

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

179 **Reliability**

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

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

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

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

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

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

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

225 **Cost Drivers**

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

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

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

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

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

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

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

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

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

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

273 ➤ The Company uses a multi-year planning process that adheres to strict
274 policies and procedures in the areas of project definition and/or project
275 scope development, project detail design, project schedule, and the use of
276 project managers during the implementation phase;

277 ➤ The Company adheres to a deeply embedded policy of minimizing project
278 change notices from the original scope;

279 ➤ The procurement department competitively bids common material
280 agreements that include aggressive terms and conditions with vendors that
281 are designed to share risk through price controls;

282 ➤ The Company continues to attract new lineman and field technician
283 construction resources into our service territory that improves pricing
284 through competition in the construction business;

285 ➤ The Company uses a competitive bid procurement process to identify
286 construction firms that provide the best value in constructing each project;
287 and

288 ➤ The Company compares the delivery strategy for each project among in-
289 house resources, active engineering-procurement-construct (EPC) vendor
290 agreements, an open competitive tendered EPC to obtain the best value for
291 our customers toward improving service quality and reliability.

292 **Q. Please summarize your testimony.**

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

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

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

307 A. Yes.