



Nodal Program Update

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Chief Operating Officer

ERCOT Board of Directors

20 September 2010



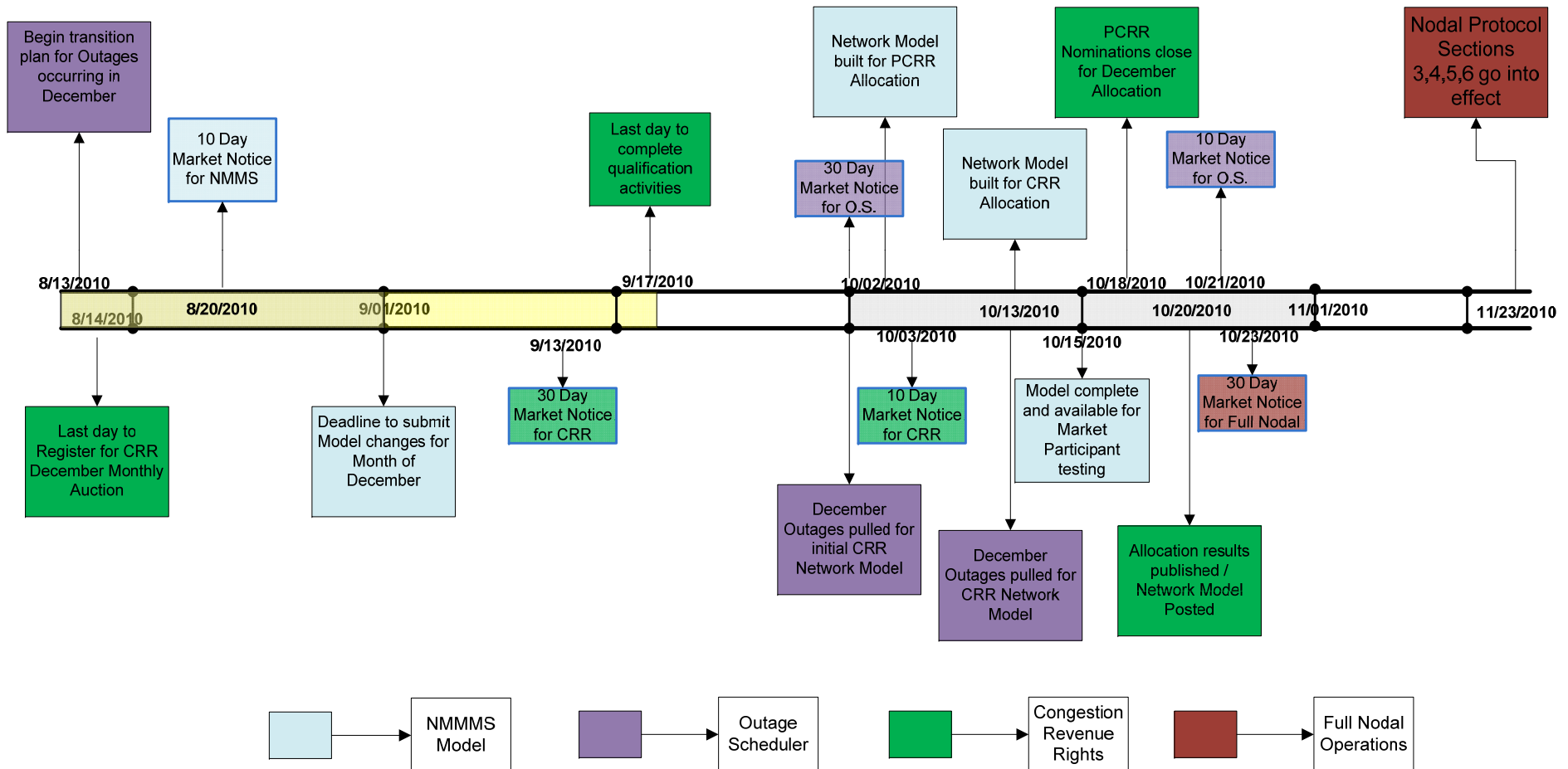
Nodal Go-Live Update

Review of Full Nodal Operations Go-Live Items

Kenneth Ragsdale
Principal Market Operations

Nodal Program Cutover Schedule: NMMS, OS, and CRR

The table below outlines key dates and activities for Nodal cutover



Nodal Program Communications

Readiness Signoff Schedule		
Network Operations Modeling	06/30 07/01 07/20 07/30 09/01	ERCOT Management Readiness Signoff TAC Approval Board of Directors Approval 30 Day Market Notice sent Nodal Protocol Section 3.10 goes into effect
Congestion Revenue Rights	08/04 08/05 08/17 08/30 10/01	ERCOT Management Readiness Signoff TAC Approval Board of Directors Approval 30 Day Market Notice sent Nodal Protocol Section 7 goes into effect
Outage Scheduling	08/04 08/05 08/17 10/01 11/01	ERCOT Management Readiness Signoff TAC Approval Board of Directors Approval 30 Day Market Notice sent Nodal Protocol Section 7 goes into effect
Full Nodal Operations	10/01 10/07 10/19 10/23 11/23	ERCOT Management Readiness Signoff TAC Approval Board of Directors Approval 30 Day Market Notice sent Nodal Protocol Sections 3,4,5,6 go into effect as well as all other unimplemented Protocol Sections

21.12.3 Notice to Market Participants of Effective Date for Nodal Protocol Provisions and Retirement of Zonal Protocol Provision

No part of the nodal market design may start operation until all the Market Readiness Criteria for that part of the nodal market design have been met. Certification that all Market Readiness Criteria have been met must be made at least by each of the following: the Technical Advisory Committee (TAC), ERCOT and the ERCOT Board. Upon such certification, ERCOT shall issue two Notices alerting Market Participants to the effective date of Nodal Protocol sections and the retirement of Zonal Protocol sections, as applicable. ERCOT shall issue the first Notice no less than thirty (30) days prior to the effective date or retirement date, as applicable, and the second Notice no less than ten (10) days prior to the effective date or retirement date, as applicable. The Notice shall include:

- (1) The Nodal Protocol Sections to become effective; and
- (2) The Zonal Protocol Sections to be retired, if any

ERCOT will measure readiness by the following categories:

- ***System Readiness*** – an evaluation of a particular system needed to support identified market activities
- ***Process Readiness*** – an evaluation of the Processes and Procedures necessary to support identified market activities
- ***People Readiness*** – an evaluation of ERCOT and Market Participant capabilities to support identified market activities

ERCOT plans to review the Market Readiness Criteria at NATF and subsequently request a vote from TAC per Section 21.12.3, Notice to Market Participants of Effective Date for Nodal Protocol Provisions and Retirement of Zonal Protocol Provision

System Readiness – evaluation of the Nodal system to support the market design

- ***Core system functionality delivered***
 - Protocol required system functionality available for market testing
- ***System Integration delivered***
 - System to system integration delivered to support Market Timeline and Business Processes
- ***Known defects resolution plan***
 - All 'Must fix prior to go-live' defects have a resolution plan in place
- ***Active Readiness Metrics***
 - Current status of Readiness Metrics

Process Readiness – evaluation of the Processes and Procedures necessary to support the market design

– ***Procedures complete***

- ERT project procedures to support business processes complete

– ***System cutover transition plan established***

- ERCOT and Market Participant business activities required for transitioning into Go-Live have been established and communicated.

– ***Market rules transition communicated***

- Nodal and Zonal Protocol effective / retirement dates identified and communicated for Market Participant review

People Readiness – evaluation of ERCOT employee readiness and Market Participant knowledge to support the market design

– ***ERCOT staff supporting Market Trials***

- ERCOT Business teams supporting system execution, problem resolution, and market questions

– ***ERCOT staff trained on System and Processes***

- ERCOT Business teams training status based on identified ERT training metrics

– ***Market Participant Training delivered***

- ERT external training classes and web based training provided by the Nodal training project

MMS – Day Ahead, Adjustment Period, RT Market Overview

Recommendation of Certification

ERCOT

NATF

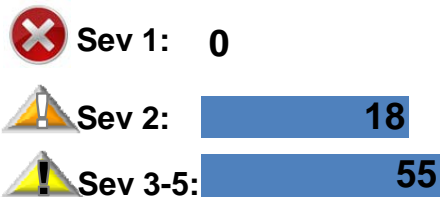
TAC

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Status / Other Issues*:

- DAM performance issue concerning CRR PTP options being investigated
- MMS currently has 73 Open defects in Test.
 - 39 Open MMS defects are in development and targeted to be fixed by October 1.
 - (15 DAM, 5 Platform, 7 RUC, 5 SCED, 7 Market Infrastructure)
 - 13 Open Price Validation defects are in development and targeted to be fixed by October 1.
- The remaining 21 defects (MMS (20) and Price Validation (1)) are being reviewed by business for final disposition

Open Defects*:



Deferred Defects*:



* As of September 10, 2010

MMS – Day Ahead, Adj. Period, RT Market – Readiness Update

System Readiness	Planned Completion	Status
MMS System release to Market Trials	2/1/10	Complete
Market Submission Connectivity Qualification (MP3)	8/31/10	Complete
Real-Time Market Daily Participation (MP15A)	Ongoing	Green
Generate LMP's for 6 months (MO5)	Ongoing	Green
Verify SCED Price Validation (MO4)	Ongoing	Green
DAM Participation (MP16)	Ongoing	Amber
Generate Day-Ahead LMPs (MO9)	Ongoing	Green
Verify DAM Price Validation (MO8)	Ongoing	Green
DRUC Execution (MO10)	Ongoing	Amber
Verify Supplemental Ancillary Services Market (MO3)	Ongoing	Green
Process Readiness		
Day Ahead, Adjustment Period and RTM Procedures	8/31/10	Complete
MMS Day Ahead & Real Time Price Validation Procedures	8/31/10	Complete
Nodal Protocol Transition Plan Updated for DAM, RUC, SASM, SCED	7/29/10	Complete
People Readiness		
ERCOT Staff Support of Market Trials	9/30/10	In Process
ERCOT Staff Trained on System and Processes	8/27/10	Complete
Market Participant Training Delivered	Ongoing	In Process

DAM Performance Issues with CRR PTP Offers : ERCOT's Action Plan

For Go-Live: Immediate Mitigation

- **Potential software based improvements:**
 - **Make changes to the software which could allow the NSM processes to run faster by enabling parallelization**
 - *DAM - Network Analysis Module*
 - Three to four weeks are required to determine the performance improvement of this option
 - Additional time will be required to fully verify the functional results
 - **Utilize newer math libraries in the software that may improve performance**
 - *DAM – Unit Commitment, Dispatch and Pricing*
 - At least four weeks are required to determine the performance improvement of this option
 - Additional time will be required to fully verify the functional results
- **Potential hardware based improvements:**
 - **Upgrade to faster processors. This is being tested at ERCOT this week to determine the magnitude of performance improvement**
 - Six to eight weeks required to migrate the ERCOT production environments to this processor set if this option is pursued

Post Go-Live: Long Term Solution

- **Potential long term software based improvement**
 - **Further enhance parallel computation capability of Network Analysis Module (NSM)**
 - Design change:
 - Allow network analysis for each hour of the study period to be done in parallel
 - Introduce new process controller that manages these parallel network analysis modules
 - Manage the interface of passing transmission constraints after network analysis for all 24 hours back to the unit commitment engine
 - Long term option, not viable before go live

EMS – Real-Time Operations

Recommendation of Certification

ERCOT

NATF

TAC

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Status / Other Issues:

- 24 Open defects in development, targeted to be migrated into production 10/1 through 10/15.
 - Defects include system studies, tuning for generation control, telemetry and state estimator.

Open Defects:

 Sev 1: 0

 Sev 2: 16

 Sev 3-5: 8

Deferred Defects:

 Deferred 321

* As of September 10, 2010

EMS – Real-Time Operations Readiness Update

System Readiness	Planned Completion	Status
EMS System Release to Market Trials	2/1/10	Complete
Verify ACE Performance (EMO5)	4/21/2008	Complete
Individual LFC Testing (EMO6)	5/31/2010	Complete
Telemetry / ICCP System Failover (N2)	Ongoing	Green
Telemetry Compliance (MP6 SCED/SE)	6/2/2010	Complete
Validate Telemetry / SE ISM / Data Accuracy (E3)	10/1/2010	Planned
State Estimator Standards Performance (EMO9)	Ongoing	Green
RTCA Zonal to Nodal Modeling Differences (EMO9)	Ongoing	Green
RTCA CSC Zonal to Nodal Comparison (EMO9)	Ongoing	Green
Verify Voltage Support Functionality (EM02)	9/10/2010	Complete
Anomalous/Auto-Disabled Telemetered Points (EMO10)	Ongoing	Green
Telemetry Alarm Processing (N1)	10/1/2010	Green
Process Readiness		
RT Operations Business Procedures	8/31/10	Complete
Nodal Protocol Transition Plan Updated for RT Operations	7/29/10	Complete
People Readiness		
ERCOT Staff Support of Market Trials	9/30/10	In Process
ERCOT Staff Trained on System and Processes	9/3/10	Complete
Market Participant Training Delivered	Ongoing	In Process

COMS – Settlement & Billing, Metering, and Data Aggregation - Overview

Recommendation of Certification

ERCOT

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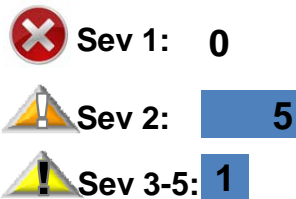
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Status / Other Issues:

- Statements and Invoices are being generated and published on time
- The bulk of the remaining Settlements Defects occur in exception circumstances and are expected to be resolved by the end of September. There is one defect related to a core calculation, it is also expected to be resolved by the end of September.
- The remaining core calculations are working correctly.

Open Defects*:



Deferred Defects*:



* As of September 10, 2010

S&B – Settlements and Billing, Metering, and Data Aggregation Readiness

System Readiness	Planned Completion	Status
S&B System release to Market Trials	5/1/10	Complete
Verify RTM Settlement Statements (CO5)	Ongoing	Green
Verify RTM Settlement Invoices (CO6)	Ongoing	Green
Verify DAM Settlement Statements (CO3)	Ongoing	Green
Verify DAM Settlement Invoices (CO7)	Ongoing	Green
Verify CRR Auction Invoices (CO8)	Ongoing	Green
Settle Market for 7 days and provide appropriate extracts (CO1)	8/25/2010	Complete
Verify Dispute Process (CO2)	9/22/2010	Planned
Zonal/Nodal Coordinated Settlement Operations (CO4)	9/8/2010	Complete
Process Readiness		
Settlements and Billing Procedures	8/24/10	Complete
Nodal Protocol Transition Plan Updated for Settlements and Billing	7/29/10	Complete
People Readiness		
ERCOT Staff Support of Market Trials	9/30/10	In Process
ERCOT Staff Trained on System and Processes	7/30/10	Complete
Market Participant Training Delivered	Ongoing	In Process

CMM – Credit Overview

Recommendation of Certification

ERCOT

NATF

TAC

BOD

Status / Other Issues:

- All open defects have been closed as of 09/03/2010.
- In conjunction with the 168-hour test, ERCOT deleted Market Trials data that was causing the core credit calculation to be unrepresentatively high
 - This provides CPs that behave “normally” during the 168-hour test an opportunity to see what their credit calculation would be after “go live”

Open Defects*:

 Sev 1: 0

 Sev 2: 0

 Sev 3-5: 0

Deferred Defects*:

 Deferred  45

* As of September 10, 2010

CMM – Credit Management and Monitoring – Go Live

System Readiness	Planned Completion	Status
Credit Management Integrated in Market Trials	5/3/10	Complete
Verify CMM Credit Calculations (CO10)	9/8/2010	Complete
Process Readiness		
Credit Management Procedures	8/24/10	Complete
Nodal Protocol Transition Plan Updated for Credit Management	7/29/10	Complete
People Readiness		
ERCOT Staff Support of Market Trials	9/30/10	In Process
ERCOT Staff Trained on System and Processes	8/13/10	Complete
Market Participant Training Delivered	Ongoing	In Process

MIS – Market Information System Overview

Recommendation of Certification

ERCOT

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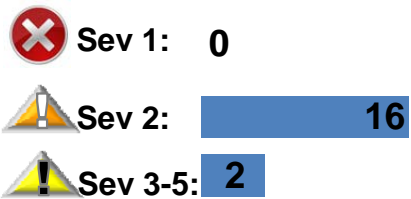
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Status / Other Issues:

- MIS defects of highest priority are around Extract Subscriber and LMP Contour Map and are targeting a resolution date by 10/11/2010.
- Fixes for most of these are already developed and will be tested during the MIS reconfiguration downtime.

Open Defects*:



Deferred Defects*:



* As of September 10, 2010

MIS – Market Information System – Go Live

System Readiness	Planned Completion	Status
MIS System release to Market Trials	2/1/10	Complete
MIS Compliance Test (E12)	9/8/2010	Complete
Process Readiness		
MIS Procedures	8/25/10	Complete
Nodal Protocol Transition Plan Updated for MIS	7/29/10	Complete
People Readiness		
ERCOT Staff Support of Market Trials	9/30/10	In Process
ERCOT Staff Trained on System and Processes	8/20/10	Complete
Market Participant Training Delivered	Ongoing	In Process

Nodal – Overall Readiness Metrics

Market Participant Readiness Items	Planned Completion	Status
QSE with Resource Connectivity to EDS Environment (MP2)	9/4/2008	Complete
ICCP Point to Point Telemetry Test (MP5)	9/4/2008	Complete
QSE Ability to Submit Transactions via MIS (MP8)	9/4/2008	Complete
QSE Ability to Submit Web Services Transactions (MP9)	9/4/2008	Complete
Resource Registration (MP11)	8/25/2010	Complete
Wind Generation Resources ICCP Metrological Telemetry (MP21)	Ongoing	Amber
Telemetry Quality (MP to ICCP Server) (MP23)	Ongoing	Green
Mapping of Resource and Loads in Private Area Networks (MP18)	8/25/2010	Complete
Telemetry Compliance (MP6 - TSP)	6/2/2010	Complete
Market Participant Nodal Readiness Declaration (R0)	10/19/2010	Planned
Independent Market Monitor		
Market Monitor Systems Capability (IMM1)	10/19/2010	Planned
Validate ISM Access & Accuracy of Postings Required by the IMM (E7)	10/19/2010	Planned

Nodal – Overall Readiness Metrics

ERCOT Readiness	Planned Completion	Status
ERCOT Internal Training (E1)	Ongoing	Green
Develop Nodal Procedures (E9)	Ongoing	Green
Develop Nodal Operating Guides (E6)	9/22/2010	Planned
Validate ISM, CDR, and Lodestar Source Reporting Access & Accuracy for internal ERCOT use (E10)	10/19/2010	Planned
Verify ERCOT Performance Monitoring Test Plan (E2)	10/19/2010	Planned
Nodal SAS 70 Preparedness (E5)	10/19/2010	Planned
ERCOT Staffed for Texas Nodal Operations (E8)	8/25/2010	Complete
Verify QSE Performance Monitoring Test Plan (E14)	10/19/2010	Planned
Verify TSP Performance Monitoring Test Plan (E15)	10/19/2010	Planned
Operating Personnel and Facilities Readiness (EMO13)	8/11/2010	Complete
ERCOT Operating Personnel and Facilities Readiness (MO7)	8/11/2010	Complete
168-Hour Test Completion (R3)	9/22/2010	Planned
ERCOT Nodal Readiness Declaration (R1)	10/19/2010	Planned
Develop Texas Nodal Market Launch Plan (R2)	9/22/2010	Planned

Nodal – Overall Readiness Metrics

Contingency Plans	Planned Completion	Status
Contingency Plan for Weekly, Daily and Hourly RUC Failure (C1)	10/01/2010	Planned
Contingency Plan for DAM / LMP Failure (C2)	10/01/2010	Planned
Contingency Plan for ICCP Data Failure (C3)	10/01/2010	Planned
Contingency Plan for SCED Failure (C4)	10/01/2010	Planned
Contingency Plans for Key Settlement and Financial Transfer Processes (C5)	10/01/2010	Planned
Develop Plan for SE Failure (C6)	10/01/2010	Planned
Contingency Plan for a Backup Facility (C7)	10/01/2010	Planned
Contingency Plan for Portal/API Failure (C8)	10/01/2010	Planned
Contingency Plan for Site Unavailability (C9)	10/01/2010	Planned
Verify Single Point of Failure Recovery EMS/MMS/NMMS/CRR/COMS (C10)	10/01/2010	Planned