Procedure for Establishing Maximum Product Quantities (or Caps) at the RTO Level

The guiding principle behind the development of the procedures to compute the Base DR and EE cap and the Base Capacity Resource cap is that the LOLE risk increase under any combination of cleared Base DR and EE and Base Generation cannot be greater than 10% of 0.1 days/year (0.01 days/year).

Procedure to Compute Cap for Base DR and EE Product

Load Model

1. The daily load forecast distributions for the applicable Delivery Year (DY) are obtained for all weekdays from the PJM load forecast model. The distributions are based on a range of historical weather scenarios. This results in approximately 260 daily load distributions.

2. The maximum load value from each weather scenario’s summer period (June 1 – August 31) is determined. The median of the distribution of all these maximum load values represents the 50/50 forecasted summer RTO peak for the applicable Delivery Year.

3. The daily load distributions from step 1 are per-unitized on the 50/50 peak load value determined in step 2. In other words, the ratio of each weather scenario load to the median forecast peak is calculated. Using the ratio calculated, all weather scenario loads can be re-evaluated for any forecasted peak while preserving the shape of the original distributions. This allows all the daily load distributions to be shifted up or down by altering the forecasted summer peak load.

Capacity Model

4. The PJM RTO cumulative capacity probability table from the most recent IRM Study is obtained for all 52 weeks of the applicable Delivery Year. The cumulative capacity probability table represents the distribution of available capacity each week. Available capacity is defined as generation that is not expected to be on a forced, maintenance or planned outage.

Analysis

5. As described in step 3, the daily load distributions are iteratively shifted to equal the IRM established for the applicable DY.

6. A reference annual LOLE is determined based on the daily load distributions from step 3 and the capacity distributions from step 4. The resulting case is the Base Case.

7. Varying amounts of Base DR and EE (expressed as a percent of the unrestricted peak load) are then added to the capacity model. Base DR and EE is modeled to be interruptible from June 1 through September 30 while being unavailable for the rest of the DY. Base DR and EE is represented as a 100% available resource and is
assumed to displace an equal amount of 100% available generation for the entire Delivery Year.

8. At each Base DR and EE amount, the annual LOLE is determined and the percent increase in risk from the reference annual LOLE is calculated.

9. The Base DR and EE reliability cap is equal to the Base DR and EE amount at which the percent increase from the reference LOLE computed in step 6 is 5%. The Base DR and EE reliability cap in MW is expressed as a percent of the forecasted unrestricted peak.

Procedure to Compute Cap for Base Capacity Resource Products

Load Model

1. The weekly load model from the most recent IRM Study is obtained for all 52 weeks of the applicable Delivery Year. For more details on the load model used in the IRM Study, see Section 3.2.1 of PJM Manual 20.

Capacity Model

2. The PJM RTO cumulative capacity probability table from the most recent IRM Study is obtained for all 52 weeks of the applicable Delivery Year. The cumulative capacity probability table represents the distribution of available capacity each week. Available capacity is defined as generation that is not expected to be on a forced, maintenance or planned outage.

3. The available capacity during the peak week of winter is adjusted to reflect winter ratings of thermal and wind units.

Analysis

4. The weekly load distributions are iteratively shifted to equal the IRM established for the applicable DY.

5. A reference annual LOLE is determined based on the weekly load distributions from step 4 and the capacity distributions from steps 2 and 3. The resulting case is the Base Case.

6. The weekly cumulative capacity probability tables are adjusted to reflect the unavailability of the amount of Base DR and EE product computed in the previous procedure (in other words, Base DR and EE is assumed to be at its cap).

7. Varying amounts of Base Generation (expressed as a percent of the unrestricted peak load) are then added to the capacity model. Base Generation is modeled to be unavailable during the peak winter week while being available for the rest of the DY. The Base Generation is represented as a 100% available resource and is assumed to displace an equal amount of 100% available generation for the entire year.
8. At each Base Generation amount, the annual LOLE is determined and the percent increase in risk from the reference annual LOLE is calculated.

9. The Base Capacity Resource reliability cap is equal to the Base Generation amount at which the percent increase from the reference LOLE computed in step 5 is 10% plus the Base DR and EE cap. The Base Capacity Resource reliability cap in MW is expressed as a percent of the forecasted unrestricted peak.

**Procedure for Establishing Maximum Product Quantities (or Caps) at the LDA Level**

The procedure for establishing the Base DR and EE cap and the Base Capacity Resource cap for each of the LDAs that are modeled separately in RPM is identical to the procedure for the RTO detailed above with two exceptions:

- The LDA’s available internal capacity during each week is increased by the Capacity Emergency Transfer Objective (CETO). Note that the CETO is computed prior to each RPM auction so that each LDA meets an LOLE of 0.04 days/year.
- For an LDA, the LOLE risk increase under any combination of cleared Base DR and EE and Base Generation cannot be greater than 10% of 0.04 days/year (0.004 days/year).