

Rocky Mountain Power
Docket 07-035-93
Witness: Mark C. Mansfield

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

Rebuttal Testimony of Mark C. Mansfield

Plant Outages

May 2008

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

3 A. My name is Mark C. Mansfield. My business address is 1407 West North Temple
4 Street, Room 310, Salt Lake City, Utah. My position is Vice President of Thermal
5 Operations Support for PacifiCorp Energy.

6 **Qualifications**

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

8 A. I have a Bachelor of Science degree in Mechanical Engineering and a Master of
9 Business Administration degree. I am also a registered professional engineer in
10 the State of Utah. I have worked in the electric industry for 24 years and in the
11 process control industry for an additional eight years.

12 During my career with PacifiCorp, I have served as an Engineer at the
13 Carbon Plant, Maintenance Supervisor at the Carbon Plant, Maintenance
14 Superintendent at the Hunter Plant, and Director of Technical Support for
15 PacifiCorp Generation in Salt Lake City. I have served as the Managing Director
16 of the Naughton Plant, Huntington Plant, and Hunter Plant. In 2006, I became
17 Vice President of Safety, Environmental and Operations Support for PacifiCorp
18 Energy. In 2007, I was appointed to my current position.

19 **Purpose of Testimony**

20 **Q. Please summarize your rebuttal testimony.**

21 A. My rebuttal testimony responds to certain issues raised by CCS witness Mr.
22 Falkenberg regarding PacifiCorp's outage rates. My testimony addresses the
23 following issues raised by Mr. Falkenberg:

- 24 • That PacifiCorp’s outage rates have substantially increased over the past
25 decade, and
- 26 • That the Jim Bridger plant outages be adjusted to the North American Electric
27 Reliability Corporation (NERC) average.

28 **PacifiCorp Outage Rates**

29 **Q. Has the outage rates for PacifiCorp increased as Mr. Falkenberg asserts?**

30 A. Yes. However, outage rates are only one of many statistics one should evaluate
31 when looking at fleet and plant performance and upon closer examination of the
32 data the fleet performance for PacifiCorp has been improving over the last four
33 years.

34 **Q. What other statistics should be considered?**

35 A. PacifiCorp looks at capacity factor, equivalent availability and planned outage
36 factor. Also PacifiCorp disagrees with the way Mr. Falkenberg uses the North
37 American Electric Reliability Corporation/Generating Availability Data System
38 (NERC/GADS) data.

39 **Q. Please explain why PacifiCorp disagrees with Mr. Falkenberg use of the
40 NERC/GADS data, isn’t this data nationally recognized?**

41 A. In Mr. Falkenberg’s exhibits Ex4.13p1 and Ex4.13p2 he cites NERC/GADS data
42 for all sizes of coal-fueled plants. This population of plants contains plants that
43 have very low capacity factors or are in economic standby for significant hours of
44 the referenced timeframe. Therefore, since they do not operate for significant
45 hours during the timeframe it is natural for them to have lower outage rates.

46 When PacifiCorp compares its performance against the NERC/GADS data

47 it creates a peer group by simulating a fleet of similarly sized units. This is
48 accomplished by creating an equivalently configured system from the
49 NERC/GADS database so that the number of units and the type of units within a
50 given fuel category and size are the same as the PacifiCorp fleet. Therefore, the
51 makeup of our fleet from year to year is duplicated by using an equivalent system
52 configuration, using the NERC/GADS database. For example, the PacifiCorp fleet
53 has 1 coal-fired unit in the 1-99 MW range, 4 coal-fired units in the 100-199 MW
54 range, 2 coal-fired units in the 200-299 MW range, 8 LM 6000 gas units, 1
55 geothermal unit, etc. The NERC/GADS capacity range averages are then
56 weighted to simulate the PacifiCorp fleet.

57 **Q. Why is it important to compare the PacifiCorp fleet to a NERC peer group?**

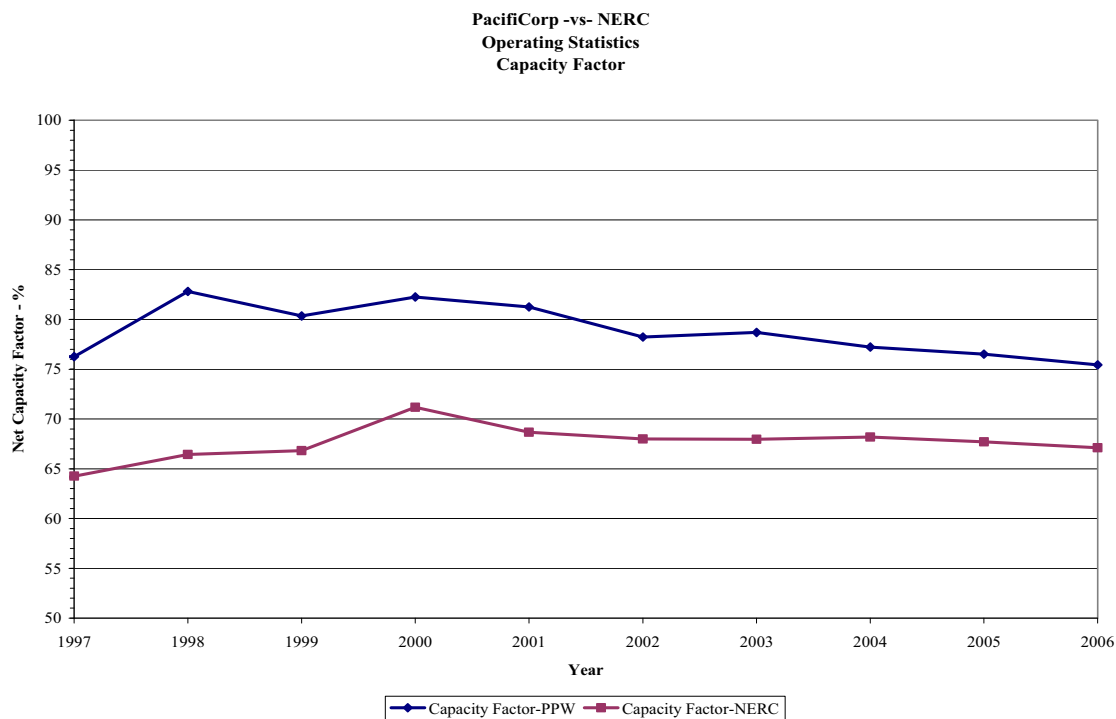
58 A. Plants with different capacities have different operating characteristics and
59 challenges. By looking at the NERC data for all sizes of coal-fueled plants is like
60 looking at gas mileage for all classes of motor vehicles from two-cycle motor
61 scooters to large SUVs. If one is trying to compare the value of their vehicle, it is
62 best to compare it to vehicles similar in size and what the vehicle is going to be
63 used for. By looking at the data for all classes of vehicles the data could be biased
64 if there were greater numbers of smaller vehicles compared to your vehicle.

65 **Q. Why should capacity factor be considered, isn't that a function of market**
66 **conditions?**

67 A. Capacity factor is the measure of actual output compared to the possible output.
68 Therefore, the higher the capacity factor the more the plant has operated at or near
69 its maximum capacity. PacifiCorp fleet has a capacity factor that is greater than

70

the NERC/GADS peer group as can be seen in the graph below.



71

By operating the fleet at these high capacity factors PacifiCorp is able to provide greater benefit to its customers by supplying a low cost source of energy. Looking at the four-year average ending December 31, 2006, the PacifiCorp fleet had a capacity factor of 76.97 percent versus the NERC peer group with a capacity factor of 67.74 percent. The difference in capacity factor represents approximately 724 MW of capacity. This represents a substantial benefit to PacifiCorp's customers.

78 Q.

PacifiCorp's capacity factor for the four-year period ending December 31, 2006 is 9.23 percent greater than the NERC peer group average. What is the approximate value associated with PacifiCorp's above average capacity during this period?

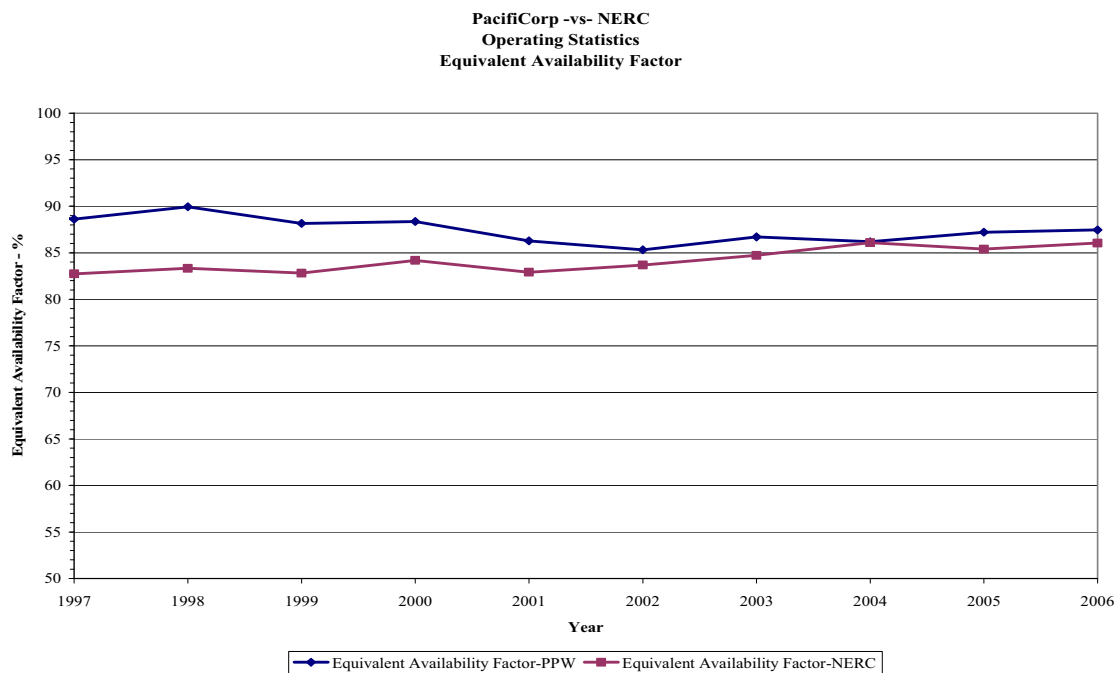
82 A.

The value of the power associated with PacifiCorp's fleet running above the

83 NERC peer group capacity factor for the four-year period ending December 31,
84 2006 is approximately \$272 million. These savings have helped PacifiCorp
85 maintain relatively low net power costs compared to other utilities.

86 **Q. Why is equivalent availability an important statistic when comparing plant**
87 **performance?**

88 A. Equivalent availability is a measure of the optimal energy that could have been
89 generated during a given report period. This eliminates the bias of market
90 conditions. It can be seen from the graph below that the PacifiCorp fleet out
91 performs its NERC peer group.



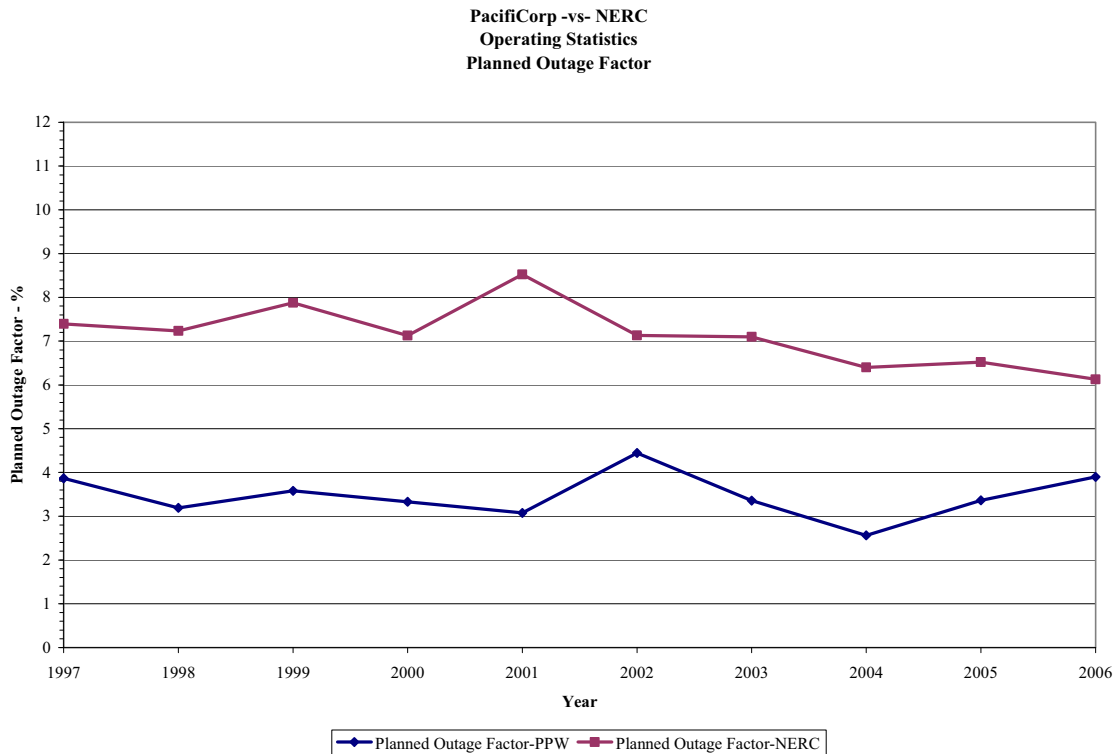
92 Equivalent availability also takes into account all the reasons a plant could
93 be off-line, i.e. planned outages, planned de-rates, forced outages, maintenance
94 outages, equivalent forced de-rates and equivalent maintenance de-rates. By
95 looking at equivalent availability it removes the bias of placing an outage or

96 restriction in a different category than the peer group. For example, it does not
97 matter if an outage is classified as maintenance or forced; they are all treated
98 equally in equivalent availability.

99 Looking at the above graph it can be seen that the PacifiCorp fleet is
100 improving its performance against the NERC peer group over the last four years.

101 **Q. Explain the significance of comparing planned outage factor.**

102 A. The planned outage factor simply takes the amount of planned outage hours over
103 the period hours. This is a measure of the percentage of time the planned was off-
104 line for a scheduled maintenance outage. The PacifiCorp fleet has less planned
105 outage hours than its NERC peer group as can be seen by the graph below.



106 Looking at the four-year average ending December 31, 2006, the
107 PacifiCorp fleet had a planned outage factor of 3.29 percent as compared to a

108 planned outage factor of 6.54 percent for the NERC peer group. This difference
109 equates to a difference of 5.82 TWh of generation (using the average fleet
110 capacity of 6,640 MW and the fleet capacity factor of 76.97 percent) over the
111 four-year period.

112 **Jim Bridger Outage Rate**

113 **Q Please describe the performance of the Jim Bridger plant over the four-year**
114 **period from 2003 to 2006.**

115 A. The Jim Bridger plant has improved its operating performance over the four-year
116 period. The equivalent availability has improved from 80.83 percent to 85.37
117 percent. The equivalent unplanned outage factor has improved from 14.86 percent
118 to 11.09 percent. And finally the capacity factor has increased from 78.04 percent
119 to 81.06 percent.

120 While its equivalent unplanned outage factor is approximately 2 percent
121 higher and its equivalent availability is approximately 3 percent lower than the
122 NERC peer group, its capacity factor is approximately 12 percent higher than the
123 NERC peer group.

124 **Q. Please explain why PacifiCorp does not think it is fair to reduce the Jim**
125 **Bridger plant's outage rate to the NERC/GADS average.**

126 A. PacifiCorp feels that this would be a one-sided adjustment. PacifiCorp operates its
127 generation assets as a fleet to maximize the benefit to its customers. Mr.
128 Falkenberg is willing to penalize PacifiCorp for one plants performance in some
129 of the performance statistics, but does not make any allowance for the benefits
130 mentioned above achieved by the fleet.

131 **Q. Please summarize your rebuttal testimony.**

132 A. PacifiCorp feels that it has demonstrated that it is not prudent to look at any one
133 statistic when comparing performance of its assets. Furthermore, PacifiCorp feels
134 it as demonstrated the fleet is being operated in a beneficial manner for its
135 customers by utilizing its assets effectively and efficiently. Finally, PacifiCorp
136 feels that it is not fair to normalize a single plant to the NERC/GADS average,
137 when the fleet as a whole is performing better than its peer group.

138 **Q. Does this conclude your rebuttal testimony?**

139 A. Yes.