

BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Voluntary Request of)	
Rocky Mountain Power for Approval of)	
Resource Decision to Construct Selective)	Docket No. 12-035-92
Catalytic Reduction Systems on Jim)	
Bridger Units 3 and 4)	DPU Exhibit 3.0 Dir
)	

PRE-FILED DIRECT TESTIMONY

MARK W. CRISP, PE

ON BEHALF OF THE

UTAH DIVISION OF PUBLIC UTILITIES

November 30, 2012

REDACTED

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3 DIVISION OF PUBLIC UTILITIES
4

5 **INTRODUCTION**
6

7 **Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

8 A. My name is Mark W. Crisp. I am Managing Consultant of Global Energy & Water
9 Consulting, LLC My business address is 4539 Woodvalley Drive, Suite 100, Acworth,
10 Georgia 30101 (A Suburb of Atlanta, GA.).
11

12 **Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

13 A. I graduated from the Georgia Institute of Technology (Ga. Tech) in 1978 with my degree
14 in Civil Engineering (my resume is included in the Appendix to this testimony). In
15 addition to my studies in Civil Engineering, I have completed post graduate studies in
16 Finance and Accounting and career development programs. Following completion of my
17 formal education, I spent seventeen years (17) employed by Arkansas Power & Light
18 (Middle South Utilities now Entergy – Arkansas) and Georgia Power Company/The
19 Southern Company. I completed assignments in the planning, siting, design, construction,
20 and operations of nuclear, coal and hydroelectric generating plants. In addition to my
21 utility operating experience, I was also responsible for technical due diligence on
22 Southern Company's International Acquisition Team. In this capacity, I was responsible
23 for evaluating all operating, environmental, staffing and operational aspects of power

24 generating facilities, worldwide, that were the focus of The Southern Company's
25 acquisition strategy.

26 Following my employment in the utility industry, I joined the consulting ranks and for
27 the previous seventeen (17) plus years I have been providing services to electric, water,
28 wastewater and natural gas utilities and regulatory bodies throughout the continental US,
29 Hawaii, Alaska and internationally. I continue to provide these services as well as direct
30 the Global Energy & Water Consulting team of consultants. I am a registered
31 professional engineer licensed in Georgia, South Carolina, and Florida.

32

33 **Q. WHAT IS THE NATURE OF YOUR BUSINESS?**

34 A. Global Energy & Water Consulting, LLC is a multi-disciplined Engineering and
35 Environmental Consulting Engineering firm located in suburban Atlanta, Georgia. We
36 specialize in engineering and environmental consulting services, regulatory compliance,
37 financial and rate making accounting to the electric, natural gas, water and wastewater
38 industry. We have completed engagements with utilities or regulatory bodies in 37 states,
39 Canada, Mexico, South America, Europe, Africa, and the Pacific Rim. Our expertise
40 includes utility resource planning and technology selection, site selection, contract
41 negotiations, design, construction, and operations support. We also specialize in power
42 purchases, contract negotiations, transmission analysis, power plant design, substation
43 and distribution design.

44

45 **Q. HAVE YOU TESTIFIED BEFORE THE UTAH PUBLIC SERVICE**
46 **COMMISSION?**

47 A. Yes. I provided Natural Gas Hedging testimony before this Commission in Rocky
48 Mountain Power's ("RMP" or "the Company") 2010 General Rate Case (Docket No.10-
49 135-024). I have also testified before the utility commissions in Georgia, South Carolina,
50 Maryland, Mississippi, the Federal Energy Regulatory Commission ("FERC"), the
51 Nuclear Regulatory Commission ("NRC"), the United States Congress, and several
52 Federal Courts.

53

54 **PURPOSE OF TESTIMONY**

55

56 **Q. WHAT IS YOUR ASSIGNMENT IN THIS PROCEEDING?**

57 A. My assignment is to assist the Division of Public Utilities ("DPU") in evaluating
58 technical and financial considerations in Rocky Mountain Power's "Voluntary Request
59 for Approval of Resource Decision" ("Request") ("Docket No. 12-035-92") to install
60 Select Catalytic Reduction ("SCR") at the Jim Bridger Plant's Units 3 & 4. The Request,
61 as filed by RMP, asks the Commission to issue an order approving the construction of a
62 major emissions reduction project, the addition of select catalytic reduction ("SCR")
63 systems on Unit 3 and Unit 4 of the Jim Bridger steam electric plant located in
64 Sweetwater County, Wyoming.

65

66 **Q. PLEASE PROVIDE A BASIS FOR THE REQUEST BEFORE THIS**
67 **COMMISSION BY ROCKY MOUNTAIN POWER.**

68 A. The Company provides a three (3) prong basis for its Request before this Commission.
69 First, Bridger Units 3 & 4 are critical to the Company's generation fleet serving

70 customers in the State of Utah. RMP cannot eliminate Units 3 & 4 without replacing the
71 energy and capacity with some other form of baseload capacity and energy. Second, due
72 to Wyoming environmental laws and proposed EPA action, Unit 3 cannot continue to
73 operate beyond December 31, 2015 and Unit 4 cannot continue to operate beyond
74 December 31, 2016. RMP states that noncompliance is not an option, only the means of
75 compliance is an option. And third RMP states that through extensive analysis the
76 installation of SCR's is the least-cost compliance alternative (adjusted for risk and
77 uncertainty).

78

79 **Q. HAVE YOU REVIEWED THE THREE (3) PRONGS OF THE COMPANY'S**
80 **REQUEST?**

81 A. Yes, I have reviewed the Pre-filed testimony of Company Witnesses Mr. Teply and Mr.
82 Link, the information supplied by the Company, Data Responses to Office of Consumer
83 Services, as well as, developed and issued Data Requests to the Company to supplement
84 the information provided by the Company in pre-filed testimony.

85

86 **Q. DO YOU SUPPORT THE COMPANY REQUEST?**

87 A. As qualified below, I support the technology selected by the Company to achieve
88 compliance with the settlement agreement of November 20, 2010, with the Wyoming
89 Department of Environmental Quality, Air Quality Division known as the "BART
90 Settlement Agreement" ("Best Available Retrofit Technology"). However, the scope of
91 the Commission's approval of this request should be limited in accordance with Section
92 54-17-402 without the Company having a contract "in-place" with a technology vendor,

93 including firm costs and contractual terms. I also am not convinced the Company has
94 thoroughly vetted other options including retrofit technology and stand-alone or
95 “greenfield” options while using appropriate modeling variables. These concerns are
96 addressed in DPU witness George Evans’ testimony.

97

98 **Q. WILL YOU PLEASE EXPLAIN YOUR POSITION?**

99 A. The Company has presented a compelling argument for the installation of SCR’s to Units
100 3 & 4. However, its argument is predicated on a concept that the SCR’s are the only
101 technology that can be constructed within the timeframe left to meet the requirements of
102 the “BART Settlement Agreement” reached in November of 2010 with the Wyoming
103 Department of Environmental Quality (“WDEQ”) and comply with the US EPA as it
104 approves the Wyoming SIP for Wyoming Regional Haze compliance. While this
105 strategy will bring the Bridger Plant Unit’s 3 & 4 into compliance with Wyoming and
106 Federal guidelines, the financial and contractual terms of the project are not established
107 under a contract with a vendor and, therefore, the costs of the project established in the
108 Company’s request are at best estimates. Terms and conditions for contractor
109 performance have not been established, leaving considerable risk to the rate payer until
110 such time as a contract is negotiated and signed. Following extensive review, there seems
111 to be a question whether other options may have not been explored to their fullest. DPU
112 Witness Mr. Evans has identified significant modeling errors affecting the “best available
113 option” selection process. I yield to Mr. Evans’ testimony for more critical assessments
114 of the modeling issues and how they have influenced the selection. While I support the

115 technology selection, I must caveat this support with reservations about the financial and
116 contractual obligations.

117

118 **Q. PLEASE EXPLAIN YOUR CONCERNS WITH THE COMPANY POSITION**
119 **REGARDING THE SELECTION OF SCRs FOR INSTALLATION AT THE**
120 **BRIDGER PLANT.**

121 A. The Company has provided in pre-filed testimony that the estimated total project cost
122 (Rocky Mountain Power portion of costs – 2/3 of Total based on ownership position),
123 including Allowance for Funds Used During Construction “AFUDC”) for Unit 3 and
124 Unit 4 SCRs is [REDACTED]. This
125 remains an estimate due to the fact that the Company has not completed its evaluation of
126 bids from Engineering, Procurement and Construction (“EPC”) contractors. Completion
127 of this analysis is not expected until after this Docket is complete. There is a risk at this
128 time that the actual cost will be higher than estimated in testimony. There is a similar
129 “opportunity” that the costs will go lower. This is a crucial step in the process selection.
130 The Company has stated it will return to the Commission with the final cost once it
131 completes its evaluation of bids. However, this will be post-decisional on the technology
132 in this Docket. While this Docket does not establish prudence nor that the installation is
133 “used and useful” within the regulatory framework of accounting in rate base, it will
134 establish an argument for a rate case or other docket that the Commission “knew the cost
135 figures and did approve of the technology selection, therefore, it is only reasonable that
136 the Commission find the final costs reasonable.”

137

138 **Q. WHAT ARE THE RISKS ASSOCIATED WITH UNCONDITIONALLY**
139 **APPROVING THE COMPANY’S REQUEST IN THIS DOCKET PRIOR TO THE**
140 **COMPANY COMPLETING ITS EVALAUTION OF BIDS?**

141 A. As mentioned above, the cost may increase or decrease. The EPC contract has not been
142 signed by the Company so it is impossible to tell how the risks will be shared between the
143 Company and the EPC Contractor. Therefore, it is impossible to determine the risk that
144 may ultimately be borne by the rate payer if cost estimates are exceeded. It is also
145 impossible, since the Company has not included its position with regards to delays in
146 completion dates in its EPC Contract template or Appendices to determine what
147 alternatives the Company may employ to mitigate cost over-runs, schedule delays, failure
148 of the technology to perform, or any other situation that may impact overall compliance.
149 Therefore, non-compliance fines from Wyoming and EPA if substantial completion does
150 not meet the compliance deadlines of December 31, 2015 and December 31, 2016, would
151 be assessed against the Company and it is unclear how these would impact total cost to
152 the Company and rate payers.

153
154 **Q. IS THE SPECIFIC TECHNOLOGY THE COMPANY IS RECOMMENDING**
155 **FOR INSTALLATION AT BRIDGER 3 & 4 APPROPRIATE AND IS IT A**
156 **PROVEN TECHNOLOGY?**

157 A. The technology the Company is recommending is a standard technology that uses either
158 an ammonia or urea to mix with flue gases over a catalyst that will convert a large
159 percentage of the NOx into its base chemical constituents of nitrogen and water which are
160 much less harmful to the environment. The technology is a not “a set it and leave it” type

161 technology. It does require considerable tuning during startup: the flow of the flue gas
162 must be continually monitored and adjusted in order to establish the required ammonia
163 injection rate which, in turn, will establish the efficiency or effectiveness of the chemical
164 conversion. Also, the effectiveness of the catalyst used in this process will decline over
165 time requiring replacement. Catalysts are expensive and become a major Capital and
166 O&M cost over the lifetime of the SCR operation.

167

168 **Q. ARE THE CAPITAL AND O&M EXPENSES FOR FUTURE OPERATIONS**
169 **INCLUDED IN THE COST ANALYSIS?**

170 **A.** Yes, but only to the extent that the Capital and O&M are estimates and not firm costs.
171 These costs are extremely volatile dependent on SCR operating efficiency, escalation of
172 costs for reagent, catalyst, and annual O&M. This variable within the financial pro forma
173 is extremely sensitive and could present issues if the Company's estimate is not proven to
174 be accurate.

175

176 **Q. YOU HAVE STATED THAT YOU CONCUR WITH COMPANY'S SELECTION**
177 **OF SCR_s AS THE BART TECHNOLOGY. HOWEVER, YOU HAVE**
178 **PRESENTED INFORMATION THAT DEVELOPS CONCERN ABOUT THE**
179 **TECHNOLOGY AND THE COSTS. WHAT IS YOUR RECOMMENDATION?**

180 **A.** The technology, in and of itself, is a proven technology in the industry and will aid
181 Bridger 3 & 4 reaching its environmental compliance for NO_x emissions. However, I do
182 have reservations with the current request before the Commission in this Docket. My
183 concerns are listed below:

- 184 1. There is no signed EPC contract that provides firm pricing, scheduling,
185 risk management, or firm contractual commitments for the capital cost of
186 the SCRs;
- 187 2. Without a signed EPC contract, the cost to develop the SCRs and the
188 forecast cash flow is exactly that, an estimate;
- 189 3. The analysis that supports the technology selection over another
190 technology or option to supply the same energy and capacity appears to
191 have flaws per DPU Witness Mr. Evans. The issues identified by Witness
192 Evans must be resolved in order to prepare a fully supportive
193 recommendation;
- 194 4. Absent a signed EPC contract and substantive risk mitigation measures to
195 protect rate payers in the event of cost over-runs, any Commission
196 approval of the Company's request should be appropriately conditioned.
- 197

198 **Q. DOES UTAH CODE (UTAH CODE ANN. § 54-17-402) PROVIDE FOR A**
199 **FINDING OF “USED AND USEFUL” AS DEFINED IN REGULATORY**
200 **ACCOUNTING?**

201 A. No it does not. As a matter of Commission regulation, the Company must return to the
202 Commission and file a rate case in an original docket requesting to add the costs of the
203 SCRs into rate base in order to earn a return on the Company's investment. A
204 determination of, or approval of, the request in this Docket does not in any way relieve
205 the Company from its responsibilities to prove the costs are prudent and “used and
206 useful” in an original docket. However, if the Commission in this Docket were to

207 unconditionally approve the Company's request, it certainly would strengthen the
208 Company's position in an original filing for cost recovery. Therefore, it is once again, not
209 in the public interest to unconditionally approve the Company's request until the EPC
210 contract is signed and the capital investment dollars "refreshed" in the financial pro
211 forma, risks to the rate payer are mitigated, and modeling issues identified by Witness
212 Evans are addressed.

213

214 **Q. WHAT IS YOUR RECOMMENDATION?**

215 A. It is recommended the Commission condition its approval of this request to address the
216 following issues:

- 217 1. The risk caused by lack of a signed EPC contract;
- 218 2. The Company will provide refreshed cost numbers and re-analysis of the pro
219 forma following the signing of the EPC contract;
- 220 3. The new pro forma with supportive documentation is provided to the Commission
221 for review and approval;
- 222 4. Risk issues are mitigated through comprehensive rate payer protection measures
223 within the EPC contract covering delays, failure to meet delivery or startup dates,
224 and failure to meet performance criteria;

225

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

227 A. Yes it does.