The History of Load Participation in ERCOT

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In the Beginning….

2002

- Texas Energy Markets are opened to competition
- Legacy interruptible programs are eliminated
- Large Industrial customers want to participate in Ancillary Service Markets
- Market Rules (Protocols) changed to add new type of resource called Loads acting as a Resource (LaaR)
- Instantaneous Interruptible customers transition to Responsive Reserve Service (RRS)
- 10 minute and 30 minute customers initially consider providing Non-Spinning Reserve Service but quickly transition to RRS
- Limits placed on maximum participation (25% of RRS capacity)
- Loads must meet similar requirements as generators
  - Real Time Telemetry
  - Dispatchable via a verbal dispatch instruction
 - UFR for Frequency Response

- Deployments are done for System Capacity Insufficiency and Management of Zonal and Local Congestion
- Loads must have a relatively flat load profile in order to provide RRS (batch process loads are not allowed to provide service)
- Loads must pass a qualification test to provide service
- 25% limit is raised to 33%
- Protocols are changed to create a new type of Resource called a CLR but system changes are extensive and not implemented
- Numerous deployments for Zonal and Local Congestion

- Protocols are changed to remove zonal deployments
- 33% limit is changed to 50%
- Firm Load Shed in April 2006 and first system wide deployment of LaaRs
- Some Performance Issues Identified
  – 20 minute initial response times
  – Real time telemetry issues
  – Qualification tests allow simulated testing

- Protocol changes implemented to correct issues
  - Simulated testing no longer acceptable – qualification tests must include an actual deployment
  - Tightened telemetry standards
  - Provisions added to suspend LaaRs that fail to perform
- Response times go from 20 minute timeframe to 7-8 minutes
- Tests run to demonstrate viability of CLR
- Zonal market ends in December 2010

- Nodal Market Implementation
  - Deployments now include XML message prior to the verbal dispatch instruction
  - Split deployment stack created
  - Full implementation of CLR

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Load Resources Registered and Qualified for ERCOT AS Market

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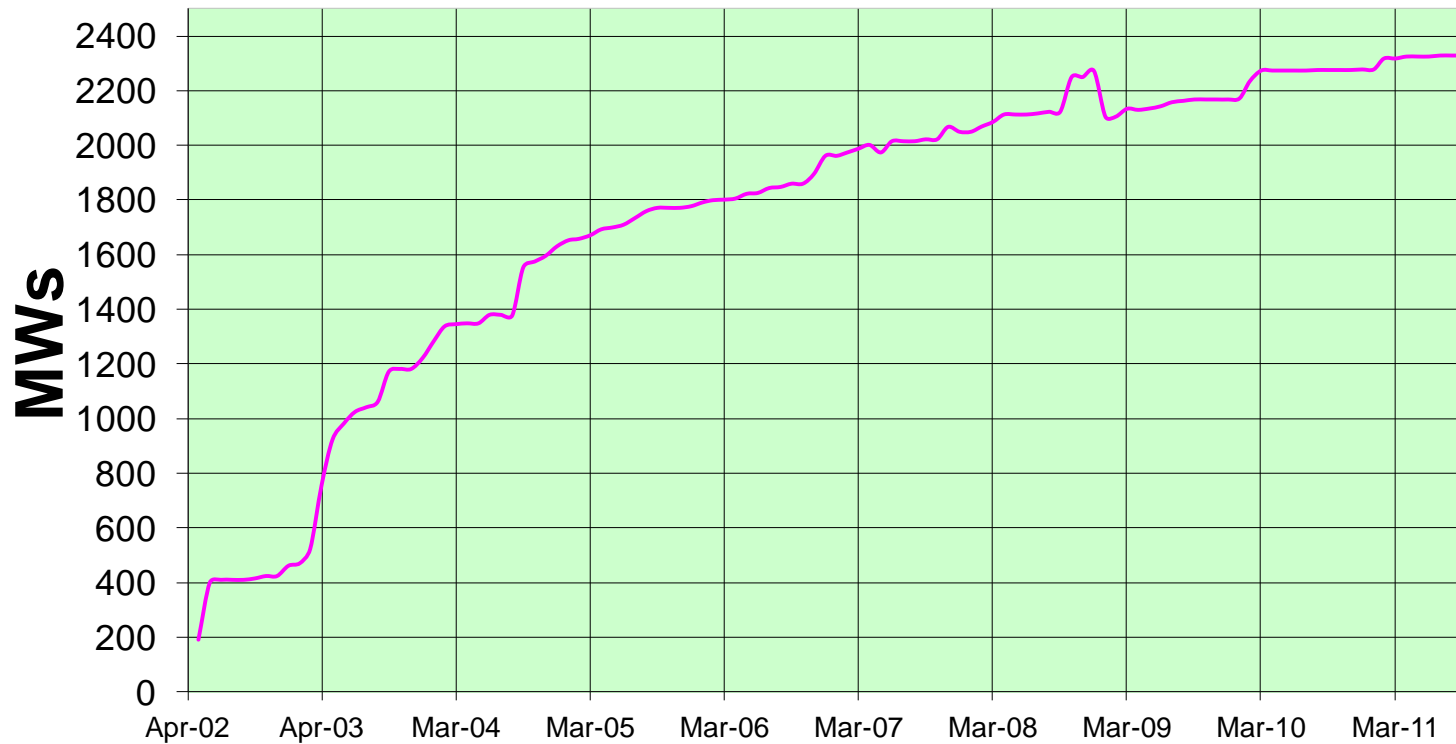
Impact of Load Resources on AS Markets

| ERCOT Load Resources Participating in Responsive Reserve Market Summary						
	2006	**2007**	**2008**	**2009**	**2010**	**2011***
Number of Participants	130	130	143	160	181	189
Registered Load (MW)	1966	2069	2153	2063	2382	2391
Load Resource RRS Awards ($ millions) *	48.4	53.2	115.8	41.6	54.1	108.3
Estimate for Total Load Resource Contribution ($ millions) **	130.0	125.7	267.9	95.5	89.5	182.9
Weighted Average Price for RRS ($)	12.93	12.61	28.68	10.17	9.03	25.27

* Represents only portion that was awarded through ERCOT AS Market Auction

** Estimate for Total Load Resource Contribution uses the weighted average price for RRS as a proxy price for self provided Load Resources
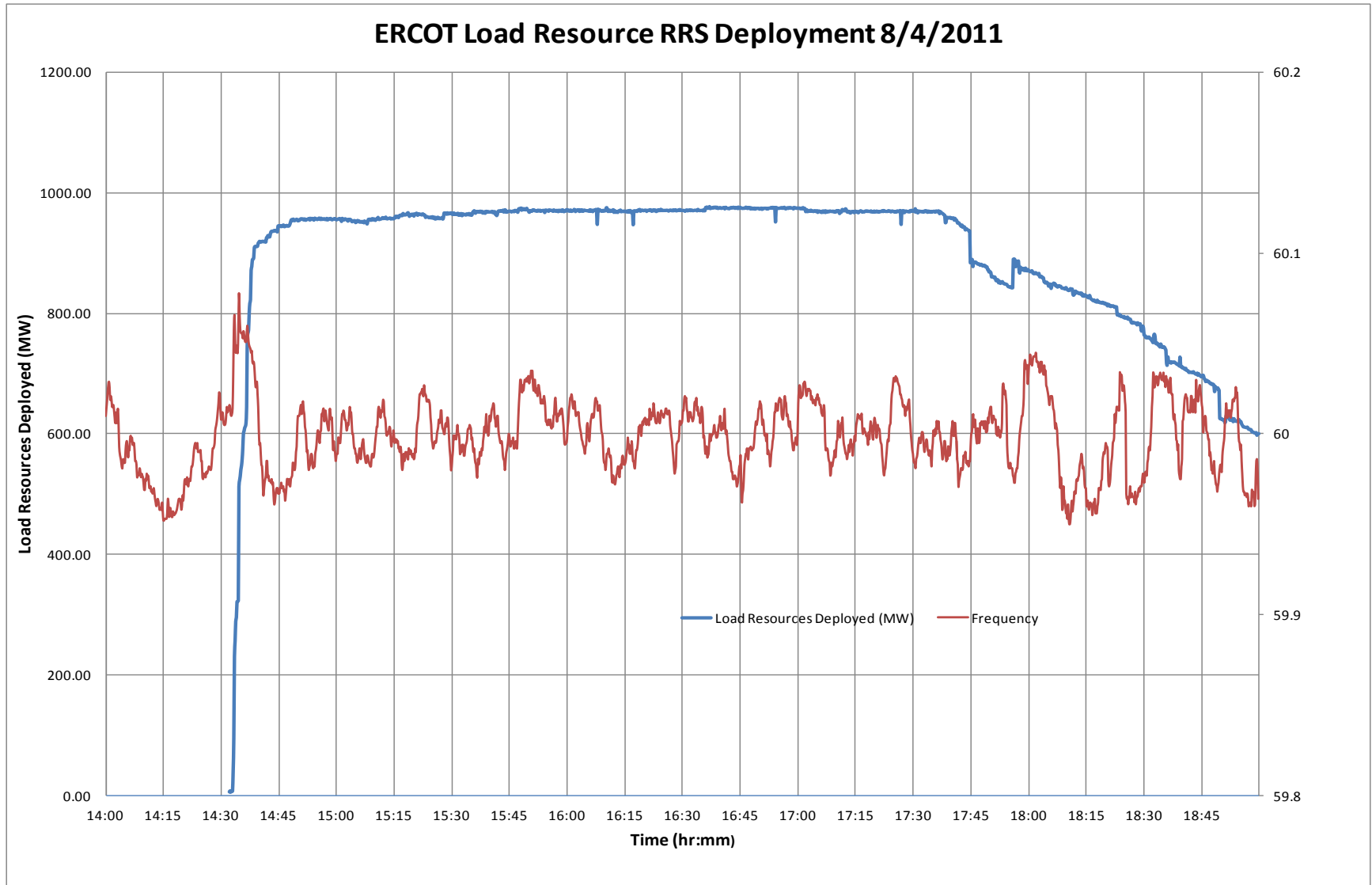
*** Results thru 9/30/2011

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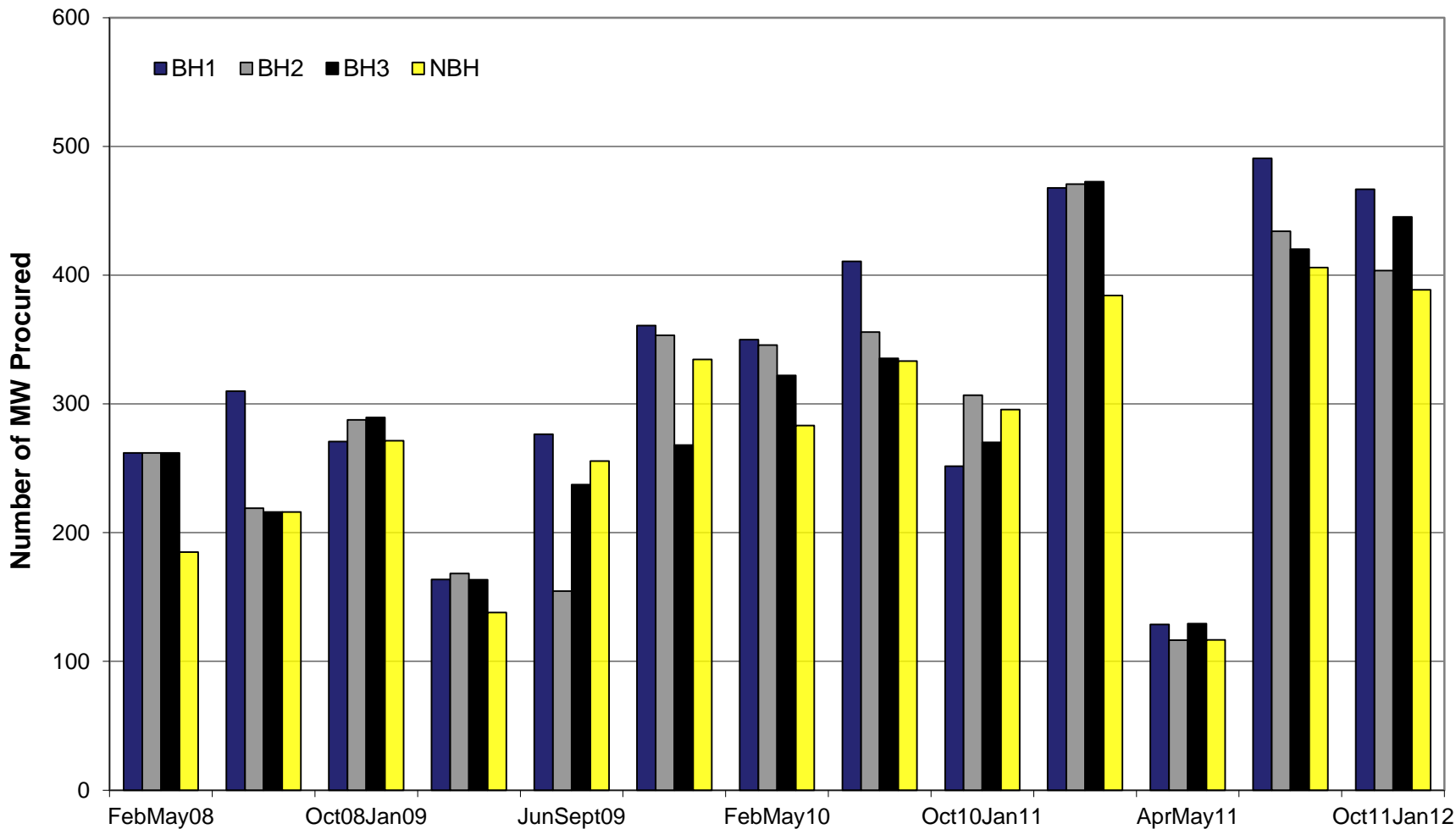ERCOT Load Resource RRS Deployment 2/2/2011

ERCOT Load Resource RRS Deployment 8/4/2011
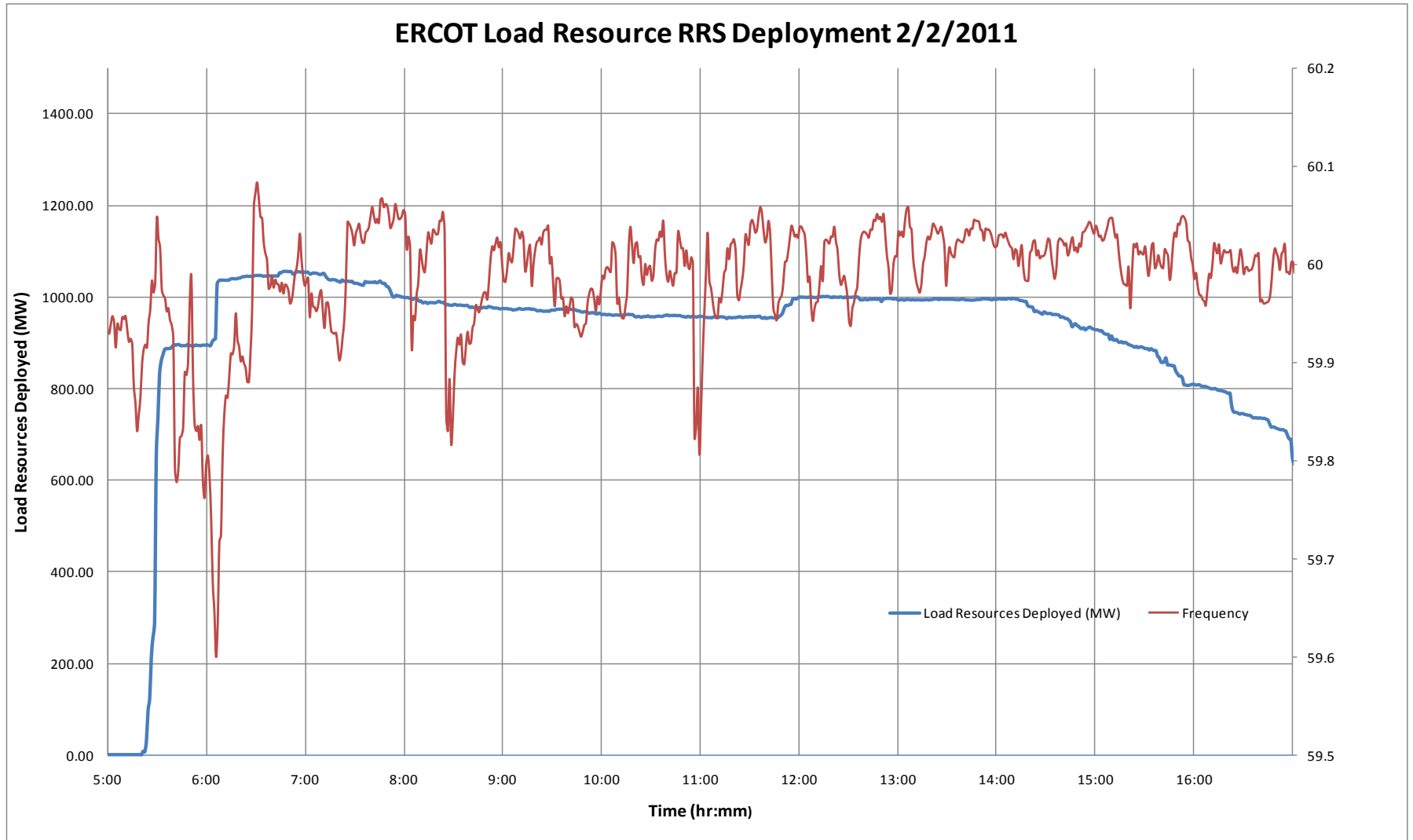
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Emergency Interruptible Load Service (EILS)

- **Service provided by end use customers willing to interrupt during an electric grid emergency**
- **An additional tool for ERCOT Operations, deployed ONLY in the late stages of a grid emergency**
- **Requirements:**
  - Can be individual loads or aggregations
  - 15-minute interval metering or statistically valid sample approved by ERCOT
  - Capability of interrupting at least 1 MW of load on 10 minutes notice at any time during the committed hours
  - No telemetry required, and not modeled in the Network Operations Model
  - 3 Contract Periods per year, each has 4 time periods
  - Performance based on both availability and deployment metrics
  - Dispatching and financial performance is between ERCOT and a QSE

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EILS Load Reduction 08/04/2011