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

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

**Qualifications**

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

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

From September 1989 to October 1993, I was a Managing Research Economist at the Kansas Corporation Commission. From October 1993 to March 1996, I was an Economist at the Nevada Office of Advocate for Customers of Public Utilities. From March 1996 to March 1998, I was a Senior Economist, Forecasting, at Sierra Pacific Power/Nevada Power Company, and from March 1998 to January 2004, I was a Staff Economist, Forecasting at Sierra Pacific Power/Nevada Power Company. From January 2004 to May 2008, I was a Consultant, Load and Revenue Forecasting at PacifiCorp. I was promoted to my current position in May, 2008.

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

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

**Q. Have you testified previously?**

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

**Purpose of Testimony**

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

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

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

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

**Summary of the Results**

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

A. As shown in Table 1, PacifiCorp's Utah retail sales for all classes for the 12 months ending June 30, 2009 are forecasted to increase by 3.9 percent from the 12 months normalized sales ending June 30, 2008. Table 1 provides the test 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 |
| Total | 22,896,172 |

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

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

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

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

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

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

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

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

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

**Historical Growth by State**

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

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

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

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

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

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

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

| | 1996 Energy Sales[1] | 2007 Energy Sales[1] | AAGR[2] |
|---|---|---|---|
| **Rocky Mountain Power** | 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% |
| **Pacific Power** | 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

Table 2 shows that for the calendar years from 1996 to 2007 the Rocky Mountain Power portion of the service territory has had approximately five times the growth rate of the Pacific Power portion of the service territory. It also shows that, of the

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

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

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

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

| | 1999 Summer Peak[1] | 2007 Summer Peak[1] | AAGR[2] |
|---|---|---|---|
| **PacifiCorp System** | 7,972 | 9,774 | 2.58% |
| **Rocky Mountain Power** | 4,760 | 6,254 | 3.47% |
| Utah | 3,170 | 4,417 | 4.23% |
| Wyoming | 892 | 1,129 | 2.99% |
| Idaho | 697 | 708 | 0.19% |
| **Pacific Power** | 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

**Sales Forecast**

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

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

**Utah Growth by Class of Service**

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

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

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

| | 12 Months ending 12/31/1996[1] | 12 Months ending 12/31/2007[1] | AAGR[2] |
|---|---|---|---|
| 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% |
| Total | 16,167,841 | 22,375,402 | 3.0% |

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

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

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

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[1] | Percentage Change[2] |
|---|---|---|---|---|---|
| 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% |
| Total | 20,379,068 | 21,319,110 | 22,043,935 | 4.61% | 8.17% |

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

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

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

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

A. Overall, weather normalized sales are tracking very well with the forecast, although both actual and weather normalized sales are generally exceeding forecast levels. Table 6 compares actual MWh sales by customer class for the six months ending June 30, 2008 (weather normalized) with the forecast for the same time period. As shown in Table 6, the variance (forecast compared to weather 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[1] | Percentage Change[2] |
|---|---|---|---|---|---|
| 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% |
| Total | 10,754,918 | 10,784,614 | 10,955,026 | 0.28% | 1.86% |

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

**Residential Growth**

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

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

**Commercial Growth**

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

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

**Industrial Class Growth**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Hourly Forecast**

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

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

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

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

**System Peak Forecasts**

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

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

**Rate Schedule Forecasts**

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

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

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

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

equals the customer class sales.

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

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

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

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

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

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

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

A. Yes.