Proposed Operating Parameter Definitions and Educations

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January 19, 2016

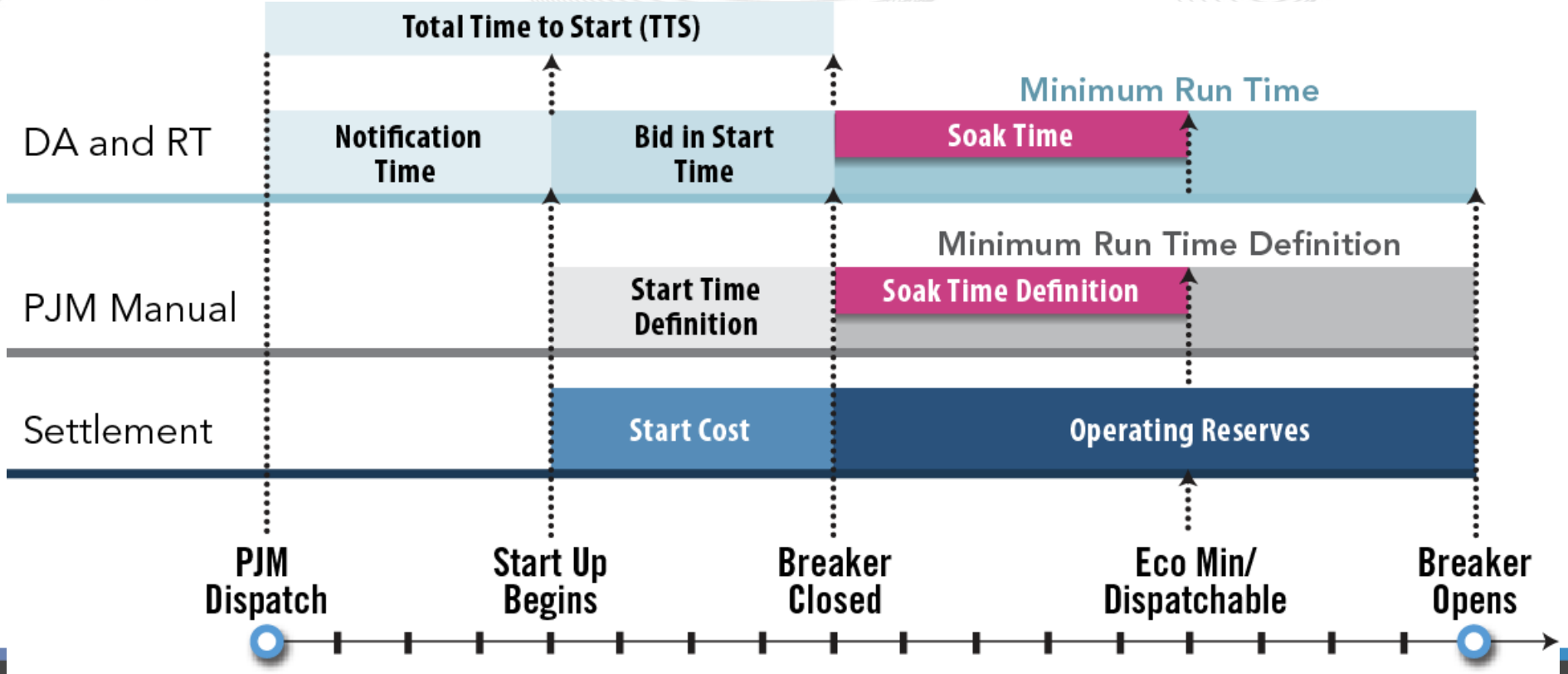
Why are we discussing?

A number of operating parameters that are only defined in the eMKT/Markets Gateway User's Guide have led to confusion among the members on what values should be entered into eMKT/Markets Gateway. PJM has also identified a few terms in Manual 15 that could be clarified.

List of Parameters

Parameter	Current Location	Likely Location
Notification Time	User Guide	M-11
Start-up Time	User Guide	M-11
Minimum Run Time	User Guide	M-11
Turn Down Ratio	User Guide	M-11
Minimum Down Time	New/User Guide	M-11
Maximum Daily Starts	User Guide	M-11
Maximum Weekly Starts	User Guide	M-11
Maximum Run Time	User Guide	M-11
Soak Time (proposed new parameter)	New	M-11/15
Start-up cost	M-15	M-15
No-load cost	M-15	M-15
Cancellation fees (cancellation credit)	M-11/28	M-11/15

Proposed Operating Parameter Relationship



Proposed Notification Time Definition

Cold/Warm/Hot Notification Time (hour) — *The time interval between PJM notification and the beginning of the start sequence of a generating unit that is currently in its cold/warm/hot temperature state.*

- *DA and RT use for scheduling units*
- *Settlements uses to determine eligibility for DASR and Operating Reserve Credits*

Proposed Startup Time Definition

Cold/Warm/Hot Startup Time (hour) — *The time interval, measured in hours, from the beginning of the start sequence to the generator breaker closure for a generating unit in its cold/warm/hot temperature state. For a Combined Cycle unit it is the time interval from the beginning of the start sequence to steam turbine generator breaker closure.*

- *DA and RT use for scheduling units*
- *Settlements uses to determine eligibility for DASR and Operating Reserve Credits*

Proposed Minimum Run Time Definition

Minimum Run Time (hour) — *The minimum number of hours a unit must run, in real-time operations, from the time of generator breaker closure to the time of generator breaker opening (as measured by PJM's state estimator). For Combined Cycle units this is the time period between the first combustion turbine generator breaker closure and the steam turbine generator breaker opening.*

- *DA and RT use for scheduling units*
- *Settlements does not use*

Proposed Turn Down Ratio Definition

Turn Down Ratio — *The ratio of a unit's economic maximum MW to its economic minimum MW. (Manual 11 section 2.3.4)*

- *DA and RT use to constrain the value of a unit's Economic Minimum entered into eMKT/Market Gateway for its Parameter Limited Schedules*
- *Settlements does not use*

User Guide Proposed Minimum Down Time Definition

Minimum Down Time (hour) — *The minimum number of hours between unit shutdown and unit startup, calculated as the shortest time difference between the unit's generator breaker opening and the unit's generator breaker closure, as measured by telemetry available to PJM. For Combined Cycles units this is the minimum number of hours between steam turbine generator breaker opening and steam turbine generator closure.*

- *DA and RT use for scheduling units*
- *Settlements uses to determine eligibility for Operating Reserves*

OC Proposed Minimum Down Time Definition

Minimum Down Time (hour) —*The down time following a shutdown that may be needed for inspecting and securing equipment to ready the plant for a subsequent startup.*

- *DA and RT use for scheduling units*
- *Settlements does not use*

Proposed Maximum Daily Starts Definition

Maximum Daily Starts — *The maximum number of times that a unit can be started in a day under normal operating conditions.*

- *DA and RT use for scheduling units*
- *Settlements does not use*

Proposed Maximum Weekly Starts Definition

Maximum Weekly Starts — *The maximum number of times that a unit can be started in one week under normal operating conditions (168 hour period starting Monday 0001 hour).*

- *DA and RT use for scheduling units*
- *Settlements does not use*

Proposed Maximum Run Time Definition

Maximum Run Time (hour) — *The maximum number of hours a unit can run before it needs to be shut down, calculated as difference between the time of generator breaker closure to the time of generator breaker opening.*

- *DA and RT use for scheduling units*
- *Settlements does not use*

Proposed Soak Time Definition

- Soak Time (hour) — *The minimum number of hours a unit must run, in real-time operations, from the time of generator breaker closure to the time the unit is at economic minimum or dispatch-able.*
  - *DA and RT use for scheduling units*
  - *Settlements use for determining eligibility for Operating Reserves*

Proposed Start-up Costs Definition

Start-up Costs ($) — *The costs incurred by a Market Seller to bring the boiler, turbine, and generator from shut-down conditions to the point of breaker closure and synchronization to the Transmission System and is determined based on the cost of start fuel, total fuel-related cost, performance factor, electrical costs (station service), start maintenance adder, and additional labor cost if required above normal station manning.*

- *DA and RT added to a unit's energy offer for comparison to other unit's offers*
- *Settlements uses for determining operating reserves*

Proposed No-load Costs Definition

No-load Costs ($/hour) — *The hourly fixed cost of a Market Seller, expressed in $/hour, needed to create the starting point of a monotonically increasing incremental cost curve (offer curve) for a generating unit.*

- *DA and RT add to a unit's energy offer for comparison to other unit's offers*
- *Settlements uses for determining energy credits and operating reserves*

Proposed Cancellation Fees Definition

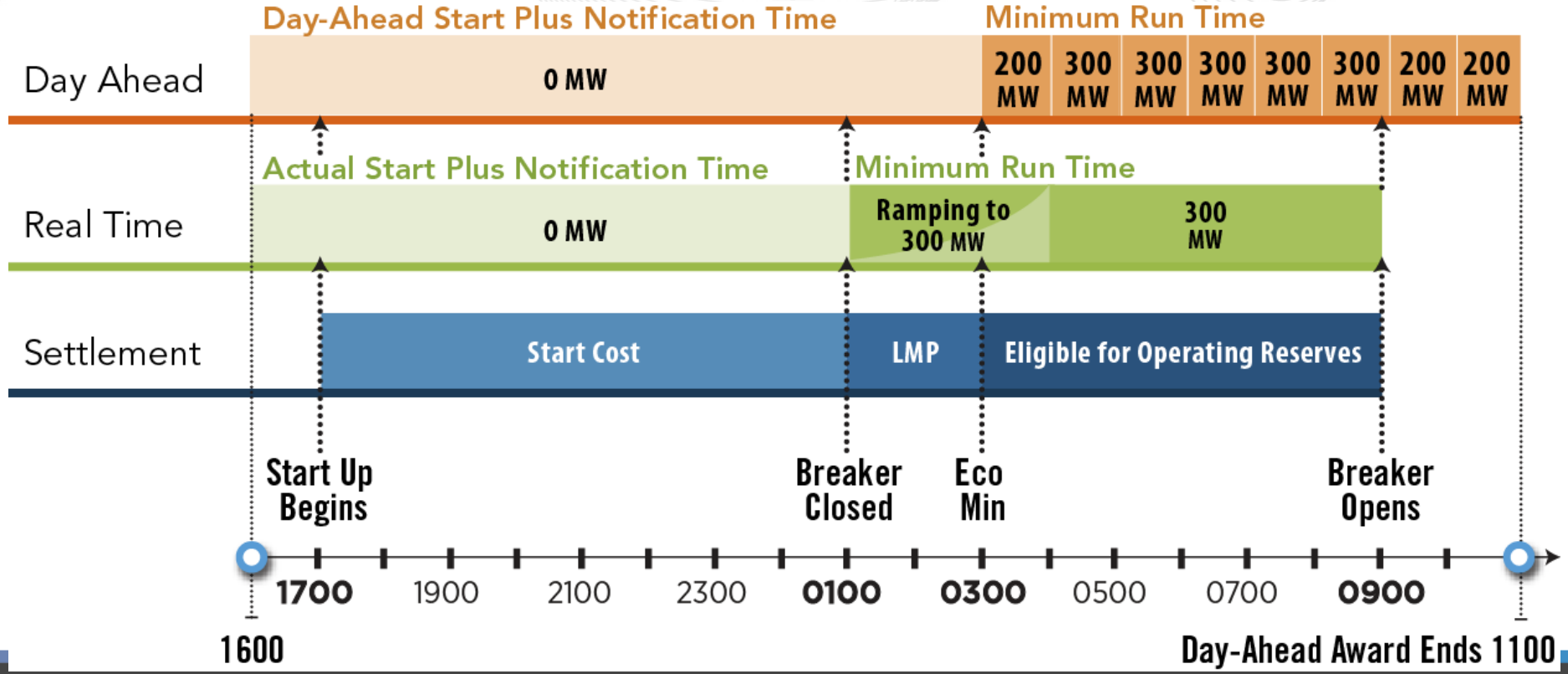
Cancellation Fees ($) — *The actual costs incurred by a Market Seller, that are typically included in Start-up Costs, when PJM cancels a pool-scheduled generation resource's start and the resource has not yet synchronized to the grid. Cancellation Fees shall be capped at the appropriate Start-up Cost for the resource as specified in its offer data.*

**Referenced in M-11 and M-28 as "cancellation credit" and "cancellation fees"*

Example – Why we need "Soak Time"

- Steam Unit needed by PJM for 6 hours for a transmission constraint starting at 0300 with the following parameters offered in DA
  - 300 MW Economic Maximum
  - 200 MW Economic Minimum
  - 1 hour notification time
  - Participant offers 10 hour start time to economic minimum in DA
    - 8 hours to breaker close & 2 hours to economic minimum
  - 8 hour minimum run

Example – without "Soak Time"



Example – with "Soak Time"