

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 Peter C. Eelkema, my business address is 825 N.E. Multnomah, Suite  
4 600, Portland, Oregon 97232, and my present position is Lead/Senior Consultant,  
5 Load and Revenue Forecasting.

6 **Qualifications**

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

8 A. I received an undergraduate degree in Economics from San Jose State University  
9 in San Jose, California. I have a PhD in Economics from the University of  
10 Kansas.

11 From September 1989 to October 1993, I was a Managing Research Economist at  
12 the Kansas Corporation Commission. From October 1993 to March 1996, I was  
13 an Economist at the Nevada Office of Advocate for Customers of Public Utilities.

14 From March 1996 to March 1998, I was a Senior Economist, Forecasting, at  
15 Sierra Pacific Power/Nevada Power Company, and from March 1998 to January  
16 2004, I was a Staff Economist, Forecasting at Sierra Pacific Power/Nevada Power  
17 Company. From January 2004 to May 2008, I was a Consultant, Load and  
18 Revenue Forecasting at PacifiCorp. I was promoted to my current position in  
19 May, 2008.

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

21 A. I am a member of the team that is responsible for the development of the forecasts  
22 of kilowatt-hour sales, number of customers, system loads, and peaks for the  
23 Company's six retail jurisdictions.

24 **Q. Have you testified previously?**

25 A. Yes. I have testified before the Public Service Commission of Utah, the Kansas  
26 Corporation Commission and the Nevada Public Service Commission.

27 **Purpose of Testimony**

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

29 A. I describe how the forecasts of the numbers of customers, bills, kilowatt-hour  
30 sales, system loads and system peaks for the twelve-month period ending June 30,  
31 2008 were developed for the Company. These forecasts are produced for all six  
32 states in which the Company serves retail customers and are necessary for the  
33 development of inter-jurisdictional allocation factors, forecasted revenues, and net  
34 power costs. In addition to these forecasts, the Company has developed a forecast  
35 of bills and kilowatt-hour sales by rate schedule for Utah.

36 **Q. Are these same forecasting methodologies used for other purposes?**

37 A. Yes. For example, these are the methodologies used to produce the forecasts for  
38 the Integrated Resource Plan (“IRP”) of the Company. These forecasts are  
39 regularly reviewed by all stakeholders in that process. The Company has also  
40 used these forecast methodologies in regulatory proceedings in Utah, Oregon,  
41 Idaho, Wyoming, Washington, and California for several years.

42 **Summary of the Results**

43 **Q. Please summarize the results of the sales forecast used in this filing.**

44 A. As shown in Table 1, PacifiCorp’s Utah retail sales for all classes for the 12  
45 months ending June 30, 2009 are forecasted to increase by 3.9 percent from the  
46 12 months normalized sales ending June 30, 2008. Table 1 provides the test

47 period forecast by customer class for Utah.

**Table 1**  
**PacifiCorp Energy Forecast by Customer Class**  
**July 1, 2008 to June 30, 2009 (MWh)**

	12 Months ending June 30, 2009
Residential	6,628,193
Commercial	7,455,280
Industrial	8,110,971
Irrigation	175,815
Street & Hiway Light	85,645
Public Authority	440,268
<b>Total</b>	<b>22,896,172</b>

48 **Q. Does the Company use other sources of data to develop its forecast?**

49 A. The Company subscribes to Global Insights and receives periodic updates on its  
50 view of economic trends, both national and Utah specific. In addition, the  
51 Company keeps abreast of the reports and publications of various analysts and  
52 governmental agencies related to the economic climate in its service territory.

53 **Q. Generally, what has the Company gleaned from these articles?**

54 A. The articles support the Company's view that the Utah economy is strong relative  
55 to the nation and it is expected to remain strong at least through 2009.

56 **Q. Can you provide some examples of reports describing Utah's economic  
57 outlook?**

58 A. Yes. Here are just a few examples. Page 9 of the 2008 Economic Report to the  
59 Governor, states: "The Utah economy is expected to continue to moderate in  
60 2008, but the outlook remains positive. Employment is expected to increase 3.2  
61 percent (near its long-term average of 3.3%). Strong net in-migration of over

62 41,000 persons should continue to above-average population growth of 3.1  
63 percent. Personal income is expected to increase by 7.8 percent and exports  
64 should grow 11.5 percent. The labor market is expected to remain tight in 2008  
65 with an unemployment rate of 2.9 percent.”

66 In June of this year both the Milken Institute and the American Electronics  
67 Association ranked Utah and Salt Lake City among the top environments for high  
68 tech companies in the nation. Kevin Klowden, a managing economist at the  
69 Milken Institute, is quoted: "That says not only is the state doing well, but that  
70 high-tech is really growing in Utah."

71 I quote from a recent article, Utah Recognized as Top Ten Business  
72 Climate State: “Utah has received three top recognitions to add to its list of  
73 economic accolades. In its July issue 2008, *Business Facilities* ranked Utah as a  
74 Top Ten State for Business Climate, Manufacturing Momentum and Most  
75 Educated Workforce. ‘These impressive rankings are a reflection of Utah’s  
76 premier economy and the focus our state places on quality jobs and education,’  
77 said Governor Jon Huntsman.”

## 78 **Historical Growth by State**

79 **Q. How does the Company assess growth?**

80 A. The Company looks at growth in two ways, kilowatt-hour sales growth and  
81 growth in peak demand. I will describe the historical growth in both sales and  
82 peak demand later in this testimony.

83 **Q. Please describe the factors that are driving the Company’s sales growth in**  
84 **Utah.**

85 A. The Company's Utah sales growth is driven primarily by the state's strong  
 86 population growth. Utah has the highest birth rate in the country and also has  
 87 experienced net in-migration for recent years. Together these factors have lead to  
 88 an increase in the state's population from 2.2 million in 2000 to 2.7 million in  
 89 2007. Several respected economists and other authorities are predicting that  
 90 Utah's population will reach nearly 3 million by 2010 and will exceed 4 million  
 91 by the year 2030--an approximately two percent per year increase. Also, there are  
 92 strong increased sales to Utah industrial customers. I will describe the industrial  
 93 forecasting process later in this testimony.

94 **Q. How would you summarize the Company's sales growth over the past**  
 95 **decade?**

96 A. Table 2 shows the average annual growth for each of the six jurisdictions the  
 97 Company currently serves.

**Table 2**  
**PacifiCorp Energy Sales**  
**Growth 1996 – 2007 (MWh)**

	1996 Energy Sales <sup>1</sup>	2007 Energy Sales <sup>1</sup>	AAGR <sup>2</sup>
<b>Rocky Mountain Power</b>	26,259,091	34,373,128	2.5%
Utah	16,168,351	22,375,402	3.0%
Wyoming	7,028,088	8,522,454	1.8%
Idaho	3,062,652	3,475,272	1.2%
<b>Pacific Power</b>	18,026,614	19,040,592	0.5%
Oregon	13,441,934	14,077,356	0.4%
Washington	3,827,584	4,078,370	0.6%
California	757,096	884,865	1.4%

Note: 1. Energy sales are not weather normalized.

2. AAGR is Average Annual Growth Rate

98 Table 2 shows that for the calendar years from 1996 to 2007 the Rocky Mountain  
 99 Power portion of the service territory has had approximately five times the growth

100 rate of the Pacific Power portion of the service territory. It also shows that, of the  
101 Rocky Mountain Power states, Utah has experienced the largest growth both in  
102 MWh and percentage during that period. Over the past few years, the various  
103 states the Company serves have had different economic climates. These  
104 differences in economic climate have resulted in differences in growth rates. In  
105 particular, the economic climate in the Pacific Power service territory, particularly  
106 in Oregon, has been weaker than that in Utah. In addition, our residential  
107 customers in states with cooling load, such as Utah, have been adopting air-  
108 conditioning equipment at a rapid rate. This phenomenon has created more  
109 growth in the east than in the west.

110 **Q. How would you summarize Company's peak demand growth?**

111 A. Table 3 shows the average annual growth in coincident peak for each of the six  
112 jurisdictions the Company currently serves. As shown in Table 3, from 1999 to  
113 2007 the peak in the Rocky Mountain Power service territory increased about  
114 three times faster than the peak in the Pacific Power service territory. It also  
115 shows that, of the three Rocky Mountain Power states, Utah has highest growth in  
116 contribution to the coincident peak both in terms of megawatts and percentage.

**Table 3**  
**PacifiCorp Peak Demand**  
**Growth 1999 – 2007 (MW)**

	1999 Summer Peak <sup>1</sup>	2007 Summer Peak <sup>1</sup>	AAGR <sup>2</sup>
<b>PacifiCorp System</b>	7,972	9,774	2.58%
<b>Rocky Mountain Power</b>	4,760	6,254	3.47%
Utah	3,170	4,417	4.23%
Wyoming	892	1,129	2.99%
Idaho	697	708	0.19%
<b>Pacific Power</b>	3,213	3,520	1.15%
Oregon	2,208	2,606	2.09%
Washington	791	754	-0.59%
California	214	160	-3.57%

Notes: 1. Peaks are not weather normalized  
2. AARG is Average Annual Growth Rate

117 **Sales Forecast**

118 **Q. How do you group customers?**

119 A. The Company typically groups customers by the type of service they receive.  
120 The Company groups customers into Residential, Commercial, Industrial, Public  
121 Street and Highway Lighting (PS&HWL), Other Sales to Public Authorities  
122 (OSPA), and Irrigation categories.

123 **Utah Growth by Class of Service**

124 **Q. How does each category of customers contribute to the total energy**  
125 **consumed in the state?**

126 A. Table 4 shows growth in MWh sales for the major customer classes from 1996 to  
127 2007.

**Table 4**  
**MWh Sales by Customer Class**  
**Growth 1996 – 2007 (MWh)**  
**Rocky Mountain Power (Utah)**

	12 Months ending 12/31/1996 <sup>1</sup>	12 Months ending 12/31/2007 <sup>1</sup>	AAGR <sup>2</sup>
Residential	4,137,735	6,560,978	4.3%
Commercial	4,508,953	7,464,604	4.7%
Industrial	6,820,776	7,603,993	1.0%
Irrigation	133,463	214,731	4.4%
Street and Hiway Light	56,315	95,701	4.9%
Public Authority	510,599	435,395	-1.4%
<b>Total</b>	<b>16,167,841</b>	<b>22,375,402</b>	<b>3.0%</b>

Note: 1. Sales are not weather normalized.  
2. AARG is Average Annual Growth Rate

128 As shown in Table 4, 2007 sales were approximately the same in the Residential,  
129 Commercial, and Industrial categories. It also indicates that Residential and  
130 Commercial sales have been the major drivers of energy sales growth.

131 **Q. How would you summarize the sales growth the Company has seen over the**  
132 **past few years?**

133 A. Table 5 provides the 12-month weather normalized sales for the past three years.

**Table 5**  
**PacifiCorp (Utah) Weather Normalized Annual Sales**  
**Growth, Three years ending June 30, 2008 (MWh)**

	Weather Norm 12 Months ending June 30, 2006	Weather Norm 12 Months ending June 30, 2007	Weather Norm 12 Months ending June 30, 2008	Percentage Change <sup>1</sup>	Percentage Change <sup>2</sup>
Residential	5,788,556	5,952,865	6,083,160	2.84%	2.19%
Commercial	6,845,698	7,142,093	7,335,177	4.33%	2.70%
Industrial	7,021,445	7,519,469	7,904,883	7.09%	5.13%
Irrigation	182,588	192,014	197,838	5.16%	3.03%
Street & Hiway Light	82,475	73,072	75,179	-11.40%	2.88%
Public Authority	458,306	439,597	447,698	-4.08%	1.84%
<b>Total</b>	<b>20,379,068</b>	<b>21,319,110</b>	<b>22,043,935</b>	<b>4.61%</b>	<b>8.17%</b>

Notes: 1. Percentage change is July 1, 2006 to June 30, 2007 over July 1, 2005 to June 30, 2006  
2. Percentage change is July 1, 2007 to June 30, 2008 over July 1, 2006 to June 30, 2007

134 **Q. Comparing Table 4 and Table 5, recent Industrial growth rates have been**  
 135 **higher than the 10-year historical rates and Residential and Commercial**  
 136 **growth rates have been lower than the 10-year historical rates. Can you**  
 137 **explain this shift?**

138 A. The residential and commercial sales both reflect slowing sales growth from the  
 139 ten year history. On the other hand, industrial sales are driven by requests from  
 140 industrial customers and there has been an increase in requests for service.

141 **Q. How does the sales forecast compare to recent sales?**

142 A. Overall, weather normalized sales are tracking very well with the forecast,  
 143 although both actual and weather normalized sales are generally exceeding  
 144 forecast levels. Table 6 compares actual MWh sales by customer class for the six  
 145 months ending June 30, 2008 (weather normalized) with the forecast for the same  
 146 time period. As shown in Table 6, the variance (forecast compared to weather  
 147 normalized sales) for the state of Utah is less than 0.3 percent

**Table 6**  
**Sales by Customer Class**  
**Forecast Compared to Actual**  
**Rocky Mountain Power (Utah)**  
**(MWh)**

	Forecast 6 Months ending June 30, 2008	Weather Norm 6 Months ending June 30, 2008	Actual 6 Months ending June 30, 2008	Percentage Change <sup>1</sup>	Percentage Change <sup>2</sup>
Residential	2,951,094	2,851,454	3,009,617	-3.38%	1.98%
Commercial	3,497,906	3,523,105	3,535,354	0.72%	1.07%
Industrial	3,961,113	4,044,455	4,044,455	2.10%	2.10%
Irrigation	85,552	99,680	99,680	16.51%	16.51%
Street & Hiway Light	44,537	39,418	39,418	-11.49%	-11.49%
Public Authority	214,716	226,501	226,501	5.49%	5.49%
<b>Total</b>	<b>10,754,918</b>	<b>10,784,614</b>	<b>10,955,026</b>	<b>0.28%</b>	<b>1.86%</b>

Notes: 1. Percentage change of weather normalized sales over forecasted sales.

2. Percentage change of actual sales over forecasted sales.

148 **Residential Growth**

149 **Q. What is the recent trend in Utah Residential sales?**

150 A. Residential sales have been increasing, driven by both an increase in the number  
151 of customers and increasing use per customer. The increasing use per customer  
152 continues to be driven by increasing home size and increasing saturation of air  
153 conditioning. While sales continue to grow, the rate of growth has slowed. Table  
154 7 shows the average number of Residential customers for each of the last three  
155 years. Table 7 indicates that the number of Residential customers has increased  
156 each year; however, the rate of increase in the number of customers has slowed.

**Table 7**  
**Annual Residential Customers**  
**Rocky Mountain Power (Utah)**

	12 Months ending June 30, 2006	12 Months ending June 30, 2007	12 Months ending June 30, 2008
Residential Customers	655,091	673,668	686,968
Change in Res Cust	19,002	17,847	9,259

157 **Commercial Growth**

158 **Q. Do you expect the commercial sales growth to continue?**

159 A. Yes, the Company is forecasting continued growth in commercial sales. This  
160 increase in sales is driven primarily by an increasing number of commercial  
161 customers. Table 8 shows the average annual number of Commercial customers  
162 for the last three years. Table 8 indicates that the number of Commercial  
163 customers has increased each year; and the rate of increase in the number of  
164 customers has also increased.

**Table 8**  
**Annual Commercial Customers**  
**Rocky Mountain Power (Utah)**

	12 Months ending June 30, 2006	12 Months ending June 30, 2007	12 Months ending June 30, 2008
Commercial Customers	71,003	73,583	77,250
Change in Com Cust	2,653	2,351	3,992

165 **Industrial Class Growth**

166 **Q. What can you tell us about sales to the industrial category?**

167 A. Prior to the last decade, Utah’s industries were heavily concentrated in those that  
 168 depended on the natural resource supplies in the state, such as coal, uranium, oil,  
 169 gas and copper. During the last decade, various manufacturing companies have  
 170 moved into the state, including semi-conductor, finished wood products, and  
 171 medical equipment manufacturing, all resulting in a more diversified economy.

172 A diversified industrial sector will be less influenced by the natural resources  
 173 sector and is expected to be more stable than an industrial sector that is heavily  
 174 dependent on the natural resources sector.

175 **Residential, Commercial, Public Street & Highway Lighting, and Irrigation**

176 **Forecasts**

177 **Q. How is the MWh sales forecast developed for the Residential, Commercial,**  
 178 **Public Street & Highway Lighting and Irrigation customer classes?**

179 A. The forecast of kWh sales for these four customer classes is the product of two  
 180 separate forecasts: number of customers, and use per customer.

181 **Q. Please describe the method the Company uses to forecast the annual number**  
182 **of customers in this proceeding.**

183 A. The forecast of the number of customers relies on an exponential smoothing  
184 statistical technique and is based on a twelve-month moving average of the  
185 historical number of customers. These forecasts are produced at the customer  
186 class level for each of the states in which the Company has retail service territory.

187 **Q. How is annual average use per customer for these classes forecast?**

188 A. The Company uses regression analysis on the average use per customer to  
189 produce the forecasted average use per customer.

190 **Q. How does the Company forecast energy sales for each customer class?**

191 A. The forecast of the number of customers is multiplied by the forecast of average  
192 use per customer to produce annual forecasts of energy sales for each of the four  
193 classes of service.

#### 194 **Industrial and Other Sales to Public Authorities Forecasts**

195 **Q. How does the Company forecast sales for the Industrial and Other Sales to**  
196 **Public Authorities customer classes?**

197 A. The industrial customers are classified based on Standard Industrial Classification  
198 (“SIC”) codes, numerical codes that represent different types of businesses.  
199 Customers are further separated into large power users and smaller power users.  
200 Account managers assigned to each of the large power users are consulted  
201 regarding that customer’s projected energy consumption. The account managers  
202 have ongoing direct contact with large customers and are in the best position to  
203 know about the customer’s plans for changes in business processes, which might

204 impact their energy consumption. In addition, the Company reviews industry  
205 trends and monitors the activities of the customers in SIC code groupings that  
206 account for the bulk of the industry sales. Sales forecasts are then developed for  
207 each SIC code group and aggregated to produce a forecast for each class. The  
208 Sales to Public Authorities is forecasted as a customer class and is not broken out  
209 by customer or use per customer.

210 **Q. Can you elaborate on what drives the industrial forecast?**

211 A. The industrial forecast starts with an inquiry or a request for service to the  
212 Company (usually through one of the account managers). If, after the initial  
213 inquiry, the customer decides to proceed, there may be a need for a study to  
214 determine if there is adequate transmission or distribution infrastructure to serve  
215 the customer. If the Company determines there is a need to complete an  
216 engineering study to determine needed facilities to serve the customers requested  
217 load, the customer must provide the funds for the study. After the customer  
218 receives the results of the engineering study, the customer then provides the  
219 Company with its decision as to whether they want to receive service and the  
220 requested load requirements. The industrial forecast is driven by these customer  
221 load requests.

222 **Q. Why are the Sales to Public Authority and Industrial classes forecasted by a**  
223 **different methodology than the other customer classes?**

224 A. These classes are forecasted differently because of the diverse makeup of the  
225 customers within the class. In the Industrial class, there is no “typical” customer.  
226 Large customers have very diverse usage patterns and power requirements. It is

227 not unusual for the entire class to be strongly influenced by the behavior of one  
228 customer or a small group of customers.

229 In contrast, customer classes that are made up of mostly smaller, homogeneous  
230 customers are best forecasted as a use per customer multiplied by number of  
231 customers. Those customer classes are generally composed of many smaller  
232 customers that have similar behaviors and usage patterns. No small group of  
233 customers, or single customer, influences the movement of the entire class. This  
234 difference requires the different processes for sales forecasting.

235 **Q. How is the monthly forecast of kWh sales and number of customers**  
236 **developed?**

237 A. The customer forecast is developed using the monthly distribution of customer  
238 growth over the past five years. The annual forecasted values are increased to  
239 system load levels by including line losses. Once this is done, the annual loads  
240 are distributed to hourly values using the regression model I will describe later in  
241 my testimony. These hourly values are then summed to monthly totals. Line  
242 losses are then subtracted from this monthly value and the total state value at sales  
243 level is established. Then for each state and customer class an average monthly  
244 shape is developed using the most recent five years of history. This process  
245 captures any changing trends in distribution between months. This average  
246 monthly shape is then applied to the annual forecasts by state and class to arrive  
247 at monthly numbers by class and state. The sum of these class totals is compared  
248 to and adjusted to iterate to the total state level established earlier using the sum  
249 of the hourly values.

250 **Hourly Forecast**

251 **Q. How are the loads distributed to the hourly level?**

252 A. The Company has developed a regression based tool that models hourly load  
253 against several independent variables. The estimation period for this regression  
254 equation is from January 2004 through June 2006. This model has a large number  
255 of independent variables such as the time of day, the week of the year, day of the  
256 week, hourly temperature and humidity.

257 **Q. When using a model of this type the independent variables require a starting**  
258 **value for the calculation. What values does the Company use?**

259 A. For the time variables, the calendar date and time in the future is used. Typically  
260 the load on a weekend is lower than on a weekday because the industrial and  
261 some commercial customers use less. A variable used to identify a weekend  
262 would have a lower contribution to the forecasted load than a weekday. For the  
263 weather values the Company uses the equivalent of the 30-year average  
264 temperature for the weather stations at the appropriate day and time in the future.  
265 The equivalent of the 30-year average humidity is used as the humidity measure.  
266 The Company also reviews the growth of the hourly load over time against  
267 historical growth rates to make sure that the loads are growing at the appropriate  
268 times. State loads are aggregated by month by time of day and future growth  
269 rates are compared with historical growth rates. This allows us to review the  
270 nighttime growth rates verses daytime growth rates. Growth in the winter months  
271 may differ from the growth in the spring and fall. All of these factors are  
272 reviewed and trends are incorporated to reflect the historical patterns observed.

273 **System Peak Forecasts**

274 **Q. Please describe the system peak forecast.**

275 A. The system peaks are the maximum load required on the system in any hourly  
276 period. Forecasts of the system peak for each month are prepared based on the  
277 load forecast produced using the methodologies described above. From these  
278 hourly forecasted values, forecast peaks for the maximum usage on the entire  
279 system during each month (the coincidental system peak) and the maximum usage  
280 within each state during each month are extracted.

281 **Rate Schedule Forecasts**

282 **Q. Has the Company created any additional forecasts for this proceeding?**

283 A. Yes. To develop forecasted billing determinants, Company witness Mr. William  
284 R. Griffith requires two additional forecasts that are based on the kWh sales  
285 forecast and the number of customers forecast. Once the kWh sales forecast is  
286 complete, it must be applied to individual rate schedules to forecast kWh sales by  
287 rate schedule. In addition, the forecast of number of customers must be expressed  
288 in number of bills.

289 **Q. How are rate schedule level forecasts produced for the Company's Utah  
290 service territory?**

291 A. This forecast was carried out in several steps. First, the ratio of sales by rate  
292 schedule to sales by customer class is calculated. Second, using regression  
293 analysis, with a time trend driver, the ratio is projected for the test period. Third,  
294 the ratio is multiplied by the customer class sales to produce the sales by rate  
295 schedule. The sum of the sales by rate schedules is then calibrated so that it

296 equals the customer class sales.

297 **Q. Were there any adjustments to the sales by rate schedule?**

298 A. No. There was no need for any adjustments.

299 **Q. How is the number of bills for each schedule forecasted?**

300 A. Similar to the kWh sales forecast, the rate schedule bill forecast is carried out in  
301 several steps. First, the ratio of bills to sales is calculated for each customer class.  
302 Second, this ratio is forecasted for the test period based on the regression results.  
303 This produces a bill forecast by customer class. Third, the ratio of bills by rate  
304 schedule to bills by customer class is calculated. Fourth, using regression  
305 analysis, with a time trend driver, the ratio is projected for the test period. Fifth,  
306 the ratio is multiplied by the customer class bills to produce the bills by rate  
307 schedule. Last, the sum of the bills by rate schedules is then calibrated so that it  
308 equals the customer class bills.

309 **Q. Were there any adjustments made to the forecast of billing?**

310 A. Yes. To correct for any discontinuity between the history and forecast, the  
311 number of bills was adjusted for some of the customer classes.

312 **Q. Does this conclude your direct testimony?**

313 A. Yes.