Company's analysis demonstrate that each of the 12 repowering projects**
623 **will deliver cost-effective energy to Utah ratepayers?**

624 A. No, it does not. The Company's analysis fails to demonstrate that the projects, in the
625 aggregate, offer a high likelihood of economic benefits to customers. Further, the
626 Company's limited project-by-project analysis does show that some projects are more
627 beneficial than others. While the Company has not demonstrated that any of the 12
628 projects provide a high likelihood of economic benefits, it is clear that a smaller set of
629 projects could be defined to increase the potential for customer benefits by eliminating
630 the projects with the poorest performance.

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631 **Q. Is the Company's modeling analysis of the repowering projects sound and does that**
632 **analysis provide an accurate representation of the economic benefits of each of the**
633 **12 repowering projects?**

634 A. No, it is not. As was the case in the Company's direct testimony, I have found that the
635 Company's model analysis produces anomalous results and does not provide adequate
636 treatment of key risks to be borne by customers or project-by-project analysis.

637 **Q. Does the Company's analysis provide a reasonable representation of all of the**
638 **uncertainties that have bearing on the risk to Utah ratepayers?**

639 A. No, it does not. The Company has only provided sensitivity analysis on key risk factors
640 for one price-policy scenario. These risks include uncertainty regarding the ability of the
641 projects to qualify for production tax credits, the potential for changes in the corporate
642 tax rate, project cost uncertainty, project energy production estimate uncertainty, and
643 assumptions regarding project life. While the Company asserts that it has demonstrated
644 net benefits to customers over a wide range of scenarios, the analysis presented does not
645 include any analysis of these factors for those price-policy scenarios that produce the
646 least attractive benefit outcomes for customers.

647 **Q. Are the repowering projects likely to be lowest reasonable cost resources?**

648 A. While it is possible that some could be lowest reasonable cost resources, there is a
649 significant probability that they are not. Given the issues I have identified with the
650 Company's modeling and the lack of consideration of several important risk factors, I
651 view the Company's results as not sufficient to provide confidence that these projects are
652 lowest reasonable cost.

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653 **Q. What are the short-term and long-term impacts to Utah ratepayers?**

654 A. The Company's presentation on the projects relies on significant benefits in the first ten
655 years resulting from PTC qualification and benefits in years 20 to 30 of project life
656 associated with extending the life of the assets. The PTC benefits, if realized, would
657 mitigate much of the cost in the first 10 years, however, the risks regarding PTC
658 qualification and changes in corporate tax rates could materially alter that outlook.
659 Conversely, much of the benefit in the Company's analysis is derived from years 20 to 30
660 of the projects, the life extension period. These benefits have been estimated using an
661 extrapolation analysis that is problematic, relies on obtaining 30 years of life, and are
662 only realized in the very long term.

663 **Q. Based on your findings, what are your recommendations at this time?**

664 A. I recommend that the Company's Application for the repowering projects be denied. I
665 have described the types of analysis that the Company should have provided to address
666 the project-specific issues and to fully address the methodology and risk issues. The
667 Company has not adequately shown that repowering provides clear net benefits to
668 ratepayers. The Company has indicated the possibility of submitting refreshed economic
669 analysis in early 2018. Based on the deficiencies in the Company's assessment of the
670 risk to ratepayers, the Commission should deny the Application.

671 **Q. If the Commission allows the Company to provide additional analysis to support its
672 Application, what should that analysis include?**

673 A. As I discussed in Section IV and Section V of this surrebuttal testimony, the Company
674 has not provided sufficient analysis to demonstrate benefits to customers under plausible

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675 future scenarios. At a minimum, any supplemental analysis should include project-by-
676 project modeling using updated low natural gas price forecasts, along with a sensitivity
677 testing the impact of those cases to a reduction in the federal corporate tax rate to 20%.
678 Further sensitivity analysis on the other risk factors I discuss in this testimony and my
679 direct testimony would be beneficial, as well. The project-by-project analysis is
680 important, as the limited project-by-project analysis conducted to date does show
681 significant variance in results by project.

682 **Q. Does this conclude your testimony?**

683 A. At this time, yes, it does.