



PJM Dispatch – Deploying Synchronized Reserves

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- Two Generation Dispatcher (GD) on shift 24 x 7
- Area Control Error (ACE) GD
 - SCED case approvals
 - Calling/ releasing units
 - ACE monitoring & adjusting supply to meet demand
- Ancillary Service Optimizer (ASO) GD
 - Ensures reserve & regulation objective is met
 - Assign/De-assign regulation and synchronize reserves
 - Assist ACE GD with monitoring and calling units
- Typical day the GD Operators handle about 500 phone calls in a 24 hour period



Synchronized Reserve Deployment

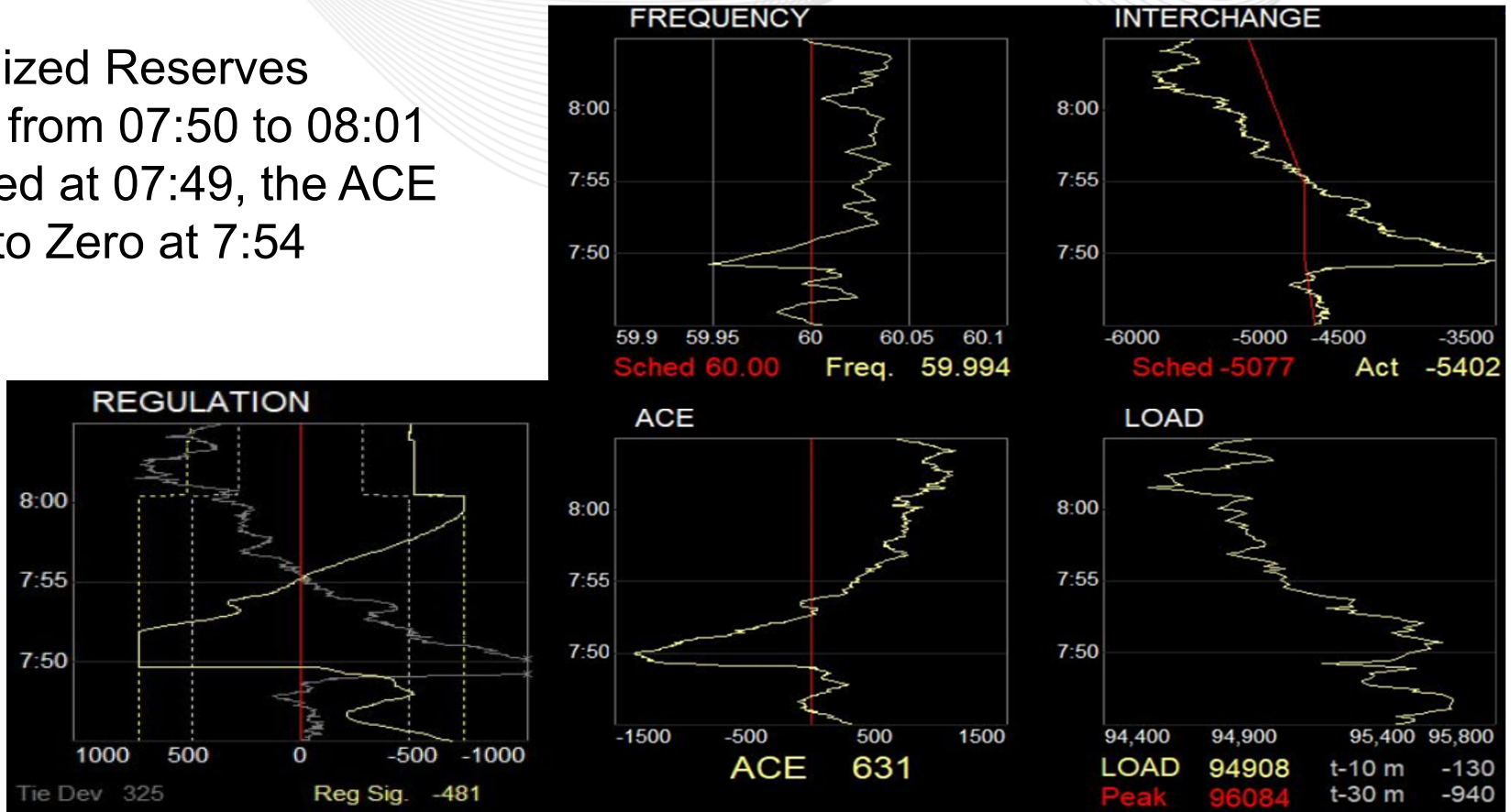
- PJM will correct for the sudden loss of generation within the PJM Balancing Area
- PJM Generation Dispatcher will make several checks before activating Synchronize Reserves
 - Time of day relative to the Load
 - Scheduled Generation coming on/off
 - Interchange Schedule changes
 - Regulation available
 - Frequency deviation
 - Tie Schedule deviation

- Sudden loss of generation
 - NERC Standard BAL-002 - Disturbance Control Standard (DCS)
 - The DCS states that ACE must return either to zero or its pre-disturbance level within fifteen minutes following the start of the disturbance
 - A Reportable Balancing Contingency Event is the lesser of 900 MWs in the Eastern Interconnection or 80 percent of the Most Severe Single Contingency
- Sustained low Area Control Error (ACE)
 - Usually occurs when there is a sudden unexpected increase in system load, or during significant Morning/Evening pickup
 - Generation slow to respond



Example - Loss of a unit loaded at 1310 MWS

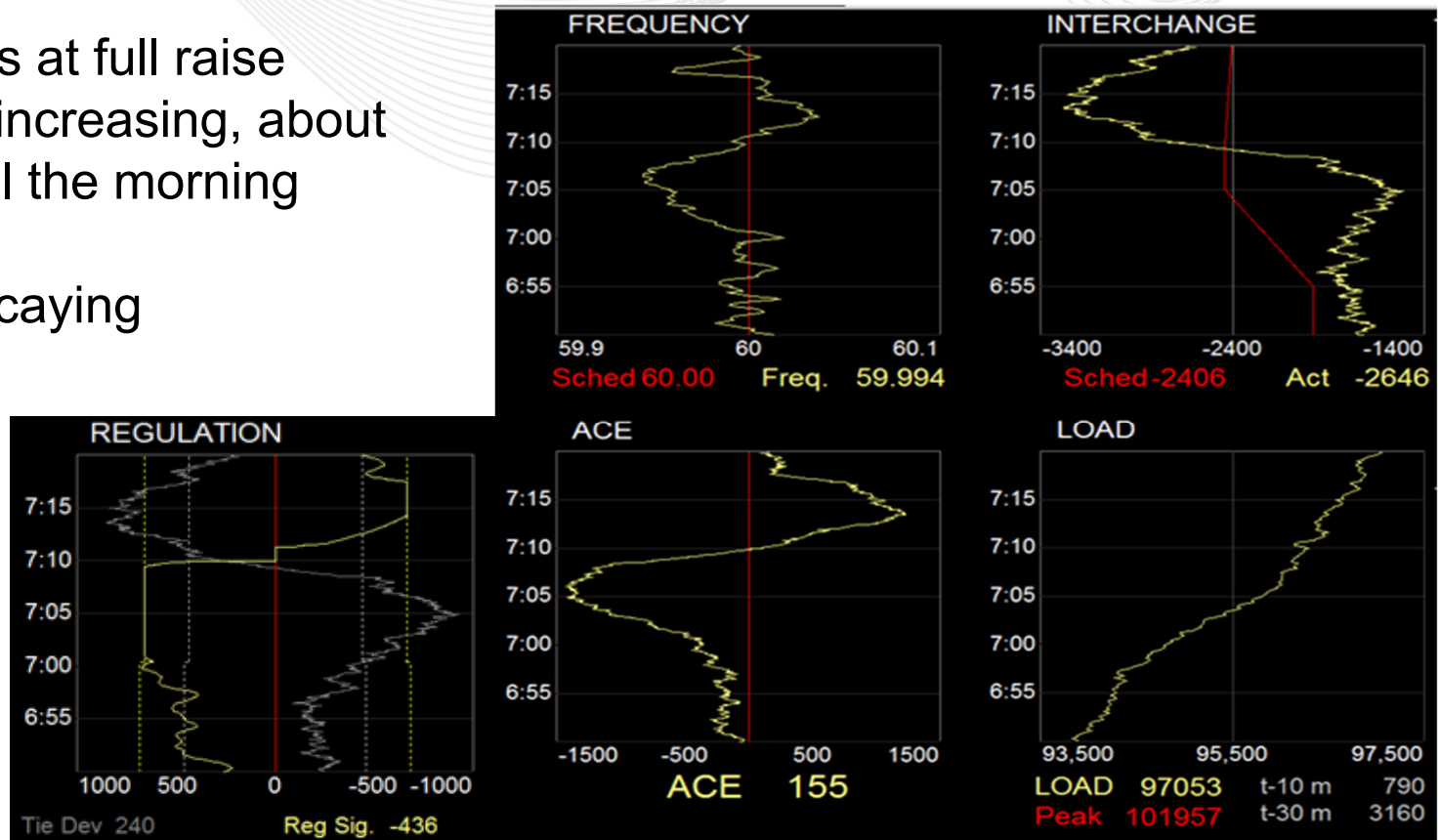
- Synchronized Reserves deployed from 07:50 to 08:01
- Unit tripped at 07:49, the ACE returned to Zero at 7:54



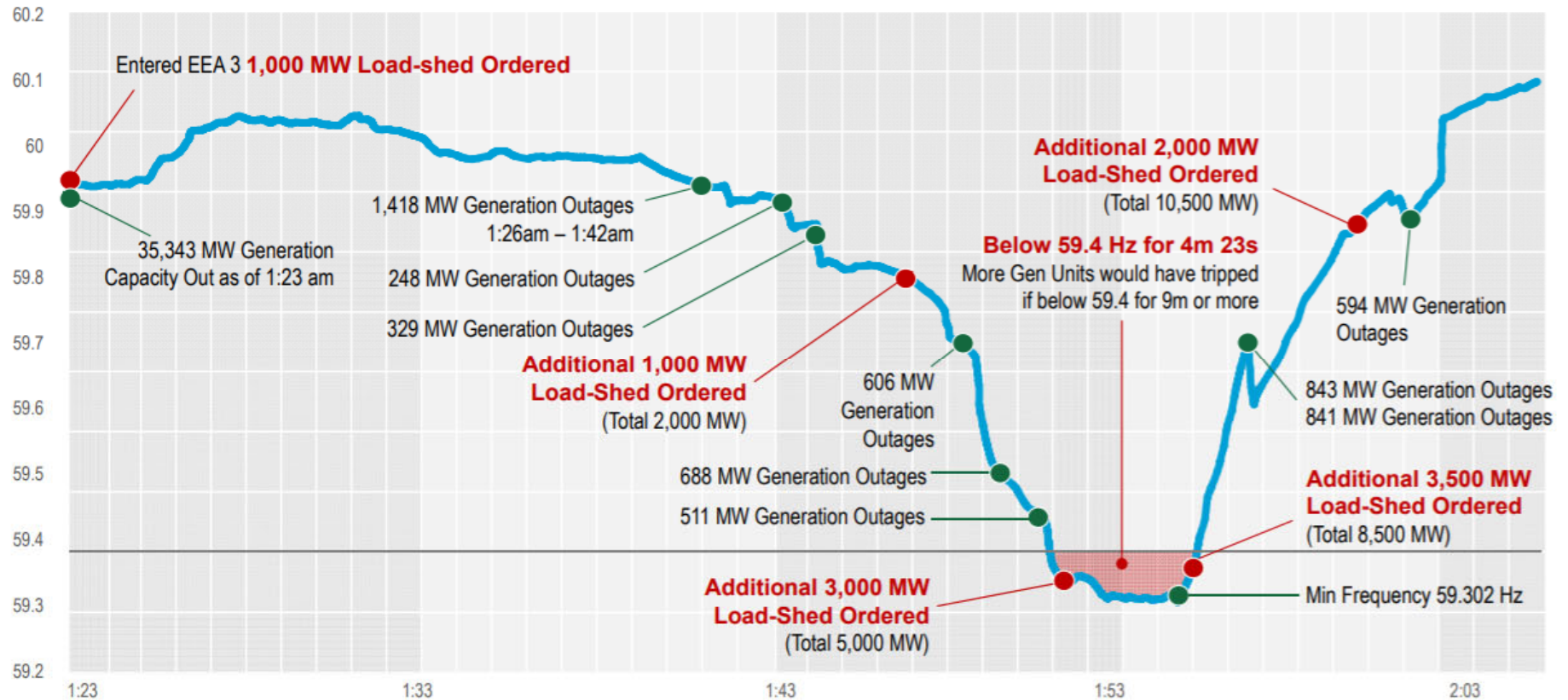


Example - Low ACE 07:06 to 07:12

- Regulation was at full raise
- Load was still increasing, about 6,000 MW until the morning peak
- Frequency Decaying



Rapid Decrease in Generation Causes Frequency Drop



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Deploying Synchronized Reserves



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