Item 8.3: Operations Report
(November & December 2015)

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President & CEO

Board of Directors Meeting
ERCOT Public
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Summary – November 2015

Operations

- The peak demand of 45,014 MW on November 5th was greater than the day-ahead mid-term forecast peak of 42,810 MW of the same operating period. In addition, it was less than the November 2014 actual peak demand of 50,677 MW. The instantaneous peak load on November 5th was 45,208 MW.
- Day-ahead load forecast error for November was 3.32%.
- ERCOT issued one notification.
  - One OCN due to ERCOT developing a new Generic Transmission Constraint (“Liston”) near the Garza JL Bates area for voltage stability.

Planning Activities

- 262 active generation interconnection requests totaling 62,510 MW, including 24,071 MW of wind generation, as of November 30, 2015. Seven fewer requests and a decrease of 516 MW from October 31, 2015.
- 15,036 MW wind capacity in commercial operations on November 30, 2015.

Summary – December 2015

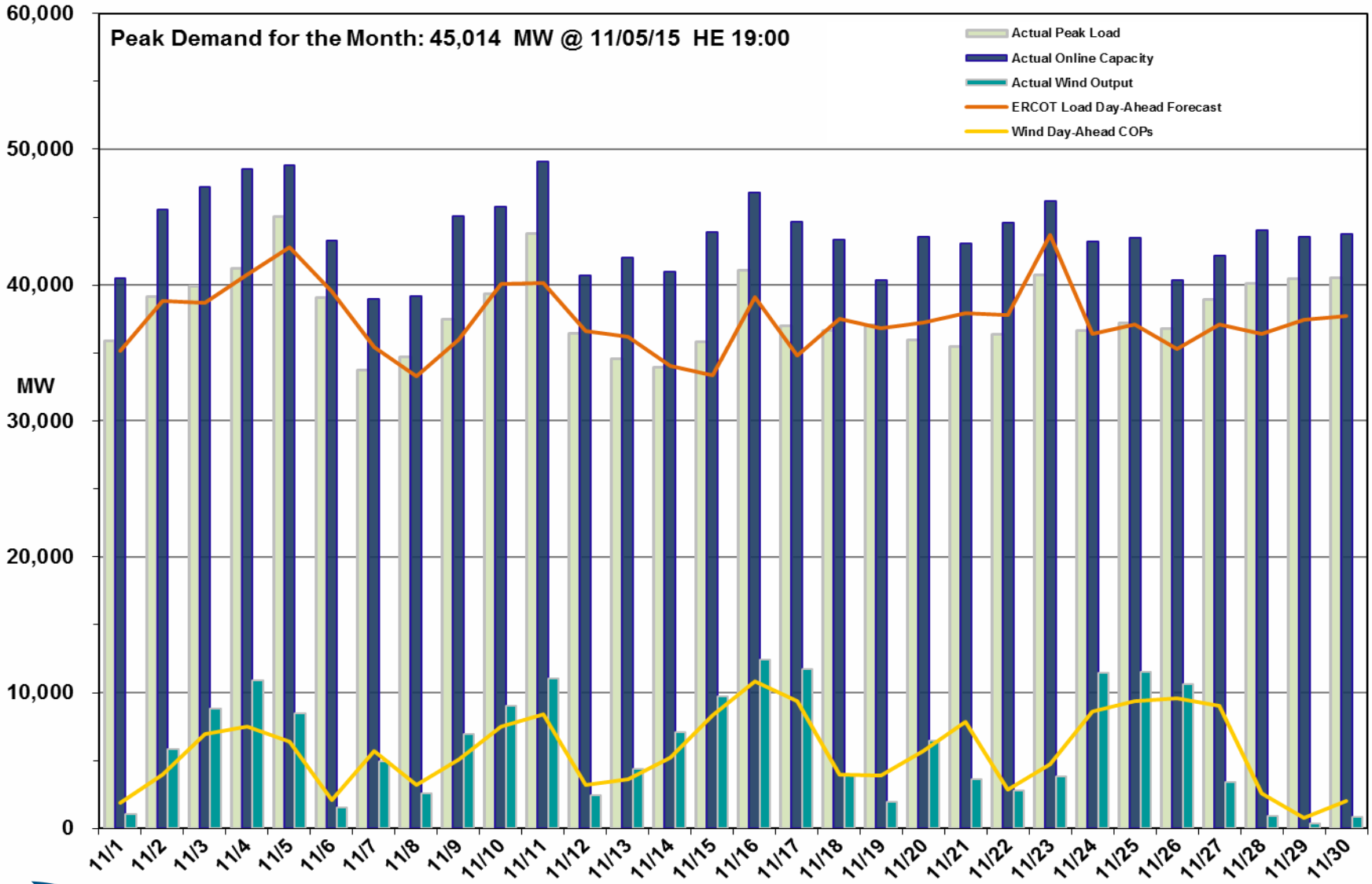
Operations

- The peak demand of 44,878 MW on December 28th was less than the day-ahead mid-term forecast peak of 45,002 MW of the same operating period. In addition, it was less than the December 2014 actual peak demand of 48,201 MW. The instantaneous peak load on December 28th was 45,021 MW.
- Day-ahead load forecast error for December was 2.39%.
- ERCOT issued two notifications.
  - One OCN due to ERCOT developing a new Generic Transmission Constraints near the Laredo area for the Molina voltage stability constraint.
  - One advisory due to ERCOT's Voltage Security Assessment Tool being unavailable.

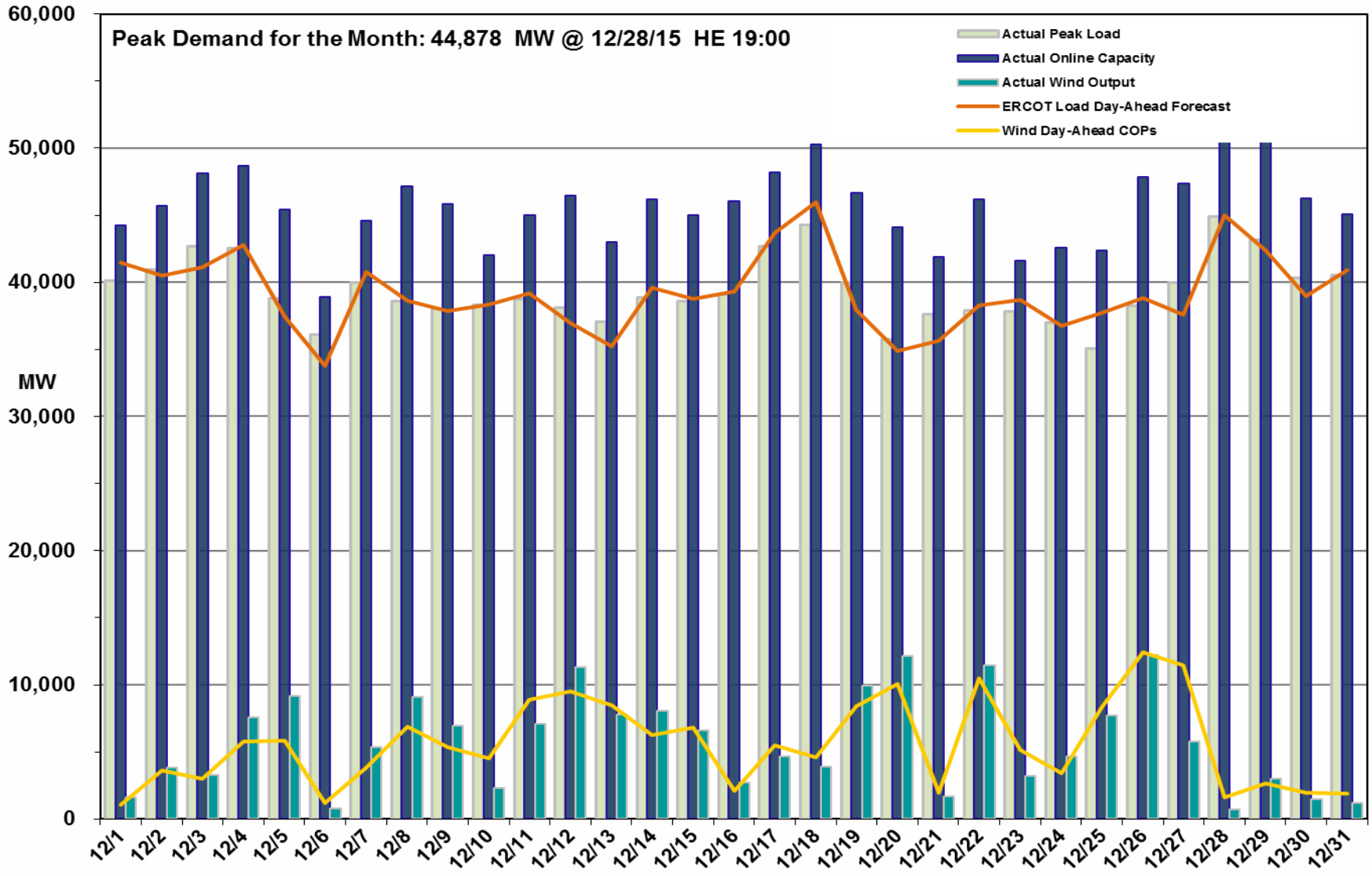
Planning Activities

- 255 active generation interconnection requests totaling 61,144 MW, including 24,095 MW of wind generation, as of December 31, 2015. Seven fewer requests and a decrease of 1,366 MW from November 30, 2015.
- 15,764 MW wind capacity in commercial operations on December 31, 2015.

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



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



Market Statistics – November 2015

Market Statistics	November 2014	November 2015	2014 Average	2015 YTD Average
Percentage of Real-Time load hedged in Day-Ahead Market	131.37%	132.91%	124.80%	131.19%
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Day-Ahead Market ($/MWh)	35.76	19.82	40.81	29.15
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Real-Time ($/MWh)	33.13	19.21	38.87	26.75
Average East Houston Fuel Index Price ($/MMBtu)	4.01	2.05	4.31	2.63

Market Statistics – December 2015

Market Statistics	December 2014	December 2015	2014 Average	2015 YTD Average
Percentage of Real-Time load hedged in Day-Ahead Market	138.68%	132.05%	124.80%	131.26%
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Day-Ahead Market ($/MWh)	27.15	18.74	40.81	28.38
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Real-Time ($/MWh)	25.83	17.37	38.87	26.05
Average East Houston Fuel Index Price ($/MMBtu)	3.27	1.92	4.31	2.57

Operational Performance Measures – Nov & Dec 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 – November & December 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 – November & December 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 • No resource was committed in November • No resource was committed in December
Supplemental Ancillary Service Market Monthly Summary	*Yes*	• Normal trend indicates that deliverability was not a major concern
Non-Spinning Reserve Service Deployment	*Yes*	• No Non-Spin was deployed in November • No Non-Spin was deployed in December
Congestion Revenue Rights Price Convergence	*Yes*	• Normal trend indicates good ability of market participants to estimate value of hedges

Operational Dashboard – November 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. • 6.8M Advanced Metering System (AMS) Electric Service Identifier (ESIID)s included in settlement as of November 2015.
Settlement Dollars	*Yes*	• As of settlement of Operating Day 11/30/2015, the daily average settlement dollars for November are $8.26M, which is down from $8.95M in October 2015 and down from November 2014 which had an average of $12.44M.
Revenue Neutrality	*Yes*	• As of settlement of Operating Day 11/30/2015, Revenue Neutrality uplift is a credit of $0.31M, which is down from a $3.25M charge in October 2015 and down from a $2.15M charge in November 2014.
Market-Based Uplift to Load	*Yes*	• As of settlement of Operating Day 11/30/2015, the market-based uplift to load is a charge of $20.40M, as opposed to a $16.25M charge in October 2015 and a charge of $34.56M in November 2014.

Operational Dashboard – December 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. • 6.8M Advanced Metering System (AMS) Electric Service Identifier (ESIID)s included in settlement as of December 2015.
Settlement Dollars	*Yes*	• As of settlement of Operating Day 12/31/2015, the daily average settlement dollars for December are $8.18M, which is down from $8.26M in November 2015 and down from December 2014 which had an average of $8.72M.
Revenue Neutrality	*Yes*	• As of settlement of Operating Day 12/31/2015, Revenue Neutrality uplift is a charge of $1.27M, which is up from November 2015 which was a credit of $0.31M and up from December 2014 which was a charge of $0.51M.
Market-Based Uplift to Load	*Yes*	• As of settlement of Operating Day 12/31/2015, the market-based uplift was a charge of $25.20M, as opposed to a charge of $20.40M in November 2015 and a charge of $9.69M in December 2014.

Market Enhancements Under Consideration

Enhancement	Further Information

Evaluating market design improvement proposals	• Future Ancillary Services Team (FAST) Activity
	  • NPRR 667 was posted on 11/18/2014
	  • Brattle presented the results from the Cost Benefit Analysis (CBA) on the Future Ancillary Services framework on 11/9/2015
	  • Full report posted on 12/21/2015 (http://www.ercot.com/content/wcm/key_documents_lists/30517/667NPRR_12a_Cost_Benefit_Analysis_122115.pdf)
	  • FAST Workshop on 2/1/2016

Evaluating Pilot Project Feasibility	• No current pilot projects

Major Project Highlights (as of 01/13/2016)

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
		  ◦ Providing defect fixes and testing support
		  ◦ Replication change requested by ERCOT, delivery forecasted for end of February
		• ERCOT Development
		  ◦ Phase 6.4 defect fixes delivered, currently working on Phase 7.1 defect resolution
		• Infrastructure
		  ◦ Production application installations completed, production verification in progress
		• Testing
		  ◦ Testing 6.4 defect release
		  ◦ EMS internal integrated testing ongoing
		  ◦ Integrated testing with down stream systems completed, no further tests anticipated
		  ◦ Failover, backups and recovery testing ongoing
		  ◦ Close Loop testing begins in March 2016
		  ◦ Go-live scheduled for May 2016

NMMS Upgrade Project – Replace the current Siemens NMMS application with the next generation of model management software available from Siemens	*Yes*	• A change control was approved in early January that confirmed the project scope and established a new budget and schedule
		  ◦ The change in scope, which aligns with the revised project approach, also redistributed the scope and associated deliverables between the vendor and ERCOT
		  ◦ The budget increased by about 8% and the go-live target is now scheduled for late September 2016
		• Key development deliverables are scheduled to be delivered by the vendor in January, with acceptance, integration and performance testing cycles running though mid-July
		• Market training and education completes in early September, a few weeks prior to the target go-live date

Major Project Highlights (as of 01/13/2016) – continued

Project	Trending as Expected	Further Information
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 tracking to the approved schedule and budget • The Bulk Electric System (BES) Cyber Systems environment components went live in early November. Stabilization of these components is complete and the team is now focused on delivery of the remaining non-BES environment components • Go live of the non-BES Cyber System environment components is targeted for late January. Delivery of this environment will complete the scope delivery and allow the project to move into the Closing phase

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 overall program is managed by the Readiness Project which is on schedule and on budget. The following efforts are ongoing:
		  ○ Changes to procedures and workflows
		  ○ Access management
		  ○ Recovery plans
		  ○ Information protection
		  ○ Remote access
		  ○ Firewall Reporting
		  ○ Port Management
		  ○ Controls and Assessments
		• The following projects have gone live:
		  ○ Firewall Access System, Next Generation Scanning, Information Technology Change Management, Privilege Account Management, IDM Reporting and Change Management System

Major Project Highlights (as of 01/13/2016) – continued

Project	Trending as Expected	Further Information

Data Center 4.0 Optimization (DC^4) Program – Replace the aging data center infrastructure with modernized infrastructure technologies to minimize the impact of failures, support future business growth, deliver highly automated next-generation infrastructure services, and ensure sustained reliability	*Yes*	• The DC^4 Program is in Planning and is tracking to the approved schedule and budget
		  ○ Completion of the technical framework and the draft of the future-state architecture
		  ○ The DC^4 RFP has been published for vendor review and response
		  ○ This planning effort includes the continuation of the migration strategy and the analysis of the asset inventory, and planning the migrations based on resource, project, business, and release dependencies
		• Other projects under the program:
		  ○ The DC^4 Compute-DB Infrastructure Install and Migration project is in Planning and is tracking as expected. Resource and project task planning is continuing
		  ○ DC^4 Compute-DB project has also completed an initial Database Computer Upgrade capacity analysis

Enterprise Resource Planning – Provide a single, integrated software solution for Human Resource, Accounting/Finance, Purchasing, Asset Management and related general business planning, strategy, and reporting functions	*Yes*	• The project gated to Planning Phase 2 in early December and is on track with approved phase schedule and budget • The implementation vendor delivered Prototype 1 (P1) of the configured application in late November and unit testing of the P1 solution has been ongoing since that time. This round of testing is scheduled to complete by the end of January • Phase 2 completes by mid-February and is focused on completion of integration design and delivery of plans for training, organizational change management, integration testing and the post-production support model, as well as confirmation of the go-live date

Appendix

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