Item 4.3: Operations Report
(May & June 2015)

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President & CEO

Board of Directors Meeting
ERCOT Public
August 11, 2015

Summary – May 2015

Operations

- The peak demand of 53,311 MW on May 18th was greater than the mid-term forecast peak of 50,729 MW of the same operating period. In addition, it was greater than the May 2014 actual peak demand of 52,625 MW. The instantaneous peak load on May 18th was 53,667 MW.

- Day-ahead load forecast error for May was 3.54%.

- ERCOT issued three notifications

  - OCN due to the development of a new Generic Transmission Constraint (GTC) due to a local voltage stability issue (5/7).

  - Advisories issued on 5/17 & 5/31 due to missing the deadline for posting the DAM solution, delayed due to length of run time.

Planning Activities

- 262 active generation interconnection requests totaling 64,209 MW, including 25,142 MW of wind generation as of May 31, 2015. Ten additional requests and an increase of 2,491 MW from April 30, 2015.

- 13,424 MW wind capacity in commercial operations on May 31, 2015.
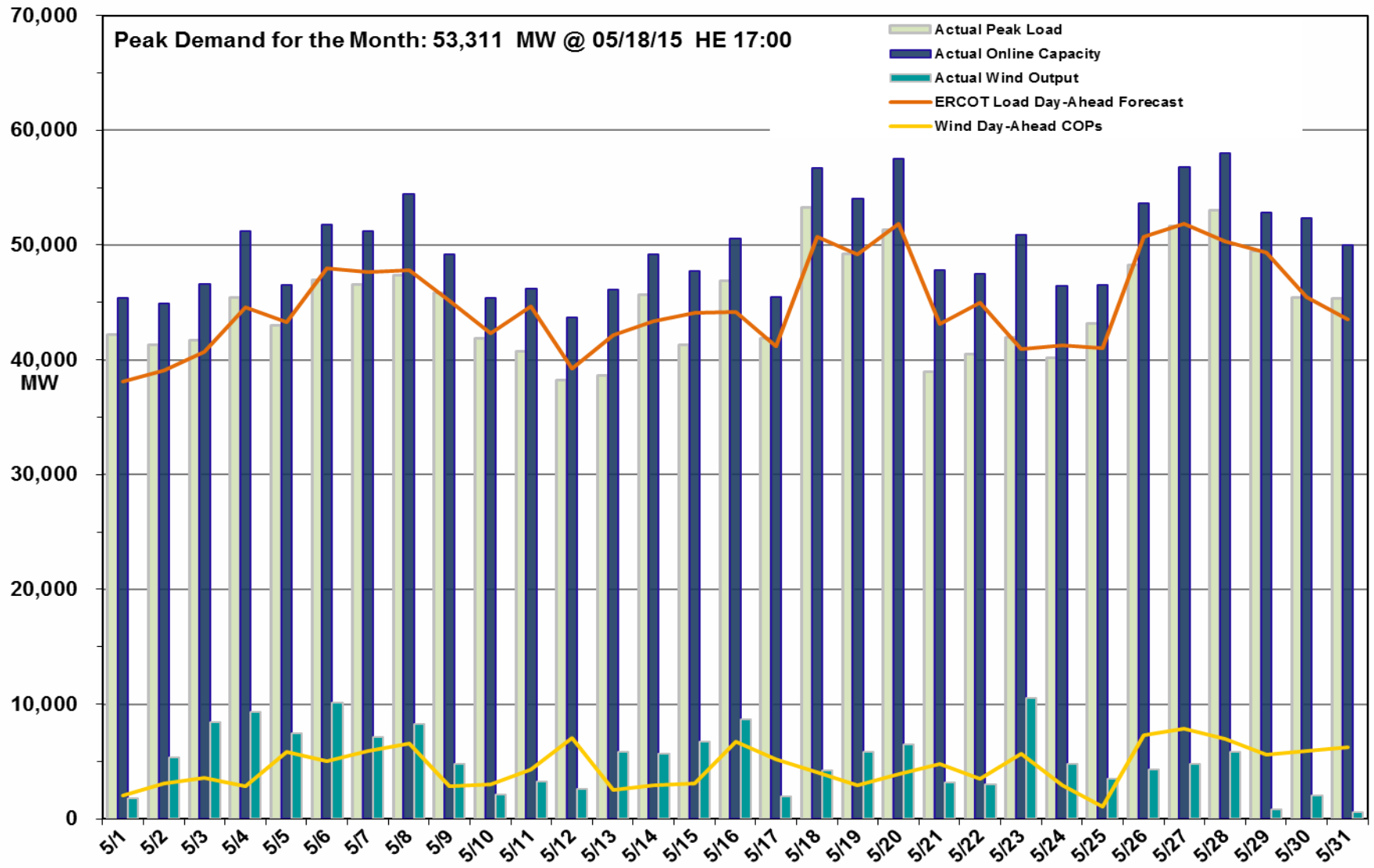
Summary – June 2015

Operations

- The peak demand of 61,741 MW on June 10th was greater than the mid-term forecast peak of 61,211 MW of the same operating period. In addition, it was greater than the June 2014 actual peak demand of 59,754 MW. The instantaneous peak load on June 10th was 61,849 MW.

- Day-ahead load forecast error for June was 2.49%.

- ERCOT issued three notifications

    - OCN due to the development of a new Generic Transmission Constraint (GTC) due to a local voltage stability issue (6/12).

    - OCN due to Tropical Storm Bill approaching the ERCOT service area (6/15).

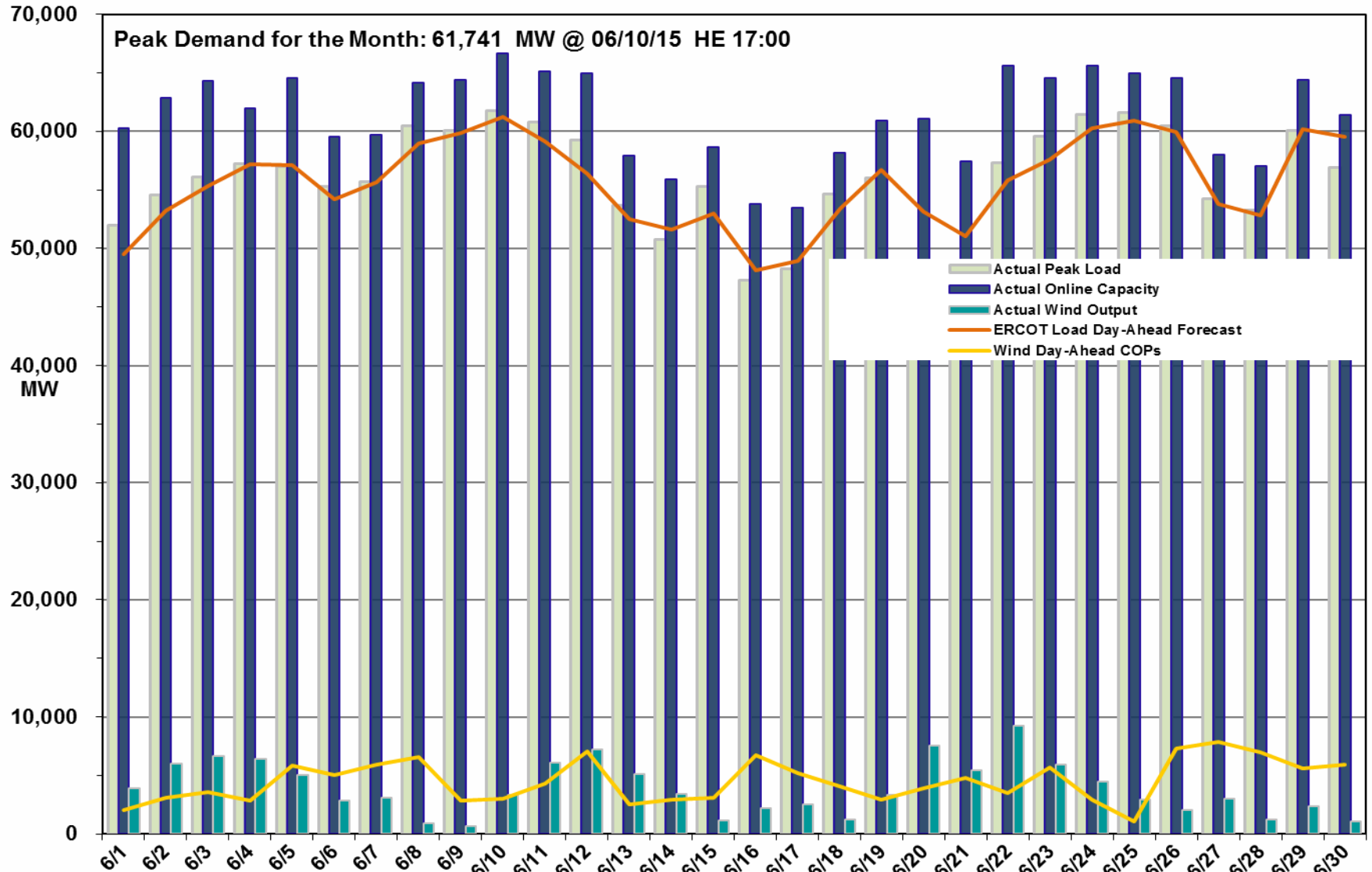   - Advisory due to a GMD Alert of K-7 and K-8 (6/22).

Planning Activities

- 266 active generation interconnection requests totaling 64,122 MW, including 25,467 MW of wind generation as of May 31, 2015. Four additional requests, yet a decrease of 87 MW, from May 31, 2015.

- 13,424 MW wind capacity in commercial operations on June 30, 2015.

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

Peak Demand for the Month: 53,311 MW @ 05/18/15 HE 17:00

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 – June 2015

Peak Demand for the Month: 61,741 MW @ 06/10/15 HE 17:00

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

Market Statistics – May 2015

Market Statistics	May 2014	May 2015	2014 Average	2015 YTD Average
Percentage of Real-Time load hedged in Day-Ahead Market	120.83%	132.14%	124.80%	137.45%
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Day-Ahead Market ($/MWh)	38.37	25.18	40.81	25.69
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Real-Time ($/MWh)	38.07	29.54	38.87	26.87
Average East Houston Fuel Index Price ($/MMBtu)	4.45	2.80	4.31	2.73

Market Statistics – June 2015

Market Statistics	June 2014	June 2015	2014 Average	2015 YTD Average
Percentage of Real-Time load hedged in Day-Ahead Market	116.81%	125.13%	124.80%	135.40%
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Day-Ahead Market ($/MWh)	41.86	26.18	40.81	25.78
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Real-Time ($/MWh)	36.98	23.76	38.87	26.26
Average East Houston Fuel Index Price ($/MMBtu)	4.61	2.71	4.31	2.73

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Operational Performance Measures – May & June 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 – May & June 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 – May & June 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 • 16 resources were committed in May to resolve congestion; 5 resources were committed in June to resolve congestion and support voltage
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 deployed for voltage support and transmission congestion
Congestion Revenue Rights Price Convergence	*Yes*	• Normal trend indicates good ability of market participants to estimate value of hedges

Operational Dashboard – May 2015

Metric	Trending as Expected	Further Information
Retail Transactions	*Yes*	• Seasonal variations in transaction volumes trending as expected.
Advanced Metering	*Yes*	• 98.6 % 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 May 2015.
Settlement Dollars	*Yes*	• As of settlement of Operating Day 05/31/2015, the daily average settlement dollars for May are $10.65M, which is up from $8.76M in April 2015 and down from May 2014 which had an average of $13.65M.
Revenue Neutrality	*Yes*	• As of settlement of Operating Day 05/31/2015, Revenue Neutrality uplift is a charge of $2.47M, which is up from a $0.97M charge in April 2015 and up from a $1.16M charge in May 2014.
Market-Based Uplift to Load	*Yes*	• As of settlement of Operating Day 05/31/2015, the market-based uplift to load is a charge of $7.75M, as opposed to a $13.57M charge in April 2015 and a charge of $13.13M in May 2014.

Operational Dashboard – June 2015

Metric	Trending as Expected	Further Information
Retail Transactions	*Yes*	• Seasonal variations in transaction volumes trending as expected.
Advanced Metering	*Yes*	• 98.7 % 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 June 2015.
Settlement Dollars	*Yes*	• As of settlement of Operating Day 06/30/2015, the daily average settlement dollars for June are $9.95M, which is down from $10.65M in May 2015 and down from June 2014 which had an average of $13.90M.
Revenue Neutrality	*Yes*	• As of settlement of Operating Day 06/30/2015, Revenue Neutrality uplift is a charge of $2.64M, which is up from May 2015 which was a charge of $2.47M and up from June 2014 which was a charge of $1.19M.
Market-Based Uplift to Load	*Yes*	• As of settlement of Operating Day 06/30/2015, the market-based uplift was a charge of $7.68M, as opposed to a charge of $7.75M in May 2015 and a charge of $3.29M in June 2014.

Market Enhancements Under Consideration

Enhancement	Further Information

Evaluating market design improvement proposals	• Operating Reserve Demand Curve (ORDC)
	    • NPRR 568 Phase 2 implementation has been put on hold and will be removed from the project schedule and from protocol after approval of NPRR 710 by the ERCOT Board
	
	• Future Ancillary Services Team (FAST) Activity
	    • NPRR 667 was posted on 11/18/2014
	    • Five workshops have occurred this year
	    • Brattle is working on the Cost Benefit Analysis (CBA) on the Future Ancillary Services framework
	    • Target is to complete the CBA by Oct 2015

Evaluating Pilot Project Feasibility	• No current pilot projects

Major Project Highlights (as of 07/30/2015)

Project	Trending as Expected	Further Information

EMS Upgrade Program – Upgrade EMS and OTS from ALSTOM EMP 2.3 to EMP 3.0	*Yes*	• Program is in the Execution Phase and tracking to the planned schedule and budget
		• ALSTOM Development
		  ○ Service 6 (SP6) currently being deployed which contains functional and security patches
		  ○ Providing defect fixes and testing support
		• ERCOT Development
		  ○ Delivering good quality, on schedule and budget
		  ○ Phase 4 completed on time with Phase 5 delivery on track for delivery in August
		  ○ Will move into defect fixes and testing support mode after Phase 5
		• Infrastructure
		  ○ New Dev/iTest and Production infrastructure online at Taylor and Bastrop datacenters
		  ○ Majority of iTest server and application builds completed with EMS now functional
		• Testing
		  ○ Functional Acceptance Testing (FAT) ongoing
		  ○ EMS integrated testing in the iTest environment begins in August
		  ○ Integrated testing with down stream systems in November
		  ○ Failover, backups and recovery testing also begins in November
		  ○ Close Loop testing begins in March 2016

NMMS Upgrade Project – Replace the current Siemens NMMS application with the next generation of model management software available from Siemens	*Yes*	• Project in Execution Phase and continues progress against the approved schedule and budget
		• The team completed the following development activities since June
		  ○ Action Plans back end (the workflow engine)
		  ○ IMM Data Provider (the API) except for the extensions which continue until the User Interface (UI) is complete
		  ○ Additional notification templates
		  ○ Excluding UI work, most of the IMM backend work for the Validation Rules Editor
		• Completion of development by the vendor remains a high risk to the schedule, but ERCOT management continues to provide additional oversight and assistance to keep those tasks on track
		• On site visits to the vendor to assess progress and demo current products, as well as additional development checkpoints between ERCOT and the vendor continue to help recover missed milestones

Major Project Highlights (as of 07/30/2015) – 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*	• Project is in Closing and tracking to budget. Upon final payment of infrastructure charges the project will be closed • Team successfully migrated to Production a stabilization release in late June to address 14 defects • Decommissioning activities are now complete. Severs and other equipment at ERCOT and vendor's sites were properly disposed
Market System Enhancements 2015 – Deliver NPRR626, Reliability Deployment Price Adder, along with other related NPRRs	*Yes*	• The project successfully migrated to Production on June 25th • The scope for this project included NPRR626, as well as NPRR598, NPRR645, NPRR665 and OBD • The project is currently in Stabilization and the team is monitoring Production through mid-August with a projected move into the Closing phase by end of August
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*	• As previously reported, the planned go-live date has moved from June 2015 to August 2015. Currently the project is tracking to the approved budget and the revised schedule • Build up and application installs for Testing and Operator Training environments are complete. The OSI PI Production environment is currently being built, to be followed with the application install. The build out is targeted for completion by mid-August, followed by the Production migration in late August • Testing activities are also underway, as well as Operator Training activities, which began the week of July 27th

Major Project Highlights (as of 07/30/2015) – 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 • The program is comprised of a dedicated Readiness Project which is on schedule and budget • The following projects are on track to deliver program dependencies ○ Configuration Management System ○ Privileged Account Management ○ Information Technology Change Management ○ Firewall Access System ○ Next Generation Scanning • Changes to policies, procedures and workflows continue to be on track

Appendix

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