

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of Rocky Mountain :
Power's Voluntary Request for :
Approval of Resource Decision to : Docket No. 12-035-92
Construct Selective Catalytic :
Reduction Systems on :
Jim Bridger Units 3 and 4 :

SURREBUTTAL TESTIMONY OF

RANDALL J. FALKENBERG

ON BEHALF OF THE

OFFICE OF CONSUMER SERVICES

REDACTED VERSION

Subject to Rule 746-100-16

February 28, 2012

1 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A. Randall J. Falkenberg, PMB 362, 8343 Roswell Road, Sandy Springs, Georgia 30350. I am
3 the same witness who filed direct testimony in this case on November 30, 2012.

4 **Q. WHAT IS THE PURPOSE OF THIS TESTIMONY?**

5 A. I discuss the rebuttal testimony of PacifiCorp witnesses Mr. Rick Link, Mr. Chad Teply
6 and Ms. Cindy Crane.

7 **Q. WHAT HAS CHANGED SINCE THE COMPANY FILED ITS CASE AND OCS**
8 **FILED ITS DIRECT TESTIMONY?**

9 A. There have been numerous significant events that have transpired in just the past few
10 months. The Company has new forecasts for natural gas, power, and coal prices. The
11 Company's IRP is being developed with a new load forecast and a much different system
12 expansion plan than it has previously used. The Company filed its rebuttal testimony
13 earlier this month and in that testimony presented updated economic studies comparing the
14 SCR option to gas conversion of Bridger Units 3 and 4. Finally, the Environmental
15 Protection Agency ("EPA") was granted a delay in its Regional Haze Rulemaking
16 ("RHR") process and will not propose a new rule until March, 2013. At present there is no
17 proposed rule for Regional Haze compliance.

18 **Q. WHAT SPECIFIC ISSUES DO YOU ADDRESS IN THIS TESTIMONY?**

19 A. I address the Company's new economic studies and discuss my efforts to verify their new
20 results. I also discuss how the Company has responded to the issues I identified in my
21 direct testimony. Office of Consumer Services ("OCS") Witness Ms. Cheryl Murray will
22 present the OCS policy testimony and the OCS recommendations in light of the EPA RHR
23 situation.

24

25 **Comparison of RMP Original and Updated Economic Studies**

26 **Q. PLEASE DESCRIBE CONFIDENTIAL EXHIBIT OCS- 1SR.**

27 **A.** This confidential exhibit presents 3 tables. Table OCS-1SR-1 shows the Company's
28 original (direct case) results, presenting the PVRR(d) of the Selective Catalytic Reduction
29 ("SCR") alternative compared to gas conversion for the indicated gas and market price
30 forecasts under different CO₂ tax assumptions. Table OCS-1SR-2 shows the Company's
31 original results with corrections for the two acknowledged fixed cost errors (the Mine
32 Capital Correction and the SCR in Gas correction) as provided in the Company's response
33 to OCS 12.3. These corrections improved the economics of the SCR option substantially as
34 compared to the original filing. Table OCS-1SR-3 shows the Company's current results,
35 which are substantially less favorable to the SCR option for all of the nine scenarios they
36 have now modeled.¹ On average the Company's rebuttal figures are \$ [REDACTED] million less
37 favorable to the SCR option as compared to the corrected filing results (from OCS 12.3)
38 for the seven scenarios modeled in both the original and updated filing.

39 **Q. WERE YOU ABLE TO EVALUATE THE REASONABLENESS OF THE**
40 **COMPANY'S RESULTS?**

41 **A.** Not directly. The System Optimizer ("SO") Model workpapers the Company provided
42 were no more transparent than those provided with the initial filing. It appears that the
43 new SO Model results are substantially different as are all of the important cost
44 components. Looking at the data, it appears all major cost categories have changed
45 substantially. Lacking the opportunity to submit multiple rounds of discovery (as was the
46 case with the initial filing), I could not realistically attempt to perform the same level of
47 analysis that I undertook prior to filing direct testimony. Consequently, I decided to

¹ In the Company's original filing only seven scenarios were modeled.

48 simply produce an independent result by performing a comparison to a more recent
49 Generation and Regulation Initiative Decision Tool (“GRID”) Model study. I did so using
50 the Company’s Fourth Quarter 2012 Avoided Cost update database.

51 **Q. WHY DID YOU SELECT THAT PARTICULAR GRID MODEL STUDY AS THE**
52 **BASIS FOR YOUR COMPARISON?**

53 **A.** There were several reasons. First, the Company made the model and data available in
54 discovery, in advance of its rebuttal filing, enabling me to undertake the analysis. Second,
55 the model was prepared for a purpose unrelated to this case. There is little reason to
56 suspect the inputs were derived with any notion of impacting the Bridger SCR analysis.
57 Third, the Company did supply detailed supporting workpapers for the updated avoided
58 cost GRID model. While I might not agree with all assumptions and inputs, the data was
59 developed in a well documented manner consistent with the Company’s standard methods.
60 Fourth, the GRID study uses the same forward price curves and load forecasts as assumed
61 by Mr. Link in his updated study. Finally, the expansion plan used in GRID was designed
62 to meet the updated load forecast. While not identical to the SO Model assumption, the
63 expansion plan in GRID is reasonably similar to the expansion plan being modeled
64 currently in the ongoing IRP process and the expansion plan included in the SO Model in
65 this case, particularly during the first decade of the Bridger study.

66 **Q. PLEASE DISCUSS YOUR RESULTS.**

67 **A.** Using the base case assumptions, the GRID study produces a PVRR(d) benefit of the SCR
68 option of █████ million. This result is comparable to the Company’s updated base case as
69 shown on Exhibit OCS-1SR-3. While only one Grid analysis was performed, it does
70 compare well to the Company’s new results.

71 **Q. THE OCS RAISED A NUMBER OF ISSUES IN YOUR DIRECT TESTIMONY.**
72 **PLEASE DISCUSS HOW THEY WERE DEALT WITH IN THE COMPANY'S**
73 **REBUTTAL FILING.**

74 **A.** Exhibit OCS-2SR summarizes the OCS issues and how they were addressed by the
75 Company. I will discuss each item briefly here.

76 **Q. DID THE COMPANY CORRECT THE ERRORS YOU IDENTIFIED IN TABLE 2**
77 **OF YOUR DIRECT TESTIMONY?**

78 **A.** Yes. The Company states it made corrections for the three acknowledged errors in the
79 Company study (the Mine Capital Cost error, the SCR costs included in the gas case, and
80 the Wyodak capacity.)

81 **Q. OCS IDENTIFIED A NUMBER OF UNPROVEN OR INCONSISTANT**
82 **ASSUMPTIONS IN THE COMPANY'S ORIGINAL FILING AS WELL. PLEASE**
83 **DISCUSS THOSE ISSUES, STARTING WITH COAL RECLAMATION COSTS.**

84 **A.** The importance of the coal reclamation issue is substantially reduced in the Company's
85 rebuttal filing because the Company increased the reclamation costs included in the SCR
86 case by █████ million. Subsequent discovery also indicated that the PVRR(d) result related
87 to this issue was much less than I estimated in Table 1 of my direct testimony █████ million²
88 v. \$████ million.³) Further, the Company made other changes in coal costs, which
89 increased coal costs in the SCR case, and decreased coal costs used in the gas conversion
90 case. This reduces the importance of the coal reclamation issue and serves to make the
91 coal costs in the SCR and gas conversion cases much closer. Company witness Cindy
92 Crane addresses the Company's new forecasts and the coal reclamation issue in detail.

93 **Q. YOUR DIRECT TESTIMONY WAS CRITICAL OF THE COMPANY'S**
94 **INCLUSION OF UPDATED SCR COSTS WHILE FAILING TO UPDATE OTHER**
95 **VARIABLES SUCH AS THE OFFICIAL FORWARD PRICE CURVE ("OFPC").**
96 **WAS THIS MATTER ADDRESSED?**

² DPU 8.3

³ This reflected all differences between the Bridger variable coal costs in the SCR and gas conversion cases.

97 A. Yes. The Company has updated the various economic assumptions so that they have now
98 used updates in a consistent manner.

99 **Q. DID THE COMPANY ADDRESS YOUR CONCERN RELATED TO OUTAGE**
100 **RATE INPUTS FOR BRIDGER UNITS 3 AND 4?**

101 A. No. The Company continues to support use of the more optimistic outage rate
102 assumptions. Mr. Link continues to support these figures on the basis that they were
103 “informed” by plant personnel who apparently believe the Bridger units will be more
104 reliable for the next 20 years than they have ever been for any extended period in the past.
105 While he suggests that some of the difference in outage rates is due to the way in which the
106 SO model uses these inputs (blurring the distinction between planned and forced outages),
107 the overall availability rates for Bridger Units 3 and 4 in the SO Model appear to be better
108 than those of the new GRID model study which is based on the four years ended June,
109 2012. I believe the impact of this difference is now less than my original estimates in
110 Table 2 of my direct testimony due to reduced forward prices and the modest
111 improvements in the Bridger Units 3 and 4 outage rates that have recently occurred. I
112 consider this issue less important at present.

113 **Q. DID THE COMPANY ADDRESS YOUR CONCERN RELATED TO MUST RUN**
114 **ASSUMPTIONS?**

115 A. Yes. Mr. Link includes the impact of changes to Must Run inputs in Table 1R, though
116 impacts appear to be very small as compared to the GRID results. However, the figure
117 shown in Table 1R also included the offsetting effect of correcting the Wyodak capacity
118 error. The SO Model has a very simplistic unit heat rate representation (which does not
119 consider the inefficiencies of running units at minimum loadings) so it is not likely to
120 realistically produce results related to changes in these inputs anyway.

121 **Q. YOU ALSO POINTED OUT THE DISPARITY BETWEEN THE GRID AND SO**
122 **MODEL RESULTS IN YOUR DIRECT TESTIMONY. AS THE NEW RESULTS**
123 **ARE MUCH CLOSER DOES THIS IMPLY IT IS NO LONGER NECESSARY OR**
124 **WORTHWHILE TO PERFORM GRID RUNS TO VALIDATE THE SO MODEL**
125 **IN FUTURE CASES?**

126 **A.** No, I would say it shows quite the opposite. It was only through making the effort to
127 isolate the various inputs for the GRID from the SO Model data and breaking out the
128 incremental fixed costs associated with the gas and SCR options that many of the problems
129 in the SO Model were identified. Further, without the GRID model in this case, I would be
130 hard pressed to render any opinion on the Company's rebuttal studies or provide the
131 Commission with even the single data point discussed above.

132 Consequently, I recommend the Commission require the Company to continue
133 providing the GRID model in future cases of this nature. However, rather than trying to
134 "align" the GRID inputs with the SO Model, a much more useful approach would be to
135 simply use the most recently prepared long term Avoided Cost GRID model update as
136 filed in Utah or any other state. The Company updates the GRID model on a regular basis
137 so it would not increase the regulatory burden appreciably to produce it with future filings.
138 However, the Company should also be required to isolate the fixed costs of each
139 alternative as I have done in this case, rather than relying on SO Model outputs to develop
140 this data. This is the only practical way to test the validity of the SO Model, and as
141 mentioned above, it was a key element in finding some of the largest errors in the
142 Company's study. The Company already develops their fixed costs for input into the SO
143 Model, but they are bundled together with inputs from many other plants. It took
144 substantial time and additional discovery to unbundle the appropriate figures.

145 **Q. DID THE COMPANY ADDRESS THE PLANNING UNCERTAINTIES RELATED**
146 **TO RPS WIND AND THE COAL FLEET STRATEGY DISCUSSED IN YOUR**
147 **DIRECT TESTIMONY?**

148 A. With regards to the coal fleet strategy, the Company indicates that the SO Model was
149 configured to include potential retirements in the menu of choices available to be selected
150 as part of the optimal solution. For this reason, Mr. Link questions the need for the coal
151 fleet analysis I conducted in his rebuttal on page 39, starting at line 778. However, simply
152 knowing that the SO Model did not select an option tells one very little. The only way to
153 validate the model results was to perform an additional analysis.

154 The Company also performed a scenario study to evaluate the impact of the
155 removal of the RPS wind resource on the SCR option. These results do show an
156 improvement in the economics of the SCR option and appear valid.

157 **Q. DID THE COMPANY ADDRESS THE PLANNING UNCERTAINTIES RELATED**
158 **TO THE GATEWAY TRANSMISSION UPGRADES?**

159 A. In rebuttal testimony Mr. Link testifies as follows:

160 The decision to install SCR equipment at the Jim Bridger plant is not influential to the
161 decision-making process for Energy Gateway transmission investments. Independent
162 of the decision to install SCRs at the Jim Bridger facility, the Gateway West segment
163 will provide reliability benefits, increase access to low cost generation resources, and
164 allow for a more efficient use of system resources. (Link Rebuttal, page 36, lines 711-
165 715.)
166

167 In OCS 20.6 the Company clarified that the statement above means the need for
168 Gateway was independent of the SCR decision in this case.

169 The Company performed a study of a Utah combined cycle option without
170 Gateway, and showed a PVRR(d) benefit (to SCR) of \$ [REDACTED] million. This result also
171 appears to be reasonable, but they do not reflect any assumed capital cost savings
172 associated with elimination or deferral of the Gateway project resulting from the
173 replacement of Bridger Units 3 and 4 with a combined cycle plant in Utah. The import of
174 these results, however, is that a deferral of Gateway by at least six years would be

175 necessary to produce results showing the Utah combined cycle alternative to be more
176 economic than the SCR alternative. Given the current record in this case, such a
177 determination does not seem possible.

178 The Company agrees with my conclusion that continued economic operation of
179 Bridger does not require the Gateway enhancements.⁴ Mr. Teply also testifies on page 4
180 of his rebuttal that the future decision making for Gateway does not depend on the Bridger
181 SCR decision. The Gateway issue has been in the discussion phase for quite some time.
182 When or if the Company actually begins to take concrete steps to begin construction of the
183 transmission projects in question, all aspects related to the projects need and justification,
184 including the location of RPS wind projects and plant retirements should be examined.

185 **Q. BASED ON YOUR ANALYSIS DOES THE OCS CONTINUE TO OPPOSE THE**
186 **SCR OPTION ON THE BASIS OF THE DEFICIENCIES IN THE COMPANY'S**
187 **MODELING STUDIES DISCUSSED IN YOUR DIRECT TESTIMONY?**

188 **A.** The OCS is satisfied that the record concerning OCS' modeling related issues is now
189 adequately developed to allow the Commission to reach a reasoned conclusion. The
190 Commission can now focus on the impact of issues such as the EPA uncertainty, gas and
191 power prices, or CO₂ tax assumptions with greater clarity. OCS witness Cheryl Murray
192 discusses the policy basis for the OCS recommendation in this case.

193 **Q. WHAT IS YOUR RECOMMENDATION FOR FUTURE CASES OF THIS**
194 **NATURE?**

195 **A.** This case has demonstrated the useful role an alternative model, such as GRID, can play. I
196 recommend that in future cases the Company be required to provide with its workpapers
197 the most recently updated GRID Avoided Cost model, and provide the incremental fixed
198 costs of the competing alternatives (in this case continued coal operation and the gas

⁴ Mr. Teply cites this conclusion in his rebuttal testimony on page 23 of his rebuttal.

199 conversion option) and any other GRID inputs necessary to model these alternatives.
200 Alternatively the GRID model could be used in place of the SO model with the backdrop
201 expansion plan derived from the SO model such as from the IRP.

202 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

203 A. Yes.