

REDACTED

Rocky Mountain Power

Docket No. 17-035-40

Witness: Rick A. Vail

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

REDACTED

Second Supplemental Direct Testimony of Rick A. Vail

February 2018

1 **Q. Are you the same Rick A. Vail who previously provided testimony in this case on**
2 **behalf of PacifiCorp dba Rocky Mountain Power (the “Company”)?**

3 A. Yes.

4 **PURPOSE AND SUMMARY OF SECOND SUPPLEMENTAL DIRECT TESTIMONY**

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

7 A. My testimony provides an update on the network upgrade costs associated with the TB
8 Flats I and II, Cedar Springs, and Uinta projects, which are three of the four new wind
9 resources (“Wind Projects”) included on the updated final shortlist of the 2017R
10 Request for Proposals (“RFP”). My testimony also contains the information required
11 under the voluntary request for approval of a resource decision to construct the Aeolus-
12 to-Bridger/Anticline line and network upgrades (“Transmission Projects”).

13 **Q. Please summarize your testimony.**

14 A. Since filing supplemental direct testimony on January 16, 2018, the Company's
15 transmission function finalized a broader open access transmission tariff (“OATT”)
16 restudy process, which included producing system impact restudy (“SISs”) reports for
17 the following three Wind Projects: TB Flats I and II, Cedar Springs, and Uinta. Based
18 on the completed SISs, the network upgrade costs have increased to [REDACTED]. In
19 addition, the Company’s updated studies indicate that with the construction of the
20 Aeolus-to-Bridger/Anticline transmission line, the Company can interconnect 1,510
21 MW of new wind capacity behind the transmission constraint in southeastern
22 Wyoming. Thus, the Company has confirmed that there is sufficient stiffness factor and
23 transfer capability to interconnect the three Wind Projects located in southeast

24 Wyoming (*i.e.*, TB Flats I and II, Cedar Springs, and Ekola Flats), as well as the fourth
25 Wind Project located in western Wyoming (*i.e.*, Uinta).

26 **UPDATE ON NETWORK UPGRADE COSTS**

27 **Q. Why has the Company updated the network upgrade costs associated with the**
28 **Wind Projects?**

29 A. The Company's transmission function updated the interconnection network upgrade
30 costs associated with three of the four Wind Projects as part of a broader OATT restudy
31 process. More specifically, after the Company announced its plan to construct the
32 Energy Gateway Aeolus-to-Bridger/Anticline D.2 segment to come online by 2020, the
33 Company's transmission function initiated an interconnection restudy process to ensure
34 its interconnection studies reflected the most current long-term transmission plan
35 assumptions. In accordance with its OATT, the Company's transmission function
36 performed restudies in serial queue order to determine whether the acceleration of
37 Energy Gateway segment D.2 would impact the cost or timing of interconnection of
38 projects that had not yet executed interconnection agreements and that had previous
39 studies depending on Energy Gateway West in its entirety. The Company's
40 transmission function posted the SIS reports to OASIS on January 29, 2018, as well as
41 certain updated reports on February 9, 2018, after the Company filed its January 16,
42 2018, supplemental direct testimony. Three of the four Wind Projects (TB Flats I and
43 II, Cedar Springs, and Uinta) were among the interconnection projects to receive
44 restudies.

45 **Q. Did the Company restudy the McFadden Ridge II project's interconnection?**

46 A. No. Because of its position in the queue, the McFadden Ridge II project had not yet

47 received even an initial SIS; therefore, it was not included in the projects that were
48 restudied. McFadden Ridge II's queue position and location in the constrained area of
49 PacifiCorp's transmission system in eastern Wyoming indicate that its future SIS will
50 require the construction of additional Energy Gateway segments beyond just the D.2
51 segment to allow the project to interconnect, which Mr. Rick T. Link explains
52 contributed to its removal from the final shortlist.

53 **Q. How does McFadden Ridge II's queue position and location indicate its future SIS**
54 **will require construction of additional Energy Gateway segments?**

55 A. PacifiCorp transmission can never guarantee the result of a future SIS because of the
56 many factors that can affect it (*e.g.*, changes to the queue, as I discussed above). Here,
57 however, there is a specific point in the interconnection queue where projects located
58 in the constrained area of PacifiCorp's eastern Wyoming transmission system will
59 require more than just the D.2 segment to interconnect, and that point in the queue is
60 before McFadden Ridge II's queue position. More specifically, the restudy reports
61 incorporating the updated assumption regarding the staging of Energy Gateway West
62 showed that interconnection projects located in eastern Wyoming with an
63 interconnection-queue position greater than Q0712 trigger the need for Energy
64 Gateway South, which is not planned to be placed in service by the end of 2020. All
65 other bids originally selected to the final shortlist can secure interconnection either
66 because they hold an interconnection queue position that does not require Energy
67 Gateway South (Ekola Flats, TB Flats I and II, and Cedar Springs); or because their
68 project location is not in the constrained area of the Company's eastern Wyoming
69 transmission system (Uinta).

70 **Q. Why can Uinta interconnect with just the D.2 segment even though it has an**
71 **interconnection-queue position higher than Q0712?**

72 A. Uinta is located in western Wyoming where it (and other projects in the same area) can
73 secure interconnection without triggering additional Energy Gateway segments.

74 **Q. Why did the Company not restudy the interconnection for the Ekola Flats**
75 **project?**

76 A. Ekola Flats executed a Large Generator Interconnection Agreement (“LGIA”) in
77 November 2017 and therefore did not require restudy.

78 **Q. Why didn't the Company complete these interconnection studies earlier so they**
79 **could be analyzed earlier in the 2017R RFP process?**

80 A. The Company’s transmission function did not perform the restudies in conjunction with
81 the 2017R RFP process. Rather, as noted above, the Company’s transmission function
82 followed its OATT process to perform a broader restudy of the interconnection queue
83 to assess whether and to what extent the cost or timing of certain interconnection
84 projects was impacted by the Company’s change to its long-term transmission plan,
85 *i.e.*, the staging of the Energy Gateway West project.

86 In addition, and as discussed by Mr. Link, at the request of the Utah independent
87 evaluator, the 2017R RFP did not require that bidders have a completed SIS when bids
88 were submitted. This allowed bidders to participate in the 2017R RFP regardless of
89 their position in the interconnection queue--a queue that can change over time as
90 generator-interconnection customers change project details, request commercial
91 operation date extensions or suspension, or withdraw from the queue altogether. As a
92 result, while the restudies were performed independent of the 2017R RFP process,

93 performing restudies to reflect an updated long-term transmission plan assumption
94 close-in-time to the selection of the final shortlist allowed the Company's transmission
95 function to incorporate the most current queue-based assumptions into restudies as
96 well.

97 **Q. Based on the SISs, what are the updated costs for the network upgrades?**

98 A. Confidential Table 1 summarizes the updated costs for the network upgrades:

99

CONFIDENTIAL TABLE 1

230kV & 138kV Network Upgrades	
ITEM	VALUE
Transmission Line	██████████
Substation	██████████
Engineering	██████████
Right of Way Acquisition	██████████
PM/Environmental/Support	██████████
Indirects	██████████
TOTAL	██████████

100 In addition, Exhibit RMP___(RAV-1SS) provides greater detail on the network
101 upgrades required for each of the Wind Projects and the SIS for each Wind Project is
102 included as Exhibit RMP___(RAV-2SS), Exhibit RMP___(RAV-3SS), Exhibit
103 RMP___(RAV-4SS), Exhibit RMP___(RAV-5SS).

104 **Q. How do the updated network upgrade costs compare to the estimate included in
105 your supplemental direct testimony of January 16, 2018?**

106 A. Network upgrade costs have increased by approximately ██████████.

107 This increase is due primarily to the fact that the completed SISs indicate additional
108 facilities are required to interconnect some of the Wind Projects.

109 **Q. How have the network upgrades changed since those identified in your**
110 **supplemental direct testimony of January 16, 2018?**

111 A. The Cedar Springs project no longer requires the rebuild of a 56-mile portion of the
112 Dave Johnston-Amasa-Difficulty-Shirley Basin 230-kV line. The rebuild can be
113 deferred because another interconnection project (Q0409) will not be online by 2020.
114 The Cedar Springs project will require a rebuild of the Standpipe-Freezeout-Aeolus
115 230 kV line with a larger conductor, approximately 15 miles, and a rebuild of the
116 existing Aeolus-Shirley Basin #1 line, approximately 16 miles. Both of these upgrades
117 were identified as network upgrades in previous testimony.

118 In addition, the Uinta project no longer requires the reconductoring of
119 approximately 13.7 miles of the Q0715-Railroad 138-kV line because the most recent
120 line ratings, which are continually upgraded as new information is available, does not
121 indicate exceedance of the emergency rating on the line. The Uinta project will,
122 however, need to eliminate the credible N-2 outage of the Ben Lomond-Birch Creek
123 and Ben Lomond-Naughton 230 kV transmission lines, which share common structures
124 for approximately eight miles as they exit Ben Lomond substation. This will require
125 the construction of a 230 kV single circuit transmission line beginning approximately
126 one mile outside of Ben Lomond substation and continuing to structure 525 for the Ben
127 Lomond-Naughton #1 line. This line segment will replace the current Ben Lomond-
128 Naughton #1 circuit, which resides on the north side of the 7-mile-long lattice tower
129 double circuit with the Ben Lomond-Birch Creek 230 kV transmission line.

130 The facilities identified for TB Flats I and II remain the same.

131 **Q. Has the Company performed any additional technical studies since the filing of**
132 **supplemental direct testimony on January 16, 2018?**

133 A. Yes. The Company's updated studies indicate that it can interconnect 1,510 MW of
134 incremental wind generation behind the TOT4A/TOT4B constraint. With the addition
135 of the Ekola Flats project to the final shortlist, the Wind Projects will utilize 1,150 MW
136 of the incremental capacity, which will leave 360 MW for other projects, including a
137 240 MW qualifying facility ("QF") that has an executed interconnection agreement that
138 does not require the construction of Energy Gateway West and South to accommodate
139 the QF's interconnection.

140 **Q. In your supplemental direct testimony, you testified that the Company was in the**
141 **process of testing a new tower design for the Transmission Projects (Vail**
142 **Supplemental Direct, lines 114-123). Is that process ongoing?**

143 A. Yes, although the results of that testing will not impact the decision on the tower design.
144 As described in my supplemental direct and rebuttal testimony, the Company will use
145 the new tower. The tower testing will verify the tower design and will not impact the
146 cost of the project.

147 **COMPLIANCE WITH UTAH ADMIN. CODE RULE R746-440-1**

148 **Q. Does your testimony and exhibits contain the information that must be included**
149 **with a voluntary request for approval of a resource decision to construct the**
150 **Transmission Projects?**

151 A. Yes. It is my understanding Utah Admin. Code Rule R746-440-1(1) sets forth the filing
152 requirements for a voluntary request for approval of a resource decision. As described
153 in my direct testimony (Vail Direct, lines 547-868), the Company provided the

154 information required by Utah Admin. Code Rule R746-440-1(1). In addition, my
155 supplemental direct and rebuttal testimony and my second supplemental direct
156 testimony provide additional information required by Utah Admin. Code Rule R746-
157 440-1(1)(a), (c), (d), (f), (i), and (j). Updated information related to the requirement in
158 Utah Admin. Code Rule R746-440-1(1)(e) is provided by Mr. Link, and updated
159 information related to Utah Admin. Code Rule R746-440-1(1)(g) is provided by Ms.
160 Joelle R. Steward.

161 **Q. Have you provided additional information that describes the proposed resource**
162 **decision, as required by Utah Admin. Code Rule R746-440-1(a)?**

163 A. Yes. My supplemental direct and rebuttal testimony and my second supplemental direct
164 testimony provide an updated description of the network upgrades required to
165 interconnect the Wind Projects. Exhibit RMP___(RAV-1SD), Exhibit RMP___(RAV-
166 2SD), Exhibit RMP___(RAV-1SS), Exhibit RMP___(RAV-2SS), Exhibit
167 RMP___(RAV-3SS), Exhibit RMP___(RAV-4SS), and Exhibit RMP___(RAV-5SS)
168 provide additional descriptions of the network upgrade facilities. Because the Aeolus-
169 to-Bridger/Anticline transmission line has remained the same throughout this
170 proceeding, the information included in my direct testimony fully describes that
171 component of the Transmission Projects.

172 **Q. Has the Company explained the “purposes and reasons for the Resource**
173 **decision,” as required by Utah Admin. Code Rule R746-440-1(c)?**

174 A. Yes. My direct, supplemental direct and rebuttal, and second supplemental direct
175 testimony, and the exhibits that accompany each, describe in detail why the Company
176 requires the construction of the Transmission Projects.

177 **Q. Has the Company provided an “analysis of the estimated or projected costs of the**
178 **Resource decision, including the engineering studies, data, information and**
179 **models used in the [Company’s] analysis,” as required by Utah Admin. Code Rule**
180 **R746-440-1(d)?**

181 A. The estimated Transmission Project costs for the Aeolus-to-Bridger/Anticline 500-kV
182 transmission line are described in my direct testimony (Vail Direct, line 284) and the
183 costs for the network upgrades are described above in Confidential Table 1. Analysis
184 supporting the project costs is provided in Exhibit RMP__(RAV-2), Exhibit
185 RMP__(RAV-3), Exhibit RMP__(RAV-4), Exhibit RMP__(RAV-5), Exhibit
186 RMP__(RAV-6), Exhibit RMP__(RAV-7), Exhibit RMP__(RAV-7), Exhibit
187 RMP__(RAV-9), Exhibit RMP__(RAV-1SD), Exhibit RMP__(RAV-2SD), Exhibit
188 RMP__(RAV-3SD), Exhibit RMP__(RAV-4SD), Exhibit RMP__(RAV-1SS),
189 Exhibit RMP__(RAV-2SS), Exhibit RMP__(RAV-3SS), Exhibit RMP__(RAV-
190 4SS), and Exhibit RMP__(RAV-5SS).

191 **Q. Has the Company provided “[s]ufficient data, information, spreadsheets, and**
192 **models to permit an analysis and verification of the conclusions reached and**
193 **models used by the [Company],” as required by Utah Admin. Code Rule R746-**
194 **440-1(f)?**

195 A. Yes. The same testimony and exhibits that demonstrate compliance with Utah Admin.
196 Code Rule R746-440-1(d), described in the preceding answer, meet the requirements
197 for Utah Admin. Code Rule R746-440-1(f).

198 **Q. Has the Company provided the “[m]ajor contracts, if any, proposed for execution**
199 **or use in connection with the Resource decision,” as required by Utah Admin.**
200 **Code Rule R746-440-1(i)?**

201 A. I describe the contracts that will be executed in my supplemental direct and rebuttal
202 testimony (Vail Supplemental Direct and Rebuttal, lines 153-182) the pro-forma
203 contracts are attached as Exhibit RMP____(RAV-6SS). The Company has not executed
204 the final contracts for the Transmission Projects.

205 **Q. Has the Company provided “[i]nformation to show that the [Company] has or will**
206 **obtain any required authorization from the appropriate governmental bodies for**
207 **the Resource decision,” as required by Utah Admin. Code Rule R746-440-1(j)?**

208 A. Yes. This information was provided in my direct testimony (Vail Direct, lines 656-855)
209 and in Exhibit RMP____(RAV-18).

210 **Q. Does this conclude your second supplemental direct testimony?**

211 A. Yes.