2.3.7 Mechanical/Technical Rules

A valid generator offer consists of the following elements:

- Use startup & no-load switch, with a default value of yes (1).

- Hourly startup and no-load costs, with default values of zero.

  ◦ External resources can only submit startup and no-load costs if the entire output of the resource is available for PJM dispatch.

- Condense available switch, with a default value of no (0).

- Ramp rate, with a default value of 9999 MW/minute.

- Hourly economic max/min and emergency max/min are the unit-level economic and emergency MW limits, respectively.

- Daily minimum down time and start times, with default values of zero.

- Daily minimum run time and notification time for the Day-ahead Market, with the ability to update the hourly values for use in Real-time commitment and dispatch. The default values will be zero.

- Daily notification time for Day-ahead energy commitment, with a default value of zero.

- Hourly notification times for use in Real-time commitment and dispatch, as well as for commitment of Non-Synchronized Reserve and 30-Minute Reserve in Day-ahead Market. The default values will be zero.

- Daily maximum run time and maximum number of starts per week, with default values of infinity.

- Use offer slope switch, with a default value of no (0).

- Hourly incremental offer curves, with default value of $0. If the last MW point on the segment curve is less than the maximum emergency limit, then the curve is extended up to the emergency maximum limit using zero slope from the last incremental point on the curve.

- For those parameters that are allowed to vary hourly, in the absence of overrides specifying separate values for each hour (hourly differentiated offer data), the daily offer value is used.

- In order to qualify for exempt or bonus MW during a Performance Assessment Interval, in accordance with PJM Manual 18: PJM Capacity Market, Section 8.4A Non-Performance Assessment, each generation resource must have at least one available schedule. Each offer must have the following:

  ◦ Economic Minimum value (zero or non-zero value).

  ◦ Economic Maximum value (zero or non-zero value).

  ◦ Emergency Maximum value (zero or non-zero value).

  ◦ At least one segment on the incremental offer curve.

Valid offers for a Generation Capacity Resource consists of a parameter limited price-based schedule (if the resource is price-based) and at least one cost-based schedule.

Valid offers for a non-Capacity Generation Resource consists of a price-based schedule (if the resource is price-based) and at least one cost-based schedule.

Valid offers for demand bids, price sensitive and fixed, consist of the following items:

- MW, with a default value of 0 MW. Demand bids should not include losses.

- Location (transmission zone, aggregate, or single bus).Price at which the demand shall be curtailed (for price-sensitive bids).

9.1 Hourly Schedule Adjustments

At times Market Sellers may benefit from having the ability to differentiate and update their offers and other associated parameters, on an hourly basis to more accurately reflect their true cost of generation or account for other operating conditions. This section discusses the timing, parameters, and process for updating schedules for use in the Real-time Energy Market.

Generation and Demand Resources may alter their offers for use in the Real-time Energy Market during the following periods (Real-time update periods):

- During the Generation Rebidding Period which is defined from the time PJM posts the results of the Day-ahead Energy Market until 14:15.

- Starting at 18:30 (typically after the Reliability Assessment and Commitment (RAC) Run is completed) and up to 65 minutes prior to the start of the operating hour (T-65 min).

The following generation offer parameters may be updated during the Real-time update periods, with exceptions as noted below:

- Incremental Offer Price

  ◦ For Price-based offers, the Incremental Offer Price may be increased or decreased for uncommitted hours, but may only be decreased for committed hours. When determining whether an update constitutes an increase or decrease, each segment of the updated offer curve will be compared to each segment of the incremental offer curve that existed for the schedule and hour at the time the resource most recently received a commitment for that hour.

  ◦ For Cost-based offers, the Incremental Offer Price may be increased or decreased for both committed and uncommitted hours.

- Incremental Offer MW

  ◦ During the Generation Rebidding Period, Offer MW may only be updated for hours that did not receive a commitment in the Day-ahead Market.

  ◦ Following the close of the Generation Rebidding Period, no updates to the Offer MW may be made, regardless of resource commitment status.

- Emergency Minimum and Maximum MW Limits

◦ These parameters are not subject to the T-65 min update deadline and may be updated through the end of the operating hour to which the updates apply.

• Economic Minimum and Maximum Limits

◦ These parameters are not subject to the T-65 min update deadline and may be updated through the end of the operating hour to which the updates apply.

• Startup Cost (Cold, Intermediate, Hot) and No-Load Cost

◦ Cost-based Startup and No-Load values (on either a Price-based or Cost-based schedule) may be increased or decreased for both committed and uncommitted hours.

◦ Price-based Startup and No-Load values may not be updated outside of the open enrollment periods as specified in Section 2.3.3 of this Manual.

• Minimum Run Time

◦ Hourly differentiated Minimum Run Time values are only considered for use during Real-time commitment and dispatch.

◦ Minimum Run Time may not be updated for any hour that has received a commitment in the Day-ahead or Real-time Market.

• Notification Time

◦ Hourly differentiated Notification Time values are ~~only~~ considered for use during Real-time commitment and dispatch.

◦ Hourly differentiated Notification Time values submitted before Day-ahead Market closes are considered for commitment of Non-Synchronized Reserve and 30-Minute Reserve in Day-ahead Market.

• Ramp Rate

◦ MW Limits

▪ Following the close of the Day-ahead bidding window, no updates to the Ramp Rate MW Limits are permitted.

◦ Ramp Rates

▪ Hourly differentiated Ramp Rates may be updated for both committed and uncommitted hours.

• Schedule Availability

◦ During the Generation Rebidding Period, Schedule Availability may only be updated for schedules that did not receive a commitment in the Day-ahead Market.

◦ No updates to Schedule Availability may be made following the close of the Generation Rebidding Period, regardless of schedule commitment status, except for dual fuel resources.

▪ Resources designated as "Dual Fuel Capable" in Markets Gateway may submit hourly differentiated schedule availability for Cost-based schedules following

the close of the Generation Rebidding Period, for uncommitted hours only, in order to communicate fuel availability.

- • Switch to Cost Schedule Flag

    ◦ May not be updated during the Generation Rebidding Period.

- • Any hourly updates made to the Offer Updates or Detail Updates pages of Markets Gateway supersede the daily values on the Offer and/or Detail pages. Hourly updates made on the Offer Updates or Detail Updates pages are not automatically carried over into the next operating day.

The following Demand Resource offer parameters may be updated during the Real-time update periods, with exceptions as noted below:

- • Incremental Offer Price

    ◦ Offer Price may not be updated for any hour that has received a commitment in the Day-ahead or Real-time Market.

- • Incremental Offer MW

    ◦ During the Generation Rebidding Period, Offer MW may only be updated for hours that did not receive a commitment in the Day-ahead Market.

    ◦ No updates to Offer MW may be made following the close of the Generation Rebidding Period, regardless of resource commitment status.

- • Economic Minimum and Maximum MW Limits

- • Shutdown Cost

    ◦ Shutdown Cost may not be updated for any hour that has received a commitment in the Day-ahead or Real-time Market.

- • Minimum Down Time Limit

    ◦ Hourly differentiated Minimum Down Time is only considered for use during real-time commitment and dispatch.

    ◦ Minimum Down Time may not be updated for any hour that has received a commitment in the Day-ahead or Real-time Market.

- • Notification Time

    ◦ Hourly differentiated Notification Time is only considered for use during Real-time commitment and dispatch.

- • Any hourly changes made on the Offer Updates or Hourly Updates screens in Markets Gateway supersede the values on the Offers and Parameter pages.

The following Hybrid Resource and ESR participation model offer parameters may be updated during the Real-time update periods, with exceptions as noted below:

- • Mode selection (charge, discharge, continuous, unavailable, intermittent)

- • Economic Minimum and Maximum Charge Limits

◦ These parameters are not subject to the T-65 min update deadline and may be updated through the end of the operating hour to which the updates apply.

• Economic Minimum and Maximum Discharge Limits

◦ These parameters are not subject to the T-65 min update deadline and may be updated through the end of the operating hour to which the updates apply.

• Emergency Minimum and Maximum Charge Limits

◦ These parameters are not subject to the T-65 min update deadline and may be updated through the end of the operating hour to which the updates apply.

• Emergency Minimum and Maximum Discharge Limits

◦ These parameters are not subject to the T-65 min update deadline and may be updated through the end of the operating hour to which the updates apply.

• Hourly state of charge (for informational purposes only)

◦ This parameter, in megawatts (MW), is managed by the participant and manually entered to reflect the state of charge for an ESR. This data is optional and will only be used for PJM research purposes.