

# Parameter Definitions (Long Term Proposal)

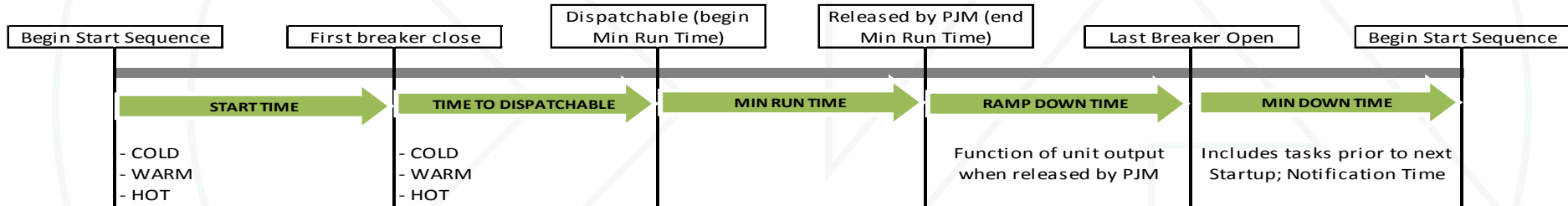
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Parameter Definitions  
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# Parameter sequence



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- **Sequential time parameters are unnested**
- **Startup Time and Time to Dispatchable are based on temperature state (Cold/Warm/Hot)**
- **Ramp Down Time is a function of the output when the unit is released by PJM**

# Startup Time Definition

- **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 first combustion turbine generator breaker closure. Start sequence includes steps such as any valve operation, starting feed water pumps, startup of auxiliary equipment.**

# Time to Dispatchable Definition

- **The time interval, measured in hours, from the generator breaker closure to dispatchable point for a generating unit in its cold/warm/hot temperature state. For a Combined Cycle unit it is the time interval from the first combustion turbine generator breaker closure to its dispatchable point. Time to Dispatchable includes any thermal soaking steps after synchronization. For Combined cycle units, Time to Dispatchable includes starting and synchronizing additional gas turbines and steam turbine.**

# Minimum Run Time

- **The minimum number of hours a generating unit must run, in real-time operations, from the time the unit is dispatchable to the time when the unit is released by PJM.**

# Ramp Down Time

- **The time interval, measured in hours, from the time when a generating unit is released by PJM to the last breaker opening.**
- **Ramp Down Time is a function of the output of the unit when released by PJM and the MW at which the last breaker opens.**

# Minimum Down Time

- **The minimum number of hours between the time of the last breaker opening and the beginning of the start sequence of a generating unit. For Combined Cycle units this is the minimum number of hours between the last generator breaker opening and the beginning of the start sequence.**



# Implementation Details

- **Implement beginning June 1, 2017**
  - **Fields in Markets Gateway**
  - **Market clearing engine model updates**
- **New data required:**
  - **MW at synchronization to accurately model output during Time to Dispatchable**
  - **Ramp rate during Time to Dispatchable**
  - **Ramp rate during Ramp Down Time**

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