

Ancillary Services (AS) Commitments



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- Ancillary Services Optimizer (ASO)
 - **Inputs:** Load, Interchange, Resource bid data (Energy and AS), Dispatcher-logged constraints
 - **Output:** Regulation and Inflexible Tier 2 Synchronized Reserve (SR) resource commitments
 - **Frequency:** Solves every hour
 - **Time Horizon:** Looks ahead one hour (for one hour interval)
 - Cases approved by Dispatcher every hour
 - GE Platform, operations database

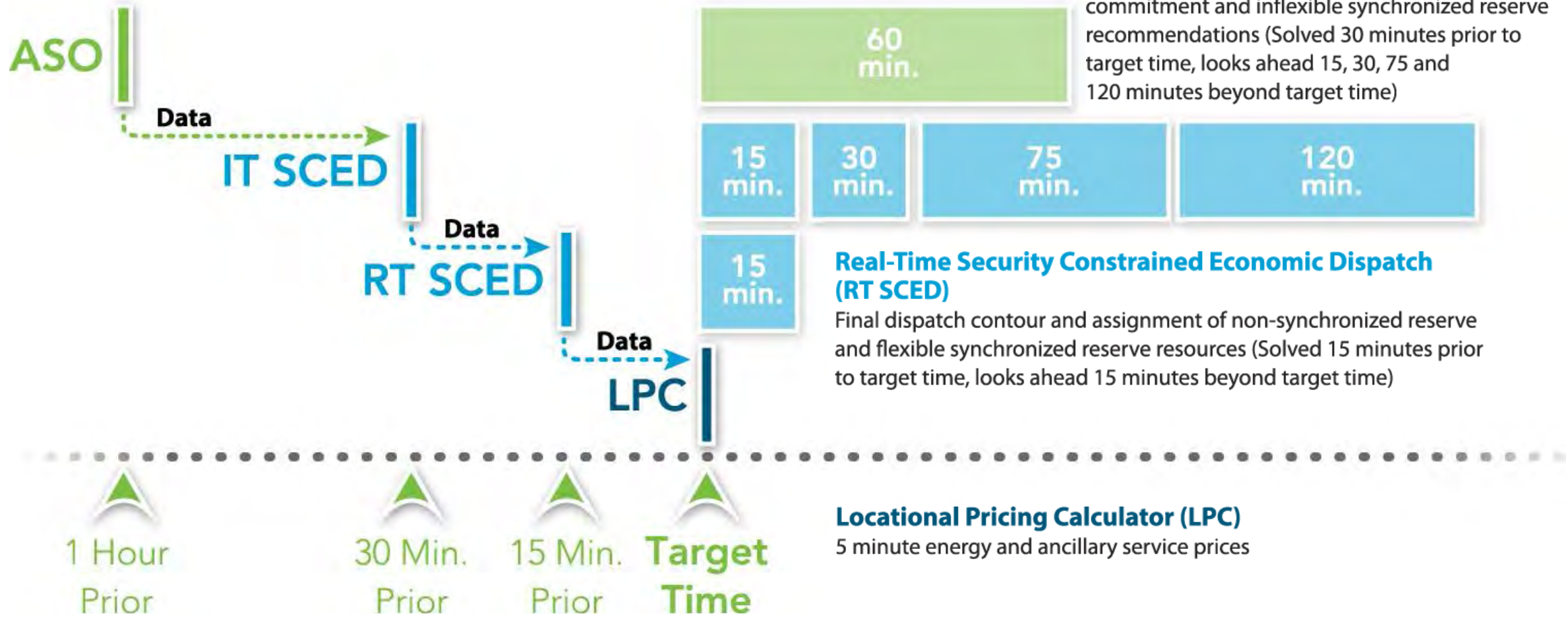
Note: Energy and AS optimization runs in all GE Platform market-clearing engines.

Ancillary Services Optimizer (ASO)

Clearing and assignment of regulation and inflexible reserve resources
 (Solved 60 minutes prior to target time, looks ahead 60 minutes beyond target time)

Intermediate-Term Security Constrained Economic Dispatch (IT SCED)

Demand Trajectory, generator loading strategy, Demand Response commitment for energy, CT commitment and inflexible synchronized reserve recommendations (Solved 30 minutes prior to target time, looks ahead 15, 30, 75 and 120 minutes beyond target time)



- **Day-Ahead** – Day-Ahead Synchronized Reserves (DASR)
- **Real-Time**
 - **ASO**
 - Regulation
 - Inflexible Tier 2 Sync Reserve *
 - **IT SCED** – (Energy and AS recommendations only)
 - **RT SCED**
 - Flexible Tier 2 *
 - Non-Synchronized Reserves *

* As needed, based on Tier 1 estimates (and Tier 2 Flexible estimates in ASO)

Appendix

Slides from “Real Time Commitment Tools” presentation:

<http://www.pjm.com/~media/committees-groups/task-forces/mgstf/20170330/20170330-item-05-real-time-commitment-tools.ashx>



- Intermediate Term (IT) SCED
 - **Inputs:** Day-ahead Market commitments, Dispatcher logged units and constraints, Load, Interchange, Resource bid data,
 - **Output:** Combustion Turbine (mostly) Recommendations
 - **Frequency:** Solves approximately every 5 minutes
 - **Time Horizon:** Looks ahead 2 hours
 - Cases are auto approved
 - GE Platform, operations database

- Real Time (RT) SCED
 - **Inputs:** Load, Interchange, Resource bid data, Dispatcher logged constraints
 - **Output:** Base Points to on-line resources
 - **Frequency:** Solves approximately every 3 minutes
 - **Time Horizon:** Looks ahead 15 minutes
 - Cases approved by Dispatcher approximately every 5 minutes
 - GE Platform, operations database

- **Inputs:** Day-ahead Market commitments, RAC commitments, Static daily constraints, Load, Interchange, Resource bid data
- **Output:** Combustion Turbine (mostly) Recommendations for resources outside IT SCED time horizon
- **Frequency:** On demand by Dispatcher 1 or more times a day
- **Time Horizon:** Current day 24 hours (01:00-24:00)
- No case approval, results are reviewed by Dispatchers
- Probe Platform, file share