
Parameter-Limited Schedules

Current Situation

According to the current PJM Energy Market business rules, each generator may submit their operating parameters for individual units when participating in the Day-ahead and Real-time Energy Markets. Resources are scheduled and committed on the basis of prices offered for energy and related services, start-up, no-load and cancellation fees, and the specified operating parameters provided by the generator.

Issue Identification

- Treatment of submitted operating parameters during times of transmission constrained operations and/or maximum generation conditions.
- Potential of generation resources to exercise market power by altering operating parameters in order to increase operating reserves credits.

Desired Outcome

- Define operator objectives and the associated relevant market for solutions.
- Apply the defined market power test to the defined market.
- Apply market power mitigation rules only when the test indicates the potential to exercise market power.

Proposed Solution

PJM proposes pre-determined limits on non-price offer parameters for all generation resources, both exempt and non-exempt, that 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 under non-emergency conditions, generation resources, both exempt and non-exempt, will be committed on their Parameter-Limited Schedule.
- In the event that the Office of the Interconnection: (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, both exempt and non-exempt, will be committed on their pre-determined non-price offer parameters.

Parameter Limits

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

PJM will review the following parameters on an ongoing basis, and may, at some future date, define limitations for:

- Hot Start Notification Time
- Warm Start Notification Time
- Cold Start Notification Time

The operating parameters for each unit class must meet the following historically based criteria:

Turn down ratio

- The ratio of economic maximum MW to economic minimum MW equals the unit turn down ratio.
- There will be two values of the turn down ratio:
 - a summer value based on June through September data
 - a non-summer value based on October through May.
- The initial turn down ratio applicable to an individual unit will be based on the minimum of the economic minima and the maximum of the economic maxima submitted over the prior 24 months for the applicable season, if the resultant turn down ratio is greater than or equal to 90 percent of the PJM-defined unit class turn down ratio for the season.
- The initial turn down ratio will remain in place unless an exception is filed and approved.
- If the resulting unit turn down ratio is less than 90 percent of the PJM-defined unit class turn down ratio, then the unit's turn down ratio will be set equal to 90 percent of PJM-defined unit class turn down ratio.

Minimum Run Time

The submitted Minimum Run Time may not exceed the defined Minimum Run Time for the PJM-defined unit class.

Minimum Down Time

- The initial Minimum Down Time for each unit is based on the minimum of the Minimum Down Times submitted over the prior 24 months, if the resultant minimum down time is less than or equal to 110 percent of the PJM-defined unit class minimum down time.
- The initial minimum down time will remain in place unless an exception is filed and approved.
- If Minimum Down Time submitted for a unit is more than 110 percent of the PJM-defined unit class Minimum Down Time, then the unit's Minimum Down Time will be set equal to 110 percent of the PJM-defined unit class Minimum Down Time.

Maximum Starts per Week

- The initial Maximum Starts per Week for a unit will be based on the posted level for the PJM-defined unit class.
- If the maximum starts per week submitted for a unit is less than the PJM-defined unit class maximum starts per week, then the unit's Maximum Starts per Week will be set equal to the PJM-defined unit class posted Maximum Starts per Week.

Maximum Starts per Day

- The maximum starts per day will be based on the PJM-defined unit class for non-CT units. For CT units, the minimum value of maximum starts per day will be 2.

- If the number of maximum daily starts submitted by a unit is less than the PJM-defined unit class Starts per Day for a non-CT unit, or less than 2 for a CT, then the unit's Maximum Starts per Day will be set equal to the PJM-defined unit class Maximum Starts per Day for a non-CT unit and 2 for a CT.

Requirements for Establishing Parameter-Limited Schedules

Requirement for Non Exempt Units

Currently, non-exempt generation resources are required to offer at least one and may offer up to five cost based schedules, and may offer one price based schedule. Under the proposed solution, non-exempt generation resources will be required to submit an additional price schedule specifying the unit's predefined non-price parameter limits. This schedule will be identified as the unit's "parameter limited" schedule. The units cost-based schedule(s) to be used when the unit is offer-capped for transmission will also need to include the same parameters as the Parameter-Limited Schedule.

Requirement for Exempt Units

Currently, exempt generation resources are required to offer in one price schedule. Under the proposed solution, exempt generation resources will be required to submit an additional schedule specifying the unit's predefined non-price parameter limits. This schedule will be identified as the unit's Parameter-Limited Schedule.

Exception Process

Exception Process - Period

Prior to each period¹, all generation suppliers 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 requested exception to ParametersExceptions@pjm.com for independent evaluation. Each exception must be submitted to ParametersExceptions@pjm.com four weeks prior to the end of each period. Each generation supplier must supply the required historical unit operating data in support of the exception.

Physical operational limitations may include, but are not limited to, metallurgical restrictions due to age and long term degradation, physical design modifications performed as part of a life extension program, or environmental permit limitations under non-emergency conditions.

Each requested exception 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 generation supplier is obligated to inform PJM and the exception will be reviewed to determine if the exception continues to be appropriate.

PJM and the MMU will review the exception and provide the generation supplier with a decision within two weeks. All Parameter-Limited Schedules must be submitted in eMKT seven days prior to the end of each period.

¹ The definition of each period will be consistent with the bi-annual enrollment periods for the submission of start-up and no-load costs. Period 1 is defined as the period of time beginning April 1 and ending September 30. Period 2 will be defined as the period of time beginning October 1 and ending March 31.

Exception Process - Daily

On a daily basis, each generation supplier may submit notification to PJM that changed physical operational limitations at the unit require a temporary exception to the unit's parameters. Each generation supplier must supply the required unit operating data in support of the exception.

Physical operational limitations may include, but are not limited to, short term equipment failures, short term fuel problems such as excessive moisture in coal fired units, or environmental permit limitations under non-emergency conditions.

Each generation supplier will provide a date on which the exception period will end. No daily exception may continue past the beginning of the next period. Such exceptions will be accepted, but will be subject to after-the-fact review by PJM and the MMU. If physical conditions at the unit change such that the exception is no longer required, the generation supplier is obligated to inform PJM and the exception will be terminated.