Item 4.3: Operations Report
(January & February 2015)

H.B. "Trip" Doggett
President & CEO

Board of Directors Meeting
ERCOT Public
April 14, 2015

Summary – January 2015

Operations

- The peak demand of 56,764 MW on January 8th was slightly greater than the mid-term forecast peak of 56,215 MW of the same operating period. However, it was less than the January 2014 actual peak demand of 57,277 MW. The instantaneous peak load on January 8th was 57,470 MW.

- Day-ahead load forecast error for January was 3.44%.

- ERCOT issued four notifications
  - Two advisories due to cold weather (1/2 and 1/6)
  - One advisory for a K Index 7 geomagnetic disturbance (1/7)
  - One watch due to cold weather (1/7)
  - One advisory due to postponing of the DAM solution (1/28)

Planning Activities

- 239 active generation interconnection requests totaling over 62,100 MW, including 24,100 MW of wind generation as of January 31, 2015. The same amount of requests and 100 more MW from December 31, 2014.

- 12,470 MW wind capacity in commercial operations on January 31, 2015.
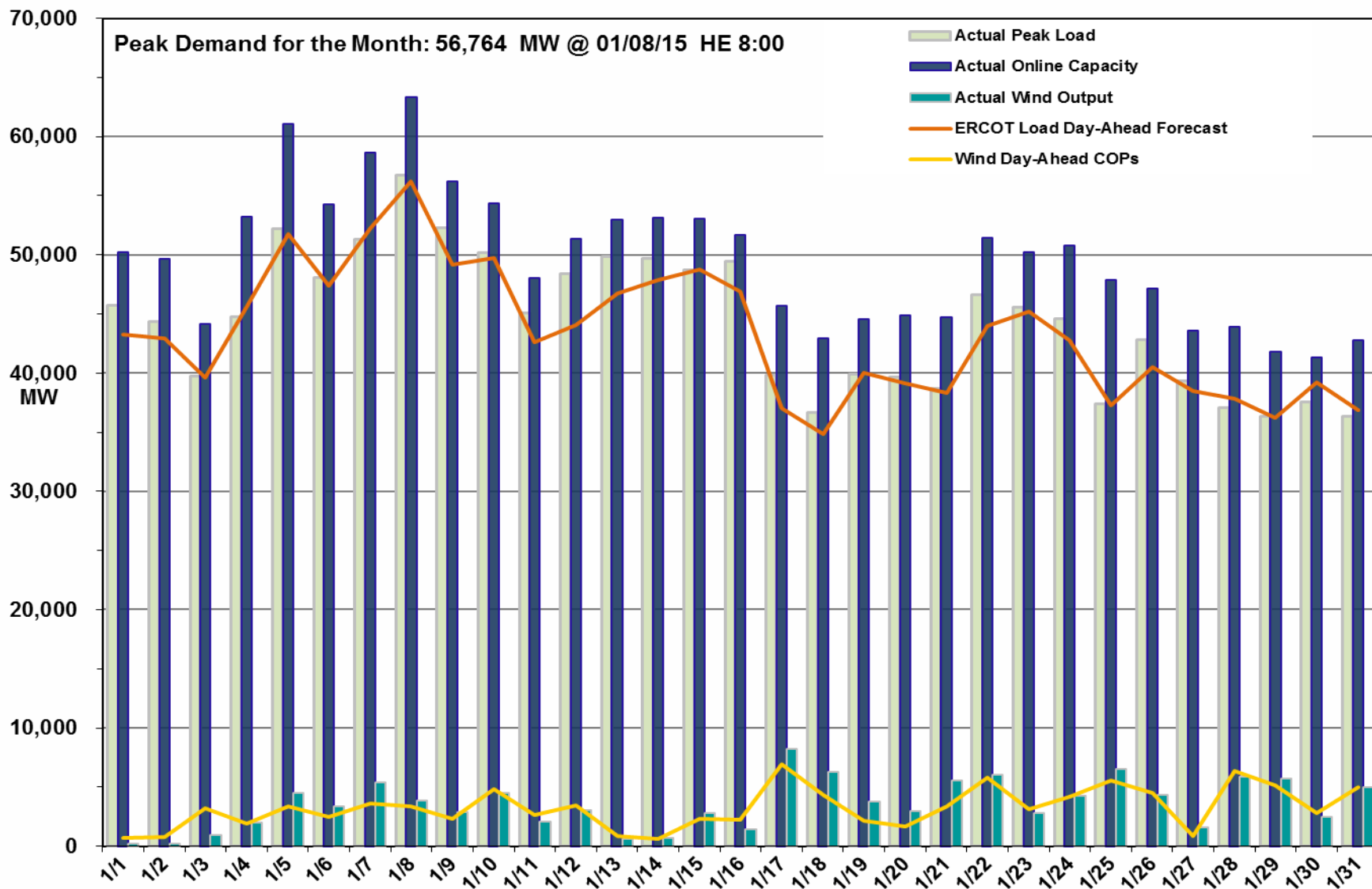
Summary – February 2015

Operations

- The peak demand of 54,505 MW on February 23rd was slightly greater than the mid-term forecast peak of 53,767 MW of the same operating period. However, it was less than the February 2014 actual peak demand of 57,056 MW. The instantaneous peak load on February 23rd was 54,753 MW.

- Day-ahead load forecast error for February was 3.38%.

- ERCOT issued four notifications

  - One advisory due to cold weather (2/20)

  - One Transmission Watch due to a forced transmission outage (2/22)

  - One OCN due to new Generic Transmission Constraint (2/27)

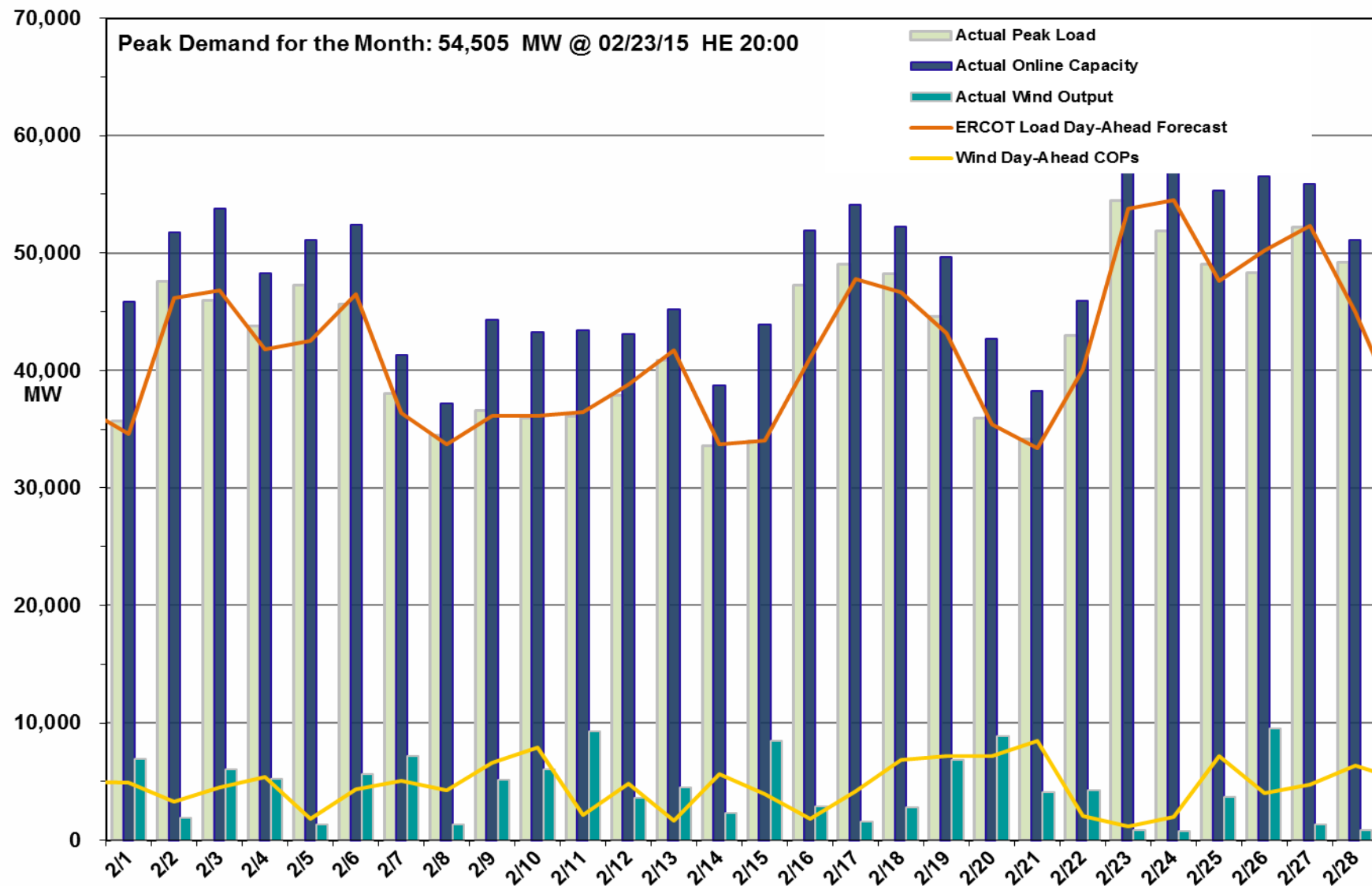 - One advisory due to postponing of the DAM solution (2/28)

Planning Activities

- 245 active generation interconnection requests totaling over 63,000 MW, including 25,300 MW of wind generation as of February 28, 2015. Six additional requests and 900 more MW from January 31, 2015.

- 12,575 MW wind capacity in commercial operations on February 28, 2015.

Peak Demand for the Month: 56,764 MW @ 01/08/15 HE 8:00

Legend:
- Actual Peak Load
- Actual Online Capacity
- Actual Wind Output
- ERCOT Load Day-Ahead Forecast
- Wind Day-Ahead COPs

Daily Peak Demand: Hourly Average Actual vs. Forecast, Wind Day-Ahead COPs & On-line Capacity at Peak – February 2015

Peak Demand for the Month: 54,505 MW @ 02/23/15 HE 20:00

Legend:
- Actual Peak Load
- Actual Online Capacity
- Actual Wind Output
- ERCOT Load Day-Ahead Forecast
- Wind Day-Ahead COPs

Market Statistics – January 2015

Market Statistics	January 2014	January 2015	2014 Average	2015 YTD Average
Percentage of Real-Time load hedged in Day-Ahead Market	128.16%	136.32%	124.80%	136.32%
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Day-Ahead Market ($/MWh)	38.63	25.89	40.81	25.89
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Real-Time ($/MWh)	47.04	24.43	38.87	24.43

Market Statistics – February 2015

Market Statistics	February 2014	February 2015	2014 Average	2015 YTD Average
Percentage of Real-Time load hedged in Day-Ahead Market	124.08%	134.02%	124.80%	135.17%
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Day-Ahead Market ($/MWh)	56.74	25.37	40.81	25.65
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Real-Time ($/MWh)	50.96	27.49	38.87	25.86

Operational Performance Measures – Jan. & Feb. 2015

Performance Measure	Target Met	Further Information
Retail Transaction Performance *(Target 98%)*	*Yes*	• Retail transaction processing performance was near 100%
Settlements Performance *(Target 99%)*	*Yes*	• 100% timely statement and invoice posting

Operational Dashboard – January & February 2015

Metric	Trending as Expected	Further Information
Day-Ahead Schedule	*Yes*	• Normal level of market activity and liquidity • Loads appear to have hedged against exposure to Real-Time prices
Day-Ahead Electricity And Ancillary Service Hourly Average Prices	*Yes*	• Hourly average prices correctly reflect the opportunity cost of energy
Day-Ahead vs Real-Time Load Zone Settlement Point Price (Hourly Average)	*Yes*	• Day-Ahead & Real-Time prices for different Load Zones reflect relative transmission congestion
Day-Ahead vs Real-Time Trading Hub Settlement Point Price (Hourly Average)	*Yes*	• The average energy price across the system reflects marginal offers and scarcity pricing impacts • Higher average Day-Ahead energy prices reflect the risk premium between Day-Ahead & Real-Time
Day-Ahead Reliability Unit (DRUC) Commitment Monthly Summary	*Yes*	• Capacity committed by the DRUC process indicates the level of out of market activity needed Day-Ahead to maintain reliability • No resource was committed in DRUC in this period

Operational Dashboard – January & February 2015

Metric	Trending as Expected	Further Information
Hourly Reliability Unit Commitment (HRUC) Monthly Summary	*Yes*	• Capacity committed by the HRUC process indicates the level of out of market activity needed during the Operating Day to maintain reliability • 1 resource was committed in January to resolve congestion, and no resource was committed in February
Supplemental Ancillary Service Market Monthly Summary	*Yes*	• Normal trend indicates that deliverability was not a major concern
Non-Spinning Reserve Service Deployment	*Yes*	• Offline Non-Spin was not deployed
Congestion Revenue Rights Price Convergence	*Yes*	• Normal trend indicates good ability of market participants to estimate value of hedges

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Operational Dashboard – January 2015

Metric	Trending as Expected	Further Information
Retail Transactions	*Yes*	• Seasonal variations in transaction volumes trending as expected
Advanced Metering	*Yes*	• 98.4 % of ERCOT load settled with 15-minute interval data. • 6.7M Advanced Metering System (AMS) Electric Service Identifier (ESIID)s included in settlement as of January 2015.
Settlement Dollars	*Yes*	• As of settlement of Operating Day 01/31/2015, the daily average settlement dollars for January are $8.58M, which is down from $8.72M in December 2014 and up from January 2014 which had an average of $6.33M.
Revenue Neutrality	*Yes*	• As of settlement of Operating Day 01/31/2015, Revenue Neutrality uplift is a charge of $2.39M, which is up from a $0.51M charge in December 2014 and up from a $3.02M credit in January 2014.
Market-Based Uplift to Load	*Yes*	• As of settlement of Operating Day 01/31/2015, the market-based uplift to load is a charge of $11.19M, as opposed to a $9.69M charge in December 2014 and a charge of $15.32M in January 2014.

Operational Dashboard – February 2015

Metric	Trending as Expected	Further Information
Retail Transactions	Yes	• Seasonal variations in transaction volumes trending as expected
Advanced Metering	Yes	• 98.4 % of ERCOT load settled with 15-minute interval data. • 6.7M Advanced Metering System (AMS) Electric Service Identifier (ESIID)s included in settlement as of February 2015.
Settlement Dollars	Yes	• As of settlement of Operating Day 02/28/2015, the daily average settlement dollars for February are $9.28M, which is down from $8.58M in January 2015 and from February 2014 which had an average of $9.76M.
Revenue Neutrality	Yes	• As of settlement of Operating Day 02/28/2015, Revenue Neutrality uplift is a charge of $0.21M, which is down from January 2015 which was a charge of $2.39M and down from February 2014 which was a charge of $2.49M.
Market-Based Uplift to Load	Yes	• As of settlement of Operating Day 02/28/2015, the market-based uplift was a charge of $10.40M, as opposed to a charge of $11.19M in January 2015 and a charge of $49.76M in February 2014.

Market Enhancements Under Consideration

Enhancement	Further Information

Evaluating market design improvement proposals	• Operating Reserve Demand Curve (ORDC)
	  • NPRR 568 Phase 2 has been moved to the September release to provide time for additional benefit analysis of OFF10/OFF30
	
	• Future Ancillary Services Team (FAST) Activity
	  • NPRR 667 was posted on 11/18/2014
	  • Two workshops have been held this year (1/30/2015 and 3/11/2015)
	  • The next workshop is scheduled for 4/20/15
	  • Brattle is the vendor for the Cost Benefit Analysis (CBA) on the Future Ancillary Services framework
	  • Target is to complete the CBA by Q2 2015

Evaluating Pilot Project Feasibility	• No current pilot projects

Major Project Highlights (as of 03/27/2015)

Project	Trending as Expected	Further Information

EMS Upgrade – Upgrade EMS and OTS from ALSTOM EMP 2.3 to EMP 3.0	*Yes*	• Program is currently in Execution Phase and tracking to approved budget and schedule; planned go-live remains May 2016
		• Infrastructure Activities:
		  ○ New infrastructure platform negotiations, contract and legal reviews in progress in preparation for procurement
		  ○ While selection and negotiation activities for the new infrastructure have taken longer than originally planned, the extended period has resulted in a reduced acquisition cost. To avoid impacting other project activities, the team is using existing computers to maintain the schedule
		• Development / Testing Activities:
		  ○ Testing of Phase 2 development complete with low number of defects showing good quality by ERCOT and ALSTOM development teams
		  ○ Phase 3 development nearing completion with concurrent defect fixes and reviews in progress
		  ○ Phase 4 development started
		  ○ After Phase 4 development is complete, phase 5 development will be the last major development effort
		  ○ Defect fix/test and integrated testing will continue for the remainder of 2015

NMMS Upgrade – Replace the current Siemens NMMS application with the next generation of model management software available from Siemens	*Yes*	• Project in Execution Phase; team focused on development activities and test script documentation
		• Most code development tasks are tracking as planned, however, deliverables for the user interface (UI) have incurred delays that the team is addressing
		  ○ The delays are attributed to the tool supplied by the vendor for user interface development. This tool has required more customizations and extensions of the baseline product than the team was expecting, thus impacting schedule
		  ○ To address the impact and recover the schedule, ERCOT has shifted more of the collaborative work back to the vendor, which in turn should increase velocity for the UI deliverables
		• In addition to the UI work, the team has also started documenting detailed test scripts that will support functional and integration testing
		• The ERCOT team continues to conduct product reviews in order to uncover issues early in the development phase

Major Project Highlights (as of 03/27/2015) – continued

Project	Trending as Expected	Further Information

ABB MMS/OS Technology Refresh – Improve ERCOT's ability to support and maintain the Market Management System (MMS) and Outage Scheduler (OS) system by upgrading the underlying infrastructure and its required components to versions on mainstream vendor support	*Yes*	• Refresh successfully released to Production on the afternoon of March 25th – this represents the second major technology upgrade / replacement within a 4-month period for ERCOT (in addition to Settlement System Upgrade)
		• Stabilization period is underway, with support teams actively monitoring production for any issues or defects. No major issues reported
		• Leading up to the production go-live, the team completed these activities/deliverables in support of the seamless production deployment
		  ○ Completed Integration, Non-Functional, Load, Performance and Penetration Testing
		  ○ Built servers with required software according to the technical design. Installations made to both data centers
		  ○ Developed, reviewed and communicated the cut-over readiness plan

Market System Enhancements 2015 – Deliver NPRR626, Reliability Deployment Price Adder, along with other related NPRRs	*Yes*	• After reviewing several delivery and scope alternatives with the Market, all of which prioritized NPRR626 but also presented options for bundling and timing of other NPRRs, ERCOT and the Market have confirmed a late June release that will include NPRR598, NPRR645, NPRR665 and OBD • Having locked on the scope, the project is now in Execution and continues to track delivery to the planned release target. Budget is also tracking as planned. • Major deliverables already completed are Requirements Documentation and Conceptual Design / Detail Design documentation • Code development by both the vendor and ERCOT is currently in progress, as is development of test scripts.

OSI PI Visualization Enhancements – Provide hardware and OSI PI tools for improved visualization to Operations staff to support development of control room displays and web-based tools that delivers fast, easy, and secure access to all PI System data.	*Yes*	• The Project is currently in the Execution Phase and progressing on schedule and within budget; target Go-Live is in June 2015.
		• Major accomplishments achieved by the project team this year include:
		  ○ Build out and completion of the development environment; test environment underway
		  ○ Completion of vendor negotiations for the additional licenses and support that is required for the new PI system and user applications. Final price is under budget
		• Training sessions supplied by the vendor are on schedule to be delivered to ERCOT operators and personnel in April and May.

Major Project Highlights (as of 03/27/2015) – continued

Project	Trending as Expected	Further Information
CIP v5 Readiness Program – Develop, modify and implement processes, procedures, workflows, and tools to ensure ERCOT's compliance with NERC CIP v5 standards	*Yes*	• NERC Critical Infrastructure Protection (CIP) Cybersecurity Standards version 5 is a regulatory requirement that is effective April 1, 2016 • ERCOT's analysis of the CIP requirements will require more capital investment than previously planned. To ensure requirements are met and compliance can be confirmed, a CIP v5 Readiness Program has been established to deliver new processes, procedures, training and technical solutions • The program is comprised of a dedicated Readiness Project, as well as deliverables from several other PPL projects. The complete list includes: ○ CIP v5 Readiness Project ○ Configuration Management System ○ Privileged Account Management ○ Information Technology Change Management ○ Firewall Access System ○ Next Generation Scanning ○ NERC/CIP ESP Network Isolation

Appendix

The *ERCOT Monthly Operational Overview* is posted on or about the 15th of the following month to (http://www.ercot.com/committees/board/)