



Flexible Resource Commitment Practices

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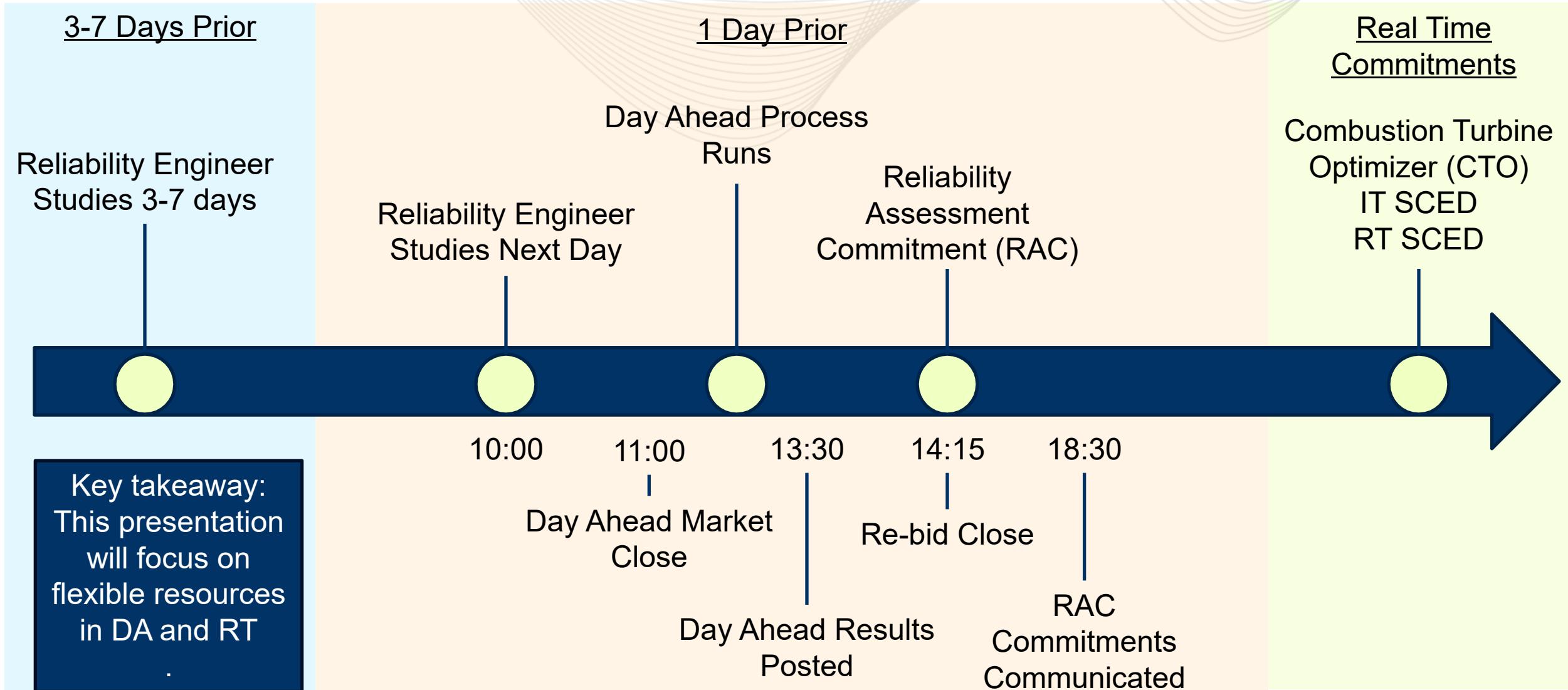
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Market Implementation Committee

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- Flexible resources are those committed in the Day-ahead Market on a schedule with a total time-to-start (TTS) 2 hours or less and a minimum run time 2 hours or less
 - TTS includes start-up and notification times
 - Market Sellers may have one Price schedule (Schedule 99), one Price PLS schedule (Schedule 79), and twelve (Schedules 1-12) cost based schedules
- Flexible resources that clear DA are not expected to run in real-time according to DA commitment
 - Reevaluated by IT SCED in real-time
 - Can be committed in real-time for reliability by Dispatch
- Flexible resources are paid LOC if they do not run in real-time

- Distinct Startup, Notification and Minimum Run times can be specified by schedule
 - Submitted as daily or hourly values
 - Ability to update hourly values post-Day Ahead Market clearing up to 65 minutes prior to the start of the Operating Hour
- Capacity Resources' Cost and Price PLS Schedules are required to comply with technology specific Minimum Unit Specific Operating Parameters or submit Unit Specific exceptions



- Resources that clear in DA on a non-flexible schedule are flagged for PJM Dispatch to coordinate the appropriate study and call-on time according to the DA commitment during the operating day.
- Resources that clear on a flexible schedule in DA are left for re-evaluation in the Real-time Market.

- Flexible resources are evaluated by IT SCED throughout the operating day to be committed for energy or constraint control
 - Intermediate-Term Security Constrained Economic Dispatch (IT SCED) executes every five minutes with four target study intervals of 30 min, 45 min, 90 min, 135 min into the future .
 - Each target intervals are solved with effective time of 15 min, 45 min, 45 min and 120 min.
 - IT SCED normally kicks off 40 min before the first target interval and a batch of three IT SCED cases are solved for the same target intervals.
 - For example, IT SCED case1, case2 and case3 kick off at 20:20, 20:25 and 20:30 respectively solving for the same target four intervals 21:00, 21:15, 22:00 and 22:45

- To be evaluated by IT SCED, a resource must have at least one schedule with TTS less than or equal to any of the IT SCED interval study time (currently up-to 2 hours)
 - If the resource is not a raise help on any transmission constraints, the resource can be committed on its price schedule, if the price schedule TTS is \leq 2 hours
 - If the resource is a raise help on any transmission constraint, it will be considered offer capped and the preferred schedule is the cheapest of all available schedules, based on Total Dispatch cost
 - Dispatch cost for the applicable hour = ((Incremental Energy Offer @ Economic Minimum for the hour [\$/MWh] * Economic Minimum for the hour [MW]) + No-load Cost for the hour [\$/H])
 - Total Dispatch cost = Sum of hourly dispatch cost over a resource's minimum run time [\$] + Start-Up Cost [\$]
 - After this preferred schedule determination, perform offline TPS Test

- If the resource fails the TPS test with a cost schedule preferred, the resource can be committed only on the cost schedule if the TTS \leq 2 hours
- If the resource fails the TPS test with a price schedule preferred, the resource can be committed only on the price schedule if the TTS \leq 2 hours
- If the resource does not fail the TPS test, the resource can be committed only on the price schedule if the TTS \leq 2 hours

Key takeaway: Flexibility across all schedules impact IT SCED commitment recommendations.

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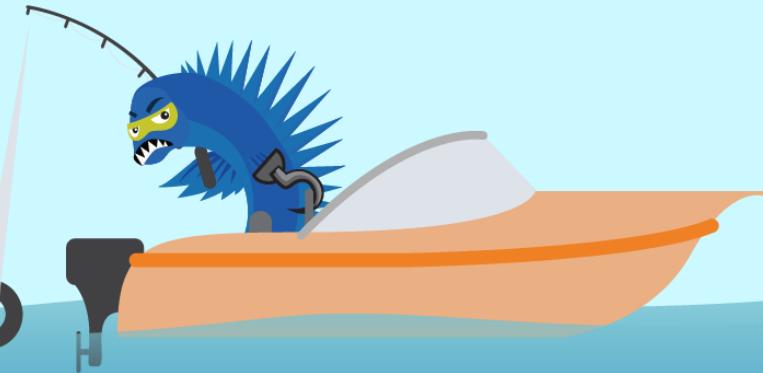
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