

Rocky Mountain Power
Docket No. 10-035-
Witness: Chad A. Teply

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

Direct Testimony of Chad A. Teply

Dave Johnston Unit 3 Pollution Control Equipment

February 2010

1 **Q. Please state your name, business address and position with PacifiCorp dba**
2 **Rocky Mountain Power.**

3 A. My name is Chad A. Teply. My business address is 1407 West North Temple,
4 Suite 210, Salt Lake City, Utah. My position is vice president of resource
5 development and construction for PacifiCorp Energy. I report to the president of
6 PacifiCorp Energy. Both Rocky Mountain Power and PacifiCorp Energy are
7 divisions of PacifiCorp.

8 **Qualifications**

9 **Q. Please describe your education and business experience.**

10 A. I have a Bachelor of Science Degree in Mechanical Engineering from South
11 Dakota State University. I am a Registered Professional Engineer in the state of
12 Iowa. I joined MidAmerican Energy Company in November 1999 and held
13 positions of increasing responsibility within the generation organization,
14 including the role of project manager for the 790-megawatt Walter Scott Energy
15 Center Unit 4 completed in June 2007. In April 2008, I moved to Northern
16 Natural Gas Company as senior director of engineering. In February 2009, I
17 joined the PacifiCorp team as vice president of resource development and
18 construction, at PacifiCorp Energy. In my current role, I have responsibility for
19 development and execution of major resource additions and major environmental
20 projects.

21 **Q. What is the purpose of your testimony?**

22 A. The purpose of my testimony is to provide the Commission and parties with
23 justification and information on the pollution control investments being made at

24 the Dave Johnston Unit 3 power plant that will result in environmental
25 improvements.

26 **Background**

27 **Q. Please describe the current operation of Dave Johnston Unit 3.**

28 A. Dave Johnston Unit 3 is located in central Wyoming, near the town of Glenrock,
29 WY. Dave Johnston Unit 3 is a nominal 230 megawatt pulverized coal unit
30 placed in service in 1964. The unit is equipped with a cell-fired boiler. The
31 original burners are still being used on the unit; however, combustion control
32 modifications for nitrogen oxides (NO_x) control are scheduled in 2010. An
33 electrostatic precipitator for control of particulate matter was installed in 1976.
34 Dave Johnston Unit 3 is not equipped with sulfur dioxide (SO₂) removal
35 equipment; however, the environmental improvement project that is the subject of
36 this Docket will provide sulfur dioxide (SO₂) emissions and particulate matter
37 (PM) emissions control with its in-service date in 2010.

38 **Q. Does Dave Johnston currently have operating restrictions related to**
39 **emissions?**

40 A. Dave Johnston Unit 3 is currently operated with a 220 megawatt net output limit
41 to maintain compliance with state of Wyoming sulfur dioxide (SO₂) emissions
42 limits. The new pollution control equipment will increase the auxiliary power
43 consumption by approximately 4.2 net megawatts. Investment in the new
44 pollution control equipment will remove the net output constraint on the unit
45 associated with sulfur dioxide (SO₂) emissions; however, net output of the unit
46 will likely remain below 230 megawatts even after additional minor capital

47 investments are made during the 2014 planned maintenance outage.

48 **Description of Pollution Control Investments**

49 **Q. Please describe the Dave Johnston Unit 3 pollution control project and**
50 **associated equipment.**

51 A. The pollution control project being undertaken at the Dave Johnston Unit 3 power
52 plant will upgrade and improve the unit's particulate matter controls and install
53 sulfur dioxide (SO₂) controls. The capital expenditure for the project during the
54 test period is \$293 million. Construction began in 2008, and the project is
55 expected to be operational by May 31, 2010. The new equipment will be tied into
56 the existing equipment during a scheduled plant maintenance outage. The project
57 will install a dry flue gas desulfurization (DFGD) system with fabric filter. A
58 DFGD system injects lime slurry in the top of an absorber vessel (scrubber) with a
59 rapidly rotating atomizer wheel. The rapid rotation of the atomizer wheel causes
60 the lime slurry to separate into very fine droplets that intermix with the flue gas.
61 The sulfur dioxide (SO₂) in the flue gas reacts with the calcium in the lime slurry
62 to form calcium sulfate in the form of particulate matter. The dry particulate
63 matter is then captured in the downstream baghouse along with fly ash from the
64 boiler. The DFGD system will produce a nonhazardous dry waste product suitable
65 for landfill disposal. Other equipment to be installed as part of the project includes
66 induced draft fans, boiler reinforcement, new ductwork, lime slurry reagent
67 preparation systems, waste material handling systems, electrical infrastructure,
68 controls, and other miscellaneous appurtenances and support systems.

69 **Q. Please describe the emissions improvements that will be achieved with the**
70 **Dave Johnston Unit 3 pollution control project.**

71 A. The Dave Johnston Unit 3 dry flue gas desulfurization system and baghouse will
72 reduce sulfur dioxide emissions from the unit by approximately 90 percent, or
73 approximately 6,600 tons per year. In addition to reducing sulfur dioxide
74 emissions, the baghouse will reduce the emissions of particulate matter. The
75 particulate matter emission limit will be reduced from 0.20 pounds per million
76 British Thermal Units to 0.015 pounds per million British Thermal Units.

77 **Q. Please provide additional details on the project cost of \$293 million.**

78 A. The project costs are broken down into the lump sum engineering, procurement,
79 and construction (EPC) contract, owner's engineer costs, PacifiCorp internal
80 costs, permitting costs, existing stack and ID Fan demolition costs, boiler
81 reinforcement costs, contingency and the allowance for funds used during
82 construction (AFUDC). As a percentage of the total cost, these categories are
83 EPC (85.11%), owner's engineer (0.72%), PacifiCorp internal cost (1.38%),
84 permitting (0.05%), stack and ID Fan demolition (1.88%), boiler reinforcement
85 (2.50%), contingency (0.7%), and AFUDC (7.67%).

86 **Q. Has the cost of the project been prudently managed?**

87 A. Yes. The project has been contracted under lump-sum turnkey EPC contract
88 terms which resulted from a competitive bidding process. PacifiCorp project
89 management staff continues to provide oversight of the project and closely
90 manages any project execution plan changes or potential EPC contract scope
91 changes.

92 **Q. Are there additional operating costs that will be incurred as a result of the**
93 **installation of the pollution control equipment?**

94 A. Yes. Operation of the new pollution control equipment will result in increased
95 operations and maintenance costs associated with reagent, waste disposal, and
96 equipment maintenance.

97 **Q. Are there net power cost savings related to adding the Dave Johnston Unit 3**
98 **pollution control equipment explained in your testimony?**

99 A. No. While providing benefits to customers through emissions reductions and in
100 meeting compliance requirements, the addition of pollution control equipment
101 does not reduce net power costs. Installation of the pollution control equipment on
102 Dave Johnston Unit 3 will reduce output by 4.2 megawatts and the average heat
103 rate is expected to increase by 138 British Thermal Units per kilowatt-hour of
104 generation. Company witness Ms. Hui Shu addresses the impact these changes
105 will have to net power costs in her testimony.

106 **Q. How are the Dave Johnston Unit 3 pollution control investment costs and**
107 **associated operating costs being treated in the revenue requirement?**

108 A. The costs for the pollution control equipment have been included in this case as
109 explained in the revenue requirement testimony of Mr. Steve R. McDougal.

110 **Justification of Investment**

111 **Q. What is the basis for this investment?**

112 A. This investment was identified as part of the Company's response to
113 environmental regulations that govern its operations. Through the 1977
114 amendments to the Clean Air Act, Congress set a national goal for visibility to

115 remedy impairment from manmade emissions in designated national parks and
116 wilderness areas; this goal resulted in development of the Regional Haze Rules,
117 enacted in 2005 by the Environmental Protection Agency. These rules trigger
118 Best Available Retrofit Technology (BART) reviews for all coal-fired generation
119 facilities built between 1962 and 1977 that emit at least 250 tons of visibility-
120 impairing pollution per year. Because Dave Johnston Unit 3 was built in 1964
121 and emits at least 250 tons of visibility impairing pollution per year, it is subject
122 to BART review. A BART review of Dave Johnston Unit 3 was completed and
123 submitted to the Wyoming Department of Environmental Quality for final
124 disposition. A copy of the final report of the BART Analysis for Dave Johnston
125 Unit 3 is provided as an attachment in the confidential filing requirements, section
126 A.1 of this application.

127 The Wyoming Department of Environmental Quality issued a BART
128 permit for Dave Johnston Unit 3 on December 31, 2009 incorporating the Dave
129 Johnston Unit 3 equipment and installation schedule recommended via the BART
130 review and contemplated in this case. The conditions of the Dave Johnston Unit 3
131 BART permit will be incorporated into the Wyoming State Implementation Plan
132 (SIP) for Regional Haze in support of its goals to reduce visibility impairing
133 emissions. The Wyoming SIP is subject to Environmental Protection Agency
134 review and approval. The state of Wyoming has also issued an Approval Order
135 (i.e. permit to construct) for the Dave Johnston Unit 3 environmental
136 improvement project. The environmental compliance activities discussed above
137 form the basis for this investment.

138 **Q. What factors does the Company consider when determining which capital**
139 **investments to make in environmental equipment retrofit projects?**

140 A. There are several factors the Company takes into consideration when making
141 pollution control equipment investments including; evaluation of state and federal
142 environmental regulatory requirements and associated compliance deadlines,
143 review of emerging environmental regulations and rulemaking, and analyses of
144 alternate compliance options. In the case of Dave Johnston Unit 3, the Company
145 evaluated several technologies on their ability to economically achieve
146 compliance and support an integrated approach to control criteria pollutants (e.g.
147 sulfur dioxide (SO₂), nitrogen oxides (NO_x), and particulate matter (PM) for the
148 facility if it were to continue to operate and to burn coal. The BART analysis
149 reviewed five available retrofit emission control technologies and their associated
150 performance and cost metrics. Each of the technologies was reviewed against its
151 ability to meet a presumptive BART emission limit based on technology and fuel
152 characteristics. The BART analysis outlined the available emission control
153 technologies, the cost for each and the projected improvement in visibility which
154 can be expected by the installation of the respective technology. Once the
155 preferred BART technology was identified, the Company moved forward with its
156 competitive bidding process to evaluate and ultimately select the preferred
157 provider for the project.

158 **Q. Would the Company's decision to make this incremental investment in**
159 **environmental controls at this unit change if limitations were placed on**
160 **carbon dioxide emissions, such as in the Waxman-Markey bill in the U.S.**
161 **House of Representatives or the Kerry-Boxer bill in the U.S. Senate?**

162 A. No. The Company is currently engaged in assessing its existing generation
163 resources, its planned supply and demand-side resources and its 10-year capital
164 budget regarding the impact of carbon dioxide emissions restrictions. While
165 planned investments in other units may change, the Company's plans regarding
166 this investment in Dave Johnson Unit 3 would not be changed by carbon-emission
167 restriction. The unit has a depreciation life for ratemaking purpose that concludes
168 in 2027, providing sufficient remaining time to depreciate the investment in the
169 environmental controls.

170 **Timing of Investment**

171 **Q. Why is PacifiCorp installing the Dave Johnston Unit 3 pollution control**
172 **equipment at this time?**

173 A. As discussed above, the Company is installing the pollution control equipment at
174 this time primarily to ensure compliance with Regional Haze Rules, but also in
175 response to a variety of existing and emerging emission reduction requirements.
176 The Wyoming Department of Environmental Quality issued a BART permit for
177 Dave Johnston Unit 3 on December 31, 2009 incorporating the Dave Johnston
178 Unit 3 equipment and installation schedule recommended via the BART review
179 and contemplated in this case. The conditions of the Dave Johnston Unit 3 BART
180 permit will be incorporated into the Wyoming State Implementation Plan (SIP)

181 for Regional Haze in support of meeting presumptive BART emission rates to
182 reduce visibility impairing emissions. The BART permit issued for Dave
183 Johnston specifically requires that the new Dave Johnston Unit 3 baghouse be
184 installed as a part of the overall pollution control investment must be in-service
185 and initially performance tested before the end of 2010.

186 Final installation activities and tie-in of the pollution control equipment
187 can only be accomplished when the unit is off-line. Dave Johnston Unit 3 is
188 scheduled for a maintenance overhaul during the spring of 2010. Meeting the
189 timing requirements of the BART permit and reducing plant outage time
190 necessitated completion of final installation activities and tie-in of the pollution
191 control equipment during the scheduled overhaul this spring. PacifiCorp
192 anticipates that the pollution control equipment will be installed and in service by
193 May 31, 2010.

194 Installation of the pollution control equipment and associated systems
195 contemplated in this case represent a significant step for the PacifiCorp coal-
196 fueled power plant fleet towards meeting the sulfur dioxide (SO₂) reductions
197 required by the Regional Haze Rules and the established sulfur dioxide (SO₂)
198 emissions reduction milestones.

199 **Customer Considerations**

200 **Q. What are the benefits to customers of installing the Dave Johnston Unit 3**
201 **pollution control equipment and why should Rocky Mountain Power's**
202 **customers pay the costs related to this project?**

203 A. Customers directly benefit from the continued availability of low-cost generation

204 produced at the Dave Johnston plant while also achieving environmental
205 improvements from this resource, resulting in cleaner air. In addition, the tie-in of
206 these necessary controls is being accomplished during a planned outage, as
207 opposed to scheduling a separate outage for this work, which reduces replacement
208 power costs. The Company has ten BART-eligible units in Wyoming and four in
209 Utah. The BART controls for each of these units must be installed within five
210 years from the date the SIP is approved and prior to the compliance dates
211 specified in the permits. Although SIP approval has not yet been received, the
212 Company anticipates that BART-required controls will be required on some or all
213 of these units if they are not retired or retrofitted to burn natural gas. Postponing
214 installation on this unit to a later planned maintenance outage would make it
215 virtually impossible for the Company to effectively ensure that all of its affected
216 units meet compliance deadlines and would place the Company at risk of not
217 having access to necessary capital, materials, and labor while attempting to
218 perform these major equipment installations in a compressed timeframe.

219 **Conclusion**

220 **Q. Please summarize your conclusions.**

221 A. Investment in the Dave Johnston Unit 3 pollution control equipment is required to
222 meet the Regional Haze Rules, enacted in 2005 by the Environmental Protection
223 Agency, and the resulting Best Available Retrofit Technology (BART) reviews
224 and permitting process, if the unit is to continue to burn coal. The Company's
225 decision to install this pollution control equipment would not be changed by the
226 enactment of carbon dioxide emissions reduction legislation such as Waxman-

227 Markey bill or the Kerry-Boxer bill. The \$293 million investment during the test
228 period and associated operating costs are reasonable and prudent, and the
229 Company should be granted cost recovery. The investment allows for the
230 continued operation of a low-cost coal-fired generation facility while achieving
231 significant environmental improvements to air quality and regional haze issues.

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

233 A. Yes.