



# Updated Operating Parameter Definitions

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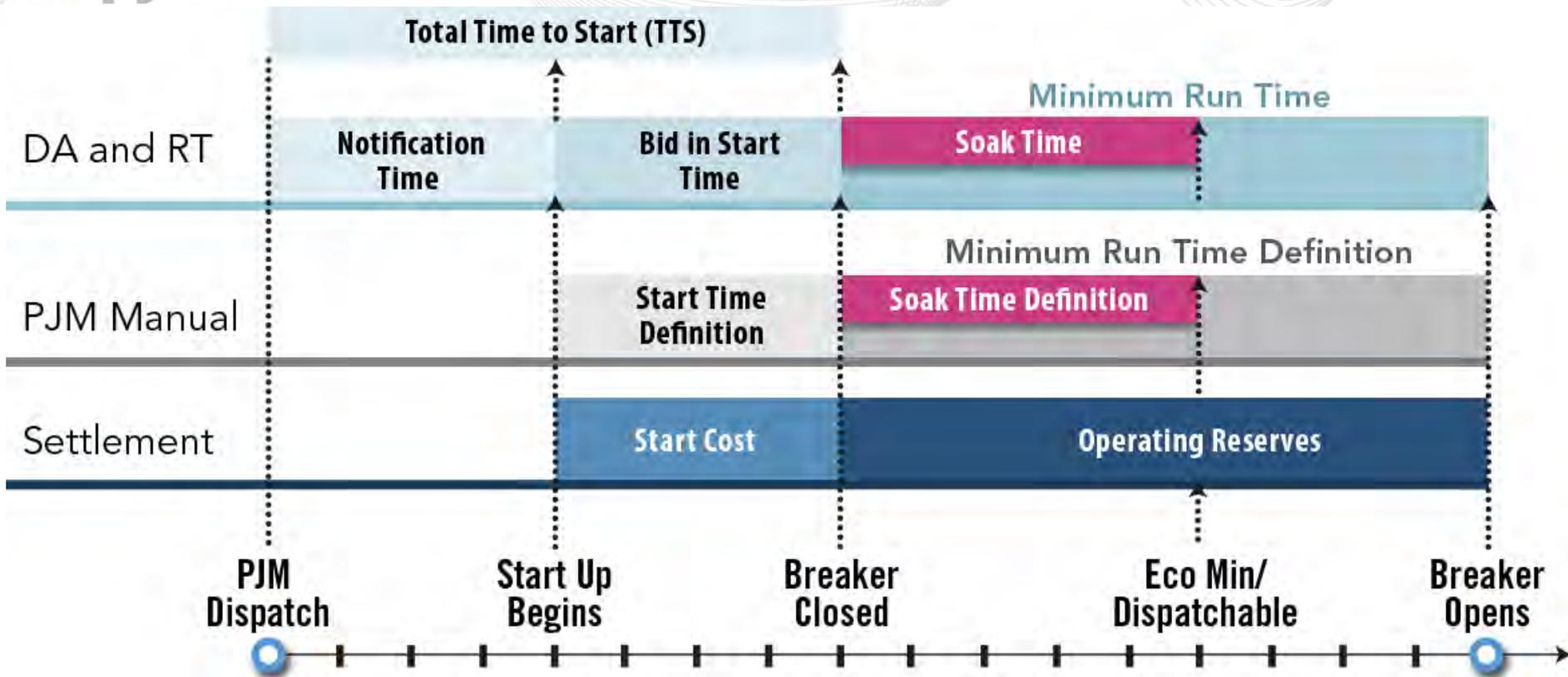
Senior Lead Engineer, Performance Compliance

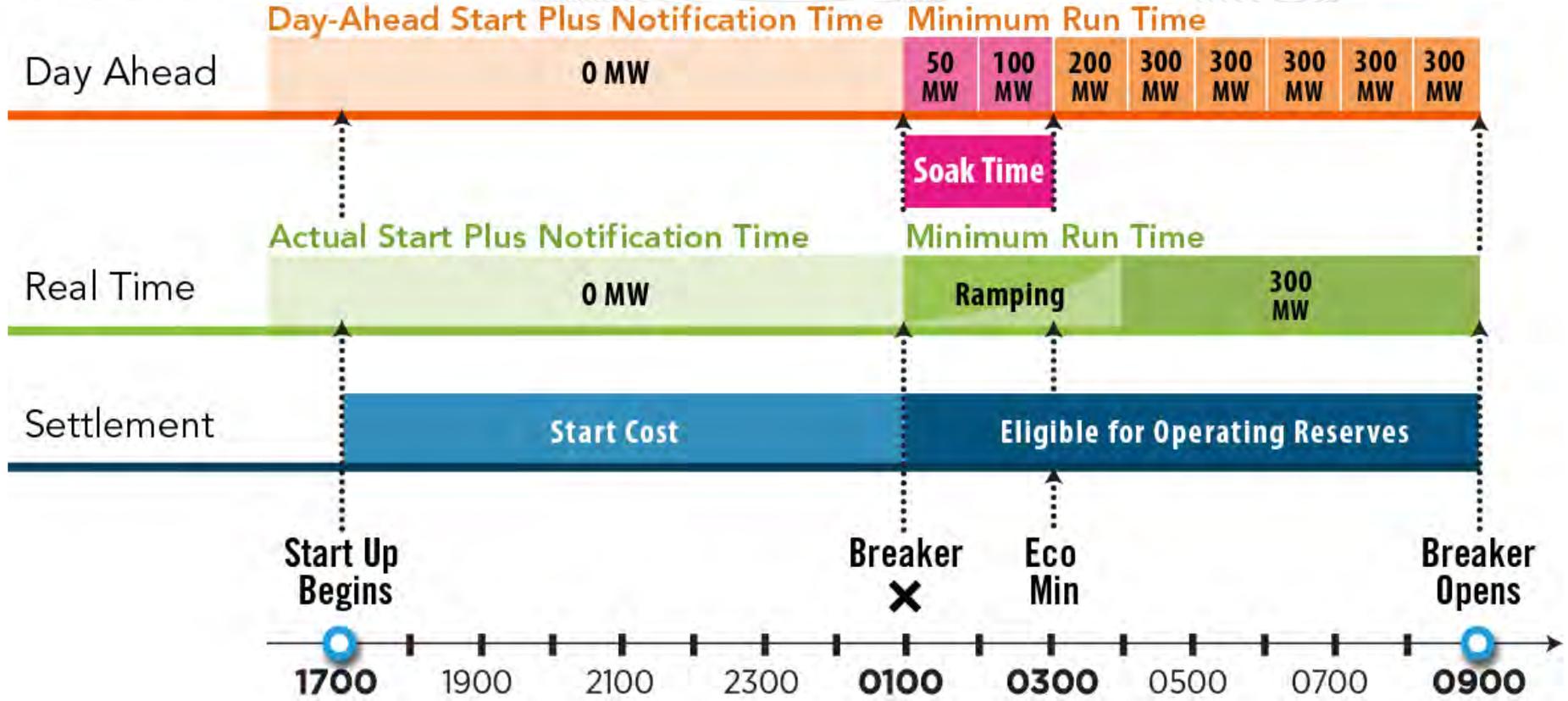
Market Implementation Committee

February 24, 2016

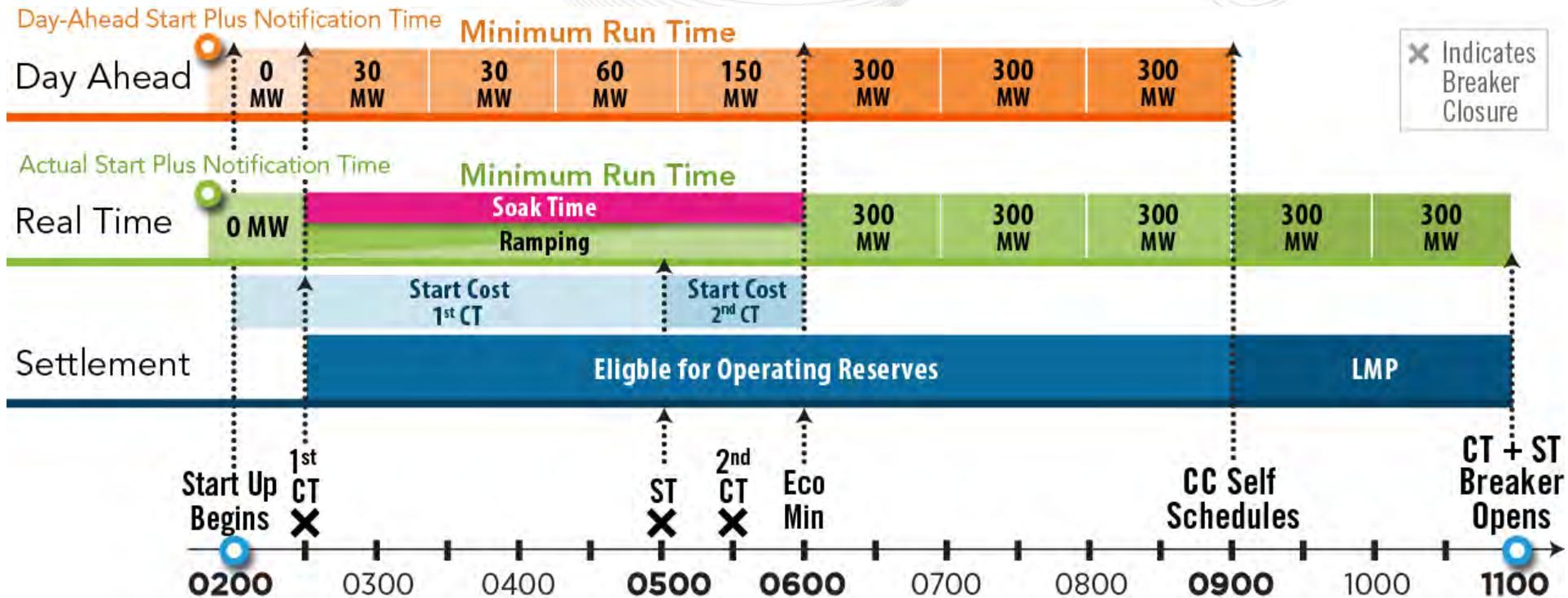
A number of operating parameters that are only defined in the eMKT/Markets Gateway User's Guide have led to confusion among the members on what values should be entered into eMKT/Markets Gateway. PJM has also identified a few terms in Manual 15 that could be clarified.

Parameter	Current Location	Definition 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
Start-up cost	M-15	M-15
No-load cost	M-15	M-15
Cancellation fees (cancellation credit)	M-11/28	M-11/28

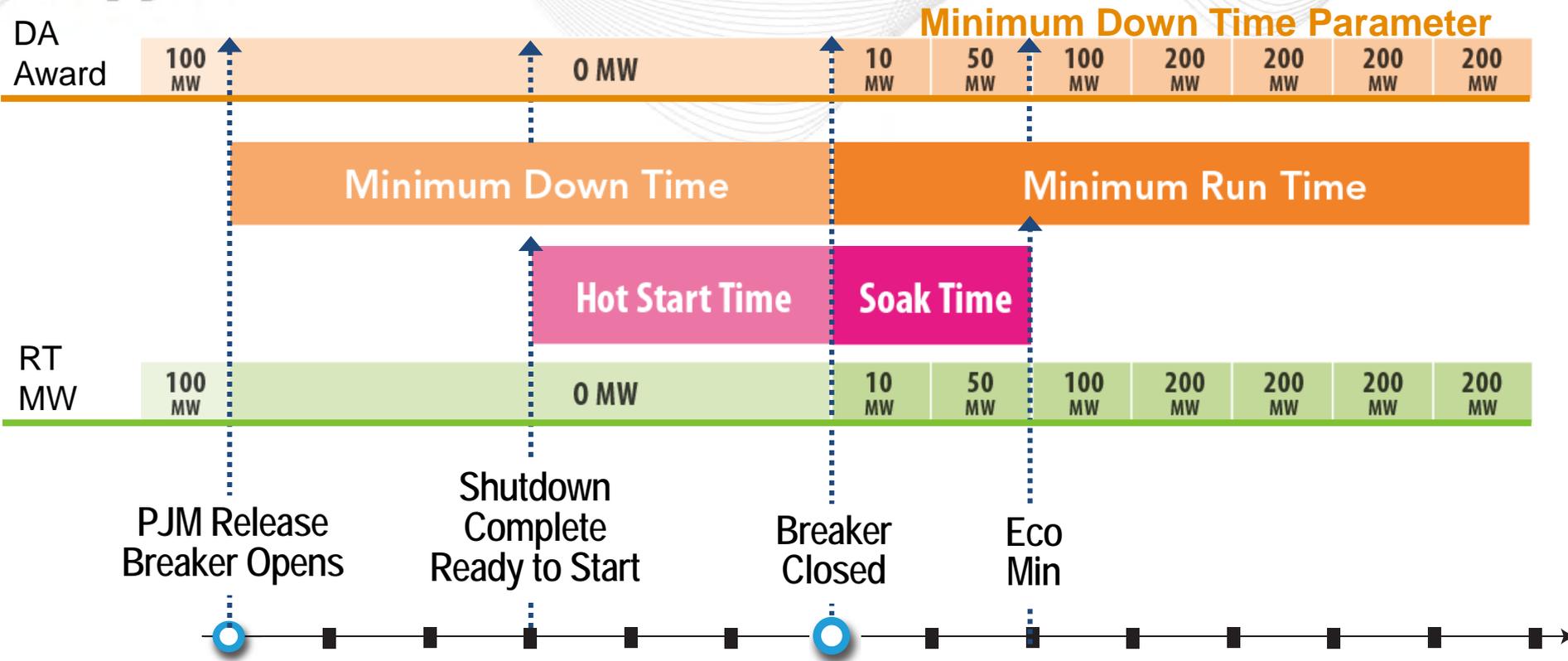




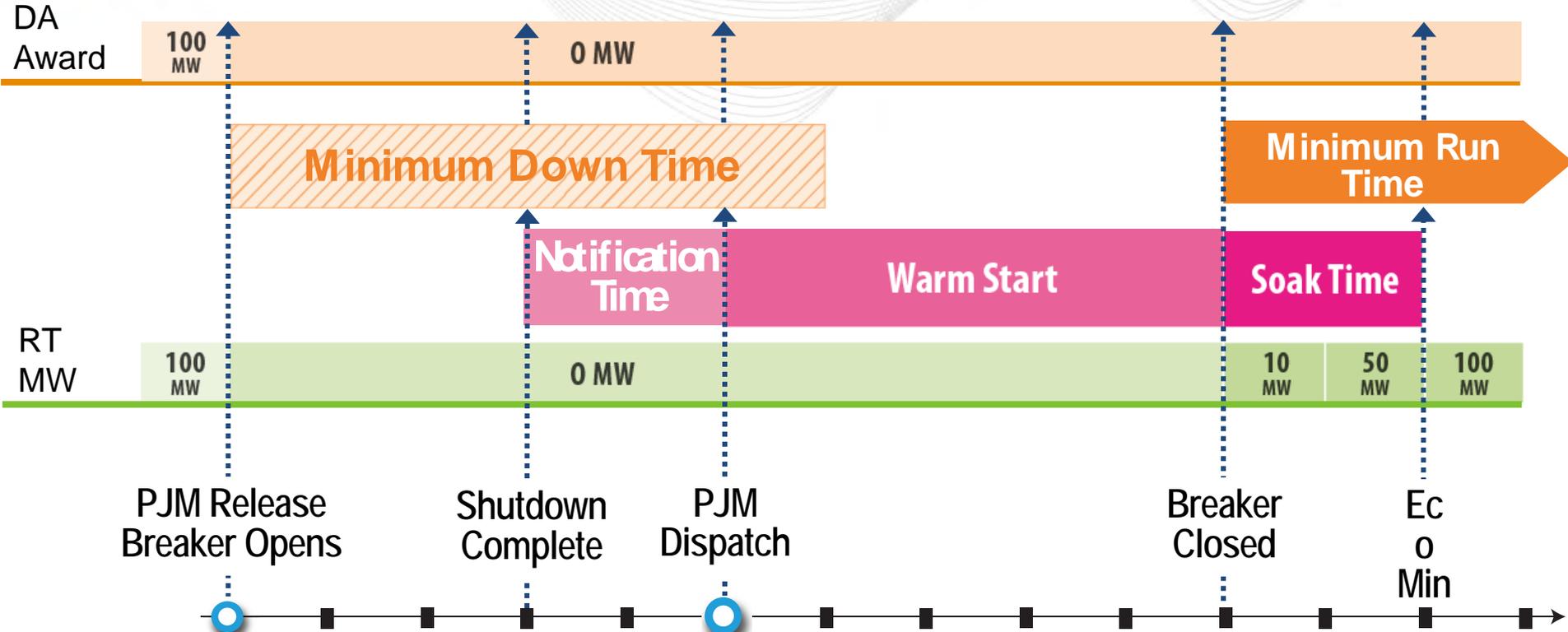
# Operating Parameter Relationship - Combined Cycle Example



# Day-Ahead Dispatch / Min Gen Event



# Real-Time Dispatch After Shutdown



**Cold/Warm/Hot Notification Time (hour)** — *The time interval between PJM notification and the **beginning of the start sequence, which includes any valve operation, startup of auxiliary equipment or beginning a checklist necessary for startup**, a generating unit that is currently in its cold/warm/hot temperature state.*

- *Replace parentheses with commas*

**Red text** are the previously presented changes to definitions in the user guide or manuals  
**Yellow highlights** incorporate additional changes due to stakeholder feedback

**Cold/Warm/Hot Startup Time (hour)** — *The time interval, measured in hours, from the beginning of the start sequence, which includes any valve operation, startup of auxiliary equipment or beginning a checklist necessary for startup, to the point after generator breaker closure when telemetered or aggregated state estimator MWs are greater than zero 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 the point after first combustion turbine steam turbine-generator breaker closure when telemetered or aggregated state estimator MWs are greater than zero.*

- *Replace parentheses with commas*
- *Added additional breaker closure wording*

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

- *Added "under normal operating conditions"*
- *Added additional breaker closure language*

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

- *This definition has already added to M11*

**Minimum Down Time (hour)** — *The minimum number of hours **under normal operating conditions** between **unit shutdown and unit startup**, calculated as the **shortest time difference** between the **unit's generator breaker opening and after the unit's generator breaker closure**, ~~as measured by telemetry available to PJM~~ **when telemetered or aggregated state estimator MWs are greater than zero**. For Combined Cycles units this is the minimum number of hours between **the last steam turbine generator breaker opening and after first combustion steam turbine generator breaker closure** ~~a~~ **when telemetered or aggregated state estimator MWs are greater than zero**.*

- *Added “under normal operating conditions”*
- *Added additional breaker closure language*

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

**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).*

**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 after the first generator breaker closure when telemetered or aggregated state estimator MWs are greater than zero to the time of the last generator breaker opening.***

- *Added “of the first” and “of the last”*
- *Added additional breaker closure language*

**Hot/Warm/Cold Soak Time (hour)** — *The minimum number of hours a unit must run, in real-time operations, from the time of **after** generator breaker closure when telemetered or aggregated state estimator MWs are greater than zero to the time the unit is ~~at economic minimum or dispatchable~~. For Combined Cycle units this is the minimum number of hours from the time just after the first combustion turbine generator breaker closure when telemetered or aggregated state estimator MWs are greater than zero and the time the unit is ~~at economic minimum or dispatchable~~.*

- Deleted "economic minimum"
- Added additional breaker closure language

**Start-up Costs (\$)** — *The **unit costs incurred by a Market Seller required to bring the boiler, turbine, and generator from shut-down conditions to the point of after breaker closure when telemetered or aggregated state estimator MWs are greater than zero** ~~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.*

- *Added “unit”*
- *Replaced “incurred by a Market Seller” with “required”*

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

- Deleted "fixed"
- Deleted "of a Market Seller"

**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 reached the point after generator breaker closure when telemetered or aggregated state estimator MWs are greater than zero ~~synchronized to the grid.~~ Cancellation Fees shall be capped at the appropriate Start-up Cost for the resource as specified in its offer data.*

- Deleted "by a Market Seller"
- Added additional breaker closure language

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