



Item 4.4: Operations Report **(January & February 2014)**

Trip Doggett
President & CEO

Board of Directors Meeting
ERCOT Public
April 8, 2014

Storage Array Outage on March 11, 2014 at 9:27 a.m.

Primary Impact

REPs and TDSPs were unable to process retail market transactions or access retail data

- Retail transaction processing was restored on 3/12
- All retail systems were back to normal on 3/14
- All systems back to normal on 3/17

Market Communication

- 1st Market Notice at 12:27 p.m. on 3/11
- 1st Retail Market Conference Call at 1:00 p.m. on 3/11
- 12 Market Notices and 6 Retail Market Conference Calls during the outage

Primary Lesson on Communication

Develop capability to send market notices without ERCOT's e-mail system

Summary – January 2014

- **Operations**

- The peak demand of 57,277 MW on January 7th was more than the mid-term forecast peak of 56,800 MW as well the January 2013 actual peak demand of 50,665 MW. The instantaneous load on January 7th was 58,043 MW.
- Day-ahead load forecast error for January was 3.19%.
- ERCOT issued thirteen notifications:
 - Three advisories, two Operating Condition Notices (OCN), and two Watches for extreme cold temperatures.
 - One Advisory issued for Voltage Security Assessment Tool (VSAT) not solving for 30 minutes.
 - One Advisory for Physical Responsive Capability (PRC) below 3000 MW.
 - Two Watches for PRC below 2500 MW.
 - Two Energy Emergency Alert (EEA) events.

- **Planning Activities**

- 210 active generation interconnection requests totaling over 52,300 MW, including 25,200 MW of wind generation as of January 31, 2014. Five more requests and 1,200 more MW from December 31, 2013.
- 11,213 MW wind capacity in commercial operation January 31, 2014; 42 less MW than December 31, 2013.

Summary – February 2014

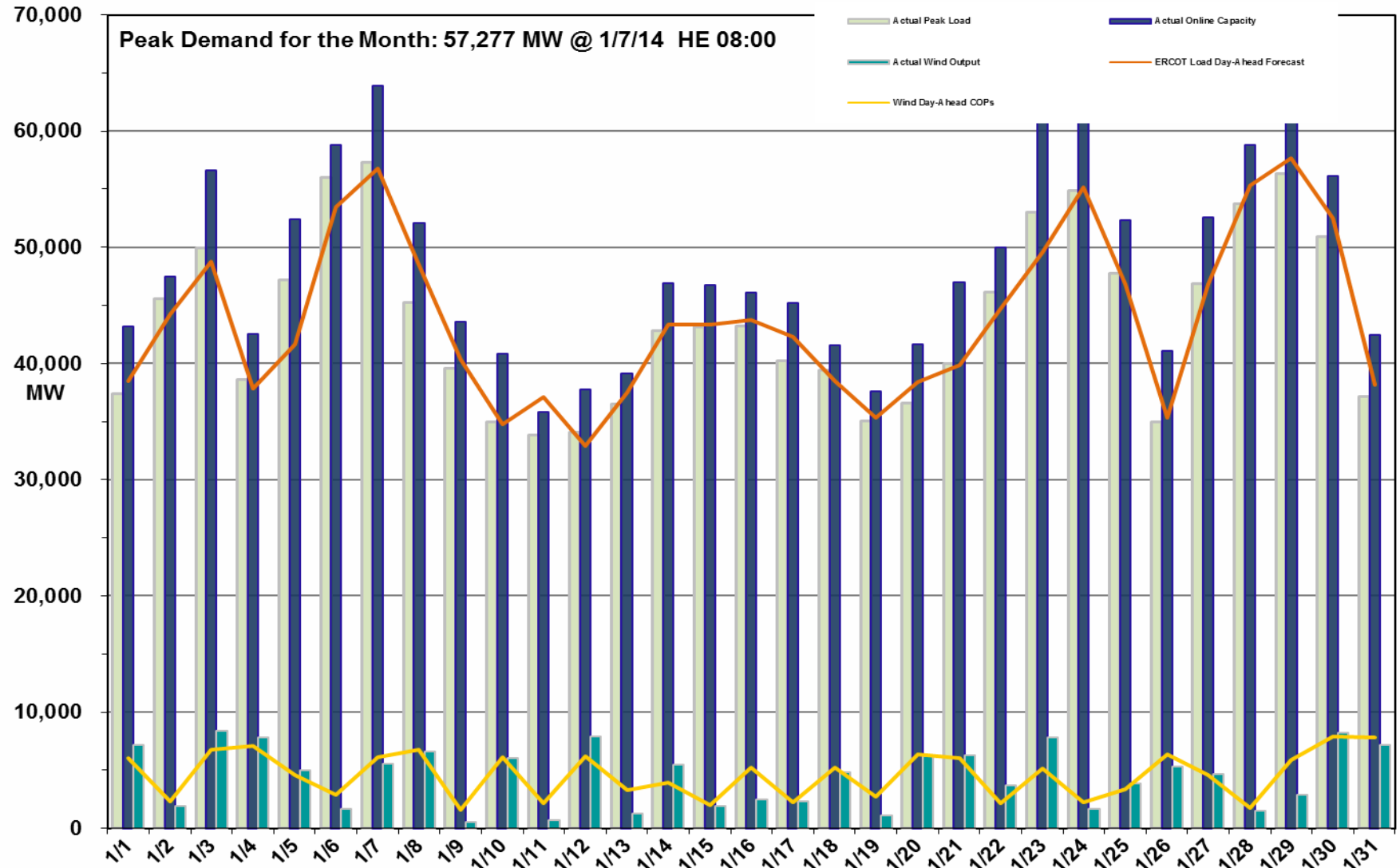
- **Operations**

- The peak demand of 57,056 MW on February 6th was less than the mid-term forecast peak of 57,683 MW but greater than the February 2013 actual peak demand of 40,407 MW. The instantaneous load on February 6th was 57,582 MW.
- Day-ahead load forecast error for February was 3.70%.
- ERCOT issued nine notifications:
 - Two Operating Condition Notices (OCN), and two advisories, and two Watches for extreme cold temperatures.
 - One Advisory for Physical Responsive Capability (PRC) below 3000 MW.
 - One Advisory and one Watch for DAM timeline deviation.

- **Planning Activities**

- 219 active generation interconnection requests totaling over 55,300 MW, including 26,700 MW of wind generation as of February 28th, 2014. Nine more requests and 3,000 more MW from January 31, 2014.
- 11,065 MW wind capacity in commercial operation February 28, 2014; 148 less MW than January 31, 2014.

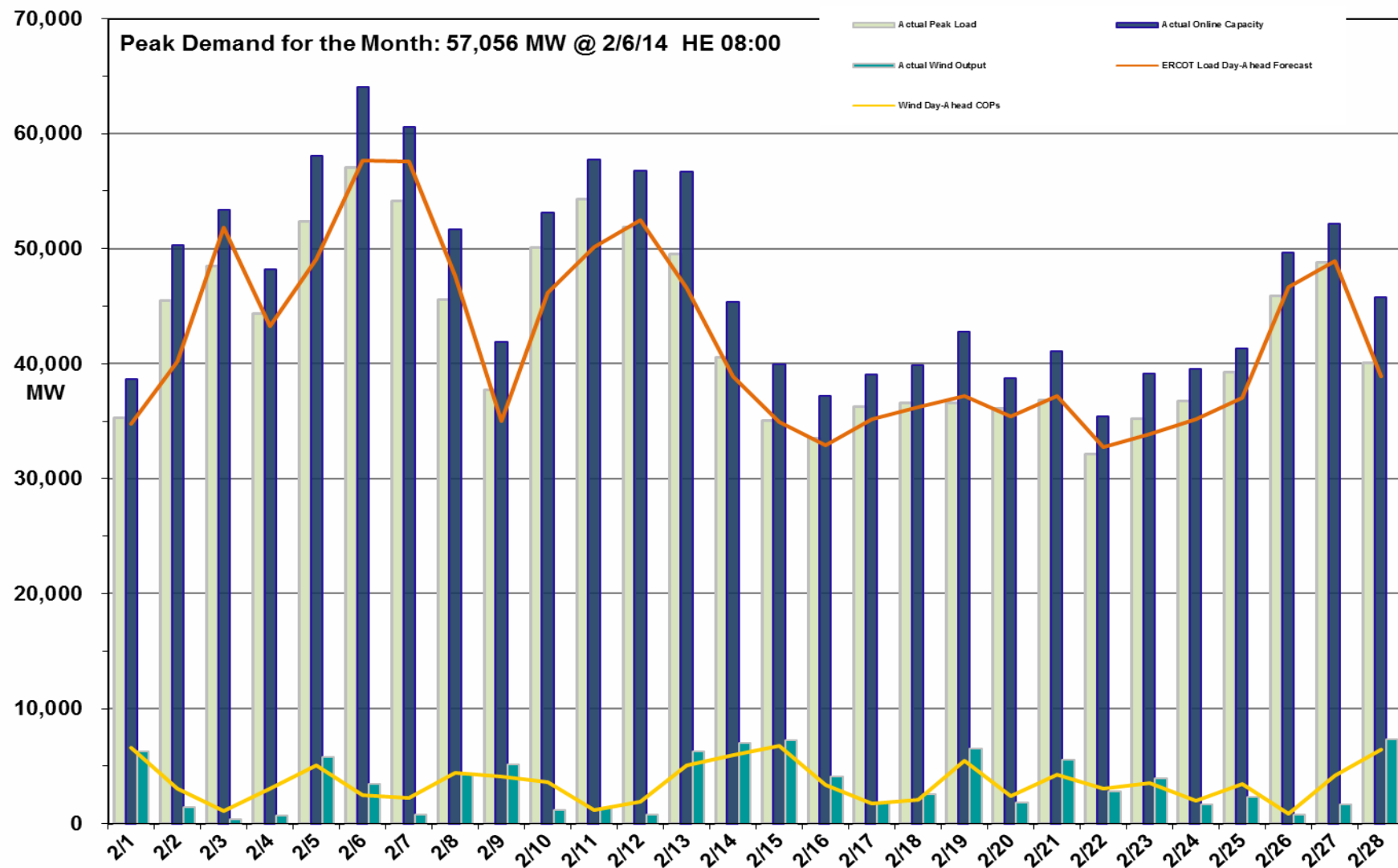
Daily Peak Demand: Hourly Average Actual vs. Forecast, Wind Day-Ahead COPs & On-line Capacity at Peak – Jan. 2014



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Note: Official Peak Demand values subject to change post Settlement process

Daily Peak Demand: Hourly Average Actual vs. Forecast, Wind Day-Ahead COPs & On-line Capacity at Peak – Feb. 2014



Market Statistics – January 2014

Market Statistics	January 2013	January 2014	2013 Average	2014 YTD Average
Percentage of Real-Time load hedged in Day-Ahead Market	124.20%	128.16%	121.18%	128.16%
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Day-Ahead Market (\$/MWh)	26.32	38.63	34.14	38.63
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Real-Time (\$/MWh)	24.95	47.04	32.45	47.04

Market Statistics – February 2014

Market Statistics	February 2013	February 2014	2013 Average	2014 YTD Average
Percentage of Real-Time load hedged in Day-Ahead Market	122.46%	124.08%	121.18%	126.12%
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Day-Ahead Market (\$/MWh)	25.14	56.74	34.14	47.13
Average 'ERCOT Hub Average 345 kV Hub' Settlement Point Price in Real-Time (\$/MWh)	24.31	50.96	32.45	48.88

Operational Performance Measures – January 2014

Performance Measure	Target Met	Further Information
Retail Transaction Performance (Target 98%)	Yes	<ul style="list-style-type: none">• Retail transaction processing performance was near 100%
Settlements Performance (Target 99%)	Yes	<ul style="list-style-type: none">• 100% timely statement and invoice posting

Operational Performance Measures – February 2014

Performance Measure	Target Met	Further Information
Retail Transaction Performance (Target 98%)	Yes	<ul style="list-style-type: none">• Retail transaction processing performance was near 100%
Settlements Performance (Target 99%)	Yes	<ul style="list-style-type: none">• 100% timely statement and invoice posting

Operational Dashboard – January 2014

Metric	Trending as Expected	Further Information
Day-Ahead Schedule	Yes	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Hourly average prices correctly reflect the opportunity cost of energy
Day-Ahead vs Real-Time Load Zone Settlement Point Price (Hourly Average)	Yes	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Capacity committed by the DRUC process indicates the level of out of market activity needed Day-Ahead to maintain reliability 1 resource was committed in DRUC in this period

Operational Dashboard – February 2014

Metric	Trending as Expected	Further Information
Day-Ahead Schedule	Yes	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Hourly average prices correctly reflect the opportunity cost of energy
Day-Ahead vs Real-Time Load Zone Settlement Point Price (Hourly Average)	Yes	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Capacity committed by the DRUC process indicates the level of out of market activity needed Day-Ahead to maintain reliability • 2 resources were committed in DRUC in this period

Operational Dashboard – January 2014

Metric	Trending as Expected	Further Information
Hourly Reliability Unit Commitment (HRUC) Monthly Summary	Yes	<ul style="list-style-type: none">Capacity committed by the HRUC process indicates the level of out of market activity needed during the Operating Day to maintain reliabilitySeven resources were committed in January to help resolve congestion or capacity
Supplemental Ancillary Service Market Monthly Summary	Yes	<ul style="list-style-type: none">Normal trend indicates that deliverability was not a major concern
Non-Spinning Reserve Service Deployment	Yes	<ul style="list-style-type: none">Offline Non-Spin was deployed in two days of January to help resolve EEA events
Congestion Revenue Rights Price Convergence	Yes	<ul style="list-style-type: none">Normal trend indicates good ability of market participants to estimate value of hedges

Operational Dashboard – February 2014

Metric	Trending as Expected	Further Information
Hourly Reliability Unit Commitment (HRUC) Monthly Summary	Yes	<ul style="list-style-type: none">Capacity committed by the HRUC process indicates the level of out of market activity needed during the Operating Day to maintain reliability20 resources were committed in February to help resolve congestion, capacity, or voltage stability
Supplemental Ancillary Service Market Monthly Summary	Yes	<ul style="list-style-type: none">Normal trend indicates that deliverability was not a major concern
Non-Spinning Reserve Service Deployment	Yes	<ul style="list-style-type: none">Offline Non-Spin was not deployed during this period
Congestion Revenue Rights Price Convergence	Yes	<ul style="list-style-type: none">Normal trend indicates good ability of market participants to estimate value of hedges

Operational Dashboard – January 2014

Metric	Trending as Expected	Further Information
Retail Transactions	Yes	<ul style="list-style-type: none"> Seasonal variations in transaction volumes trending as expected.
Advanced Metering	Yes	<ul style="list-style-type: none"> 98.1 % of ERCOT load settled with 15-minute interval data. 6.5M Advanced Metering System (AMS) Electric Service Identifier (ESIIDs) included in settlement as of January 2014.
Settlement Dollars	Yes	<ul style="list-style-type: none"> As of settlement of Operating Day 01/31/2014, the daily average settlement dollars for January are \$16.4M, which is up from \$11.8M in December 2013 and higher than January 2013 which had an average of \$8.7M.
Revenue Neutrality	Yes	<ul style="list-style-type: none"> As of settlement of Operating Day 01/31/2014, Revenue Neutrality uplift is a credit of \$3.02M, which is down from a \$1.73M charge in December 2013 and a \$0.19M charge in January 2013.
Market-Based Uplift to Load	Yes	<ul style="list-style-type: none"> As of settlement of Operating Day 01/31/2014, the market-based uplift to load is a charge of \$2.20M, as opposed to a \$6.11M charge in December 2013 and a credit of \$5.48M in January 2013.

Operational Dashboard – February 2014

Metric	Trending as Expected	Further Information
Retail Transactions	Yes	<ul style="list-style-type: none"> Seasonal variations in transaction volumes trending as expected.
Advanced Metering	Yes	<ul style="list-style-type: none"> 98.2 % of ERCOT load settled with 15-minute interval data. 6.5M Advanced Metering System (AMS) Electric Service Identifier (ESIID)s included in settlement as of February 2014.
Settlement Dollars	Yes	<ul style="list-style-type: none"> As of settlement of Operating Day 2/28/2014, the daily average settlement dollars for February are \$18.9M, which is up slightly from \$16.4M in January 2014 and higher than February 2013 which had an average of \$9.0M.
Revenue Neutrality	Yes	<ul style="list-style-type: none"> As of settlement of Operating Day 2/28/2014, Revenue Neutrality uplift is a charge of \$2.49M, which is up from January 2014 which was a credit of \$3.02M and up from February 2013 which was a charge of \$0.07M.
Market-Based Uplift to Load	Yes	<ul style="list-style-type: none"> As of settlement of Operating Day 2/28/2014, the market-based uplift was a charge of \$38.19M, as opposed to a \$2.20M charge in January 2014 and a charge of \$8.32M in February 2013.

Market Enhancements Under Consideration

Enhancement	Further Information
Evaluating market design improvement proposals (NPRR 568)	<ul style="list-style-type: none">• ERCOT BOD approved NPRR 568 and corresponding Other Binding Document (OBD) on 11/19/2013• ERCOT has completed the Planning Phase of Implementing the NPRR and is now working on the Development Phase of the Implementation• Go live date is still 6/1/2014• Update given to TAC on 2/27/2014 on Implementation Status• ERCOT is working with stakeholders in RATF meeting to improve the ORDC design
Evaluating Pilot Project Feasibility	<ul style="list-style-type: none">• No current pilot projects

Major Project Highlights (as of 2/28/2014)

Project	Trending as Expected	Further Information
2014 Market Enhancements – delivery of several Market related NPRRs including NPRR568, Real-Time Reserve Price Adder Based on Operating Reserve Demand Curve and NPRR555, Load Resource Participation in Security-Constrained Economic Dispatch	Yes	<ul style="list-style-type: none"> • Project in Execution phase and tracking to approved schedule and budget • Code development, test documentation and training plans underway for the following scope components: <ul style="list-style-type: none"> ○ NPRR568 – Real-Time Reserve Price Adder Based on Operating Reserve Demand Curve; ○ NPRR564 – Thirty-Minute Emergency Response Service (ERS); ○ NPRR555 – Load Resource Participation in Security-Constrained Economic Dispatch; ○ NPRR532 – Performance Measurement and Verification and Telemetry Requirements for Load Resources Providing Non-Spin; ○ NPRR240 – Proxy Energy Offer Curve; and ○ NPRR591 As-Built Clarification & Corrections Related to NPRR568 ○ NPRR598 Clarify Inputs to PRC & ORDC • Other Binding Document (OBD) for Setting the Shadow Price Caps and Power Balance Penalties in Security Constrained Economic Dispatch was removed from scope. • Production changes are occurring in three releases: <ul style="list-style-type: none"> ○ February 2014 – NPRR240 - Complete ○ April 2014 - NPRR564 - Testing in progress ○ June 1, 2014 – remainder of enhancements (NPRR532, NPRR555, NPRR568, NPRR591, NPRR598) • The project is working to an aggressive delivery and testing schedule that may put the go-live date at risk. At this time, plans for go-live remain intact.
EMS Upgrade – Upgrade EMS and OTS from ALSTOM EMP 2.3 to EMP 3.0	Yes	<ul style="list-style-type: none"> • The project is tracking to approved schedule and budget baselines • Completed work on Functional Requirements, Functional Design, system planning of various environments and the evaluation of the base product. The tasks in progress are: <ul style="list-style-type: none"> ○ Development and review of Test Scripts ○ Creation of Work Breakdown Structure for the Execution Phase with Development focus ○ Completion of Technical Architecture tasks ○ Evaluation of vendor solutions for system security • Development of a subset of key application subsystems by both ERCOT and ALSTOM and continues on track with no major issues. Work completed : <ul style="list-style-type: none"> ○ Save case conversion from EMP2.3 to EMP3.0 by ALSTOM ○ Scada development by ERCOT ○ ETS (CIM Importer) development by ERCOT

Major Project Highlights – continued (as of 2/28/2014)

Project	Trending as Expected	Further Information
Oracle 11g Upgrade – Upgrade Oracle databases and related tools that support ERCOT's application portfolio from Oracle 10g to Oracle 11g	No	<ul style="list-style-type: none"> 7 systems remain for upgrade in this project (EMS, MIS, Credit Monitoring and Management – CMM, Congestion Revenue Rights – CRR, Nodal TIBCO, Commercial Systems Integration – CSI, and Load Resource Sampling – LRS) <ul style="list-style-type: none"> No issues reported with Development environments upgrades Integration test environment upgrades are occurring in March. LRS upgrades are moving forward with no risk to schedule and the CSI application is in regression testing of code changes that addressed performance issues. CRR upgrade and verification activities by the vendor were completed late which impacted ERCOT business testing. Currently working to mitigate schedule impacts, but planned March Integration testing will move to a later timeframe. <i>The remaining four systems (EMS, CMM, MIS, Nodal TIBCO), targeted for April, are being re-evaluated for potential changes due to a recent storage issue and a new approach for replacement of storage drives. Work to confirm schedules is underway. Any changes will be addressed with Change Control.</i>
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	<ul style="list-style-type: none"> A change control was approved in February 2014 to extend Planning through end of May 2014. Currently monitoring the remaining Planning work with both the vendor and internal resources to ensure milestones are achieved per the revised schedule. Activities recently completed or underway include: <ul style="list-style-type: none"> Hardware setup at the vendor's site is complete. The vendor is currently addressing activities that merge base product code with ERCOT customs, as well as working on activities to update technical documentation and develop the test strategy and test scripts.
Settlement System Upgrade – Replace proprietary code, data structures and tools with an ERCOT supported solution	Yes	<ul style="list-style-type: none"> Project team is making very good progress against the schedule and budget. <ul style="list-style-type: none"> Code development is 68% complete for required components (up from 53% reported in February 2014) Functional Acceptance Testing (FAT) completion is at 69% (up from 47%). Project continues to track to approved schedule that delivers to production in Q4 2014. <ul style="list-style-type: none"> Management has added additional development resource to remaining Eligibility coding efforts to avoid any delays with this critical path work. Go-live now aligned with specific releases. Data Aggregation functionality will release first, going live with R4 release in July 2014. Settlements and Billing functionality will follow, going live with the R6 release in December 2014.



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