

DRAFT Manual Changes for Proposed addition of 2 new Economic DR parameters

Manual 11**10.3 Economic DR Energy Market Participation**

Qualified CSPs may offer the load reductions of demand resources into the Day-ahead and/or Real-time Energy Market pursuant to the PJM Manuals, Markets Gateway User Guide, and the following rules and requirements.

CSPs that would like to participate in the Energy Market shall submit a bid for each Demand Resource (registration or dispatch group) which includes:

- Transmission zone and pricing point based on where the Demand Resource is located and the associated pricing point used to settle the load in the retail market and as defined by PJM.

- Demand Resource market type which determines how the bid is utilized by the Energy Market:

- o Day-ahead Market – If an hour clears in the Day-ahead Market then the Demand Resource should respond with associated MW. PJM does not dispatch in Real-time for hours that clear in Day-ahead Market.

- o Real-time Market (Balancing) – The Demand Resource should follow the Real-time dispatch signal for the MW that have been dispatched.

- o Both:

- If specific hour clears in Day-ahead Market then the Demand Resource should respond with associated MW. PJM does not dispatch in the Real-time market for hours that clear in the Day-ahead Market.

- If an hour does not clear in Day-ahead Market then the hour is eligible to be dispatched in the Real-time Market.

- Hourly Incremental Offer curve (minimum increments of 0.1MW) may represent up to ten (10) combinations of MW load reduction and offer price. This determines the price offered into the Day-ahead Market for respective MW amount in each hour and the price offered for dispatch in the Real-time Market.

- CSPs may only submit an energy offer greater than \$1,000/MWh for an Economic DR resource if the CSP has verified that the end use customer's incremental cost for each offer is greater than \$1,000/MWh pursuant to the DR Validation Process.

- o The offer must be equal to or less than the end use customer(s)' incremental cost.

- o CSP verified energy offers greater than \$1,000/MWh and less than or equal to \$2,000/MWh are eligible to be used in the calculation of the applicable LMP as defined in the Tariff.

- o Energy offers with CSP verified incremental costs greater than \$2,000/MWh are compensated through Operating Reserves.

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

- Changes made on the DR Updates pages of Markets Gateway are not carried over into the next day.

The hourly availability which determines the specific hours when the Demand Resource may be cleared in the Day-ahead Market and the associated MW volume that is available to clear for each hour. This also determines the specific hours when the Demand Resource may be dispatched in the Real-time Market and the associated MW volume that may be dispatched for each hour.

- Economic Minimum and Maximum MW used to determine the dispatch of Demand Resources in the Real-time Energy Market can be changed up to 65 minutes before the operating hour by the CSP. For example, hourly updates for hour ending 15 which starts

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at 1400 can be changed up to 1255 during the same day.

- Shut down costs, for each period are defaulted to zero if not submitted. Shutdown costs are expressed in dollars, and represent the fixed cost associated with committing a Load Response resource. Shutdown costs may not be updated for any hours in which the resource received a commitment in the Day-ahead or Real-time Market.
 - Minimum down times for which the load reduction must be committed are defaulted to zero if not submitted. Minimum down time is expressed as a number of hours, and represents the minimum number of continuous hours for which a Load Response bid must be committed in the Day-ahead Market or dispatched in the Real-time Market. Hourly differentiated minimum down times can be specified but are only for use during Real-time commitment and dispatch.
 - Maximum down time - the maximum number of continuous hours for which a load response bid can be committed in the Day-ahead Energy Market or dispatched in the Real-time Energy Market (having reached the maximum number of continuous hours, the clearing engines will release the commitment/dispatch). Maximum down time is expressed as a number of hours, and is treated as undefined and not enforced by market clearing engine if not submitted. Hourly differentiated maximum down times can be specified but are only for use during Real-time commitment and dispatch. The maximum down time must be greater than or equal to the minimum down time parameter.
 - Minimum release time - the minimum number of continuous hours that must be between a Demand Resource's release and its next curtailment commitment in the Day-ahead Energy Market or dispatched in the Real-time Energy Market. Minimum release time is expressed as a number of hours, and is defaulted to zero if not submitted. Hourly differentiated minimum release time can be specified but are only for use during Real-time commitment and dispatch.
- Load Response bids in the Day-ahead Market or hourly MW availability in the Real-time Market should exclude losses (transmission zone losses and share of 500 kV losses). This means bids should be based on expected retail metered load reductions grossed up for line losses.
 - Day-ahead Energy Market bids and associated information must be submitted based on overall Energy Market rules and associated time line as described in this Manual.
 - Demand Resources are eligible to set Day-ahead and Real-time Energy market prices if selected as the marginal resource.

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 the Office of Interconnection posts the results of the Day-ahead Energy Market until 1415.
 - Starting at 1830 (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:

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- Incremental Offer Price
 - o 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.
 - o For Cost-based offers, the Incremental Offer Price may be increased or decreased for both committed and uncommitted hours.
- Incremental Offer MW
 - o During the Generation Rebidding Period, Offer MW may only be updated for hours that did not receive a commitment in the Day-ahead Market.
 - o 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
 - o 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

- o 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
 - o 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.
 - o 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
 - o Hourly differentiated Minimum Run Time values are only considered for use during real-time commitment and dispatch.
 - o 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
 - o Hourly differentiated Notification Time values are only considered for use during real-time commitment and dispatch.
- Ramp Rate
 - o MW Limits
 - Following the close of the Day-ahead bidding window, no updates to the Ramp Rate MW Limits are permitted.
 - o Ramp Rates
 - Hourly differentiated Ramp Rates may be updated for both committed and uncommitted hours.
- Schedule Availability
 - o During the Generation Rebidding Period, Schedule Availability may only be updated for schedules that did not receive a commitment in the Day-ahead Market.
 - o 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

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

- Switch to Cost Schedule Flag
- o 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
 - o 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
 - o During the Generation Rebidding Period, Offer MW may only be updated for hours that did not receive a commitment in the Day-ahead Market.
 - o 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
 - o 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
 - o Hourly differentiated Minimum Down Time is only considered for use during real-time commitment and dispatch.
 - o 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
 - o Hourly differentiated Notification Time is only considered for use during real-time commitment and dispatch.
- Maximum down time
 - o Hourly differentiated Maximum Down Time is only considered for use during real-time commitment and dispatch.
 - o Maximum Down Time may not be updated for any hour that has received a commitment in the Day-ahead Energy Market or Real-time Energy Market.
- Minimum release time
 - o Hourly differentiated Minimum release time is only considered for use during real-time commitment and dispatch.
 - o Minimum release time may not be updated for any hour that has received a commitment in the Day-ahead Energy Market or Real-time Energy Market.
- Any hourly changes made on the Offer Updates or Hourly Updates screens in Markets Gateway supersede the values on the Offers and Parameter pages.