

Docket No. 20000-\_\_-ER-11  
Witness: Douglas N. Bennion

BEFORE THE WYOMING PUBLIC SERVICE  
COMMISSION

ROCKY MOUNTAIN POWER

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Direct Testimony of Douglas N. Bennion

December 2011

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

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 electrical  
10 engineering in the state of Utah. In addition to formal education, I have attended  
11 various educational, professional and electric industry seminars. I joined the  
12 Company in 1978, and during those 34 years I have held various engineering  
13 positions of increased responsibility providing extensive experience working  
14 across PacifiCorp’s service territory prior to assuming my current position.  
15 Additionally, I have provided testimony on various matters before the Public  
16 Service Commission of Utah, the Idaho Public Utilities Commission, and the  
17 Wyoming Public Service Commission (the “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, which assists the Company in providing  
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 while maintaining industry reliability and operation

1 standards.

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

3 A. The purpose of my testimony is to explain and support the T&D capital  
4 expenditures included in the Company's revenue requirement. Specifically, my  
5 testimony includes an explanation of the Company's T&D capital investment plan,  
6 plant additions to support capacity increases, and justification for program funding  
7 to support distribution reliability in Wyoming.

8 **Q. Please describe the major T&D investments that the Company is adding to**  
9 **rate base in this case.**

10 A. Between June 30, 2011 (the conclusion of the base period in this filing), and  
11 March 31, 2013 (the conclusion of the test period), the Company will place into  
12 service approximately \$359.4 million of transmission investment, and  
13 approximately \$48.4 million of Wyoming distribution investment.

14 Significant projects in this filing include the following:

15 • **Center Street Substation: Convert to 12.5 kV**

16 This project is part of the Wyoming Stipulation Agreement approved by the  
17 Commission in Docket No. 20000-384-ER-10, paragraph 19-D (the "2010  
18 General Rate Case Docket"). The Center Street substation is currently a  
19 115 to 4 kV 12.5 MVA substation that serves the downtown Casper load.  
20 Historically this transformer peaks at 5.5 MVA. The remaining capacity is  
21 not capable of providing support to the surrounding area that is served at  
22 12.5 kV. This project will convert the low side voltage of the Center Street  
23 substation from 4 kV to 12.5 kV. Construction required to convert to 12.5

1 kV includes changing the low side tap on transformer T-3673 to the 12.5  
2 kV setting, replacing the existing 4 kV regulators with 12.5 kV regulators,  
3 upgrading the low side bus work and switches to accommodate 12.5 kV  
4 operation, disconnecting the existing 4 kV feeders and installing two 12.5  
5 to 4 kV rack mounted step down transformers, three underground feeder  
6 exits and four 25 kV 600 amp group operated switches. The existing 115  
7 kV fuses will be replaced with a circuit switcher to eliminate the possibility  
8 of ferroresonance and to improve protection and control. The total cost of  
9 this project is approximately \$1.2 million and will be placed into service by  
10 December 2012.

11 • **Southwest Wyoming to Silvercreek: New 138 kV Line and Substation**

12 This project will rebuild approximately 70 miles of 46 kV transmission  
13 line at 138 kV, build a new 138-46 kV substation near Hennefer, Utah,  
14 convert the Coalville substation to 138 kV, and convert the remaining 46  
15 kV substations along the route to 12.47 kV. Phase I of this project includes  
16 rebuilding the 46 kV line to 138 kV from the Evanston, Wyoming area to  
17 the Devils Slide, Utah area. This will be completed by January 2012 and  
18 the total cost will be approximately \$10.5 million.

19 The capital investments mentioned above, as well as all of the other T&D capital  
20 projects that are included in the revenue requirement, are detailed in Company  
21 witness Mr. Brian S. Dickman's Exhibit RMP\_\_\_(BSD-2).

1 **Q. What benefits will Wyoming customers derive from the T&D capital projects**  
2 **included in this case?**

3 A. The Company's capital investments in T&D have the common customer benefit  
4 of increasing system capacity to accommodate customer load requirements and  
5 growth, and improving service quality and reliability. Transmission facilities are  
6 considered part of the Company's integrated network, and provide benefits to all  
7 customers in the Company's six-state retail service territory, including Wyoming.  
8 Industry experiences from the past show transmission interruptions in certain  
9 locations have disrupted power delivery at bordering states. It is, therefore,  
10 important that the Company complete the transmission projects included in this  
11 filing to provide adequate and reliable service to all of our customers.  
12 Additionally, distribution capital investments result in a direct benefit to our  
13 Wyoming customers, whether it is to connect new customers, reinforce, repair or  
14 upgrade the existing system, or to meet mandated compliance requirements.

15 **System Reinforcement and Replacement**

16 **Q. Please describe the system reinforcement and replacement portion of the**  
17 **capital investment plan.**

18 A. System reinforcement is investment made by the Company on behalf of customers  
19 to serve load growth; this case includes approximately \$7.1 million of system  
20 reinforcement at distribution level voltages in Wyoming and approximately \$37  
21 million of non-main grid system reinforcement investment on the Company's  
22 transmission system. In general, upgrading or replacing transformers and  
23 distribution feeders is initiated when thermal loading is projected to reach 105

1 percent of thermal rating or when voltage delivery at the customer metering point  
2 is projected to fall outside of the American National Standards Institute (“ANSI”)  
3 planning criteria. When customers connect to the Company’s electrical system,  
4 there is a possibility that customer load additions/connections will cause thermal  
5 overloads or voltage levels to be outside of the ANSI range. Additional electrical  
6 infrastructure would be required to address these issues.

7 Wyoming’s load growth rate slowed in 2010-2011 from the previous year  
8 due to the current economic conditions. While residential new connects have  
9 slowed down, commercial and industrial loads have been less volatile; but  
10 irrespective of the slower growth rates, growth is still occurring across our system.  
11 RMP had about 3,275 new connects in Wyoming from January 2010 through  
12 September 2011 and projects to have another 2,025 new connects in Wyoming  
13 through March of 2013. System reinforcement projects remain necessary to  
14 support these new customers.

15 Another category of capital investment essential to maintaining and/or  
16 improving reliable service is replacing aging assets. The revenue requirement in  
17 this case includes approximately \$8.2 million in Wyoming distribution  
18 replacements and approximately \$55.6 million for Company transmission  
19 replacements. Due to normal aging processes, some assets are nearing the point of  
20 replacement, which may be preceded by increased failures and higher maintenance  
21 costs. Examples of assets subject to replacement include substation equipment,  
22 transmission lines, distribution lines, poles and cross-arms, switchgear, and  
23 underground cable. As Rocky Mountain Power’s system ages and demand

1 increases, additional stress is placed on the Company's assets.

2 **System Compliance**

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

4 A. T&D compliance investments are those required by city, state or federal  
5 regulations. Customers may also request and fund projects in the compliance  
6 portion of the capital investment plan. Rocky Mountain Power plans to spend  
7 approximately \$14.6 million in Wyoming distribution system compliance work  
8 and approximately \$65.3 million in Company transmission system compliance  
9 work. Examples of compliance driven projects include the following:

- 10 • Environmental Work – (approximately \$4.9 million in Wyoming distribution  
11 work and approximately \$4.8 million in Company transmission work).
  - 12 ○ Environmental programs to mitigate bird and raptor mortality;
  - 13 ○ Spill prevention, control and counter measure (“SPCC”) projects to  
14 mitigate environmental contamination;
- 15 • Overhead relocations or overhead to underground conversions for road  
16 construction, public works projects, or customer requests (approximately \$1.5  
17 million in Wyoming distribution work and approximately \$11 million in  
18 Company transmission system work); and
- 19 • Federal Communications Commission (“FCC”) wideband mobile radio  
20 conversion to narrow band operation by 2013 (approximately \$7.7 million in  
21 Wyoming and approximately \$49.4 million total Company);

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

23 A. New customer connections include residential (Wyoming distribution connections

1 budgeted at approximately \$4.3 million), commercial (Wyoming distribution  
2 connections budgeted at approximately \$6.8 million and Company transmission  
3 connections budgeted at approximately \$4.6 million), industrial (Wyoming  
4 distribution connections budgeted at approximately \$1.6 million and Company  
5 transmission connections budgeted at approximately \$4.5 million), irrigation  
6 (Wyoming distribution connections budgeted at approximately \$0.3 million), other  
7 utilities (Wyoming distribution connections budgeted at approximately \$38k), and  
8 street lighting (Wyoming distribution connections budgeted at approximately \$0.4  
9 million). Residential and commercial customers typically account for the majority  
10 of the new connection costs. The residential market (new housing starts) remains  
11 low when compared to historic highs in 2007. The commercial sector has dropped  
12 as well but the industrial sector has improved. Although overall new connects have  
13 slowed, a single commercial or industrial customer load can put pressure on the  
14 transmission investments of the Company.

15 A challenge for the Company in making large commercial and industrial  
16 new connections is the sheer magnitude of the projects. For example, depending on  
17 the size of the new load and its proximity to existing transmission system facilities,  
18 adding just one substantial new commercial or industrial customer may exceed the  
19 operating limitations of the Company's local area transmission system or  
20 substation capacity. Extensive planning, engineering and construction of  
21 transmission lines, substations, switching stations and other facilities will still be  
22 necessary.

23 The present state of the economy has reduced the annual number of new

1 customer connections in Wyoming since the peak in 2007; however, Wyoming's  
2 customer base is still growing. From January 2010 through September 2011,  
3 Rocky Mountain Power connected about 21,000 new customers, 3,275 of which  
4 were in Wyoming.

5 **Q. Please explain how load growth on the T&D system has been modified by the**  
6 **reduction in new connects.**

7 A. Each year the Company completes an analysis of its system performance to  
8 understand the impacts load growth has had on the transmission and distribution  
9 system. Although Wyoming experienced a drop in the number of new residential  
10 and commercial connections from 2010 to 2011, the number of new industrial  
11 connections increased. Data shows that substation transformer and distribution  
12 feeder loading continues to increase; thus, when thermal ratings are being  
13 approached, projects are initiated. Continued investment in system reinforcement  
14 is still necessary to serve load growth caused by new and existing customers.

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

17 A. The Company begins with mandated/compliance requirements, customer service  
18 requests, system reinforcement projects to serve load growth, asset replacements  
19 and functional upgrades to prepare budgets for T&D investments. Through the  
20 planning process, a preliminary project scope is identified and initial project  
21 estimates are created to approximate project costs. Once the project budget is  
22 approved, the Company initiates a process to complete detail planning, detail  
23 design engineering, and detail project scheduling, resulting in a more refined cost

1 estimate and projected in-service date. When a project moves to the delivery  
2 (construction) phase, the Company uses internal business controls to measure and  
3 monitor the progress to ensure projects are delivered within scope and budget. The  
4 Company uses these activities to provide quality at the lowest long-term cost  
5 required to meet the needs of our customers.

6 **Reliability**

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

8 A. The Company's reliability investment program is designed to reduce the number  
9 and impact of power interruptions to its customers. The Company constantly  
10 challenges approaches and processes in its efforts to be more efficient at  
11 deploying resources to improve electric service reliability in an effective manner.  
12 The Company's plan to support and improve Wyoming's statewide reliability  
13 performance requires continued funding (to be discussed later in my testimony) in  
14 this case consistent with funds included in the most recent rate case. The  
15 Company is confident that with the completion of planned transmission and  
16 distribution reliability investments, Wyoming's statewide service reliability will  
17 improve.

18 **Q. Please describe the Company's reliability performance in Wyoming since**  
19 **2007.**

20 A. In 2007, customers in Wyoming began experiencing volatility in their reliability  
21 performance. The statewide system average interruption duration index  
22 ("SAIDI") and the statewide system average interruption frequency index  
23 ("SAIFI") increased significantly that year. Therefore, through its reliability

1 monitoring program the Company initiated projects to improve reliability. Some  
2 projects have been completed, but some are still being implemented. In 2008,  
3 statewide SAIDI and SAIFI slightly improved, but the Company was not satisfied  
4 with the reliability performance recorded in 2009 and 2010. As a result, the  
5 Company incrementally initiated more reliability projects to improve reliability  
6 performance.

7 The Company began identifying distribution circuits with increased outage  
8 activity and then prioritized circuit work. Circuits identified during this project  
9 undergo a main line hardening process to strengthen the main line section of the  
10 circuit, improve the system protection coordination of the circuit, replace sections  
11 of poor performing underground cable, and replace distribution poles; pole  
12 replacements include raptor safe design standards. By using this approach, when  
13 work is completed line outage activity will be limited to smaller sections of the  
14 distribution system, thus reducing the impact to other customers on the circuit.  
15 The Wyoming Service Quality Review for the first six months in 2011 reflects  
16 that the total Wyoming underlying SAIDI and SAIFI trends are an improvement  
17 from 2009 and 2010. For these reasons, the Commission's support for funding  
18 reliability projects in this case is needed. See Exhibit RMP\_\_\_(DNB-1) from the  
19 2011 Wyoming Service Quality Review report for the January through June  
20 SAIDI/SAIFI statistics for the state of Wyoming.

21 **Q. Please describe the reliability in the Casper and Natrona County Area in 2011.**

22 A. In the Stipulation approved by the Commission in the 2010 General Rate Case, the  
23 Company agreed with the Casper and Natrona area parties to provide the parties a

1 progress report on achieving improved reliability through planned projects in the  
2 Casper area against selected annual targets through 2013, not including major  
3 events, using Institute of Electrical and Electronics Engineers (IEEE) guidelines.  
4 Per the stipulation agreement, the Company met with Natrona County interveners  
5 on October 12, 2011, in Casper, Wyoming to present progress on the reliability  
6 items noted in the stipulation. A template was presented and agreed to by the group  
7 to use going forward. Future meetings in 2012 and 2013 are pre-scheduled. The  
8 2013 target has a lower limit of 135 minutes and an upper limit of 195 minutes for  
9 SAIDI and a lower limit of 1.5 interruptions and an upper limit of 2.1 interruptions  
10 for SAIFI. At the end of the 2011 second quarter (June 30, 2011), the Company  
11 reported that the Casper area experienced 78 SAIDI minutes and 0.654 SAIFI  
12 interruptions. The trend of the reliability performance is in the right direction to  
13 meet the 2013 target prior to this time. See Exhibit RMP\_\_\_(DNB-2) from the  
14 2011 Wyoming Service Quality Review report for the January through June  
15 Natrona County SAIDI/SAIFI statistics.

16 **Q. Please explain the measures the Company is taking to continue to improve**  
17 **distribution reliability.**

18 A. The Company initiated a plan in late 2010 that focused \$4 million in annual capital  
19 investments and maintenance funding towards improved reliability performance in  
20 Wyoming. In addition to this, the Company agreed in the 2010 General Rate Case  
21 Stipulation to spend an additional \$3.15 million on Wyoming distribution circuit  
22 reliability improvements and feeder hardening projects by September 2012. This  
23 consists of \$2.5 million in capital investments and \$0.65 million in operating and

1 maintenance costs. The Company will complete its work on these projects by  
2 September 2012. Circuits identified as part of this work will undergo the same  
3 circuit reliability improvements and main line hardening process that was used  
4 previously in the initial \$4 million allocated annually to reliability projects  
5 approved in the most recent rate case. The Company is maintaining its focus on  
6 improving the state of Wyoming's overall reliability performance for the benefit of  
7 customers.

8 **Q. Has the Company included an increased level of funding for distribution**  
9 **reliability improvements in this rate case?**

10 A. No. The Company will be spending \$1.25 million of distribution plant capital to be  
11 invested by December 2011 and another \$1.25 million of distribution plant capital  
12 to be invested by September 2012. This \$2.5 million of capital is being spent by  
13 the Company to meet the commitments made in the 2010 General Rate Case  
14 Stipulation where the Company agreed to spend \$2.5 million in capital by  
15 September 22, 2012, on Wyoming distribution circuit reliability improvements and  
16 feeder hardening projects. These are one-time investments, but are in addition to  
17 the annual \$4.0 million included for 2012 in the Company's distribution reliability  
18 improvements plan. The Company is well underway with the execution of these  
19 investments; current funds expended are ahead of the target dates.

20 **Q. How will the Company's increased funding for distribution reliability**  
21 **improvements benefit Wyoming rate payers?**

22 A. Rocky Mountain Power has learned that specific operating areas play a significant  
23 role in the state's overall reliability performance. Areas where the Company is

1 increasing its reliability planning focus are in the communities of Buffalo, Casper,  
2 Cody, Evanston, Laramie, Pinedale, Riverton, Rock Springs and Worland. The  
3 distribution reliability funding included in this rate case allows the Company to  
4 fund additional projects in these operating areas, such as hardening feeders,  
5 replacing sections of poor performing underground cable and increasing the  
6 replacement of distribution poles that include raptor safe design standards.

7 There are currently 242 distribution feeders in Wyoming serving 135,000  
8 customers. If an outage occurs on one of these feeders, reliability performance for  
9 the area or even the state is likely to be significantly impacted. Many of the circuits  
10 described above have been targeted for main line hardening. Main line hardening  
11 is an improvement method by which the main section of the feeder is engineered to  
12 reduce interruptions. Examples of main line hardening include installing new poles  
13 to reduce span lengths, replacing deteriorating equipment, and installing protective  
14 devices to reduce outage exposure. Once the main line is hardened, the tap lines  
15 connected to the main feeder are reviewed for corrective action. Using this  
16 methodology to address reliability concerns will help improve statewide reliability  
17 performance and benefit customers.

18 **Q. Please describe the substation transformer capacity availability in the Casper**  
19 **and Natrona County area in 2011 and whether there is a capacity concern to**  
20 **serve customers?**

21 A. There are 15 distribution substations in the Casper and Natrona County area. They  
22 range in size from 3 to 30 MVA and are served by 69 or 115 kV on the high side,  
23 with low side voltages ranging from 2.4 kV to 34.5 kV. During the summer of

1 2011 peak demand on 14 substations was less than 90 percent of nameplate rating  
2 and one substation operated at 92 percent of nameplate rating. IEEE/ANSI  
3 standard C57.91-1995(R2004), “IEEE Guide to Loading Mineral-Oil-Immersed  
4 transformers 2004” and C57.91-1995/Cor 1-2002, “IEEE Guide to Loading  
5 Mineral-Oil-Immersed transformers 2002” provide the standard engineering  
6 practice for loading these type of transformers to its nameplate rating. Since the  
7 peak demand in 2011 was well below nameplate rating for all locations, there is no  
8 capacity concern around these operating levels. See Exhibit RMP\_\_\_(DNB-3),  
9 which is an updated slide dated November 14, 2011, from the presentation to  
10 Natrona County interveners on October 12, 2011, which details distribution  
11 transformer capacity in the Natrona County area.

12 **Q. Please summarize your testimony.**

13 A. The T&D capital expenditures included in this case are essential in meeting  
14 Rocky Mountain Power customers’ needs and maintaining system reliability  
15 standards. In particular, the proposed T&D capital expenditures are required in  
16 order to:

- 17 • Serve new customers (industrial, commercial, and residential) that require  
18 an extension of the Company’s existing infrastructure.
- 19 • Serve existing customers through system reinforcement (expansion or  
20 increase in capacity) of existing infrastructure.
- 21 • Serve general load growth to maintain acceptable reliability and service.
- 22 • Comply with orders issued by regulatory, state or local governmental  
23 entities.

- 1           • Comply with the reliability provisions included in the Stipulation  
2           approved by the Commission in the 2010 General Rate Case.

3           The Company's transmission and generation projects are part of an  
4           integrated, system-wide, high voltage system that provides the foundation to  
5           move resources throughout the western United States, thus providing service and  
6           reliability benefits to Wyoming customers. Additionally, these investments  
7           contribute to meeting the performance standards program that the Company has  
8           committed to through 2013.

9   **Q. Are the T&D capital investments included in this case in the public interest**  
10 **and do you recommend that the Commission include them in the Company's**  
11 **rate base?**

12 A. Yes. The T&D capital investments included in this case are in the public interest  
13 for the reasons that I mentioned earlier in my testimony, including serving the  
14 public with safe, adequate and reliable service. For these reasons, I recommend  
15 that the Commission approve these investments for inclusion in the Company's  
16 rate base.

17 **Q. Does this complete your direct testimony?**

18 A. Yes.