

Docket No. 20000-__-ER-11
Witness: Jeffery W. Bumgarner

BEFORE THE WYOMING PUBLIC SERVICE
COMMISSION

ROCKY MOUNTAIN POWER

Direct Testimony of Jeffery W. Bumgarner

December 2011

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

3 A. My name is Jeffery W. Bumgarner and my business address is 825 NE
4 Multnomah Boulevard, Suite 600, Portland, Oregon, 97232. I am the director of
5 demand-side management for the Company.

6 **Q. Please describe your responsibilities as director of demand-side**
7 **management?**

8 A. My responsibilities include the development of demand-side management
9 (“DSM”) program strategy and planning. I work closely with the Company’s
10 integrated resource planning (“IRP”) department to identify and incorporate DSM
11 resource opportunities into the resource planning process. Identification of DSM
12 resource potential, program planning, introduction of new DSM programs,
13 modifications and terminations of DSM programs all fall within the scope of my
14 responsibilities.

15 **Q. Please describe your educational and utility industry background.**

16 A. I received a Bachelor of Science degree in Finance and Business Management in
17 1981 from the University of Oregon. Thereafter, I joined PacifiCorp in 1981 in
18 the customer service department and have held various management positions in
19 the customer care, new product and business development and demand-side
20 management departments. I have held my current position since July of 2000.

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

22 A. I am responding to the Commission’s Order in Docket No. 20000-384-ER-10
23 (“2010 General Rate Case”) Paragraph 130, that directs the Company to provide

1 any new information or any analysis conducted by the Company monetizing
2 demand or treating demand as a resource. I will also address why, based on the
3 latest information, the Company is not pursuing demand response resources in
4 Wyoming at this time.

5 **New Demand Response Analysis**

6 **Q. Since the 2010 general rate case, has the Company received any new**
7 **information or completed any new analysis monetizing demand response and**
8 **treating it as a resource?**

9 A. Yes. The Company published an update of the 2007 Conservation Potential
10 Assessment (“Potential Assessment”) in March 2011. Demand side resource
11 potential assessments are heavily relied upon to assist the Company in identifying
12 energy efficiency and load management resource opportunities and costs for the
13 purposes of their consideration as planning resources in the Company’s integrated
14 resource planning process.

15 **Q. Specific to load management or demand response resources, what resource**
16 **types did the updated Potential Assessment consider?**

17 A. Under the Rocky Mountain Power definitions, Class 1 and Class 3 demand-side
18 management (“DSM”) resource classifications most closely represent what is
19 commonly referred to as demand response resources. As the name suggests, the
20 aim of demand response programs is managing customer demand for electricity
21 during periods of peak energy usage. While some energy savings may result from
22 demand response programs, it is secondary to the primary function of managing
23 demand.

1 **Q. Please provide the Company’s definitions or description of Class 1 versus**
2 **Class 3 demand response resources?**

3 A. Class 1 DSM: Fully dispatchable or scheduled firm capacity management
4 programs. Class 1 resources are those for which capacity savings occur as a result
5 of active Company control or advanced scheduling. Once customers agree to
6 participate in Class 1 DSM program, the timing and persistence of the load
7 reduction is involuntary on the customer’s part within the agreed limits and
8 parameters of the program. In most cases, loads are shifted rather than avoided.
9 Examples include residential and commercial central air conditioner load control
10 programs, irrigation load management, and commercial aggregation curtailment
11 programs, all of which are typically dispatchable in nature.

12 Class 3 DSM: Class 3 programs seek short-duration (hour by hour) energy and
13 capacity savings from actions taken by customers voluntarily, based on a financial
14 incentive or penalty. Savings are measured at a customer-by-customer level (via
15 metering), and customers are compensated or charged in accordance with a
16 program’s pricing parameters. As a result of their voluntary nature, savings are
17 less predictable making them less suitable as a planning resource. Savings
18 typically endure only for the duration of the incentive offering or penalty period
19 and loads tend to be shifted rather than avoided (marginal energy savings).
20 Program examples include large customer energy bid programs (“Energy
21 Exchange”), customer energy challenges and pricing products such as time-of-use
22 pricing plans, critical peak pricing plans, and inverted and/or season rate designs.
23 While Class 2 (Energy Efficiency) and Class 4 (Energy Efficiency education and

1 non-financial voluntary/public plea curtailment programs) DSM resources can
2 and do contribute positively in helping reduce customer load requirements, they
3 are typically not defined as demand response resources.

4 **Q. How was the updated Potential Assessment information used in monetizing**
5 **demand response and treating it as a resource?**

6 A. The Potential Assessment was updated to account for changing sector loads, load
7 forecasts, evolving federal codes and standards, and to update other key
8 information (e.g. equipment costs and savings assumptions), customer
9 participation assumptions, incorporation of new/emerging technologies, etc. The
10 results of the Potential Assessment update were used by the Company to compare
11 demand response resource availability and costs to supply side resource
12 alternatives in the development of the Company's 2011 Integrated Resource Plan
13 ("IRP"). It is in the IRP process, not the Potential Assessment, that demand
14 response is monetized and treated as a resource as it competes against other
15 resource alternatives in the development of the Company's IRP.

16 **Q. Using this updated information, were both Class 1 and Class 3 resources**
17 **modeled against competing supply-side resource options in the IRP process?**

18 A. Yes, both Class 1 and Class 3 resources are included in the modeling process
19 under varying scenarios; however, only Class 1 is deemed firm and reliable
20 enough to be included as a planning resource in the IRP's final preferred
21 portfolio. Some Class 3 resources are considered by the Company to manage
22 system reliability when issues develop caused by unusual weather, outages, and
23 other load anomalies, e.g. the demand buy-back program (Wyoming Schedule

1 71), while other demand response products, (e.g. time variant products like time-
2 of-use (Wyoming Schedules 33, 46 and 48 and seasonal residential inverted
3 rates), encourage customers to shift usage to off-peak hours or conserve energy
4 during the Company's system-peak during summer months.

5 **Q. Putting reliability and firmness aside, why not rely more heavily on Class 3**
6 **resources for what they can provide the Company?**

7 A. There are several reasons why the Company does not rely more heavily on Class
8 3 resources. First, in most cases Class 1 and Class 3 resource opportunities
9 compete for the management of the same end-use loads; they are not
10 complimentary resources. For example, Class 1 commercial curtailment products
11 attempt to manage loads associated with lighting, heating and cooling systems,
12 motors, productions/processing equipment, refrigeration systems, pumps and
13 water heating. These are the same end-use loads customers manage to take
14 advantage of savings opportunities when participating in Class 3 products like
15 demand buy-back, commercial time-of-use, and real-time pricing products, for
16 instance. As a result, when modeling these resources in the IRP the Company
17 must look at Class 1 and Class 3 products separately and/or net out the
18 overlapping resource opportunities between the two classes of resource in order to
19 avoid an over-reliance on demand response resources beyond what's actually
20 available in the market. Second, time variant pricing products are very difficult to
21 quantify or measure. While the Company financially encourages larger customers
22 to shift as much load as possible away from peak load hours through time-of-use
23 rates (Wyoming Schedules 33, 46 and 48) it's very difficult to establish a reliable

1 baseline usage pattern to determine what these customers' usage patterns would
2 have been absent the presence of the time variant product. Due to this situation
3 and the lack of firmness or reliability of Class 3 resources (usage under the
4 control of customers rather than the Company), the Company prioritizes Class 1
5 demand response over Class 3 in the IRP process and doesn't incorporate Class 3
6 resource products directly as planning resources.

7 **Q. What do you mean by "directly"?**

8 A. I mean that the impact of the majority of Class 3 resources, such as the time
9 variant price products I mention earlier in my testimony, are captured in actual
10 usage patterns that help make up the historical usage or trend line used as the
11 basis for the load forecasts used in the IRP process. They are included in the IRP
12 for planning purposes; however, in a more indirect way that best captures their
13 variability over time.

14 **Q. Did the update of demand response information in the Potential Assessment
15 result in the 2011 IRP process selecting demand response resources in
16 Wyoming?**

17 A. Not specifically. The model selected an incremental 187 megawatts in Rocky
18 Mountain Power's service area for resources with a summer versus winter peak
19 contribution. The end-use loads targeted for greater control are residential air
20 conditioning in Utah, irrigation pump loads in Utah and Idaho, and commercial
21 lighting and process loads at commercial facilities e.g. commercial curtailment in
22 Utah. The 2011 IRP did not select any of the demand response resources for
23 pursuit in the Company's Wyoming service area.

1 **Q. Did the Potential Assessment identify any demand response resource**
2 **opportunities in Wyoming?**

3 A. Yes, however, the change in opportunity identified between the 2007 and 2011
4 Potential Assessments was modest, as is the overall opportunity in the state. The
5 2011 Potential Assessment showed a decrease in Class 1 demand response
6 opportunity in Wyoming of 5 megawatts (from 29 MW to 24 MW) and an
7 increase in Class 3 resources of 41 MW (from 36 MW to 77 MW) when
8 compared to the 2007 study. See Exhibit RMP____(JWB-1). The slight decrease in
9 Class 1 resource opportunity was the result of a decrease in residential and
10 commercial load growth forecasts, decreasing 15 percent and 4 percent,
11 respectively, between the two studies. In other words, the “rate of increase” in
12 load growth has slowed and results in less future load to potentially manage
13 through DSM. The increase in Class 3 resource opportunity was the result of an
14 increasing industrial load forecast of 70 percent between the two studies.¹ The
15 increased load forecast resulted in higher opportunity assessments for critical peak
16 pricing (19.83 MW to 41.10 MW) and demand buy back products (9.65 MW to
17 19.06 MW), two products that technically compete with one another for the same
18 end-use loads. Netting for the overlap associated with the competing Class 1 and
19 Class 3 resource types the potential for demand response resources in Wyoming
20 between the 2007 and 2011 Potential Assessments increased 19 MW (from 34.40
21 MW to 53.68 MW, respectively). This is before attempting to quantify and
22 account for the impact of Wyoming’s existing general service time variant

¹ The load forecasts used in the development of the two studies differs from the load forecasts used in the development of the 2011 IRP and that used in the development of the 2011 general rate case. The forecasts were those available at the time the studies were completed.

1 products e.g. Schedules 33, 46 and 48.² In comparison, the Class 1 only resource
2 potentials for demand response in Idaho and Utah are 180.5 MW and 331.1 MW,
3 respectively; three to six times more opportunity than that identified in Wyoming.

4 **Q. Why would a state like Idaho whose loads are substantially less than**
5 **Wyoming have more opportunity for Class 1 demand response?**

6 A. It comes down to the types of loads and their impact on the system during the
7 system's coincident peak hours, specifically during the summer months of June,
8 July and August. Wyoming's loads are dominated by its industrial sector whose
9 longer hours of operation result in a state load profile of roughly 70 percent, the
10 highest of PacifiCorp's six states. In contrast, Idaho's peak load is heavily
11 influenced by summer agricultural irrigation pumping. Irrigation customers
12 operate exclusively May-September at certain times for a limited number of hours
13 each day, giving them the flexibility to shift their usage to off-peak hours without
14 significant customer interruption or consequences. Idaho's load profile in
15 comparison is 24 percent on average, the lowest of PacifiCorp's six states.³

16 **Q. Regardless of the size of the opportunity, if demand response opportunities**
17 **exist in Wyoming, why wasn't demand response selected as a resource in the**
18 **2011 IRP and pursued by the Company?**

19 A. The reason stems from the differences in the load requirement characteristics
20 between Utah, Idaho and Wyoming and the underlying need and opportunity for
21 demand response in some markets. The peak demand for energy in Utah and

² In the development of the potential assessment studies the Company's vendor attempts to net out the interactive effects of Class 1 and Class 3 product within a class of resource but not between classes and makes no attempt to net out the impact of existing products in each class that might compete for the same end-use loads; e.g. time-of-use rates already offered in Wyoming would compete with both Critical Peak Pricing and Real Time Pricing potentials.

³ Comparison was based on 2010 actual hourly usage by state.

1 Idaho coincides with the Company's system peak, occurring typically in the
2 months of July and August. The peak demand for energy in Wyoming is during
3 the winter months, typically occurring sometime between December and
4 February, at a time when the Company has less of a need for system peak load
5 management. In addition, both Utah and Idaho have what is often referred to as a
6 needle peak, a significant amount of load occurring during a few select hours each
7 year, generally on select weekday afternoons. Wyoming does not have a
8 significant issue with short duration peaks in the demand for energy, as illustrated
9 by Wyoming's 2010 load duration curve provided as Exhibit RMP___(JWB-2).
10 Note that the load duration curve shows Wyoming loads increasing roughly 50-60
11 MW during the top one percent of the load hours (87 hours), each year and only
12 about 70 MW during the top two percent (174 hours) with these loads occurring
13 in the winter months (November-January). Across all load hours for the year
14 (8,760 hours) Wyoming loads only varied 400 MW from the highest usage hour
15 to the lowest usage hour. In comparison, reference Utah's 2010 load duration
16 curve, Exhibit RMP___(JWB-3). Utah loads increase approximately 325 MW
17 during the top one percent of load hours (87 hours), increase 475 MW during the
18 top two percent (174 hours), and across all load hours for the year (8,760 hours)
19 shows loads varying by over 2,600 MW. Utah's significant increase in loads for
20 the top few one to two percent load hours each year correspond closely with the
21 Company's broader system summer peak load months and hours. Utah has what
22 is commonly referred to as a needle peak load profile, heavily influenced by the
23 state's summer afternoon space cooling loads.

1 **Q. Why is the timing of the loads and their duration important?**

2 A. It points to two important factors in the pursuit of demand response resources in
3 Wyoming: 1) Wyoming's peak loads occur in the winter, when the value of the
4 resource is less to the Company; and 2) to achieve sufficient loads for curtailment,
5 customers would have to agree to significantly more hours of curtailment
6 annually, i.e., it would require a minimum of 174 hours of curtailment to lower
7 Wyoming's peak loads by up to 70 MW. The Company experience with Class 1
8 programs such as the air conditioner program and irrigation program has shown
9 that customer participation is adversely effected when customers are curtailed in
10 excess of 40 to 50 hours annually, absent the presence of significant incentives for
11 participation. Given the value of the resource to the Company is lower during the
12 winter months, higher participation incentives would work against program
13 economics. In situations where the duration of the curtailment is longer and
14 customers would be adversely impacted by long curtailment requirements,
15 curtailment is generally addressed through longer and more permanent load
16 reductions like those achieved from energy efficiency programs, such as those
17 currently offered by the Company in Wyoming. Resource acquisitions from
18 energy efficiency programs act to lower the overall load duration curve, not
19 simply manage loads for a select few hours along the curve in response to needle
20 peak situations.

21 **Q. Is Wyoming disadvantaged by not having a need to manage peak loads**
22 **through demand response programs?**

23 A. Not at all. In fact, what demand response strives to do is to manage inefficient

1 loads into load profiles much like what already exist in Wyoming today. As can
2 be seen in Exhibit RMP__(JWB-2), Wyoming loads have little variation
3 between high load and low load hours, showing that the industrial base loads
4 contribute significantly to Wyoming's efficient load characteristics and efficient
5 use of system resources.

6 **Q. Does this mean Wyoming's loads are as efficient as they can be and no**
7 **further action is needed at this time?**

8 A. No, there is little opportunity and immediate value in managing peak loads
9 through demand response in Wyoming; however, there is both opportunity and
10 value to continue to focus on improving the efficiency of customer load through
11 energy efficiency programs. As shown in Tables A.8 – Forecasted Average
12 Annual Energy Growth Rates for Load, on page 11 in the 2011 IRP Volume II –
13 Appendices, attached here as Exhibit RMP__(JWB-4), Wyoming's average
14 annual energy growth rate for load is forecasted to grow faster through 2020 than
15 any state served by PacifiCorp's (2.9 percent compared to PacifiCorp's system
16 average annual growth rate of 2.1 percent and Rocky Mountain Power (Wyoming,
17 Utah and Idaho) average annual growth rate of roughly 2.4 percent). As shown in
18 Table A.7 – Forecasted Retail Sales Growth in Wyoming, page 10, of the same
19 appendices and attached here as Exhibit RMP__(JWB-5), the industrial and to a
20 lesser but meaningful degree commercial loads are expected to drive the growth;
21 3 percent and 1.8 percent respectively. It's critical to 1) continue to improve the
22 efficiency of current customer loads, and 2) influence higher efficiency standards
23 for the new loads forecasted in order to most effectively manage the costs

1 associated with servicing the loads. While improving system efficiency through
2 cost-effective energy efficiency programs and practices is always important,
3 doing so during times of rapid growth helps capture opportunities that if not
4 captured up-front result in locked in inefficiency for some period of time, lost
5 opportunities.

6 **Q. Is there other information that parties might find helpful in understanding**
7 **the Company's position on demand response in Wyoming?**

8 A. Yes, parties might reference my pre-filed direct and rebuttal testimony in the 2010
9 general rate case. In that case I provided other pertinent information on how the
10 Company identifies, selects and prioritizes initiatives designed to control peak
11 usage as well as the Company's demand side program development process.

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

13 A. Yes.