

Rocky Mountain Power  
Docket No. 17-035-40  
Witness: Chad A. Teply

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Supplemental Direct and Rebuttal Testimony of Chad A. Teply

January 2018

1 **Q. Are you the same Chad A. Teply who submitted direct testimony in this proceeding**  
2 **on behalf of Rocky Mountain Power (“the Company”), a division of PacifiCorp?**

3 A. Yes.

4 **PURPOSE AND SUMMARY OF TESTIMONY**

5 **Q. What is the purpose of your supplemental direct and rebuttal testimony in this**  
6 **proceeding?**

7 A. In my supplemental direct testimony, I reflect the results of the Company’s 2017R  
8 request for proposals (“2017R RFP”), by updating my direct testimony supporting the  
9 Company’s proposal to construct or procure new wind resources (“Wind Projects”) and  
10 to construct the Aeolus-to-Bridger/Anticline transmission line and network upgrades  
11 (“Transmission Projects”) (collectively, the “Combined Projects”). I describe the four  
12 new wind facilities totaling 1,170 megawatts (“MW”) selected as final shortlist  
13 resources in the 2017R RFP, and explain how those resources compare to the original  
14 proxy benchmark resources incorporated into my direct testimony. I also provide the  
15 information required by Public Service Commission of Utah (“Commission”) Rule  
16 R746-430-2(1)(a), (b), (e) and (f) for the Wind Projects and for the associated facilities  
17 necessary to interconnect the Wind Projects. The other requirements under Rule 746-  
18 430-2(1) are addressed in the testimony of the other witnesses supporting the  
19 Application.

20 In my rebuttal testimony, I respond to the testimony of the Utah Division of  
21 Public Utilities (“DPU”) witnesses Dr. Joni Zenger and Mr. Daniel Peaco, and Office  
22 of Consumer Services (“OCS”) witness Mr. Philip Hayet.

23 **Q. What are the key issues you address in your rebuttal testimony?**

24 A. The key issues include:

- 25 1. Development and procurement of the Wind Projects is on schedule, so the Company  
26 can timely deliver them and address the risks identified in the parties' testimony  
27 with risk-mitigation measures that advance the public interest.
- 28 2. The implementation schedules for the Combined Projects continue to provide  
29 reasonable timelines to assess project risks, incorporate the assessments into  
30 decision-making, and allow for changes in project direction in response to changing  
31 circumstances (*i.e.*, off-ramps).

32 **Q. Please summarize your testimony.**

33 A. The Company recognizes the unique circumstances resulting from the time-sensitivity  
34 of the resource opportunity. The Company has addressed these circumstances with a  
35 project schedule that permits the Company to comprehensively assess and confirm the  
36 economic benefits of the Combined Projects as development progresses and mitigate  
37 the risks inherent in projects of this scope.

38 The Company preliminarily announced the final shortlist from the 2017R RFP  
39 on January 8, 2018. The Company successfully engaged the competitive market, and  
40 the RFP results increase the benefits of the Combined Projects to customers. The  
41 Company is on track to successfully deliver the Combined Projects by year-end 2020  
42 through timely development, procurement, and implementation. All of the steps taken  
43 by the Company ensure that the Wind Projects will qualify for production tax credits  
44 (“PTCs”).

45 The Company's extensive experience successfully developing comparable

46 projects supports its firm belief that it can deliver the Combined Projects and provide  
47 substantial customer benefits. If changing circumstances adversely impact the  
48 economics of the Combined Projects, the Company has established reasonable  
49 timelines to assess project risks, incorporate the assessments into decision-making, and  
50 allow for changes in project direction in response to changing circumstances (*i.e.*, off-  
51 ramps). The Combined Projects are in the public interest and provide substantial  
52 benefits to customers.

### 53 SUPPLEMENTAL DIRECT TESTIMONY

54 **Q. Please describe the Wind Projects selected to the 2017R RFP final shortlist.**

55 A. The Wind Projects selected to the 2017R RFP final shortlist are four facilities in  
56 Wyoming totaling approximately 1,170 MW:

- 57 1. McFadden Ridge II – 109 MW Company benchmark;
- 58 2. TB Flats I and II (combined into single project) – 500 MW Company  
59 benchmark;
- 60 3. Cedar Springs – 400 MW third-party build-transfer and power purchase  
61 agreement; and
- 62 4. Uinta – 161 MW third-party build-transfer.

63 **Q. How do these projects relate to the benchmark projects included in the**  
64 **Application?**

65 A. In its Application, the Company provided detailed information on four proxy  
66 benchmark wind facilities and committed to providing updated information regarding  
67 the Wind Projects ultimately selected in the 2017R RFP. The Company's McFadden  
68 Ridge II and TB Flats I and II benchmarks were selected to the final shortlist. The

69 Company's fourth benchmark wind facility, Ekola, was not selected to the 2017R RFP  
70 final shortlist.

71 **Q. Please describe the McFadden Ridge II project.**

72 A. McFadden Ridge II is a nominal 109 MW wind facility located in Carbon and Albany  
73 counties, Wyoming, which the Company is currently developing on a Company-  
74 controlled site. McFadden Ridge II is expected to have approximately 44 2.3-MW-to-  
75 2.5-MW wind turbine generators. The facility will consist of an electrical collection  
76 system, a 34.5-kilovolt ("kV") to 230-kV collector substation, 230-kV breakers, a 230-  
77 kV tie-line between the wind project and the point-of-interconnection substation,  
78 meteorological towers, access roads, and required communication and control facilities  
79 (e.g., metering, hardware, software, and associated communication circuits and other  
80 equipment).

81 The McFadden Ridge II project selected to the shortlist is substantively  
82 identical to the project described in the Company's direct testimony.

83 **Q. Please describe the TB Flats I and II projects.**

84 A. TB Flats I and II is a nominal 500 MW wind facility located primarily in Carbon  
85 County, Wyoming, although some facilities may be sited in Albany County as well. We  
86 expect TB Flats I and II to have approximately 134 2.0-MW-to-4.2-MW wind turbine  
87 generators and similar project infrastructure as described for McFadden Ridge II, with  
88 the addition of an operations and maintenance ("O&M") building.

89 The TB Flats I and II project, as selected to the 2017R RFP final shortlist, was  
90 submitted as a single Company benchmark project alternative to benefit from  
91 economies of scale and is no longer presented as two stand-alone projects of 250 MW

92 for TB Flats I and 250 MW for TB Flats II projects as originally described in the  
93 Application.

94 The TB Flats I and II project is substantively identical to the TB Flats I and TB  
95 Flats II projects described in the Company's direct testimony.

96 **Q. Please describe the Cedar Springs project.**

97 A. Cedar Springs is a nominal 400 MW wind facility located in Converse County,  
98 Wyoming, and is being developed by a third-party. We expect the project to consist of  
99 approximately 161 2.3-MW-to-2.5-MW wind turbine generators and similar project  
100 infrastructure as described for McFadden Ridge II, with the addition of an O&M  
101 building. The Cedar Springs project, as proposed, will be procured as 50 percent build-  
102 transfer and 50 percent power purchase agreement.

103 **Q. Please describe the Uinta project.**

104 A. Uinta is a nominal 161 MW wind facility located in Uinta County, Wyoming. The Uinta  
105 project is being developed and delivered by a third-party under a build-transfer  
106 agreement. We expect the project to consist of approximately 47 2.3-MW-to-3.6-MW  
107 wind turbine generators and similar project infrastructure as described for McFadden  
108 Ridge II, with the addition of an O&M building.

109 **Q. What are the total costs for the Wind Projects?**

110 A. The proposed Wind Projects are estimated to cost approximately \$1.30 billion,  
111 recognizing the split procurement attributes of the Cedar Springs facility. This amount  
112 is lower than the cost estimate for the initial benchmark projects included in the  
113 Application, even though the Wind Projects selected to the 2017R RFP final shortlist  
114 provide additional capacity. The overall costs of the Combined Projects reflected in the

115 Company's supplemental direct testimony are consistent with the costs included in the  
116 Application.

117 **Q. Do all four Wind Projects rely on the Transmission Projects for interconnection?**

118 A. No. McFadden Ridge II, TB Flats I and II, and Cedar Springs, which total 1,009 MW,  
119 rely on the construction of the Transmission Projects, which will relieve existing  
120 congestion and allow interconnection of those Wind Projects. Uinta, which has a  
121 nominal capacity of 161 MW, will interconnect to the Company's Wyoming  
122 transmission system in southwest Wyoming and is not reliant on the Transmission  
123 Projects for interconnection and delivery. In total, the benefits generated by the Wind  
124 Projects' zero-fuel-cost generation, which lowers net power costs and provides 10 years  
125 of PTCs, continue to support cost-effective development of the Transmission Projects.

126 **Q. Did the 2017R RFP consider the recently passed federal tax legislation and any  
127 potential impacts on wind project proposals?**

128 A. Yes. As discussed in detail in Mr. Rick T. Link's testimony, the 2017R RFP process was  
129 adjusted to allow proposals to be updated to reflect any impacts to proposal pricing, or  
130 project viability, before determination of the final shortlist.

131 **Q. Has recently passed federal tax legislation resulted in a change to the time-  
132 sensitive nature of the Combined Projects?**

133 A. No. The time-sensitive nature of the Combined Projects remains and is primarily driven  
134 by the pending phase-out of PTCs for new wind resources. As Company witness Ms.  
135 Nikki L. Kobliha explains, the recently passed federal tax legislation did not modify  
136 the PTC provisions of the tax code.

137 **Q. To receive 100 percent of safe-harbor PTCs, must wind turbine generators still be**  
138 **placed in service by the end of calendar year 2020?**

139 A. Yes. To receive 100 percent of safe-harbor PTCs, wind turbine generators in new  
140 facilities that began construction before January 1, 2017, through purchase of safe-  
141 harbor equipment, must be reviewed, approved, implemented, and placed in-service by  
142 year-end 2020 to be eligible for the full PTC. The Company's implementation schedule  
143 for the Combined Projects is designed to meet these criteria and provide customers the  
144 economic benefit of 100 percent of the PTCs.

145 **Q. Do the Wind Projects selected to the 2017R RFP final shortlist meet the Internal**  
146 **Revenue Service's ("IRS") start-of-construction criteria?**

147 A. Yes. The Company confirmed through its due diligence efforts that each of the Wind  
148 Projects selected to the 2017R RFP final shortlist have acquired, or have the rights to,  
149 sufficient wind turbine generator equipment and other facility-specific components  
150 before December 31, 2016, to meet the start-of-construction definition for tax purposes.  
151 These transactions satisfy the safe-harbor requirements under the PTC guidance issued  
152 by the IRS. More specifically, the Company has confirmed 2016 safe-harbor purchases  
153 of wind turbine generator equipment for each of the 2017R RFP final shortlist Wind  
154 Projects with the respective project developers. Each of the shortlisted 2017R RFP  
155 project developers has provided the appropriate evidence of the safe-harbor purchases  
156 that will be applied to each of the respective Wind Projects.

157 **Q. How does the Company plan to continue to procure the Wind Projects selected to**  
158 **the 2017R RFP shortlist?**

159 A. With the final shortlist determined, the Company will continue to engage the shortlisted



160 counterparties in negotiations to finalize terms and conditions, with a target for  
 161 execution of definitive agreements by April 16, 2018. The final shortlist Wind Projects  
 162 include a combination of Company benchmark resources, facilities that have been  
 163 selected instead of one or more of the Company benchmark resources, and facilities in  
 164 addition to the Company benchmark resources. These Wind Projects have been  
 165 assessed as equal-to or better-than the Company benchmark resources included in the  
 166 Application. In each case, the individual Wind Projects’ developer has submitted its  
 167 proposed commercial structure for construction and procurement of the resource within  
 168 the guidelines of the 2017R RFP.

169 **Q. Please provide an updated timeline of key decision points, regulatory outcomes,**  
 170 **and project development activities.**

171 A. The following timeline provides an overview of the key events that have already  
 172 occurred, and the events that will occur as the currently anticipated resource  
 173 procurement and development efforts continue.

174 **Energy Vision 2020 New Wind and Transmission Timeline**

<b>2017</b>	<b>Apr. 4, 2017—PacifiCorp 2017 Integrated Resource Plan (“IRP”) filing</b>
	<b>Jun. 30, 2017—Idaho CPCN filing</b>
	<b>Jun. 30, 2017—Wyoming CPCN filing</b>
	<b>Jun. 30, 2017—Utah Resource Decision filing</b>
	<b>Sept. 27, 2017—PacifiCorp 2017R RFP issued to market</b>
	<b>Nov. 17, 2017—PacifiCorp 2017R RFP initial shortlist determination</b>
	<b>Nov. 22, 2017—PacifiCorp 2017R RFP initial shortlist price updates from market</b>
	<b>Dec. 11, 2017—Oregon Commission action on 2017 IRP action items</b>
	<b>Dec. 2017—U.S. Tax Code legislation passed</b>

2018	<p><b>Jan. 8, 2018—PacifiCorp 2017R RFP final shortlist determination</b></p> <p><b>Jan. 16, 2018—Idaho CPCN supplemental filing</b></p> <p><b>Jan. 16, 2018—Wyoming CPCN supplemental filing</b></p> <p><b>Jan. 16, 2018—Utah Resource Decision supplemental filing</b></p> <p><b>Feb. 22–28, 2018—Wyoming CPCN public hearing</b></p> <p><b>Mar. 6–9, 2018—Utah Resource Decision public hearing</b></p> <p><b>Mar. 12–15, 2018—Idaho CPCN public hearing</b></p> <p><b>Mar. 9, 2018—Wyoming legislative session ends (budget session)</b></p> <p><b>Apr. 6, 2018—Idaho CPCN Commission Order</b></p> <p><b>Apr. 6, 2018—Utah Resource Decision Commission Order</b></p> <p><b>Apr. 30, 2018—Wyoming CPCN Commission Order (conditioned upon rights-of-way (“ROW”) acquisition)</b></p> <p><b>Apr. 16, 2018—Executable Wind Projects Agreements Finalized</b></p> <p><b>May 1, 2018—Begin Transmission Projects ROW acquisition</b></p> <p><b>May 31, 2018—Wind Projects Limited Notice to Proceed (“LNTP”)</b></p> <p><b>Jun. 30, 2018—USFWS Eagle Take Permit first-year data collection complete (benchmarks)</b></p> <p><b>Nov. 30, 2018—Transmission Projects EPC Contract LNTP (500 kV)</b></p> <p><b>Dec. 31, 2018—Wyoming Industrial Siting Council permits received, New Wind (benchmarks)</b></p> <p><b>Dec. 31, 2018—Wyoming Industrial Siting Council permit received, Transmission</b></p>
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2019	<p><b>Jan. 1, 2019—Complete Transmission Projects ROW acquisition (anticipated)</b>  <b>Jan. 1, 2019—Wyoming CPCN issued (transmission ROW acquired; anticipated)</b></p> <p><b>Mar. 31, 2019—Wyoming legislative session ends (full session; approximate date)</b></p> <p><b>Apr. 1, 2019—Transmission EPC Contract Full Notice to Proceed (“FNTP”) (500 kV)</b>  <b>Apr. 1, 2019—Wind Projects FNTP</b>  <b>Apr. 1, 2019—Wind Projects Turbine Supply Agreement release (benchmark)</b></p> <p><b>Jun. 30, 2019—USFWS Eagle Take Permit second-year data collection complete (benchmarks)</b></p> <p><b>Sept. 30, 2019—Submit voluntary USFWS Eagle Take Permit application (benchmarks)</b></p>
2020	<p><b>Mar. 15, 2020—Wyoming legislative session ends (budget session; approximate date)</b></p> <p><b>Dec. 31, 2020—Receive voluntary Eagle Take Permit (if issued by USFWS)</b></p> <p><b>Dec. 31, 2020—New Wind and Transmission Projects in-service</b></p>

175 **Q. Is the Company currently on track to meet this development schedule and**  
176 **complete the Combined Projects by the end of 2020?**

177 A. Yes.

178 **Q. Does the timeline above provide off-ramps to allow the Company to revise, or**  
179 **potentially terminate, development efforts in response to changes in federal**  
180 **income tax policy, project permitting, or other risks associated with the Combined**  
181 **Projects?**

182 A. Yes. In particular, the Company has incorporated the changes to the federal corporate  
183 income tax code into the economic analysis included in Mr. Link’s supplemental direct  
184 testimony. Thus, the risk associated with changes in federal tax rates have been  
185 resolved.

186           To provide further risk mitigation, the timeline for developing and  
187           implementing the Combined Projects contemplates offering limited notices to proceed  
188           (“LNTP”) to key engineering, procurement, and construction (“EPC”) contractors and  
189           build-transfer project counterparties associated with the projects after obtaining the  
190           Certificate of Public Convenience and Necessity (“CPCN”) from the Wyoming Public  
191           Service Commission. The LNTP will facilitate EPC contractor support of the Wyoming  
192           Industrial Siting Council permit review and hearing processes, as well as initiation of  
193           certain engineering and pre-procurement activities. The LNTP concept incorporated  
194           into these key contracts will limit cost commitments while allowing critical parallel  
195           path project development activities and approvals to progress.

196           The project timeline also incorporates off-ramps to ensure the transmission  
197           rights-of-way (“ROW”) acquisition effort is complete and the final CPCNs are obtained  
198           before release of full notice to proceed (“FNTP”) to EPC contractors and build-transfer  
199           counterparties for the Combined Projects. Under the terms of the major contracts for  
200           the Combined Projects that will be awarded by the Company, FNTP allows the EPC  
201           contractors to proceed with their major equipment purchases, site mobilization, and  
202           subcontract awards that also entail the associated cost commitments for those activities.  
203           Recognizing that a successful and timely ROW acquisition process is fundamental to  
204           the overall success of the project, negotiation of the FNTP terms described above with  
205           major contractors and counterparties provides another layer of risk mitigation that the  
206           Company has incorporated into its planning.

207 **CONTINUED DEVELOPMENT, NEGOTIATIONS, AND IMPLEMENTATION**

208 **Q. What is the current status of development for each of the Wind Projects?**

209 A. As part of the 2017R RFP process, the Wind Projects have undergone preliminary  
210 vetting for interconnection status, wind resource performance, PTC eligibility,  
211 permitting status, conformance to specifications, constructability, and equipment  
212 supply. Going forward, the Company's resource development team will engage  
213 shortlisted project counterparties in detailed commercial negotiations of scope,  
214 schedule, cost, and terms within the construct of the 2017R RFP, and otherwise  
215 continue with established development plans and activities for the Wind Projects.

216 **Q. Will the Company develop additional information for the Wind Projects?**

217 A. Yes. If material changes in circumstances or new information on the Wind Projects  
218 becomes available during the detailed negotiations, ongoing development, and project  
219 implementation activities, the Company will assess the information to ensure the  
220 Company delivers the most competitive Wind Projects for customers. The Company  
221 will communicate any material changes in circumstances, as discussed in the  
222 supplemental direct and rebuttal testimony of Company witnesses Ms. Cindy A. Crane  
223 and Ms. Joelle R. Steward.

224 **Q. Will the Company provide additional landowner notifications now that the 2017R**  
225 **RFP final shortlist has been identified?**

226 A. Yes. To ensure compliance with the Wyoming statute on landowner notifications  
227 associated with CPCN applications for wind and transmission facilities, the Company  
228 updated landowner information for parcels within 2,000 feet of any 230 kV  
229 transmission lines related to the Wind Projects and will work with the Wyoming Public

230 Service Commission to notify any landowners who were not previously included in the  
231 landowner notifications related to the Transmission Projects.

232 **Q. Are applications with the Wyoming Industrial Siting Council (“ISC”) for the**  
233 **Wind Projects being prepared?**

234 A. Yes. The Company’s McFadden Ridge II benchmark project scope was included in a  
235 previous permitting process before the ISC, which was approved. The ISC Permit  
236 Applications for the TB Flats I and II, Cedar Springs, and Uinta projects are being  
237 developed and will be filed in accordance with the individual project development and  
238 implementation schedules to support year-end 2020 in-service dates now that those  
239 projects have been selected to the 2017R RFP final shortlist. Based upon a review of  
240 the shortlisted project schedules, the Company expects the ISC review processes and  
241 hearings for the TB Flats I and II, Cedar Springs, and Uinta projects will proceed  
242 through April 2019, subject to updates identified during detailed negotiation of project  
243 contracts, schedules, and implementation plans with each of the shortlisted Wind  
244 Projects counterparties. The ISC is required to hold a hearing within ninety days of  
245 each application under W.S. § 35-12-109.

246 **Q. Does the Company anticipate landowner participation in the ISC proceedings**  
247 **associated with the Wind Projects?**

248 A. Yes. Based upon past experience in siting wind resources in Wyoming, as well as the  
249 landowner intervener interests in this docket, the Company anticipates robust  
250 participation of landowners in the ISC proceedings for each of the Wind Projects to  
251 ensure that all issues and concerns within the scope of the ISC permit process are fully  
252 vetted.

253 **Q. Has the Company performed preliminary evaluations of the wind potential at**  
254 **each Wind Project site?**

255 A. Yes. Studies for each of the Wind Projects were completed by the individual project  
256 developers. The Company also validated wind potential with a third-party wind  
257 resource evaluation firm as part of the 2017R RFP process. Wind assessments for each  
258 of the Wind Projects indicate that the sites have favorable wind regimes suitable for  
259 high performance wind resources. In particular, the Company previously provided  
260 testimony in this docket regarding the wind resources and the anticipated capacity  
261 factors expected to be produced by the Company's project layouts for the McFadden  
262 Ridge II and TB Flats I and II wind projects. The third-party developers of the Cedar  
263 Springs and Uinta Wind Projects provided similar assessments of the wind resources  
264 and expected capacity factors for their projects, which is included in the exhibits for  
265 each project attached to my testimony.

266 The 2017R RFP evaluation team also reviewed the wind resource assessments  
267 for each project and independently determined whether the wind data for each project  
268 supported the proposed capacity factors or whether adjustments to the proposed  
269 capacity factor for a project were warranted. Mr. Link provides additional testimony  
270 regarding the results of the 2017R RFP team's independent review in his supplemental  
271 direct testimony.

272 **Q. Has each Wind Project developer determined who will be responsible for**  
273 **construction of each project?**

274 A. Not yet. Each of the Wind Project developers has indicated its intent to issue  
275 competitive procurement requests for proposals to obtain firm-fixed pricing to

276 engineer, procure, construct and commission each wind facility now that they have  
277 been added to the 2017R RFP final shortlist. For the McFadden Ridge II and TB Flats  
278 I and II projects, the Company is negotiating with shortlisted EPC contractors that  
279 submitted formal proposals in 2017.

280 **Q. Has each Wind Project developer determined who will supply the wind turbine**  
281 **generators for each Wind Project?**

282 A. Not entirely. As discussed above, each of the Wind Project developers has acquired or  
283 has rights to acquire safe-harbor wind turbine generator equipment and other project-  
284 specific components, which it proposes to use at the Wind Projects as required to meet  
285 the IRS's start-of-construction criteria for PTC eligibility. Each of the Wind Project  
286 developers also indicated its intent to finalize procurement of follow-on wind turbine  
287 generator equipment through competitive procurement requests for proposals or under  
288 existing master supply agreements, and identified its intended equipment suppliers,  
289 models, and configurations in its 2017R RFP submittals.

290 **Q. How did the Company generate the cost information for construction, operation,**  
291 **and maintenance of the individual Wind Projects through their useful lives?**

292 A. As further discussed in Mr. Link's testimony, the Company prepared its capital cost  
293 estimates for the Wind Projects using information from a variety of sources.

294 For its McFadden Ridge II and TB Flats I and II benchmark Wind Projects, the  
295 Company obtained wind turbine costs from competitive procurement processes that  
296 were held in 2016 to procure the Company's safe-harbor wind turbine generator  
297 equipment and in 2017 for follow-on wind turbine generator equipment. The Company  
298 also obtained balance of plant engineering, procurement, construction, and



299 commissioning costs from a competitive procurement process that was held in 2017 to  
300 support final submittals in the 2017R RFP process. Transmission interconnection costs  
301 were estimated using comparable wind facility transmission studies and prior project  
302 experience, and internal project development, management and permitting costs were  
303 estimated based upon the Company's experience with construction of past wind  
304 facilities and other recent generation resource additions. The Company applied  
305 contingencies in various cost categories to account for project uncertainties given the  
306 current stage of development of the project. O&M cost estimates were developed based  
307 upon the Company's experience with wind resource O&M budgets and third-party  
308 contracts for the Company's existing wind facilities. Ongoing capital costs were  
309 estimated based upon the Company's experience and indicative costs provided by wind  
310 turbine generator suppliers for critical capital components.

311 For the third-party developed Wind Projects, the Company received  
312 competitive market proposals for a combination of build-transfer projects and power  
313 purchase agreements within the guidelines provided in the 2017R RFP. All bid  
314 proposals received through that process require a bid validity date through April 16,  
315 2018, and final shortlist bidders provided a letter signed by an officer that commits to  
316 the requirements of the 2017R RFP. Transmission interconnection costs for the  
317 individual projects were informed by transmission system impact studies, and internal  
318 project development, management, and permitting costs were estimated based upon the  
319 developers' experience with development and construction of past wind facilities.  
320 O&M cost estimates were developed based upon the Company's experience with wind  
321 resource O&M budgets and third-party contracts for the Company's existing wind

322 facilities. Ongoing capital costs were estimated based upon the Company's experience  
323 and indicative costs provided by wind turbine generator suppliers for critical capital  
324 components.

325 **Q. Will the Company and third-party developers collaborate with the Wyoming**  
326 **Game and Fish Department, the U.S. Fish and Wildlife Service, and other**  
327 **environmental agencies to develop and implement the Wind Projects?**

328 A. Yes. The Company and the third-party project developers have initiated discussions  
329 with the Wyoming Game and Fish Department and the U.S. Fish and Wildlife Service  
330 regarding developing and implementing the Wind Projects. The Company and the  
331 third-party project developers have also begun pre-construction usage surveys for  
332 various avian, bat, and wildlife species using recommendations from applicable state  
333 and federal guideline documents, including the 2012 Land Based Wind Energy  
334 Guidelines. The Company and third-party project developers will coordinate with  
335 county, state, and federal agencies that have jurisdiction over development, permitting,  
336 and operations to ensure appropriate environmental and safety measures are  
337 implemented throughout the life of the Wind Projects. The Company is committed to  
338 establishing development and implementation schedules and protocols that recognize  
339 the potential environmental impacts of the Wind Projects and strive to mitigate negative  
340 impacts.

341 **Q. Will the Wind Projects' wind turbine generators or associated infrastructure be**  
342 **built in Wyoming's Greater Sage Grouse Core area?**

343 A. No. The Wind Projects' wind turbine generators and associated infrastructure,  
344 including the associated generation interconnection tie-lines, will not be located within

345 the current boundaries of Wyoming's Greater Sage Grouse Core area.

346 **Q. How will potential visual and lighting impacts from the Wind Projects be**  
347 **addressed?**

348 A. State and county permitting regulations contain requirements that recognize and  
349 address potential visual and lighting impacts. The Company and third-party developers  
350 will incorporate those applicable measures into the siting, construction, and operations  
351 of the Wind Projects as part of the permitting process. Such measures may include:  
352 down shielded lighting on project infrastructure; Federal Aviation Administration  
353 approved/recommended turbine lighting protocols; active aviation light management;  
354 and use of approved paint colors for turbines.

355 **Q. When will construction of the Wind Projects begin and end?**

356 A. As described in detail in the exhibits attached to my testimony, site construction of the  
357 Wind Projects will begin as soon as the second quarter of 2019. The Company and the  
358 third-party developers will not begin construction, however, until all of the necessary  
359 regulatory approvals and applicable permits and authorizations from other local, state,  
360 tribal or federal governmental agencies that have jurisdiction over the construction or  
361 operation of the Wind Projects have been received, including approval from the  
362 Wyoming ISC to ensure that the projects ultimately selected are in the best interest of  
363 customers. The Company anticipates that substantial completion for the Wind Projects,  
364 under normal construction circumstances, weather conditions, labor availability and  
365 materials delivery, will be achieved by November 15, 2020, or as otherwise updated  
366 during detailed negotiation of project contracts, schedules, and implementation plans  
367 with each of the shortlisted Wind Projects counterparties.

368 **Q. What is the expected operational life of the Wind Projects?**

369 A. The anticipated operational life of the Wind Projects has been assessed at 30 years for  
370 the purposes of the Application and this supplemental filing, which aligns with the  
371 Company's currently approved depreciable life for wind resources. The operational life  
372 may be reviewed and extended based on advances in turbine technologies or  
373 improvements in maintenance processes (or both) through the course of the Company's  
374 regular depreciation studies and filings.

375 **Q. Will the Wind Projects be decommissioned or repowered at the end of their**  
376 **operational life?**

377 A. The Company may dismantle and reclaim the Wind Projects delivered under a build-  
378 transfer agreement at the end of their operational life based upon the requirements of  
379 the operating permit. Typically, county and state agencies identify the decommissioning  
380 requirements during the permitting process, including expected reclamation efforts and  
381 overall decommissioning costs and security requirements. The Company may also  
382 consider replacing or upgrading the existing infrastructure at the end of the operational  
383 life if conditions (*i.e.*, economics, permitting, customer load needs, etc.) are conducive  
384 to reinvestment in the Wind Projects.

385 **REQUIREMENTS OF COMMISSION RULE 746-430-2(1)**

386 **Q. Please summarize how the Company's Application meets the requirements for**  
387 **approval of a significant energy resource.**

388 A. Commission Rule 746-430-2(1) describes what must be included in an application for  
389 approval of a significant energy resource. As such, I have incorporated exhibits to my  
390 testimony that provide information for the Wind Projects pertaining to R746-430-

391 2(1)(a), (b), (e) and (f) requirements. The other requirements under Rule 746-430-2(1)  
392 are addressed in the testimony of the other witnesses supporting the Application.

393 **Q. Please describe your exhibits for the nominal 400 MW Cedar Springs facility that**  
394 **provide the information required by Commission Rule 746-430-2(1).**

395 A. The required information for the nominal 400 MW Cedar Springs facility is included  
396 in Confidential Exhibit RMP\_\_\_(CAT-1SD) to my testimony. Confidential Exhibit  
397 RMP\_\_\_(CAT-1SD) subparts are:

- 398 • Confidential Exhibit RMP\_\_\_(CAT-1SD-1)–Wind Turbine Generator (“WTG”)  
399 Site Layout
- 400 • Confidential Exhibit RMP\_\_\_(CAT-1SD-2)–Site Wind Resource Data
- 401 • Confidential Exhibit RMP\_\_\_(CAT-1SD-3)–Preliminary Project Schedule
- 402 • Confidential Exhibit RMP\_\_\_(CAT-1SD-4)–Project Map
- 403 • Confidential Exhibit RMP\_\_\_(CAT-1SD-5)–Metes and Bounds Property  
404 Information
- 405 • Highly Confidential Exhibit RMP\_\_\_(CAT-1SD-6)–Generation Tie-line Property  
406 Information
- 407 • Confidential Exhibit RMP\_\_\_(CAT-1SD-7)–Environmental Studies
- 408 • Confidential Exhibit RMP\_\_\_(CAT-1SD-8)–Raptor Nest Information
- 409 • Confidential Exhibit RMP\_\_\_(CAT-1SD-9)–Permitting Matrix
- 410 • Confidential Exhibit RMP\_\_\_(CAT-1SD-10)–System Impact Re-Study Q712
- 411 • Confidential Exhibit RMP\_\_\_(CAT-1SD-11)–230-kV Tie-line Structure Details

412 **Q. Please describe the exhibits to your testimony for the nominal 500 MW TB Flats I**  
413 **and II wind facility that provide the information required by Commission Rule**  
414 **746-430-2(1).**

415 A. The required information for the nominal 500 MW TB Flats I and II wind facility is  
416 included in Confidential Exhibit RMP\_\_(CAT-2SD) to my testimony. Confidential  
417 Exhibit RMP\_\_(CAT-2SD) subparts that have been updated since my direct testimony  
418 was filed in this docket are:

- 419 • Confidential Exhibit RMP\_\_(CAT-2SD-1)–Preliminary Site Layout
- 420 • Confidential Exhibit RMP\_\_(CAT-2SD-7)–Parcel Map
- 421 • Confidential Exhibit RMP\_\_(CAT-2SD-14)–Large Generator Interconnection  
422 Facilities Study

423 **Q. Please describe the exhibits for the nominal 109 MW McFadden Ridge II wind**  
424 **facility that provide the information required by Commission Rule 746-430-2(1).**

425 A. The required information for the nominal 109 MW McFadden Ridge II wind facility is  
426 included in Exhibit RMP\_\_(CAT-3SD) to my testimony. Exhibit RMP\_\_(CAT-3SD)  
427 subparts that have been updated since my direct testimony was filed in this docket are:

- 428 • Confidential Exhibit RMP\_\_(CAT3SD-1)–WTG Site Layout

429 **Q. Please describe the exhibits to your testimony for the nominal 161 MW Uinta wind**  
430 **facility that provide the information required by Commission Rule 746-430-2(1).**

431 A. The required information for the nominal 161 MW Uinta wind facility is included in  
432 Confidential Exhibit RMP\_\_(CAT-4SD) to my testimony. Confidential Exhibit  
433 RMP\_\_(CAT-4SD) subparts are:

- 434 • Confidential Exhibit RMP\_\_(CAT-4SD-1)–Project Details and Facilities

- 435           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-1-A)–Site Layout
- 436           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-1-D)–Preliminary One-Line
- 437           Diagrams
- 438           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-1-E)–Wetlands and Surface Water
- 439           • Confidential Exhibit RMP\_\_\_(CAT-4SD-2)–Site Description
- 440           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-2-A)–Preliminary Metes and Bounds
- 441           Description
- 442           • Confidential Exhibit RMP\_\_\_(CAT-4SD-3)–Geology
- 443           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-3-A)–Vicinity Topography
- 444           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-3-B)–Groundwater
- 445           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-3-C)–Surficial Geology
- 446           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-3-D)–Bedrock Geology
- 447           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-3-E)–Mineral Deposits
- 448           • Confidential Exhibit RMP\_\_\_(CAT-4SD-4)–Natural Resources
- 449           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-4-A)–Visual Resources
- 450           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-4-B)–Visual Simulations
- 451           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-4-C)–Regional Summary
- 452           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-4-H)–Studies Status
- 453           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-4-I)–Environmental Studies
- 454           • Highly Confidential Exhibit RMP\_\_\_(CAT-4SD-5)–Property Acquisition Status
- 455           ◦ Confidential Exhibit RMP\_\_\_(CAT-4SD-5-B)–Landowner Map
- 456           • Confidential Exhibit RMP\_\_\_(CAT-4SD-6)–Preliminary Construction Schedule

457 • Confidential Exhibit RMP (CAT-4SD-7)–Site Wind Resource Data

458 **Q. Please provide a summary of the capital expenditures required to construct the**  
459 **Wind Projects.**

460 A. Confidential Exhibit RMP\_\_\_(CAT-5SD) to my testimony includes the summary.

461 **REBUTTAL TESTIMONY**

462 **Q. Several parties note that the Wind Projects must be operational by the end of 2020**  
463 **to receive full PTC benefits. (See, e.g., Hayet Direct, lines 249-252; Zenger Direct,**  
464 **lines 289-293.) How does the Company plan to ensure successful and timely**  
465 **delivery of the Combined Projects?**

466 A. The Company relies on several strategies to ensure successful mitigation of the types  
467 of project-implementation risks that could delay the Combined Projects beyond 2020.  
468 The Company recently used these same strategies to successfully deliver very similar  
469 wind and transmission projects as those under review in this docket.

470 Perhaps most importantly, the Company built its regulatory procedural  
471 schedules and project-implementation timeline to allow sufficient time to acquire the  
472 rights-of-way (“ROW”) necessary for the Aeolus-to-Bridger/Anticline transmission  
473 line. The ability to acquire necessary ROW will be known before releasing the full  
474 notice to proceed (“FNTP”) to major contractors for the Combined Projects. Moreover,  
475 if there is a delay in acquiring the necessary ROW for the Transmission Projects, the  
476 Company will reassess how to adjust the projects' remaining critical-path schedules to  
477 successfully deliver customers the benefits of the Combined Projects.

478 **Q. Has the Company started negotiating the contracts for the Combined Projects?**

479 A. Yes. The Company solicited competitive market proposals and is actively negotiating  
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480 contract terms, conditions, and pricing for the Wind Projects, and is engaged in similar  
481 efforts for the Aeolus-to-Bridger/Anticline transmission line, as more fully described  
482 in the rebuttal testimony of Company witness Mr. Rick A. Vail. This will ensure  
483 contract execution in a timely and efficient manner following regulatory approvals and  
484 receipt of critical permits, but also to review each potential counterparty's ability to  
485 secure and deliver labor and materials throughout its proposed construction schedules.  
486 (See Zenger Direct, lines 315-318.) This review considers the number and scope of  
487 concurrent projects that potential counterparties have been able to deliver historically,  
488 and their approach to booking future projects and managing that business growth in  
489 times of significant market opportunity. The early engagement of contractors and  
490 counterparties, the timely selection of contractors and shortlisted projects, and the  
491 timely approval of a CPCN from the Wyoming Public Service Commission for the  
492 projects, will allow the Company to commit and secure labor and materials from the  
493 selected contractors and counterparties for its projects before other market participants  
494 who engage in such discussions later in 2018 and 2019.

495 **Q. Has the Company taken a similar approach to engage the market for wind turbine**  
496 **suppliers?**

497 A. Yes. The Company has also solicited competitive market proposals and is actively  
498 negotiating wind turbine supply contract terms, conditions, and pricing for the  
499 Company benchmark Wind Projects. These efforts will (1) ensure timely and efficient  
500 contract execution following receipt of regulatory approvals and critical permits, and  
501 (2) secure manufacturing and delivery queue positions and schedules in support of the  
502 Wind Projects. I discussed the procurement status of wind turbine generators for the

503 Wind Projects earlier in this this testimony.

504 **Q. How will the Company manage any weather-related construction-delay risk as**  
505 **discussed by Dr. Zenger? (Zenger Direct, line 309.)**

506 A. The Company is actively negotiating project schedules and commercial terms with its  
507 shortlisted EPC contractors for the McFadden Ridge II and TB Flats I and II benchmark  
508 Wind Projects to address the potential for wind days, extreme weather, construction  
509 restrictions to accommodate winter ranges for certain wildlife, and other potential  
510 weather-related risks. For example, the Company has shifted construction activities  
511 such as installation of turbine foundations and collector systems from 2020 to 2019 in  
512 the proposed construction schedules to mitigate weather-related construction risk in  
513 2020. The Company's economic analysis supporting the Combined Projects  
514 incorporates these EPC contract provisions, and similar provisions will be negotiated  
515 with the third-party build-transfer Wind Project developers.

516 **Q. Mr. Hayet argues there is risk associated with the Company's reliance on third-**  
517 **party developers. (Hayet Direct, lines 498-521.) How do you respond to this risk?**

518 A. Mr. Hayet's contention that third-party developers being responsible for constructing a  
519 significant portion of the Wind Projects introduces undue risk is inaccurate and, more  
520 importantly, unsupported given the shortlisted 2017R RFP build-transfer Wind Projects  
521 developers' commitments and contractual obligations to deliver the build-transfer  
522 projects submitted to the 2017 RFP under the prescribed commercial structure,  
523 regardless of the ratio of Company self-build options to third-party build-transfer  
524 projects. The terms of the Development Transfer Agreement provides specific  
525 provisions for the timing and scope of the TB Flats I and II benchmark project

526 development assets transfer, to be implemented by PacifiCorp with directly assigned  
527 balance of plant EPC contracts and directly assigned wind turbine generator supply  
528 contracts. The terms of the 2017R RFP build-transfer agreements for the Cedar Springs  
529 and Uinta Wind Projects provide specific protections for the Company's rights and  
530 obligations, and for Company oversight of progress, inspection, confirmation of scope  
531 compliance, and performance guarantees with those counterparties. In addition, the  
532 third-party developers on the 2017R RFP final shortlist responsible for the Cedar  
533 Springs and Uinta build-transfer wind projects are industry leaders in wind-project  
534 development and implementation.

535 **Q. Mr. Hayet suggests a risk that the Company's 2016 safe-harbor expenditures**  
536 **related to the Wind Projects may be insufficient to receive the full PTC benefits.**  
537 **(Hayet Direct, lines 711-718.) How has the Company mitigated this risk?**

538 A. The Company has mitigated this risk by confirming 2016 safe-harbor wind turbine  
539 generator purchases for each of the 2017R RFP final shortlist Wind Projects with the  
540 respective project developers. Mr. Hayet's reference to the Company's direct  
541 expenditures for safe-harbor equipment in 2016 represents only a portion of safe-harbor  
542 wind turbine generator purchases required for the Wind Projects. Each of the 2017R  
543 RFP project proponents has provided the appropriate evidence of the safe-harbor  
544 purchases that will be applied to each of the respective Wind Projects.

545 **Q. Mr. Peaco alleges that the Company has not "provided any mechanism for damage**  
546 **recovery due to 'lost' PTC." (Peaco Direct, lines 879-882.) How do you respond?**

547 A. As discussed above, the Company will use various risk mitigation measures, or  
548 "mechanisms," including specific contract terms and conditions to be negotiated with

549 2017R RFP shortlist counterparties and contractors to avoid “lost PTC” scenarios.  
550 Specific contract terms and conditions will include, but not be limited to, project  
551 schedule and tracking requirements, performance guarantees, indemnities, and  
552 liquidated damages, all of which provide the Company with commercial “mechanisms”  
553 to proactively manage and address potential counterparty performance issues that could  
554 ultimately lead to “lost PTC.” While a competitive-market participant will not accept  
555 consequential damages related to the recovery of “lost PTC” in entirety, the Company  
556 will deploy reasonably appropriate and commercially available risk mitigation  
557 measures within the Combined Projects' implementation plans and contracts.

558 **Q. Mr. Peaco notes a risk that the capital costs of the Wind Projects will be more than**  
559 **expected and thereby decrease the estimated customer benefits. (Peaco Direct,**  
560 **lines 961-962.) Has the Company been able to mitigate this risk?**

561 A. Yes. By engaging the competitive market and implementing appropriate and  
562 commercially available risk-mitigation measures in its contracts for the Combined  
563 Projects, the Company is making every effort to mitigate any capital cost risks for the  
564 Combined Projects. Mr. Link provides additional detail of the economic results of the  
565 2017R RFP and the associated positive impact to the assessment of customer benefits  
566 in his testimony, and the Company's efforts to incorporate risk mitigation into all  
567 aspects of the Combined Projects has been discussed at length in my testimony and the  
568 testimony of Mr. Vail.

569 **Q. Does the level of risk or uncertainty of the capital cost estimates for the Combined**  
570 **Projects differ from the risks and uncertainty inherent in all resource**  
571 **acquisitions?**

572 A. No. The Company's approach to estimate costs and then engage the competitive market  
573 during the Combined Projects' development schedules is reasonable and prudent and  
574 provides additional certainty and mitigation of capital cost risk.

575 **Q. Mr. Peaco argues that a small reduction in production from the Wind Projects will**  
576 **erode the customer benefits. (Peaco Direct, lines 995-998.) What efforts has the**  
577 **Company taken to validate the capacity factors developed for the Wind Projects?**

578 A. The Company engaged an independent third-party wind-resource-data technical  
579 analyst to review and determine the appropriate capacity factor estimates to incorporate  
580 into its Wind Project analyses and 2017R RFP submissions. The third-party technical  
581 assessments are based on an annual 50-percent probability ("P50") approach and  
582 provide estimated wind production over several years to account for normal and  
583 expected annual variations. By the very nature of a P50 estimate, actual wind project  
584 production is expected to be below the P50 estimate half of the years and above the  
585 P50 estimate the other half of the years. Requiring the Company to provide the full  
586 PTC and energy benefits at the higher of the P50 capacity factor or actual production  
587 is asymmetrical and unreasonable.

588 **Q. Has the Company taken additional efforts to validate the capacity factors of the**  
589 **shortlisted bids in the 2017R RFP?**

590 A. Yes. As Mr. Link testifies, the Company engaged another independent third-party wind-  
591 resource data technical analysts to review and determine the appropriate capacity factor

592 estimates to incorporate into any final shortlist analyses. The third-party experts based  
 593 their assessments on a P50 approach. This independent study is included as an exhibit  
 594 to Mr. Link's supplemental direct testimony.

595 **Q. How have the Company’s Wyoming wind resources performed from 2010 through**  
 596 **2016, as compared to the annual capacity factors estimated for the individual**  
 597 **projects at the time of acquisition decision-making?**

598 A. Overall, the Company's existing wind projects in the Medicine Bow, Wyoming area  
 599 near the proposed location of the Aeolus substation have out-performed the pre-  
 600 construction estimates, as set forth in the following table:

601 **WYOMING WIND CAPACITY FACTOR SUMMARY**

Capacity Factor	MW	COD	Pre-Construction	Average Actual	Difference
			(non-leap years)	2010 - 2016	
SEVEN MILE HILL I	99	12/31/2008	41.3 percent	39.2 percent	-5.0 percent
SEVEN MILE HILL II	19.5	12/31/2008	39.3 percent	42.5 percent	8.1 percent
HIGH PLAINS	99	9/13/2009	35.7 percent	35.2 percent	-1.3 percent
MCFADDEN RIDGE I	28.5	9/29/2009	34.5 percent	37.2 percent	7.9 percent
DUNLAPI	111	10/1/2010	36.4 percent	40.2 percent	10.4 percent
Total	357				

602 **Q. Why have you limited your analysis to only projects developed near the Medicine**  
 603 **Bow area of Wyoming?**

604 A. The Company’s results with the relatively recent Wyoming wind projects that were  
 605 developed near Medicine Bow, Wyoming, are better correlated and more representative  
 606 of the results the Company would expect with the Wind Projects, particularly  
 607 considering each of the four Wind Projects incorporated into the Application is located  
 608 adjacent to the Company’s existing operating sites included in the chart above.

609 **Q. Do the results to date indicate fatal flaws or undue risk in the third-party P50**  
610 **analysis the Company relies on to assess project economics and customer benefits**  
611 **before acquisition of new wind projects?**

612 A. No. If anything, the data presented above indicates the Company's approach to P50  
613 capacity factor assessment for its Wyoming projects has provided a conservative  
614 representation of results on an average basis through seven years of project operation.

615 **Q. Is there a mechanism in place to appropriately capture the variability in resource**  
616 **benefits inherent with new wind projects?**

617 A. Yes. As used with previously implemented new wind projects, the Energy Balancing  
618 Account captures the variability in resource benefits inherent with new wind projects,  
619 in conjunction with other system energy costs, and distributes those benefits to  
620 customers.

621 **Q. Is there anything about the Wind Projects that makes the estimated capacity**  
622 **factor more uncertain than for other wind facilities the Company has developed?**

623 A. No. The Company's methodology for estimating the capacity factors for the Wind  
624 Projects is the same as the methodology previously relied on by the Commission. In  
625 this respect, the Wind Projects are no riskier than any of the previous wind projects the  
626 Company has successfully developed for customers.

627 **Q. Are customers bearing all of the risks associated with the Combined Projects?**

628 A. No. Until the Commission reviews the implementation of a resource acquisition for  
629 prudence, the Company bears the risks. The Company anticipates that the prudence of  
630 its implementation of the Combined Projects will undergo rigorous review in Utah, and  
631 in all the other states where the Company provides retail service. In addition, as

632 described by Mr. Link, the risks associated with the Combined Projects are no different  
633 than those associated with any other utility resource acquisition.

634 **CONCLUSION AND RECOMMENDATION**

635 **Q. What do you conclude in your supplemental direct and rebuttal testimony?**

636 A. The Combined Projects remain well positioned to provide customer benefits and are  
637 being effectively developed in parallel to ongoing regulatory proceedings--including  
638 the 2017R RFP, procurement activities, and upcoming permitting--to mitigate project  
639 risks and deliver desired outcomes. The Company continues to manage project-  
640 development activities within a reasonable timeline to assess project risks, incorporate  
641 those assessments into decision-making, and allow for changes in project direction (*i.e.*,  
642 off-ramps), if necessary. The Company appreciates the parties' engagement, and the  
643 Combined Projects will benefit from this rigorous stakeholder review before the  
644 Company makes major commitments to the projects.

645 **Q. Does this conclude your supplemental direct and rebuttal testimony?**

646 A. Yes.