

1 **Q. Please state your name, business address, and present position with Rocky**  
2 **Mountain Power (the Company), a division of PacifiCorp.**

3 A. My name is Douglas N. Bennion. My business address is 1407 West North  
4 Temple, Suite 270, Salt Lake City, Utah 84116. I am the Vice President of  
5 Engineering Services and Capital Investment for Rocky Mountain Power.

6 **Qualifications**

7 **Q. Please briefly describe your education and business experience.**

8 A. I received a Bachelor of Science Degree in Electrical Engineering from the  
9 University of Utah, and I am a registered professional engineer in the state of  
10 Utah. In addition to formal education, I have attended various educational,  
11 professional and electric industry seminars. I joined the Company in 1978, and  
12 during the 30 years since then I have held various engineering positions of  
13 increasing responsibility providing extensive experience working across the  
14 Company's service territory prior to assuming my current position. Additionally, I  
15 have provided expert testimony on various matters before the Utah Public Service  
16 Commission, the Idaho Public Utilities Commission, and the Wyoming Public  
17 Service Commission.

18 **Q. Please describe your present duties.**

19 A. I am responsible for Rocky Mountain Power's transmission and distribution  
20 (T&D) network investment planning and to assure that the Company can provide  
21 safe, economic, and reliable energy delivery to our customers. This includes  
22 prioritizing investments to manage risk and planning future T&D investments to  
23 meet customer energy needs as well as industry reliability and operation

24 standards.

25 **Q. What is the purpose of your testimony in this proceeding?**

26 A. The purpose of my testimony is to explain and support the T&D capital  
27 expenditures included in the Company's application for a general price increase.

28 Specifically my testimony includes an explanation of the following issues:

- 29 ➤ The Company's T&D capital investment plan and plant additions;
- 30 ➤ Cost drivers that are causing T&D costs to increase;
- 31 ➤ Company actions to minimize the impact of rising costs during a robust  
32 construction period.

33 **Q. Please describe Rocky Mountain Power's T&D assets in Utah.**

34 A. The Company owns and operates over 360 substations in Utah plus over 6,650  
35 miles of transmission lines and 20,600 miles of distribution lines. About 67 percent  
36 of the T&D lines are overhead conductors. The overhead transmission lines in  
37 Utah are supported by approximately 89,000 transmission poles, and the  
38 distribution lines are supported by over 363,600 distribution poles. Over 1000  
39 distribution feeder lines originate from Utah substations that serve approximately  
40 767,700 Utah customers with over 108,900 overhead distribution transformers and  
41 75,000 pad-mount distribution transformers.

42 **Q. Please describe the major T&D investments that the Company is adding to  
43 rate base in this filing.**

44 A. As reflected by Mr. McDougal's Exhibit RMP\_\_\_\_(SRM-2), between December  
45 31, 2007 and June 30, 2009 the Company will place into service \$325 million of  
46 transmission investment and \$223 million of Utah distribution projects. A few of  
47 the more significant projects (over \$5 million) include:

- 48 1. \$47 million for a Static Var Compensator at Camp Williams. This project  
49 will provide a -125/+250 MVAR, 345 kilovolt device for the Wasatch  
50 Front area which is needed to avert Wasatch Front area voltage collapse  
51 under critical disturbances on the 345 kilovolt transmission system and to  
52 meet the NERC/WECC Reliability Criteria for Transmission System  
53 Planning. This transmission project will be placed in-service June 2009.
- 54 2. \$52 million for the Oquirrh 345 to 138 kilovolt, 700 megavolt ampere  
55 substation project. Six 345/138 kV transformers presently serve the Salt  
56 Lake Valley; two transformers each at Terminal, MidValley and Ninety  
57 South substations. The project will provide for an additional 345 to 138  
58 kilovolt transformer in the Salt Lake Valley, which will unload the existing  
59 transformers and alleviate possible cascading outages of the entire Wasatch  
60 Front load.
- 61 3. \$31 million for the Herriman distribution substation in Herriman, Utah,  
62 The project will establish a 138 to 12.5 kilovolt, 30 mega-volt-ampere  
63 substation at Herriman, Utah to serve local residential and commercial  
64 loads in the area and will reduce loading on the Bangerter and Sunrise  
65 substations and circuits that were either overloaded or close to capacity  
66 limits in 2007. The project also secures permits and right of way for 16  
67 miles of 138 kilovolt line between Oquirrh and Camp Williams and  
68 completes the construction of eight miles between Oquirrh and Herriman.  
69 The project is scheduled for completion in December 2008.
- 70 4. \$58 million for installation of Threemile Knoll Substation, a 345 to 138  
71 kilovolt 700 megavolt ampere substation that will provide a firm power  
72 source to several large industrial customers in the Soda Springs, Idaho area,  
73 It will also provide a second transmission source to the residential and  
74 commercial customers in southeast Idaho. Finally, it will provide a new  
75 power source to Bonneville Power Administration's connection to the Fall  
76 River and Lower Valley Rural Electric systems. This transmission project  
77 will be placed in-service April 2009.

78 **Q. What benefits will Utah customers derive from the \$548 million of T&D**  
79 **capital projects, including the four new capital investment projects named**  
80 **above?**

81 A. The Company's capital investments in T&D have the common customer benefit of  
82 improving service quality, reliability, and the delivery of power to meet customer  
83 load requirements. Transmission facilities 46 kilovolt and greater are considered  
84 integrated network, and therefore system resources that provide benefits to the  
85 Company's six-state retail service territory. In the past, transmission interruptions

86 in certain locations, times and other circumstances have disrupted power delivery  
87 several states away. It is, therefore, essential that the Company complete the  
88 transmission projects included in this filing in order to provide adequate and  
89 reliable service to all of our customers. Additionally, distribution capital  
90 investments result in a direct benefit to our Utah customers, whether it is to  
91 connect new customers, reinforce, repair or upgrade the existing system, or meet  
92 mandated compliance requirements.

93 **T&D Access**

94 **Q. Please provide additional details on the capital investment plan in the areas of**  
95 **T&D access, system reinforcement, replacements, compliance, reliability and**  
96 **new customer connections, starting with T&D access.**

97 A. Rocky Mountain Power must invest in transmission assets to move Company-  
98 owned generation to substations and load centers. The Company must also build  
99 transmission facilities to move power generated by “qualifying facilities” under  
100 PURPA, and independent power producers (IPPs) to substations and load centers.  
101 Under federal regulations, the Company is required to purchase power from  
102 qualifying facilities. IPPs also have equal access rights to the transmission system  
103 under federal regulations. In addition, the Company must build facilities that  
104 interconnect with other transmission and generation providers as it enters into  
105 contracts with customers, generators, and shippers that require transmission access.  
106 Transmission interconnections with other utilities and generators are essential to  
107 enhance efficiencies and to take advantage of other resource opportunities as daily  
108 and seasonal loads fluctuate.

109 **System Reinforcement and Replacement**

110 **Q. Please describe the system reinforcement and replacement portion of the**  
111 **capital investment plan.**

112 A. Utah continues to grow in both customer numbers and capacity requirements with  
113 significant increases expected in commercial and residential load growth in many  
114 areas such as the Wasatch Front, Cache Valley and Washington County to name a  
115 few. The Wasatch Front peak load alone increased over 350 megawatts in the last  
116 year which represents an annual rate of 5.1 percent. There have also been  
117 significant pockets of commercial and industrial growth requests in Box Elder,  
118 Summit, Millard, Carbon, Grand and Iron counties. Prospects in these counties are  
119 expected to add 384 megawatts to the area transmission system in the next 2-3  
120 years. Upgrading or replacing transformers and distribution feeders is required  
121 when circuit loading is projected to exceed 100 percent of thermal rating or when  
122 voltages are projected to fall outside of American National Standards Institute  
123 (ANSI) planning criteria.

124 Capital investment is necessary to replace aging assets prior to failure and  
125 to upgrade the system in specific areas in order to sustain or improve existing  
126 reliability levels. As with many western utilities, a large portion of the Company's  
127 existing asset base is 30 to 50 years of age. Due to normal aging processes, some  
128 assets are nearing the point of replacement, which may be preceded by increased  
129 failures and higher maintenance costs. Assets targeted for replacement include  
130 obsolete substation class equipment, sub-transmission lines, distribution lines,  
131 poles and cross-arms, switchgear, and underground cable. As Rocky Mountain

132 Power's system ages and demand increases, additional stress is placed on the  
133 Company's assets.

134 **System Compliance**

135 **Q. Please describe the system compliance portion of the capital investment plan.**

136 A. T&D compliance investments are those required by state and federal regulations or  
137 codes. Customers may also request and fund projects in the compliance portion of  
138 the capital investment plan. Examples include:

- 139 ➤ Environmental programs to mitigate bird and raptor mortality;
- 140 ➤ Overhead relocations or overhead to underground conversions for road  
141 construction, public works projects, or customer requests;
- 142 ➤ Federal Communications Commission wideband mobile radio conversion  
143 to narrow band operation by 2012; and
- 144 ➤ Federal Energy Regulatory Commission substation security initiatives.

145 **New Connects**

146 **Q. Please describe the new connection portion of the capital investment plan.**

147 A. New customer connections include residential, commercial, industrial, irrigation,  
148 other utilities, and street lighting. Residential and commercial customers typically  
149 account for the majority of the new connection costs. However, while the  
150 residential market (new housing starts) has dropped off from historic highs, the  
151 commercial and industrial sectors continue to increase. An increase in this  
152 business sector puts pressures on the transmission investments of the Company in  
153 Utah. The challenge for the Company in making numerous large commercial and  
154 industrial new connections is the sheer size and scope of the projects. For  
155 example, depending on the size of the new load and its proximity to existing

156 transmission system facilities, adding just one substantial new commercial or  
157 industrial customer may exceed the operating limitations of the Company's local  
158 area transmission system. Therefore, significant planning, engineering and  
159 construction of transmission lines, substations, switching stations and other  
160 facilities will be necessary.

161 During 2007, Rocky Mountain Power connected about 27,100 new  
162 customers, 21,600 of which were in Utah.

163 **Q. Please explain the load growth impact on the T&D system when you connect**  
164 **this many customers annually.**

165 A. Each year the Company completes an analysis of its system performance to  
166 understand the impacts that load growth have had on the transmission and  
167 distribution system. To illustrate, an important feature of the Wasatch Front is the  
168 impact that temperature plays as a variable with the peak demand. Area planning  
169 forecast studies suggest that the impact of extreme temperatures for extended days  
170 can cause a 200 megawatt increase in peak demand along the Wasatch Front in  
171 Utah. Most recently, between the summer of 2005 and 2007, the Wasatch Front  
172 peak load increased 462 megawatts, or close to the size of the new Lake Side plant  
173 over a two year timeframe. Thus, this type of growth means system utilization of  
174 assets continues to increase. Substation transformers and distribution feeders  
175 loading is approaching nameplate rating and thermal rating. Therefore, continued  
176 investment in system reinforcement is necessary to accommodate the new  
177 connections and load growth.

178 **Reliability**

179 **Q. Please describe the reliability portion of the capital investment plan.**

180 A. The Company reliability investment programs are designed to reduce the number  
181 and impact of power interruptions to its customers. Investments in this area also  
182 support the Company's merger commitments including performance standards  
183 one through four. The latest Performance Standards approved by the Commission  
184 expired on March 31, 2008. However, in 2006 the Company committed to  
185 maintaining its reliability performance standards through 2011, with the option to  
186 modify them after March 2008. Accordingly, the Company has filed to extend  
187 the Performance Standards through 2011 with certain modifications.

188           Since 2002 the Company has been able to collect better customer outage  
189 data with our Outage Management System. As a result, we have changed our  
190 processes that allow us to better target budget dollars towards those portions of  
191 the distribution system with lower reliability performance. Our experience during  
192 the past two years has shown that we should (i) focus more on reducing the  
193 impact of reliability issues we can control, such as deteriorating equipment and  
194 vegetation management; and (ii) promptly and carefully address reliability events  
195 that are less controllable (such as vehicles hitting power poles and conductive  
196 balloons contacting lines) but not be held accountable for these outages to the  
197 same degree. With this in mind the Company has asked the Commission to extend  
198 the performance standards through 2011 and begin measuring, reporting, and  
199 being held accountable for reliability due to "controllable distribution outages" (as  
200 known in the industry). We believe that this will sharpen our focus and make the

201 Company's operation more efficient as we strive to continuously improve the  
202 reliability of our electric service.

203 As an example, to address reliability needs we first work on the portions  
204 of the system that have demonstrated the worst reliability as measured by  
205 objective reliability metrics, such as the Customers Experiencing Multiple  
206 Interruptions metric. We have also developed some state-of-the-art tools to help  
207 us target our work more effectively such as the Geographic Reliability  
208 Enhancement Analysis Tool. The combination of this metric and software tool  
209 allows the Company to better allocate funds needed to address problematic areas.

210 **Q. Please explain how Rocky Mountain Power determines the amount and**  
211 **timing of T&D capital investments.**

212 A. The Company begins with customer service requests and load growth projections  
213 to prepare budgets for T&D investments. Reliability initiatives and asset  
214 replacement programs are prioritized in the capital investment plan. Initial project  
215 estimates are created using block estimate software tools to approximate project  
216 costs. Once the project budget is approved, the Company initiates the process to  
217 complete detail planning, detail design engineering, and detail project scheduling,  
218 resulting in a better cost estimate and a more refined in-service date. When a  
219 project moves to the delivery (i.e. construction) phase, the Company uses internal  
220 business controls to measure and monitor the progress to ensure projects are  
221 delivered within scope and budget. The Company uses the activities to provide  
222 quality at the lowest long-term cost required to meet industry service standards and  
223 the needs of our customers.

224 **Cost Drivers**

225 **Q. What are the primary challenges that Rocky Mountain Power faces with**  
226 **respect to T&D capital projects?**

227 A. The two primary challenges facing the Company are 1) global industrial  
228 construction and associated commodity price increases, and 2) permitting. Rocky  
229 Mountain Power is not the only electric utility in the United States facing aging  
230 plant and customer growth. Global development is contributing to the demand for  
231 materials and supplies, which results in limited resources, cost increases and  
232 delivery pressure for Rocky Mountain Power projects. New substations and  
233 switching stations are expensive. In the mid-1990s a typical distribution substation  
234 may have cost \$3 million. Today it is about twice that amount, primarily due to the  
235 cost of metals, material, property and labor.

236 In addition, new T&D infrastructure, particularly 46 kilovolt and above, is  
237 becoming increasingly difficult to permit with federal, state, county and municipal  
238 entities. This is true, not only in Utah, but throughout the Company's six state  
239 service territory. Opposition to large projects by vocal community activists is  
240 becoming more frequent, and the time period for the permitting process has  
241 increased. For example, over the last two years, the Company has undertaken  
242 several large scale projects impacting multiple jurisdictions. In these cases, the  
243 permit process will typically include environmental impact studies, environmental  
244 assessments, conditional use permits, or a combination of all three. The time  
245 associated for permitting can stretch out to three years. Delays associated with  
246 permits will contribute to an increase in overall project costs.

247 **Q. Please explain the specific areas of cost increases.**

248 A. Construction material costs have risen significantly since the 2007 general rate  
249 case. Worldwide demand for electrical infrastructure has increased dramatically in  
250 recent years, and this increased demand has driven up the price of transformers,  
251 copper, and other materials necessary for the construction of an electrical system.  
252 From April 2006 to April 2008, the market basket index of materials used for the  
253 construction of a power delivery system has risen 30.5 percent. From April 2006  
254 to April 2008, the price of metal (which is a major component of substations and  
255 transmission structures) increased 48 percent. The following also increased over  
256 the same period:

- 257 ➤ conductor (copper, aluminum, steel) prices increased 40 percent;
- 258 ➤ distribution transformer prices increased 63 percent;
- 259 ➤ fuel prices increased 58 percent;
- 260 ➤ poleline prices increased 28 percent.

261 The foregoing examples are some of the more significant cost increases the  
262 Company has experienced for all its major service components. These material  
263 and supply cost increases are included in the plant-in-service values that Company  
264 witness Steven McDougal used to determine the Utah revenue requirement.

265 **Q. What is Rocky Mountain Power doing to minimize the impact of rising costs**  
266 **during the current growth and construction cycle?**

267 A. The Company, like the electric utility industry in general, is in a construction boom  
268 cycle. Accordingly, the Company is actively managing the project lifecycle costs  
269 within the investment planning processes on the front end, by ensuring availability

270 of project material at competitive prices and selecting the appropriate delivery  
271 strategy for the construction phase. For example:

- 272 ➤ The Company uses a multi-year planning process that adheres to strict  
273 policies and procedures in the areas of project definition and/or project  
274 scope development, project detail design, project schedule, and the use of  
275 project managers during the implementation phase;
- 276 ➤ The Company adheres to a deeply embedded policy of minimizing project  
277 change notices from the original scope;
- 278 ➤ The procurement department competitively bids common material  
279 agreements that include aggressive terms and conditions with vendors that  
280 are designed to share risk through price controls;
- 281 ➤ The Company continues to attract new lineman and field technician  
282 construction resources into our service territory that improves pricing  
283 through competition in the construction business;
- 284 ➤ The Company uses a competitive bid procurement process to identify  
285 construction firms that provide the best value in constructing each project;  
286 and
- 287 ➤ The Company compares the delivery strategy for each project among in-  
288 house resources, active engineering-procurement-construct (EPC) vendor  
289 agreements, an open competitive tendered EPC to obtain the best value for  
290 our customers toward improving service quality and reliability.

291 **Q. Please summarize your testimony.**

292 A. The T&D capital expenditures included in this case are necessary and real. In  
293 particular, they are required in order to: (a) serve new customers (i.e. industrial,  
294 commercial, and residential) that require an extension of the Company's existing  
295 infrastructure; (b) serve existing customers through system reinforcement  
296 (expansion or increase in capacity) of existing infrastructure; (c) to serve general  
297 load growth to maintain acceptable reliability and service; and (d) to comply with  
298 orders issued by regulatory, state or local governments, and generation  
299 interconnections needed to support load growth. The transmission and generation

300 projects are part of an integrated, system-wide, high voltage system that provides  
301 the foundation to move resources through-out the western United States thus  
302 providing service and reliability benefits to Utah customers. Additionally, these  
303 investments also contribute to meeting the performance standards program to  
304 which the Company is committed through 2011 and supported by Utah.

305 **Q. Does this complete your testimony?**

306 A. Yes.