

**Rocky Mountain Power**  
**Docket No. 11-035-200 Stipulation Compliance**  
**Stress Factor Study Plan**

**1. Monthly Firm Peak Demands**

*Definition:* Highest hourly monthly demand for power used by firm load customers.

*Intended to show:* A monthly comparison of the peak hour demand for power used by firm load customers. The months having the highest peak demands are indicative of the periods of greatest stress on the system, when additional capacity resources may be required to maintain system reliability.

*Methodology:*

- Historical monthly firm peak demand for 2008 through 2012
- Forecasted monthly firm peak demands for 2013 through 2022 & 2027.
- Two levels of load analyzed.
  - Retail firm load
    - Firm retail load
    - Interruptible loads & Class 1 DSM – Two approaches
      - Included during all hours (interruptible load treated as resources).
      - Excluded during the hours the load can be curtailed (interruptible load treated as load reduction).
  - Total firm load
    - Retail firm load as defined above
    - Long-term wholesale sales contracts
    - Exchanges out which represent a return of energy. .

*Pros:*

- Information readily available
- Easy to capture and calculate

*Cons:*

- Does not evaluate the ability of the Company to meet load in the peak hour
- Periods of stress may occur at times other than on the monthly peak hour

*Company ability to do analysis:* The Company has the information to perform this analysis.

**2. Probability of Contribution to Peak (1)**

*Definition:* Number of hours each month that firm load exceeds a percentage of the annual peak load.

*Intended to show:* A comparison of the number of hours in each month that the peak load exceeds the average load

*Methodology:*

- Historical firm load all hours 2008 through 2012
- Forecasted firm load all hours 2013 through 2022 & 2027.
- Two levels of load analyzed.
  - Retail firm load
    - Firm retail load
    - Interruptible loads & Class 1 DSM – Two approaches
      - Included during all hours (interruptible load treated as resources).

- Excluded during the hours the load can be curtailed (interruptible load treated as load reduction).
  - Total firm load
    - Retail firm load as defined above
    - Long-term wholesale sales contracts
    - Exchanges out which represent a return of energy.
- Each hour that the firm load exceeds the following percentage of the annual hourly firm load is captured and summed by month
  - 70% of annual peak
  - 80% of annual peak
  - 90% of annual peak
  - 95% of annual peak
  - 99% of annual peak

*Pros:*

- Information readily available
- Easy to capture and calculate
- May provide a broader measure of stress

*Cons:*

- Measures the number of hours that firm load exceeds the defined percentage of annual firm peak, but does not measure the magnitude by which the load exceeds that percent.
- Broadening the number of hours to construct a demand allocator could result in some overlap if the system generation allocator is also based, in part, on an energy allocator.

*Company ability to do analysis:* The Company has the information to perform this analysis.

**3. Probability of Contribution to Peak (2)**

*Definition:* Number of MWh associated with the hours each month that firm load exceeds a percentage of the annual peak load.

*Intended to show:* A comparison of the MWh during the hours in each month that the peak load exceeds the average load

*Methodology:*

- Same as Probability of Contribution to Peak (1) except the MW in each hour that the firm load exceeds the threshold percentage of the annual hourly firm load is captured and summed by month

*Pros:*

- Information readily available
- Easy to capture and calculate
- Measures the magnitude by which the load exceeds that percent.
- May provide a broader measure of stress

*Cons:*

- Broadening the number of hours to construct a demand allocator could result in some overlap if the system generation allocator is also based, in part, on an energy allocator.

**4. Monthly Reserve Margins**

*Definition:* The Company's reserve margin during the peak hour each month.

*Intended to show:* A comparison of the reserve margins during the peak hour of each month of the year. The analysis is intended to support identifying the peak hours that cause the most stress on the system.

*Methodology:*

- Forecasted firm load and resources 2013 through 2022 & 2027
- Firm resources available to meet load during the peak hour each month less the firm load during that hour.
- Firm resources include owned resources, long-term firm purchases, and exchanges which represent a receipt of energy. Balancing purchases are excluded.
- Monthly firm peak demands include long-term wholesale sales contracts and exchanges out which represent a return of energy. Interruptible loads are excluded during the hours the load can be curtailed. Balancing sales are excluded.

*Pros:*

- Information readily available
- Easy to capture
- Evaluates the ability of the Company to meet load during the peak hour

*Cons:*

- May result in unusually low reserve margins during months when significant non-recurring planned outages (e.g., for environmental compliance) are projected to occur.

*Company ability to do analysis:* The Company has the information to perform this analysis.

## 5. **Cost of Peak Resources**

*Definition:* The dollar per megawatt-hour difference each month that cost of wholesale market purchases exceeds the cost of gas-fired resources.

*Intended to show:* A comparison of the cost of wholesale market purchases to the cost of gas-fired resources at reasonably expected operating levels on a dollar per megawatt-hour basis.

*Methodology:*

- Forecasted monthly market prices 2013 through 2022 & 2027.
- Two market prices locations.
  - Mid-Columbia
  - Palo Verde
- Two market price time periods each month
  - Average price all hours
  - Average Heavy Load Hours price
- The cost of a new simple cycle combustion turbine per MWh at the following capacity factors.
  - 5%
  - 10%
  - 15%
  - 20%
- The cost of a new combined cycle combustion turbine per MWh at the following capacity factors.
  - 50%
  - 60%

- 70%
- 80%

*Pros:*

- Information readily available
- Easy to capture and calculate
- Provides a cost dimension that may be used with other stress factors

*Cons:*

- Considers resource costs but does not consider physical status of loads or resources.

*Company ability to do analysis:* The Company has the information to perform this analysis.

**6. Loss of Load Probability**

*Definition:* Monthly energy not served (ENS) data, which represents the amount of load that cannot be met with either system resources or with system balancing market purchases.

*Intended to show:* ENS data from the IRP stochastic risk analysis provide a measure of reliability suitable for comparing ENS results among a range of different portfolios.