



*Working to Perfect the Flow of Energy*

PJM Manual 11:

***Energy & Ancillary Services  
Market Operations***

Revision: 61

Effective Date:

Prepared by

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### 2.3.4 Minimum Generator Operating Parameters – Parameter Limited Schedules

Below is the list of business rules to require units to submit schedules that meet minimum accepted parameters.

- Pre-determined limits on non-price offer parameters for all generation resources will define limits on generation resources' non-price offer parameters under the following circumstances:
  - If the three pivotal supplier test for the operating reserve market defined by transmission constraint(s) is failed, generation resources will be committed on their Parameter-Limited Schedule, as defined below.
- The Parameter-Limited Schedule that is utilized shall be the less limiting of the defined Parameter-Limited Schedules or the submitted offer parameters.
- In the event that the PJM: (i) declares a Maximum Generation Emergency; (ii) issues an alert that a Maximum Generation Emergency may be declared (“Maximum Generation Emergency Alert”); or (iii) schedules units based on the anticipation of a Maximum Generation Emergency or a Maximum Generation Emergency Alert for all or any part of such Operating Day, generation resources will be committed on their Parameter-Limited Schedule.
- On an annual basis, PJM will define a list of minimum acceptable operating parameters, based on an analysis of historically submitted offers, for each unit class for the following parameters:
  - Turn Down Ratio
  - Minimum Down Time
  - Minimum Run Time
  - Maximum Daily Starts
  - Maximum Weekly Starts
- The following parameters<sup>2</sup> will be reviewed on an ongoing basis, via a stakeholder process, and may, at some future date, define limitations for:
  - Hot Start Notification Time
  - Warm Start Notification Time
  - Cold Start Notification Time
- Turn Down Ratio is defined as the ratio of economic maximum MW to economic minimum MW.

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<sup>2</sup> As defined in the PJM Manuals and Markets Database Dictionary.

- Market Sellers with price based generation resources will be required to submit three schedules, per Section 2.3.3 of this Manual, as follows: (1) a cost based parameter limited schedule, (2) a price based schedule, and (3) a price based parameter limited schedule. Only the cost based parameter limited schedule and the price based parameter limited schedule must follow the predefined parameters in the Parameter Limited Schedule Matrix or approved parameter exceptions.

The default values set forth in the Parameter Limited Schedule Matrix shall apply unless a generation resource is operating pursuant to an exception from the default values due to physical operational limitations that prevent the resource from meeting the minimum parameters. The Parameter Limited Schedule Matrix is found in Section 6.6(c) of Attachment K-Appendix of the Tariff and the parallel provision of Schedule 1 of the Operating Agreement found at: <http://www.pjm.com/documents/agreements.aspx>

- There are three different types of exceptions to the Parameter Limited Schedule Matrix default values:
  - **Temporary Exception** – is a one-time exception lasting for 30 days or less during the twelve month period from June 1 to May 31.
  - **Period Exception** – is an exception lasting for at least 31 days but no more than one year during the twelve month period from June 1 to May 31.
  - **Persistent Exception** – is an exception lasting for at least one year.
- The MMU shall review the Parameter Limited Schedule Matrix, included in Section 6.6(c) of Schedule 1 of the Operating Agreement annually, and, in the event it determines that revision is appropriate, shall provide a revised matrix to PJM by no later than December 31. Pursuant to section II.B of Attachment M – Appendix of the Tariff, period and persistent exception requests must be received by the MMU and PJM by no later than February 28 immediately preceding the twelve month period from June 1 to May 31 during which the exception is requested to commence. All market sellers that wish to submit a Parameter-Limited Schedule for units with physical operational limitations that prevent the units from meeting the minimum parameters may submit a request for a new exception via eMKT for evaluation. Each Market Seller seeking an exception must supply the required historical unit operating data in support of the period or persistent exception and if the exception requested is based on new physical operational limits for the resource for which historical operating data is unavailable, the Market Seller may also submit technical information about the physical operational limits for period exceptions of the resource to support the requested parameters.
- Physical operational limitations for period and persistent exceptions may include but are not limited to, metallurgical restrictions due to age and long term degradation; physical design modifications; operating permit limitations; operating limits imposed by federal, state or local regulatory requirements or insurance carrier requirements; consent decrees; manufacturer technical bulletins; or environmental permit limitations under non-emergency conditions. Each Market Seller requesting a period

or persistent exception based on new physical operational limitations for a unit may submit the technical information, required due to the unavailability of historical operating data, supporting the requested parameters, which must be based on the definition of physical operational limitations for period and persistent exceptions of the unit.

- Each temporary, period or persistent exception request will indicate the expected duration of the requested exception including the date on which the requested exception period will end. If physical conditions at the unit change such that the exception is no longer required, the Market Seller is obligated to inform PJM and the MMU and the exception will be reviewed to determine if it continues to be appropriate.
- If a request for a period or persistent exception is received by February 28, the MMU will review the exception and provide the Market Seller and PJM with a determination in writing whether the request raises market power concerns by April 1, and PJM shall provide its determination whether the request is approved or denied by no later than April 15. Should PJM require additional technical expertise in order to evaluate the exception request, PJM will engage the services of a consultant with the required expertise.
- A generation resource shall notify the MMU and PJM when the temporary exception commences and terminates and provide to the MMU and PJM within three days following such commencement documentation explaining in detail the reasons for the temporary exception, that includes:
  - Unit Name
  - Parameter Limit Requested
  - Reason for Temporary Exception Request
  - eDart ticket
  - Justification for Temporary Exception Request, including required unit operating data in support of the exception
  - Date on which the exception period will end.
- Physical operational limitations for temporary exceptions may include, but are not limited to, short term equipment failures, short term fuel quality problems such as excessive moisture in coal fired units, or environmental permit limitations under non-emergency conditions.
- In addition, physical operational limitations for temporary exceptions may include any physical operational limitation for period exceptions that arises during the annual period **from June 1 to May 31** to which period exceptions apply.
- For steam units, regardless of fuel type, the average historical values for any of the parameters as offered by the owners for the calendar year 2006 may be used in place of the values in the parameter-limited schedule matrix.

- For steam units, regardless of fuel type, the historical averages are calculated from the market based offers for market based units and from cost-based offers for units that made only cost-based offers.
- For combined cycle units:
  - If the 2006 average historical market-based offer parameters are within the limits in the parameter matrix, the unit will be limited to that 2006 historical average. If not then ii) applies;
  - If the unit was offered with market-based offer parameters for 10% or more of the days (36 days minimum) at a level at or more flexible than parameters in matrix, the unit will be limited at that level. If not the iii) applies
  - If the 2006 average historical market based offer parameters exceed the limits in the matrix (less flexible than the parameters in the matrix) then the unit will be limited to the level at which the market-based parameter was bid to the most flexible level for 10% or more of the days (36 days minimum) at that level.
- If physical conditions at the unit change such that the exception is no longer required, the market seller is obligated to inform PJM and the MMU and the exception will be terminated.
- Market sellers may indicate to PJM and the MMU those units with the ability to operate on multiple fuels. Multiple-fuel units may submit a parameter-limited schedule associated with each fuel type. All Parameter-Limited Schedules must be submitted via eMKT seven days prior to the beginning of each period beginning **June 1**. The market seller will be required to indicate to PJM which of the parameter-limited schedules are available each day by using the eMKT use max gen flag. Any exceptions required for any of the parameter-limited schedules submitted for multiple-fuel units will be required to be submitted and approved via the exception process.
- Nuclear Units are excluded from eligibility for Operating Reserve payments except in cases where PJM requests that nuclear units reduces output at PJM's direction or where a physical problem at a nuclear unit requires a risk premium and that risk premium is submitted to and accepted by the MMU. Other specific circumstances will be evaluated on a case-by-case basis by PJM and the MMU.

Market Sellers shall notify in writing the MMU and the PJM of a material change to the facts relied upon by the MMU and/or the PJM to support a temporary, period or persistent exception.

The following business rules apply to Transmission Customers:

- Transmission customers may submit external bilateral transaction schedules and may indicate willingness to pay congestion charges into either the Day-ahead Market or balancing market. In the Day-ahead Market, a transaction shall indicate

- willingness to pay congestion charges by submitting the transaction as an 'up to' congestion bid.
- 'Up to' congestion bids shall be no greater than \$50/MWh, and no less than -\$50/MWh. Any 'up to' congestion transaction that bids higher than \$50/MWh or less than -\$50/MWh will be rejected.
  - PJM will maintain an up-to date list of source/sink combinations that will be available for 'Up to' congestion bidding on the PJM OASIS.
  - Internal bilateral transactions may be designated as day-ahead or balancing market in PJM InSchedule.
  - Up-to congestion bids, increment offers, and decrement bids shall be supported in the Day-ahead Market only.
  - 'Up to' congestion bids are cleared based on the total LMP price difference between the source and the sink.