Overview of January 6 EEA Event

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ERCOT Public
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Event Summary – January 6, 2014

- At 6:52, ERCOT declared Level 1 of its Energy Emergency Alert (EEA) and declared EEA Level 2 at 7:01, primarily due to the loss of a number of generating units during the early morning hours
- Non-Spin Reserve Service (NSRS), Load Resources (LR) and Emergency Response Service (ERS) were deployed, but firm load shed was not required
- ERCOT moved from EEA2 to EEA1 at 7:51 and resumed normal operations at 9:12
- Approximately 8650 MW of generation was unavailable at some point between midnight and the end of the EEA event
- Hourly peak demand was 55,487 MW for HE08 and instantaneous peak demand was 56,478 MW at 07:08:24

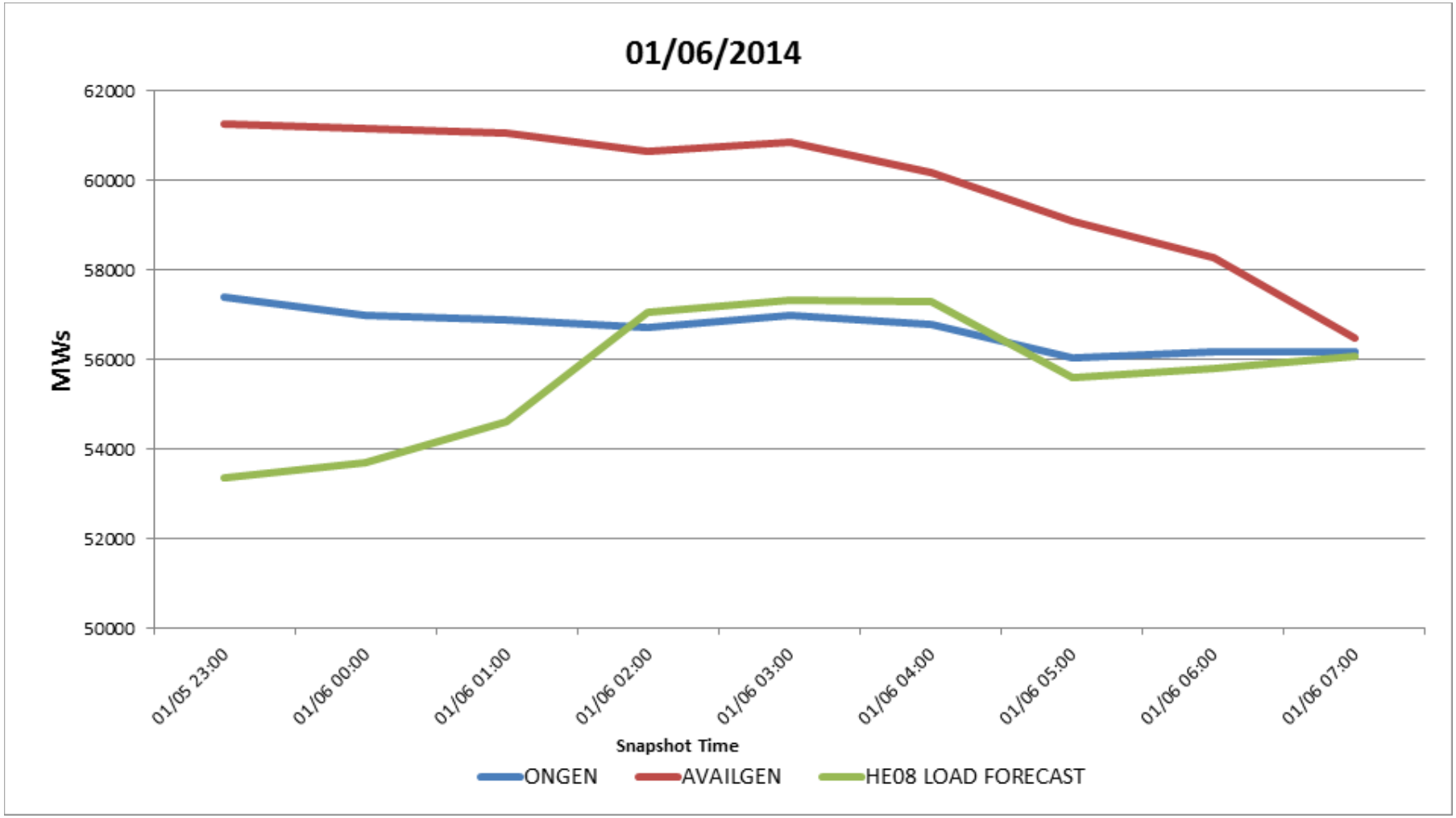
Seasonal Planning

- Resource Entities (REs) attested that their weatherization procedures were in place
- ERCOT performed a selected number of onsite reviews with the Resource Entities on their weatherization procedures
- ERCOT Regional Winter Drill was conducted on November 5 & 6, 2013.
- TRE and ERCOT hosted Winter Preparation seminar for Resource Entities to share lessons learned and best practices.

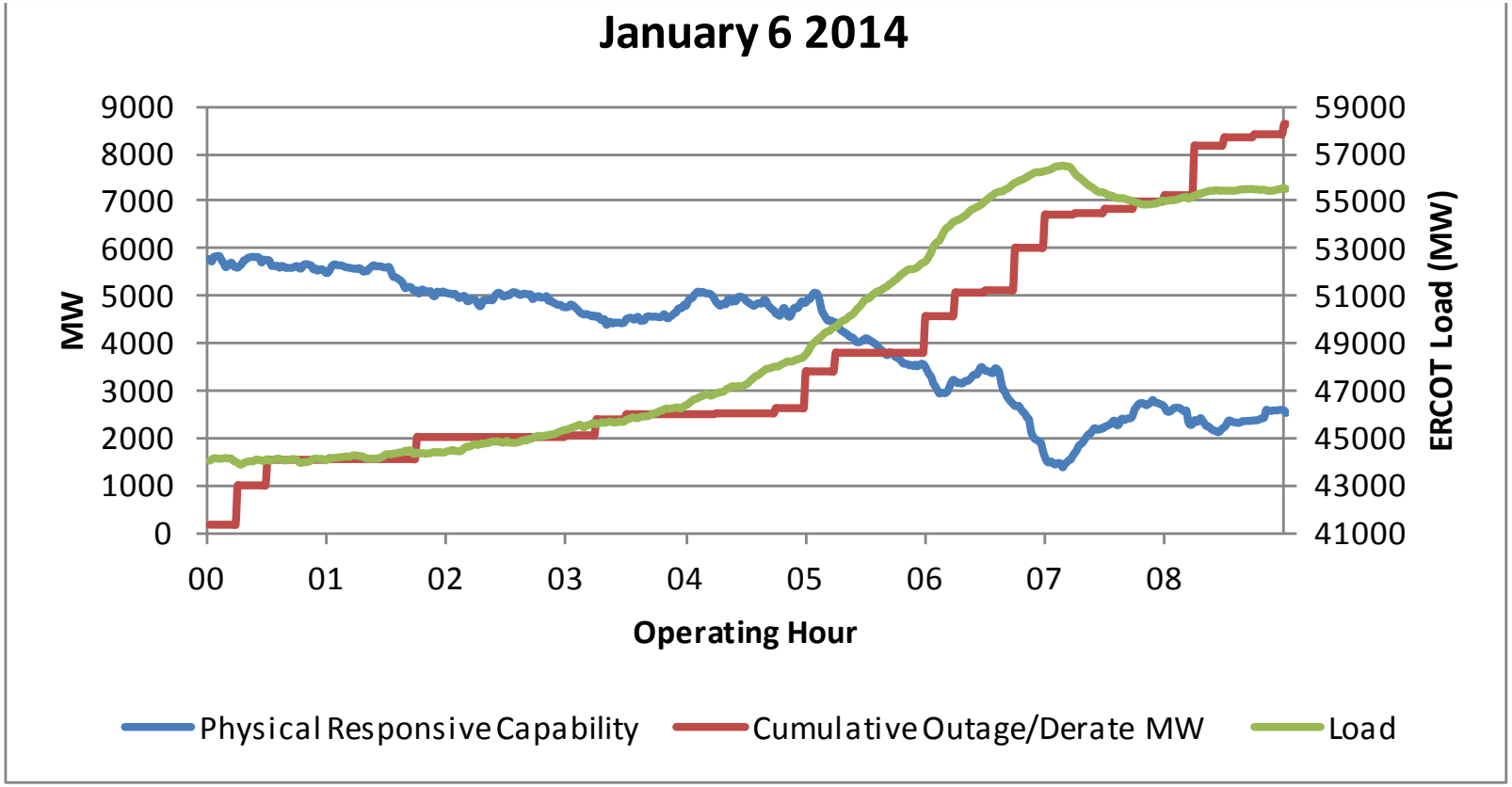
Further Operational Preparation

- ERCOT reviewed operational readiness for cold weather, considered notification of fuel restrictions, and reviewed current and upcoming planned outages at higher loads
- ERCOT issued a Cold Weather Advisory on January 5
  - Qualified Scheduling Entities (QSEs) and ERCOT Transmission Operators (TOs) were advised of the forecasted cold weather and instructed to review and implement emergency operations plans including winterization plans.
  - QSEs and TOs were instructed to review their planned outages and consider delaying those outages if possible and returning from outage early if possible.
  - QSEs were instructed to review fuel supplies and notify ERCOT of any known or anticipated fuel restrictions.
  - QSEs and TOs were instructed to notify ERCOT of any changes or conditions that could affect system reliability.

Available Capacity(HASL) and Load Forecast for HE8



PRC and Unit Trips/Derates



Hour Ending	1	2	3	4	5	6	7	8	9
Cumulative # of Unit trips after Midnight	6	9	10	14	21	27	37	42	49

EEA Steps

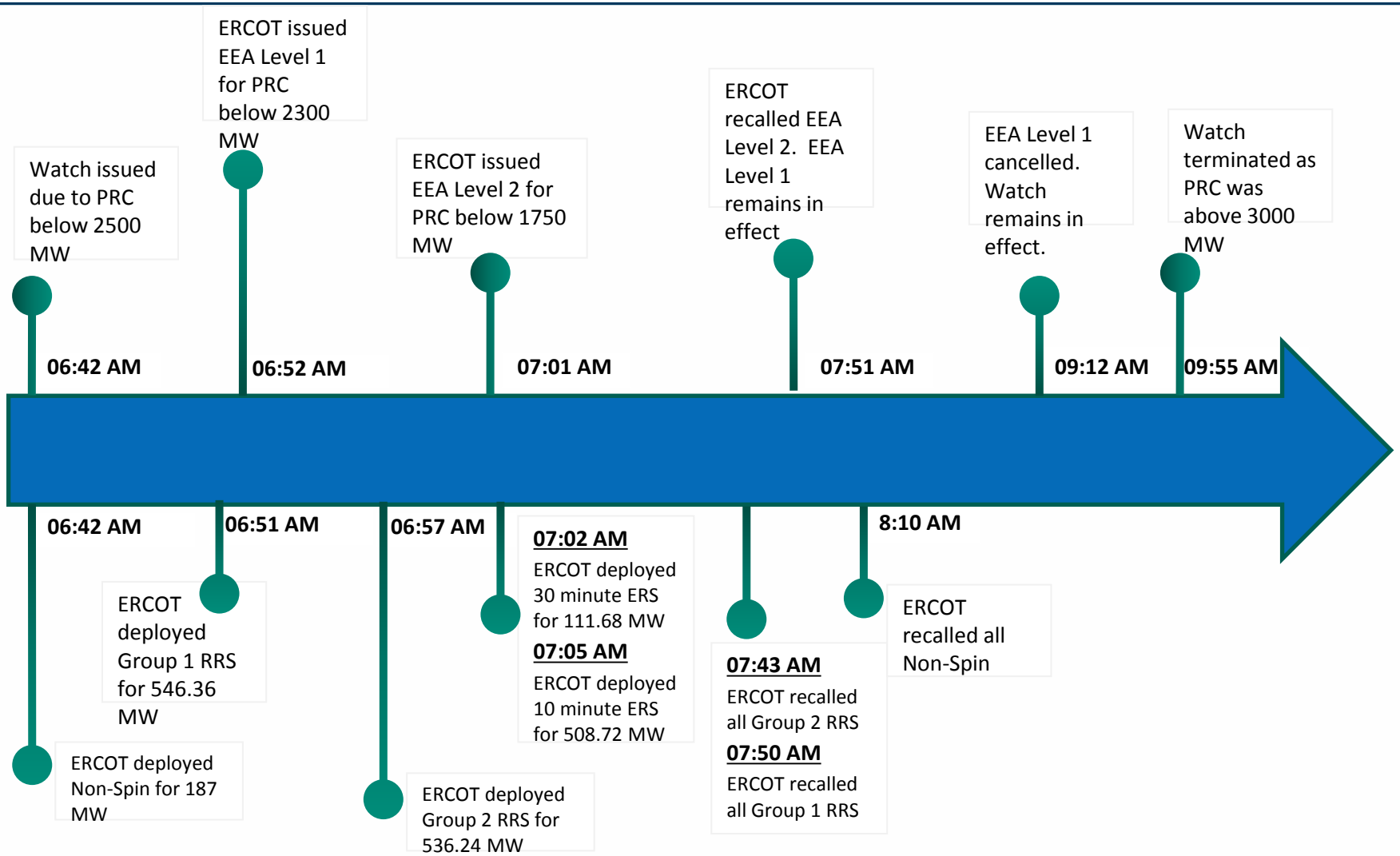
EEA procedure in the ERCOT Protocols defined by levels

1. Maintain 2,300 MW of on-line reserves

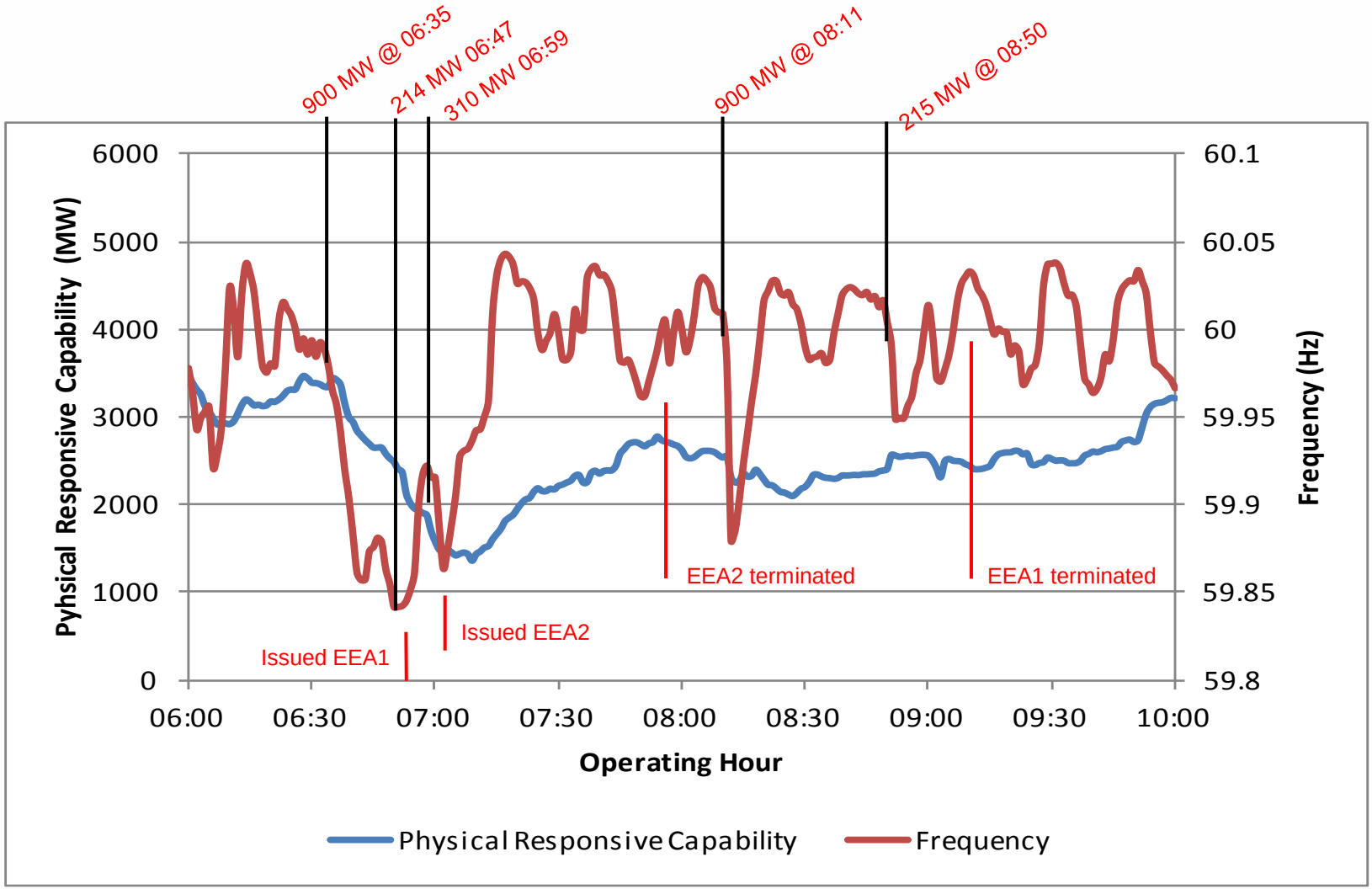
2. Maintain 1,750 MW of on-line reserves. Interrupt loads providing Responsive Reserve Service. Interrupt loads providing Emergency Response Service (ERS).

3. Maintain System frequency at or above 59.8 Hz and instruct TSPs and DSPs to shed firm load in rotating blocks.

Timeline


Watch issued due to PRC below 2500 MW
06:42 AM
ERCOT issued EEA Level 1 for PRC below 2300 MW
06:52 AM
ERCOT issued EEA Level 2 for PRC below 1750 MW
07:01 AM
ERCOT recalled EEA Level 2. EEA Level 1 remains in effect
07:51 AM
EEA Level 1 cancelled. Watch remains in effect.
09:12 AM
Watch terminated as PRC was above 3000 MW
09:55 AM
06:42 AM
ERCOT deployed Non-Spin for 187 MW
06:51 AM
ERCOT deployed Group 1 RRS for 546.36 MW
06:57 AM
ERCOT deployed Group 2 RRS for 536.24 MW
07:02 AM
ERCOT deployed 30 minute ERS for 111.68 MW
07:05 AM
ERCOT deployed 10 minute ERS for 508.72 MW
07:43 AM
ERCOT recalled all Group 2 RRS
07:50 AM
ERCOT recalled all Group 1 RRS
8:10 AM
ERCOT recalled all Non-Spin

PRC And System Frequency During EEA



Weather Comparison

- Weather was generally somewhat less severe than February 2, 2011

Differences in Weather from February 2, 2011

		Dallas		Houston		Austin		San Antonio		Brownsville		Midland	
		Temp	Wind	Temp	Wind	Temp	Wind	Temp	Wind	Temp	Wind	Temp	Wind
6-Jan-14	5AM	2	7	6	-8	7	3	11	-2	10	3	7	4
EEA2	6AM	2	2	7	1	5	2	10	4	10	-2	8	2
	7AM	1	12	6	0	3	3	8	3	9	6	7	3
	8AM	4	11	5	9	3	5	7	1	9	-1	7	4
7-Jan-14	5AM	8	8	1	5	0	20	5	13	5	9	11	17
13/14 Winter Peak to date	6AM	8	6	3	14	-4	13	4	20	7	5	12	9
	7AM	7	11	3	16	-3	18	4	17	8	12	14	9
	8AM	8	11	1	14	-4	18	4	16	9	9	14	10

Temperature values shown indicate degrees warmer at this time than same time on 2/2/2011

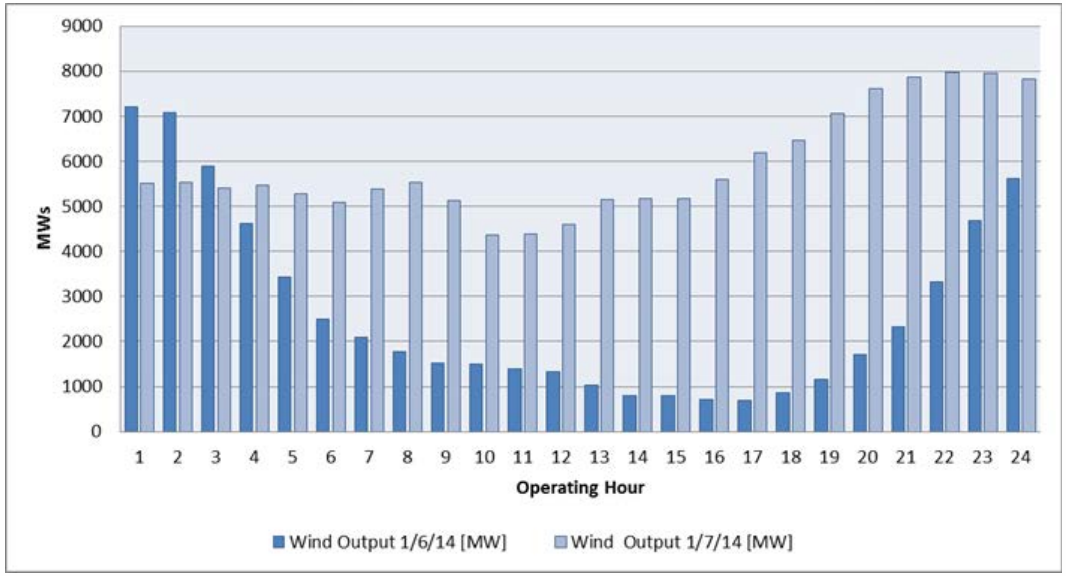
Wind values shown indicate MPH higher wind speed on 2/2/2011 than at this time

Comparison of 1/6 and 1/7

- ERCOT had a higher peak demand on Tuesday, 1/7 of 57,277 MW
- Sufficient generation, due to fewer generator outages and more wind

	January 6, 2014*	January 7, 2014*
Planned Outages	2232 MW	2258 MW
De-rates	3025 MW	1751 MW
Forced Outages	7541 MW	4813 MW
TOTAL	12,798 MW	8,822 MW

*Up to HE8



Next Steps

- ERCOT and Texas RE have requested additional information from generators on causes of generator trips and derates on January 6
- ERCOT has already (re)visited 4 of the units who initially reported weather-related issues on January 6 to review winterization plans
- ERCOT had already requested data to improve accuracy of wind forecast during icing and cold weather from wind generators due to November 2013 cold spell; need to add temperature limits to RARF
- Enhance procedures to directly consider increased generating capacity unavailability for unit commitment during severe cold weather events
- Reassess outage calculations used for future SARA reports to ensure derates are appropriately included
- Improve means to get updated information on generation derates and startup failures to ERCOT in near-real time

Questions