



Proposed Updates to Existing Operating Parameter Definitions

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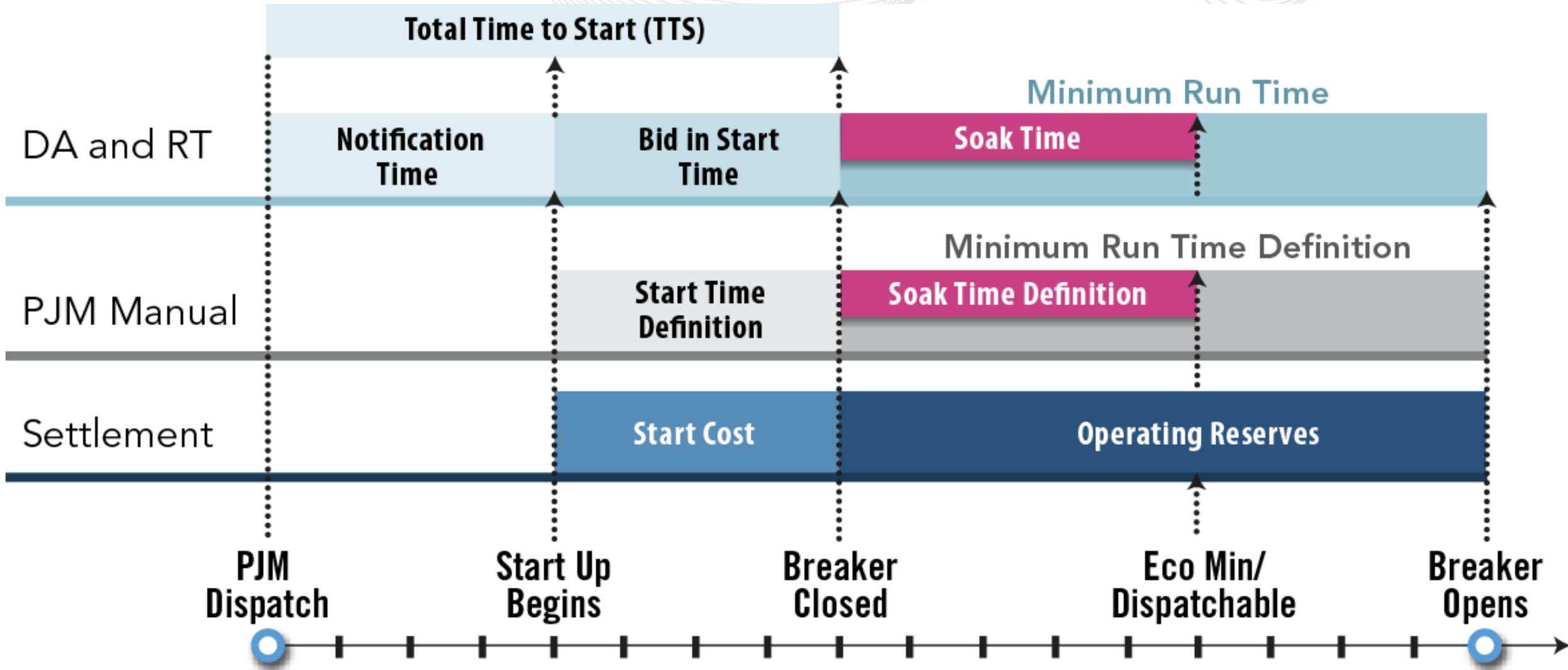
Modeling Generation Senior Task Force

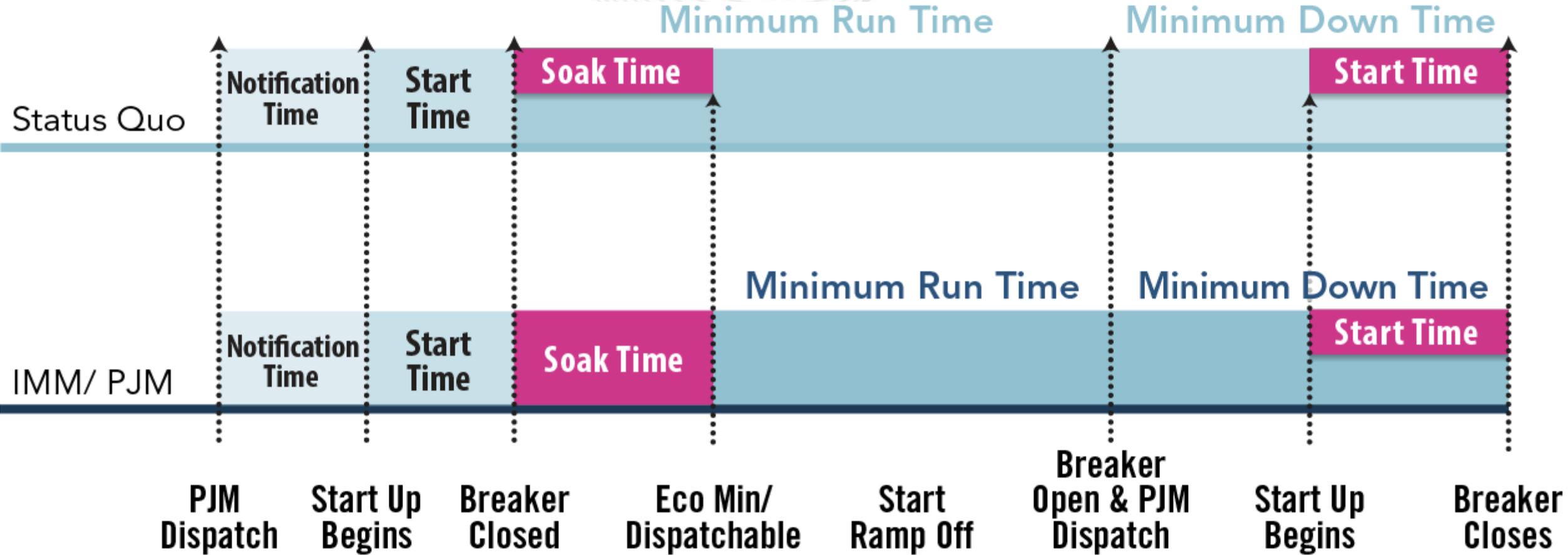
February 16, 2018



List of Operating Parameters Changes

Parameter	Status	Definition Location
Configuration	New	M11?
Transition Time	New	M11?
Transition Cost	New	M11?
Start-up Time	No Changes	M-11
Start-up Cost	Modified	M-15
Soak Time	Modified	M-11
Minimum Run Time	Modified	M-11
Minimum Down Time	Modified	M-11
Notification Time	Modified	M-11
Maximum Daily Starts	Modified	M-11
Maximum Weekly Starts	Modified	M-11
Maximum Run Time	Modified	M-11
No-load cost	Modified	M-15
Cancellation fees (cancellation credit)	No Changes	M-11/28





A Schedules:

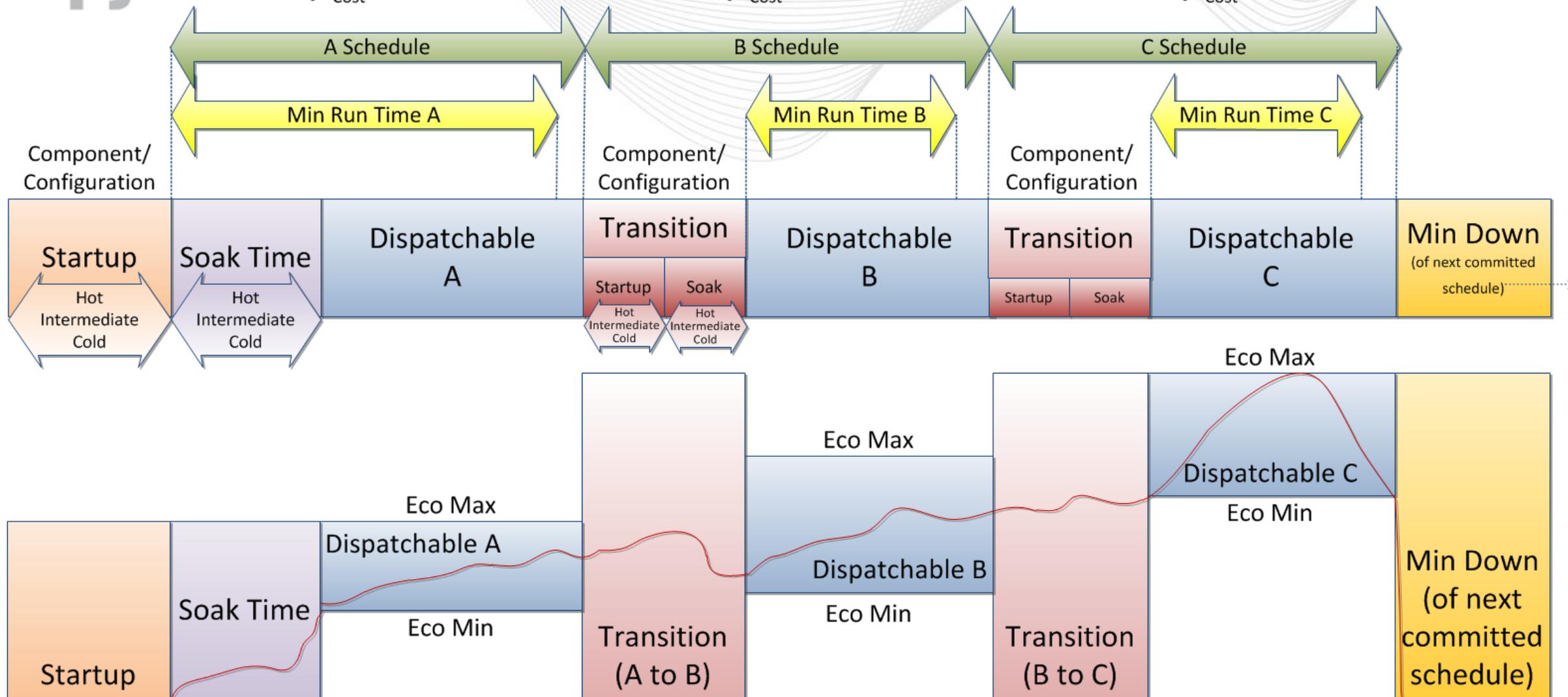
- Price
- Price PLS
- Cost

B Schedules:

- Price
- Price PLS
- Cost

C Schedules:

- Price
- Price PLS
- Cost



Configuration — *Is a physical arrangement of operating plant components. Each configuration shall have 1) distinct dispatch ranges; 2) eco min, 3) eco max, 4) minimum run time; 5) startup costs; 6) start up times; 7) & No-Load. PJM can start-up into and shutdown from any configuration.*

Transition Time (hour) — *The number of hours required, for a unit in real-time operations, to change between configurations where the unit is unable to follow PJM dispatch instructions and provide ancillary services. A unit must have already completed a start-up and Soak Time (if applicable) into a configuration before it can perform a transition. Transitions are not temperature state dependent.*

Transition Costs (\$) — *The unit costs required to transition from one configuration to another configuration and includes total fuel-related cost, performance factor, and electrical costs (station service) start maintenance adder, and additional labor cost if required above normal station manning.*

Cold/Warm/Hot Start-up Time (hour) — *The time interval, measured in hours, from the beginning of the start sequence to the point after generator breaker closure which is typically indicated by telemetered or aggregated state estimator MWs 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 generator breaker closure which is typically indicated by telemetered or aggregated state estimator MWs greater than zero. Start sequence may include steps such as any valve operation, starting feed water pumps, startup of auxiliary equipment, etc.*

Start-up Costs (\$) — *The unit costs required to bring the boiler, turbine, **and** generator **or configuration** from shut-down conditions to the point after breaker closure which is typically indicated by telemetered or aggregated state estimator MWs greater than zero 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. **Combined Cycle units include the costs for start fuel from CT fire to steam turbine generator clutching or breaker closing & pressure matching, shutdown fuel, station service and start maintenance adder, and additional labor cost if required above normal station manning. Credits for net generation during the startup and shutdown periods are debited.***

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

Minimum Run Time (hour) — *The minimum number of hours a unit **or configuration** must run, in real-time operations, from the time after the unit **or configuration** is dispatchable to the time of generator breaker opening, as measured by PJM's state estimator. For Combined Cycle units this is the time period after the unit **or configuration** is dispatchable to the time of the last generator breaker opening as measured by PJM's state estimator.*

Minimum Down Time (hour) — *The minimum number of hours under normal operating conditions between unit **or configuration** 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, which is typically indicated by telemetered or aggregated state estimator MWs greater than zero. For Combined Cycles units this is the minimum number of hours between the last generator breaker opening and after first combustion turbine generator breaker closure which is typically indicated by telemetered or aggregated state estimator MWs greater than zero.*

Cold/Warm/Hot Notification Time (hour) — *The time interval between PJM notification and the beginning of the start sequence for a generating unit **or configuration** that is currently in its cold/warm/hot temperature state. Start sequence may include steps such as any valve operation, starting feed water pumps, startup of auxiliary equipment, etc.*

Maximum Daily Starts — *The maximum number of times that a unit **or configuration** can be started in an Operating Day under normal operating conditions.*

Maximum Weekly Starts — *The maximum number of times that a unit or configuration 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 **or configuration** can run over the course of an operating day as measured by PJM's state estimator.*

No-load Costs (\$/hour) — *The hourly cost required to create the starting point of a monotonically increasing incremental offer curve for a generating unit **or configuration**.*

Cancellation Fees (\$) — *The actual costs incurred 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 which is typically indicated by telemetered or aggregated state estimator MWs greater than zero. Cancellation Fees shall be capped at the appropriate Start-up Cost for the resource as specified in its offer data.*