Nodal Program Update
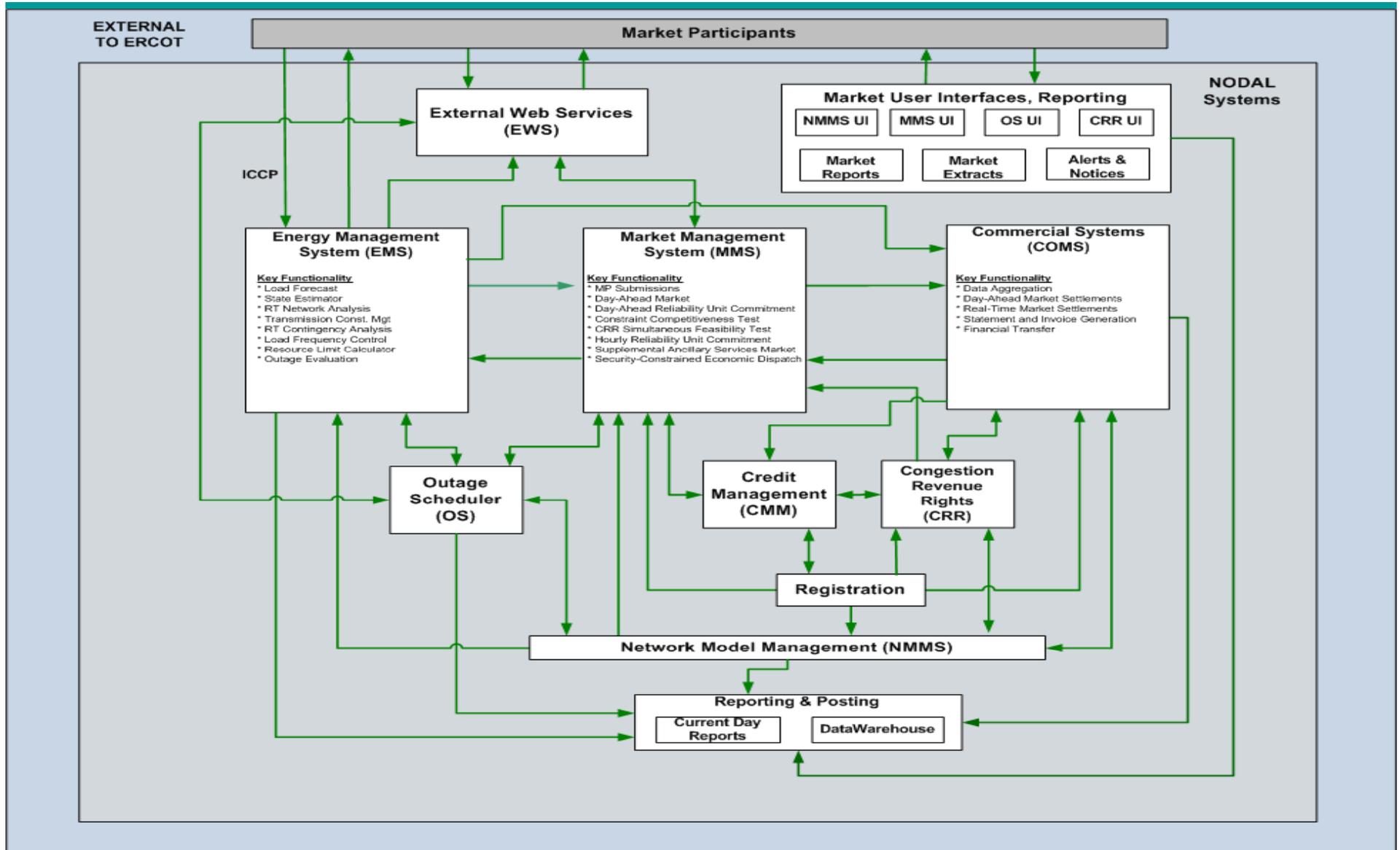

Jason Iacobucci

Nodal Program Manager

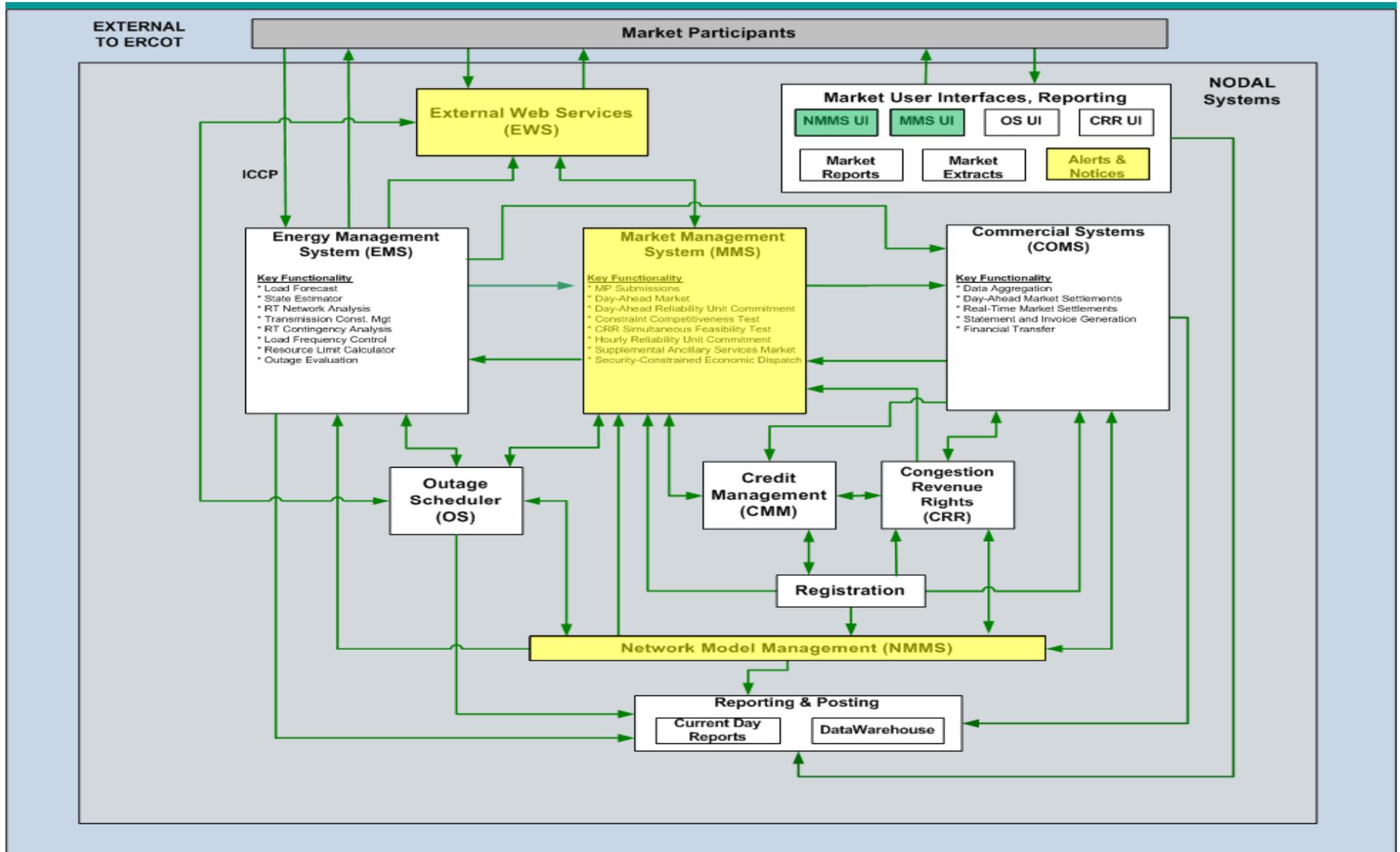**Special Nodal Program Committee**
14 December 2009

Today's Agenda

- **Program Status**

- **Defects Reporting & Program Risks**

- **Go-live Change/ Enhancement Process**

- **Traceability**

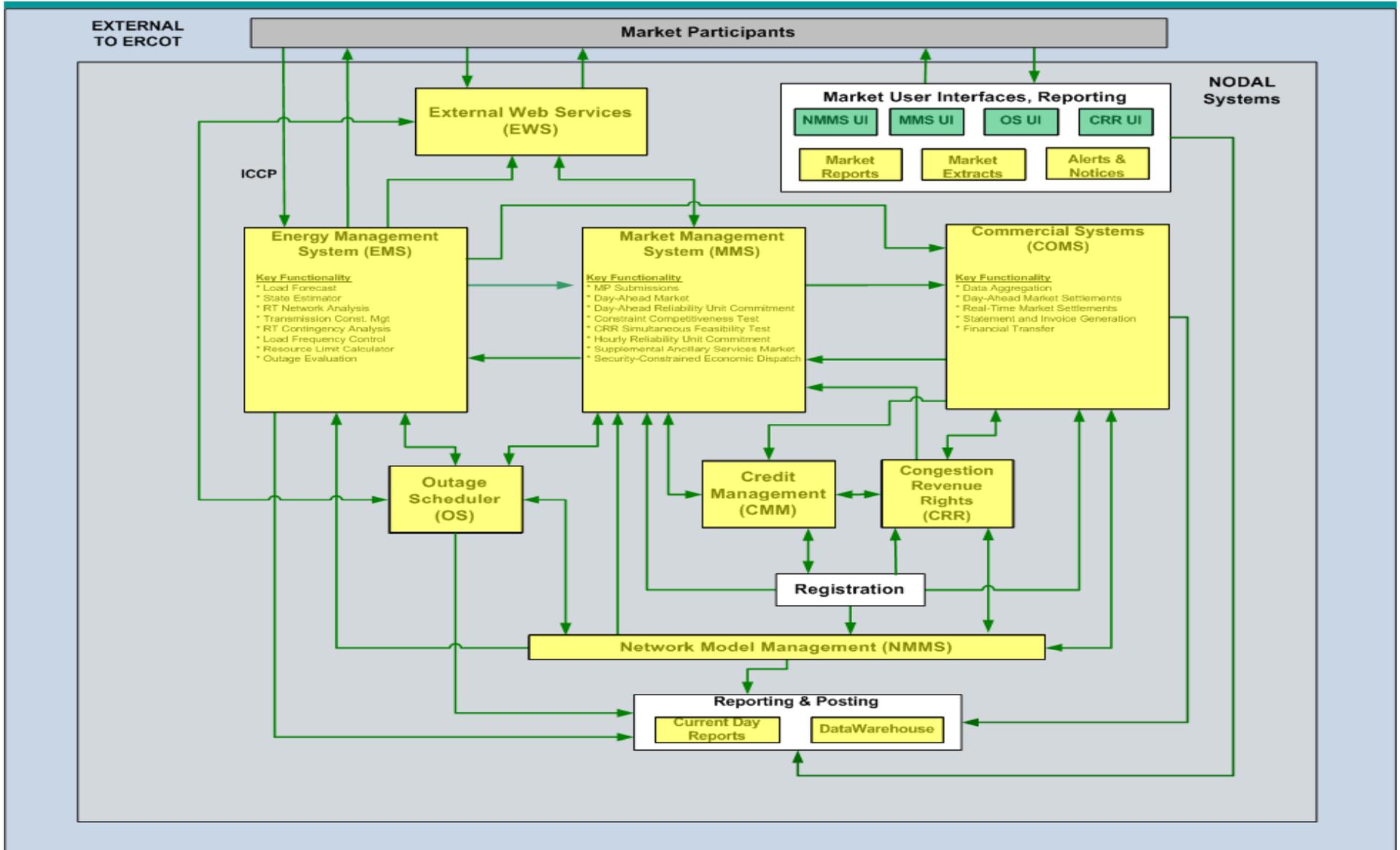- **Market Readiness**

- **Financials**
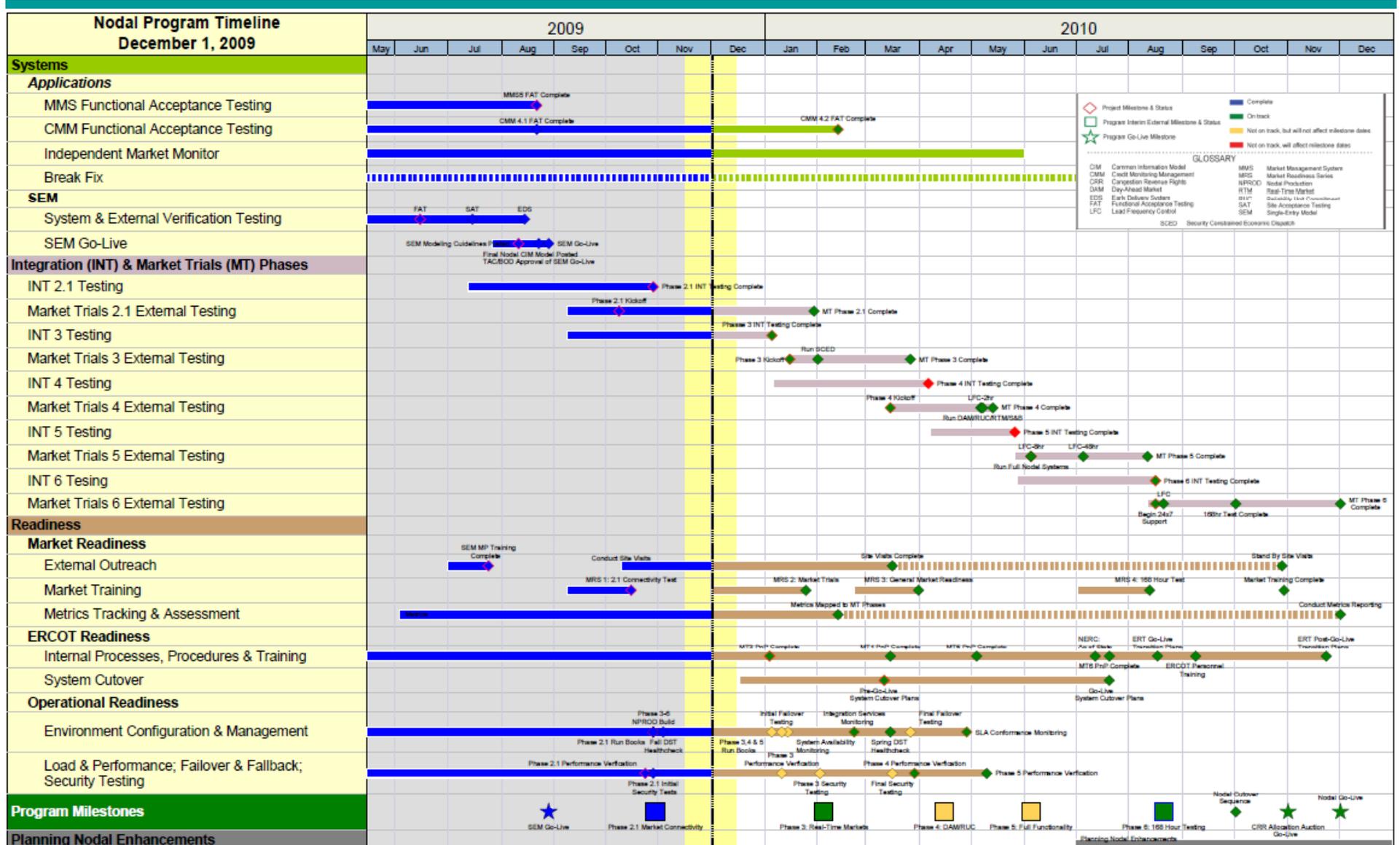
- **Appendix**

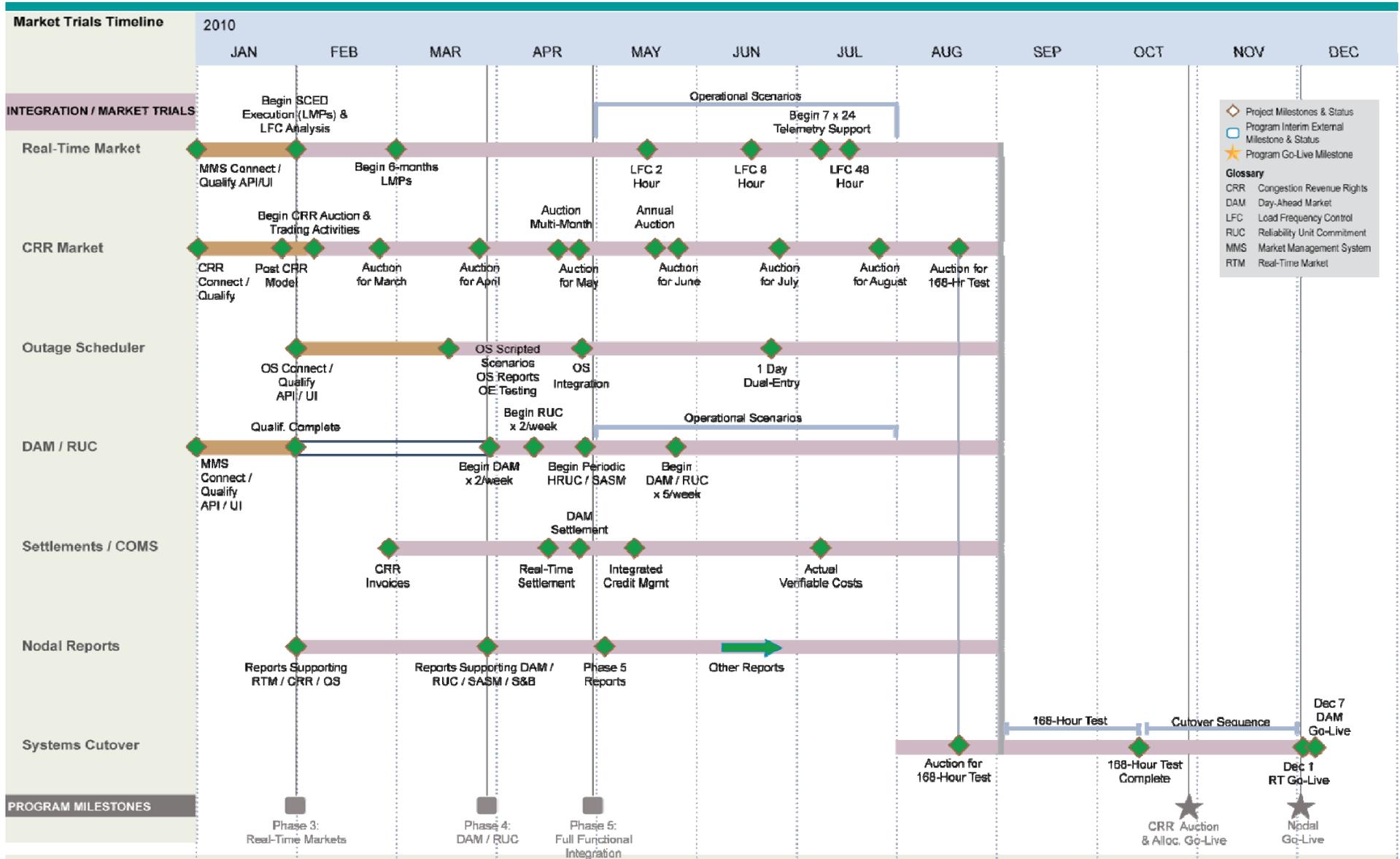# Nodal Systems Blueprint

Nodal Systems Blueprint - Today

Nodal Systems Blueprint - Market Trials Phase 3

Integrated Nodal Timeline

Integrated Nodal Timeline

Next Delivery Milestones

- **Real Time Market (RTM)**
  - Jan 4, 2010 – Jan 29, 2010: Mandatory Connectivity Qualification
    - After completing early voluntary qualification with 19 QSE's, ERCOT will reopen the mandatory qualification window in for the month of Jan.
    - QSEs and QSEs w/ Resources will be asked to complete a transaction checklist and notify ERCOT when complete
    - ERCOT will then confirm the submittals
  - Jan 8, 2010: Start of the weekly RTM Market Calls
    - The bi-weekly market calls held in all of 2009 will now be held weekly starting Jan 8, 2010
    - There will be a call for each functional area. The RTM call will be held Fridays at 9:00am Information on accessing the call is located on the ERCOT calendar.
  - Feb 1, 2010 – Feb 28, 2010: SCED Execution with Price, Base Point and continued LFC analysis
    - QSEs with resources will start submitting COPs, Three Part Supply Offers and Output Schedules (with optional INC/DEC) to support SCED solutions
    - ERCOT will be exercising price validation using price validation software as well as continuing market outreach on telemetry quality
  - March 1, 2010 – Sept 1, 2010: 6 Month LMP
    - Once ERCOT completes LMP analysis and can claim reasonable LMPs, 6 Month LMP begins

Next Delivery Milestones

- **CRR Market Trials**
  - <u>Jan 4, 2010 – Jan 29, 2010: Mandatory Connectivity Qualification for all registered CRR Account Holders (CRRAH)</u>
    - CRRAHs will be asked to complete a transaction checklist and notify ERCOT when complete
    - ERCOT will then confirm the submittals

  - <u>Jan 8, 2010: Start of the weekly CRR Market Calls</u>
    - These weekly calls will serve as the primary forum for communication and providing answers to common questions to the CRRAH Nodal PMs and their teams.
    - There will be a call for each functional area. The CRR call will be held Fridays at 10:30am Information on accessing the call is located on the ERCOT calendar.

  - <u>Feb 1, 2010 – Feb 28, 2010: Begin Auction and Trading Activities</u>
    - Starting in Feb, 2010, registered CRRAH will have the ability to:
      - Download and review the CRR Model for the following month
      - Participate in Monthly Auction for the following month (e.g. Feb for the March Auction)
      - Execute bi-lateral trades
      - Review Auction Invoices
      - Submit PCRR (pre-assigned) nominations (NOIE)
    - ERCOT will:
      - Execute business processes in support of the CRR Auction and invoicing
      - Post the CRR Mode for the following Month
      - Review and post Auction results / Auction Invoices
      - Run PCRR Allocations (NOIE)

Nodal Program Dashboard

	Delivery Area	Project	Milestone Description	Project Milestone Link	Schedule Date	This Weeks Status
■	**Program Milestone**	PMO/DA	**PHASE 2.1 - MARKET CONNECTIVITY**	**Phase 2.1 Market Connectivity**	10/28/09	Complete
◆	Integration Testing	INT	Phase 2.1 Integration Testing	MTPHASE-2.1 (EWS, MMS, UI's)	10/28/09	Complete
◆	Market Trials	MT	Phase 2.1 Kick-off Meeting	Phase 2.1 Kick-Off Meeting	10/8/09	Complete
◆	Market Training	ERT	MRS 1: 2.1 Connectivity Test	MRS 1: 2.1 Connectivty Test	10/15/09	Complete
◆	Env. & Config Management	INF/ORT	Phase 2.1 NPROD Build	NProd Build	9/25/09	Complete
◆	Env. & Config Management	INF/ORT	Phase 2.1 Run Books, Monitoring	MT 2.1 Run Books	10/28/09	Complete
◆	L&P; Failover & Fallback; Security	INF/ORT	Phase 2.1 Security Testing (rd 1)	Phase 2.1 Initial Security Tests Complete	10/28/09	Complete
◆	L&P; Failover & Fallback; Security	INF/ORT	Phase 2.1 Performance Testing	Phase 2.1 Performance Verification Complete	10/23/09	Complete
■	**Program Milestone**	PMO/DA	**PHASE 3 - Real-Time Markets**	**Phase 3: Real-Time Markets**	2/4/10	Green
◆	Integration Testing	INT	Phase 3 - INT Testing Complete	MTPHASE-3 (RTM, SCED, CRR)	1/4/10	Green
◆	Market Trials	MT	Phase 3 Kick-off Meeting	Phase 3 Kickoff	1/15/10	Green
◆	Market Training	ERT	MRS 2: Market Trials	MRS2: Market Trials	1/25/10	Green
◆	Internal Process, Procedures, Training	ERT	MT3 PnP Complete	Process and Procedures Drafted for MT3	3/18/10	Green
◆	Env. & Config Management	INF/ORT	Phase 3-6 NPROD Build	Phase 3-6 NPROD Build Complete	10/28/09	Complete
◆	Env. & Config Management	INF/ORT	Phase 3,4,&5 Run Books	MT 3, 4 & 5 Run books	1/5/10	Green
◆	Env. & Config Management	INF/ORT	System Availability Monitoring	System Availability Monitoring Complete	1/14/10	Green
◆	L&P; Failover & Fallback; Security	INF/ORT	Performance Verification	Phase 3 Performance Verification Complete	1/11/10	Green
◆	L&P; Failover & Fallback; Security	INF/ORT	Phase 3 Security Testing	Phase 3 Security Testing Complete	2/2/10	Yellow
■	**Program Milestone**	PMO/DA	**PHASE 4 - DAM/RUC**	**Phase 4: DAM/RUC**	4/14/10	Yellow
◆	Integration Testing	INT	Phase 4 - INT Testing Complete	MTPHASE-4 (DAM/RUC)	4/5/10	Red
◆	Market Trials	MT	Phase 4 Kick-off Meeting	Phase 4.0 Kickoff	3/15/10	Green
◆	Market Trials	MT	MT Phase 3 Complete	MT3-Market Trial Activities	3/16/10	Green
◆	External Outreach	ERT	Conduct Site Visits	Conduct Site Visits (Start)	3/16/10	Complete
◆	External Outreach	ERT	Site Visits Complete	Site Visits Complete	3/31/10	Green
◆	Market Training	ERT	MRS 3: General Market Readiness	MRS3: General Market Readiness	2/12/10	Green
◆	Metrics Tracking & Assessment	ERT	Metrics Mapped to MT Phase	Metrics Mapped to MT Phases	3/15/10	Green
◆	Internal Process, Procedures, Training	ERT	MT4 PnP Complete	All MT4 L-1 to L-4 Updated Process and Procedures	1/11/10	Green
◆	Env. & Config Management	INF/ORT	Initial Failover Testing	Initial Failover Testing Complete	3/26/10	Green
◆	Env. & Config Management	INF/ORT	Final Failover Testing	Final Failover Testing Complete	2/22/10	Green
◆	Env. & Config Management	INF/ORT	Integration Services Monitoring	Integration Services Monitoring Complete	3/16/10	Green
◆	L&P; Failover & Fallback; Security	INF/ORT	Final Security Testing	Final Security Testing Complete	3/29/10	Yellow
◆	L&P; Failover & Fallback; Security	INF/ORT	Phase 4 Performance Verification	Phase 4 Performance Verification Complete	3/29/10	Green
■	**Program Milestone**	PMO/DA	**PHASE 5 - Full Functionality**	**Phase 5: Full Functionality**	6/4/10	Yellow
◆	Integration Testing	INT	Phase 5 - Integration Testing Complete	MTPHASE-5 (FULL INTEGRATION)	5/26/10	Red
◆	Market Trials	MT	MT Phase 4 Complete	MT4-Market Trial Activities	5/13/10	Green
◆	Internal Process, Procedures, Training	ERT	MT5 PnP Complete	All MT5 L-1 to L-4 Updated Process and Procedures	5/4/10	Green
◆	Env. & Config Management	INF/ORT	Fall DST Testing	Fall DST Testing	11/3/09	Complete
◆	Env. & Config Management	INF/ORT	Spring DST Testing	Spring DST Testing	3/15/10	Green
◆	Env. & Config Management	INF/ORT	SLA Conformance Monitoring	SLA Conformance Monitoring Complete	4/28/10	Green
◆	L&P; Failover & Fallback; Security	INF/ORT	Phase 5 Performance Verification	Phase 5 Performance Verification Complete	5/10/10	Green
■	**Program Milestone**	PMO/DA	**PHASE 6 - 168 Hour Testing**	**Phase 6:168 Hour Testing**	8/20/10	Green

Program Milestone Schedule Mitigation

Phase 4: DAM / RUC

Integration Testing Schedule has slipped 2 weeks

Issues	Execution
• **Environment Issues (Power Outage, Storage Issues)**	• Scheduled more work to occur during the holiday period slowdown(12/18-1/4)
	• Authorize resource overtime for Phase 4 test execution
• **Planning delays due to Phase 2.1 and Phase 3 delivery focus**	• Reduce the number of Operating Day (OD) runs planned through the end of the year to more effectively leverage testing and support resources
	• Prioritize and pull forward more comprehensive End-to-End scenarios where applicable

Program Milestone Schedule Mitigation

Phase 5: Full Functionality

Integration Testing Schedule has slipped 4 weeks

| Issues	Execution
• **Schedule impact from Phase 4 slippage**	• **Continue to leverage overtime for Phase 5 test execution**
	• **Phase in the delivery of reports during Market Trials**
• **Phase 5 Planning delays and a large reporting scope**	• **Prioritize Testing to ensure the critical functionality and reports are completed first**
	• **Leverage multiple environments and coordinated planning to continue Operating Day (OD) runs while performing issue analysis and Quality of Solution testing in a parallel environment**
• **Comprehensive Test Case development with Business**	• **Prioritize must have End-to-End scenarios**

Nodal Defects Trends - High Priority
# (Must Fix Before Go-Live)

- Defect counts increased as expected due to planned software migrations into Nodal iTest and extensive integration testing efforts.

- Reopened defect count increased in November as report testing resumed with new planned software migrations

Nodal Defects
Total Open vs. Monthly Variation
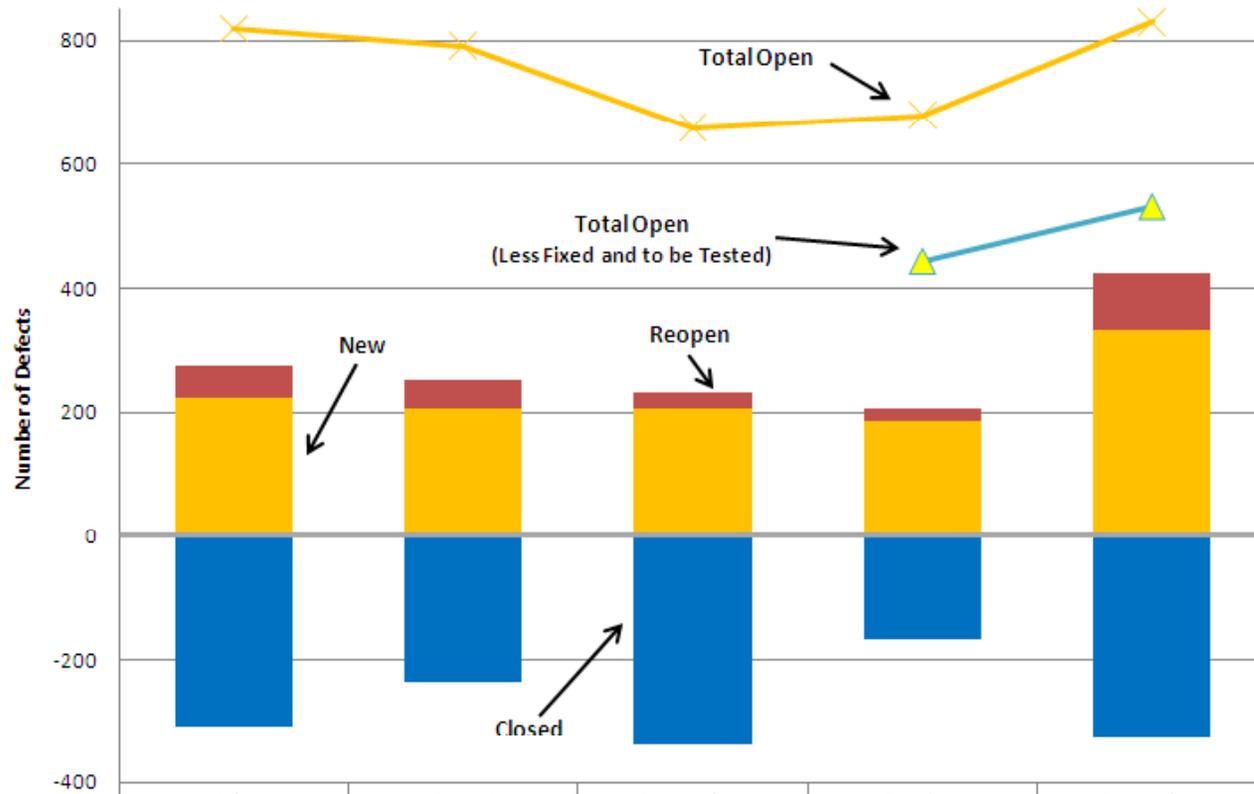
	July	August	September	October	November
Closed	-307	-235	-339	-167	-328
Reopened	52	44	24	18	91
New	223	207	207	187	333
Total Open	819	791	659	679	830
Total Open - (Fixed & to be Tested)				443	532

Nodal Defect Reporting

Priority 1
Severity 1 or 2 Defects
(by Phase and Severity)
as of December 10, 2009
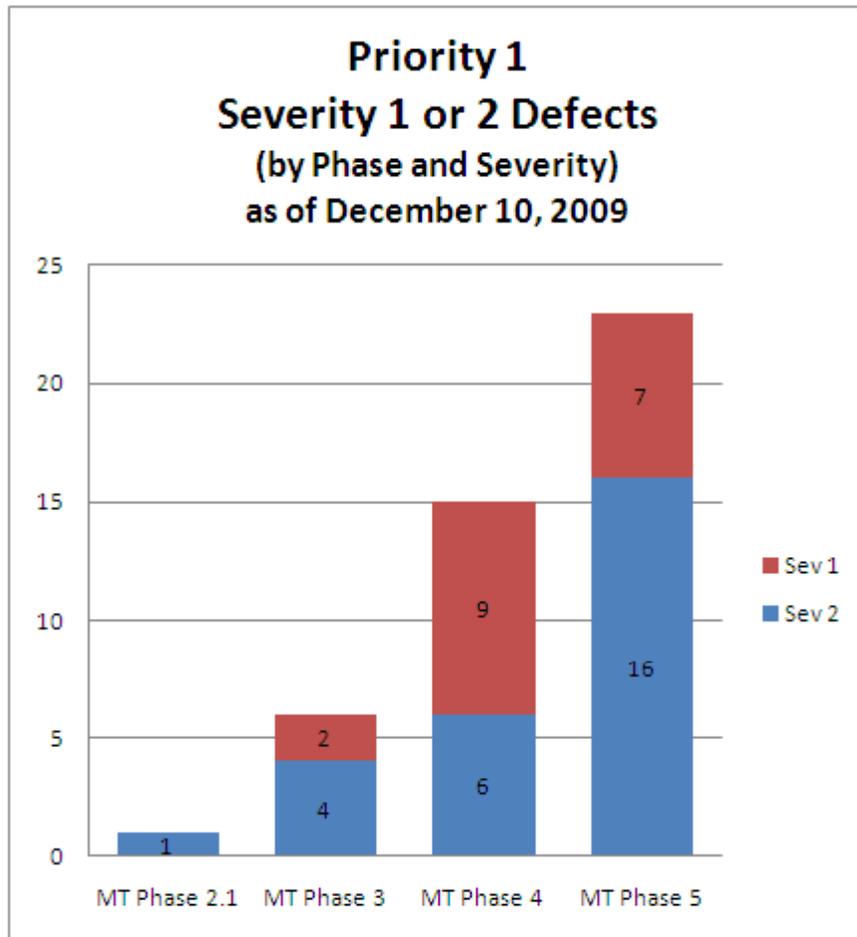
*Systems & Testing teams
are focused on the most
important defects.*

Severity 1 – High Level Description

*Phase 3:*
Configuration Issue – New
Security Issues – Fixed

Phase 4:
Integration Processing (2) –Test
Data Error (1) – Test
Configuration Issue (1) – Fixed
Calculation Errors (5) – Open

Phase 5:
Calculation / Process Timing (1) - Open
Configuration Issue (1) – Open
Report Generation (2) – Open, Fixed
Report Functionality (1) – Fixed
Data Integration (1) – Re-Open
System Code (1) – Open

Nodal Defect Reporting

Phase 3 - Priority 1 Defects
Severity 1 or 2 Defects
(by Project and Severity)
as of December 10, 2009
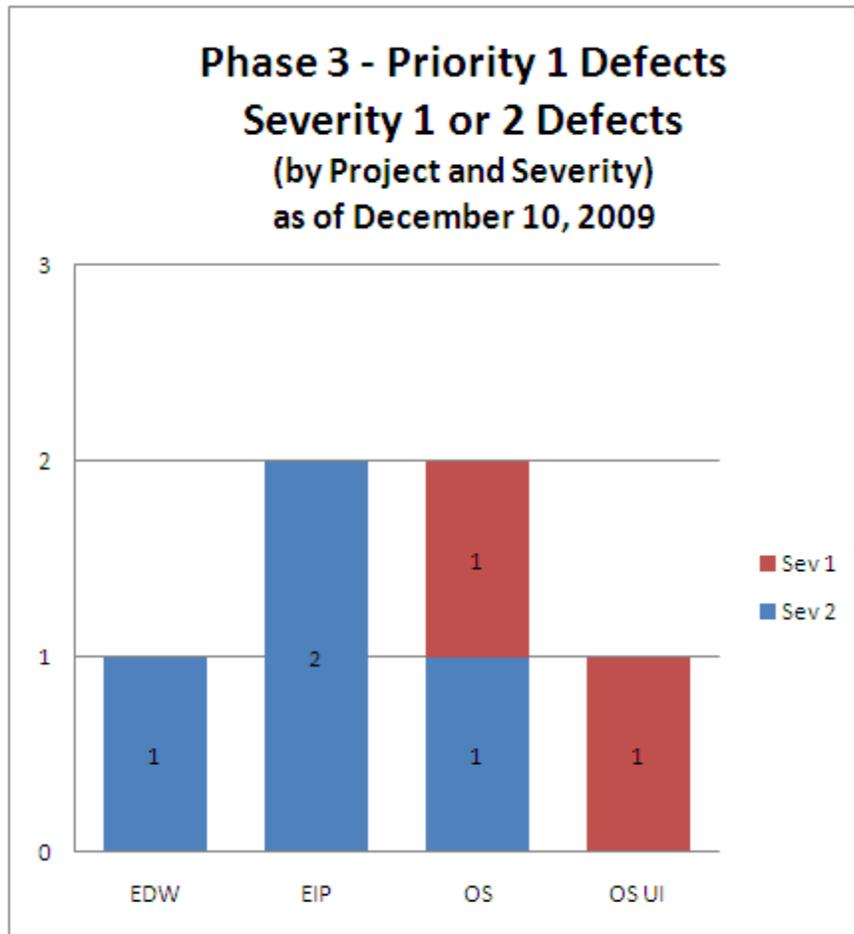
Market Trials delivery risk is being managed through a focus on key systems.

Severity 1 – High Level Description

OS:
(Sev 1) Configuration Issue – Test
(Sev 2) Integration Issue – Re-Open

OS UI:
(Sev 1) Security Issues – Fixed

EDW:
(Sev 2) Report Creation – Test

EIP:
(Sev 2) Performance Issue – Open
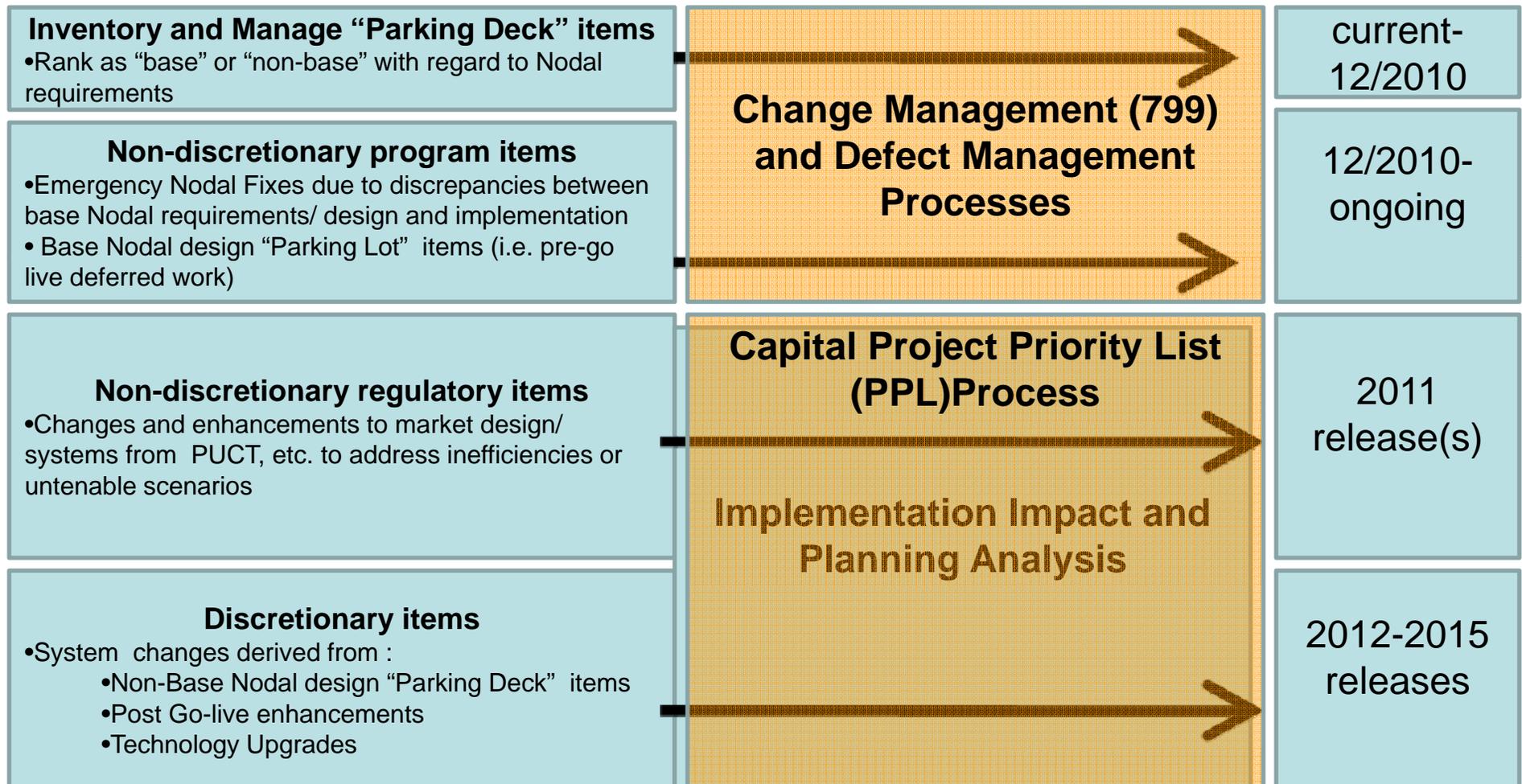*(Sev 2) Performance Issue – Test*

Nodal Program Risks & Issues

Risk/Issue	Impacted Milestone	Target	Status
Integration Testing *Continued risk around technology delivery of business systems integration due to complexity and continuing maturing of application and data dependencies.*	**Program**	**May 2010**	• Phase 3 On track; planning complete, execution in progress • Execution of work plan, with specific focus on January Market Trials functionality, under way • Later phase schedules have slipped due to environment issues and focus on Phase 2.1, Phase 3 delivery
Oracle Licensing *ERCOT IT department is researching a potential Oracle Licensing compliance issue that may result in unplanned budget impacts.*	**Program**	**Feb 2010**	• ERCOT Management reviewing licensing compliance
Market Interaction Operating Level Agreements (OLAs) *Need to determine operating level agreements associated with market interactions to assist ERCOT in establishing operational thresholds. ERCOT is responsible for ensuring any market thresholds required before Go-Live are defined, managed through the appropriate stakeholder processes and communicated in a timely fashion.*	**Program**	**April/May 2010**	• Phase 2.1 OLAs established and communicated to the market during Oct. 8 Market Readiness Seminar • Phase 3 and 4 OLA definitions in process

Nodal Program Risks & Issues

Risk/Issue	Impacted Milestone	Target	Status
Reconciling Protocols, Systems and Market Expectations *Experience by other ISOs in deploying nodal markets has shown that expectations of the market participants are often missed, despite best efforts at defining tariffs or protocol requirements. ERCOT needs to assume such a risk exists for this nodal implementation as well.*	**Phase 3**	**Feb 2010** **(Change control submitted)**	• December 31st deadline at risk • Work underway to trace protocols, requirements and business processes alignment analyses are in progress. • SMEs added to the team in May.
Internet Explorer Upgrade *Nodal Integration testing for the Market Participant (MP) User Interfaces and MIS reporting is using Internet Explorer (IE) version 6. MPs have requested ERCOT support a newer version: IE7 (IE8 is also available). If the nodal market-facing application requires certification against other IE versions, there will be internal and external costs associated with re-testing and updating the UIs.*	**Phase 6**	**July 2010**	• ERCOT Enterprise Architecture team completed initial Zonal analysis and developed options. • Nodal Impact assessment to be completed in parallel with Integration Testing over the next several weeks. • Systems team updating Change Request with impact assessment results

Post Go-live Change/ Enhancement Process

Slides from the TAC Nodal presentation on Dec 3rd regarding Parking Deck

Inventory and Manage "Parking Deck" items •Rank as "base" or "non-base" with regard to Nodal requirements	**Change Management (799) and Defect Management Processes**	current-12/2010
Non-discretionary program items •Emergency Nodal Fixes due to discrepancies between base Nodal requirements/ design and implementation • Base Nodal design "Parking Lot" items (i.e. pre-go live deferred work)		12/2010-ongoing
Non-discretionary regulatory items •Changes and enhancements to market design/ systems from PUCT, etc. to address inefficiencies or untenable scenarios	**Capital Project Priority List (PPL)Process** Implementation Impact and Planning Analysis	2011 release(s)

Discretionary items
•System changes derived from :
    •Non-Base Nodal design "Parking Deck" items
    •Post Go-live enhancements
    •Technology Upgrades
		2012-2015 releases

Post Go-live Change/ Enhancement Process- Next Steps

Slides from the TAC Nodal presentation on Dec 3rd regarding Parking Deck

- "Parking Deck" items will be managed through ERCOT PMO via current process 799 Change Management process

- Non-discretionary items will be managed through Nodal Change Management and Defect Management Process with implementation status reported through the Nodal Parking Deck monthly updates

- Leverage existing ERCOT Program Management process, Capital Project Priority List, to collaborate with the market in:
  - Ranking priorities, additions, holds, cancels, etc., of change and enhancement items and;
  - Analyzing items in consideration of ERCOT's core functions and overall corporate goals

- Create Post Nodal Go-live (R1.0) Release Schedule (by Q3/2010)
  - Create proposed post go-live release schedule with associated inventory for discussion with market

- Conduct Implementation Impact and Planning Analysis (by Q4/2010)
  - Analyze items to create a proposed inventory and ranking, including levels of effort for each item and associated budget

Traceability

Betty Day
Program Control & Review

Special Nodal Program Committee

14 December 2009

Protocol Traceability Effort Update

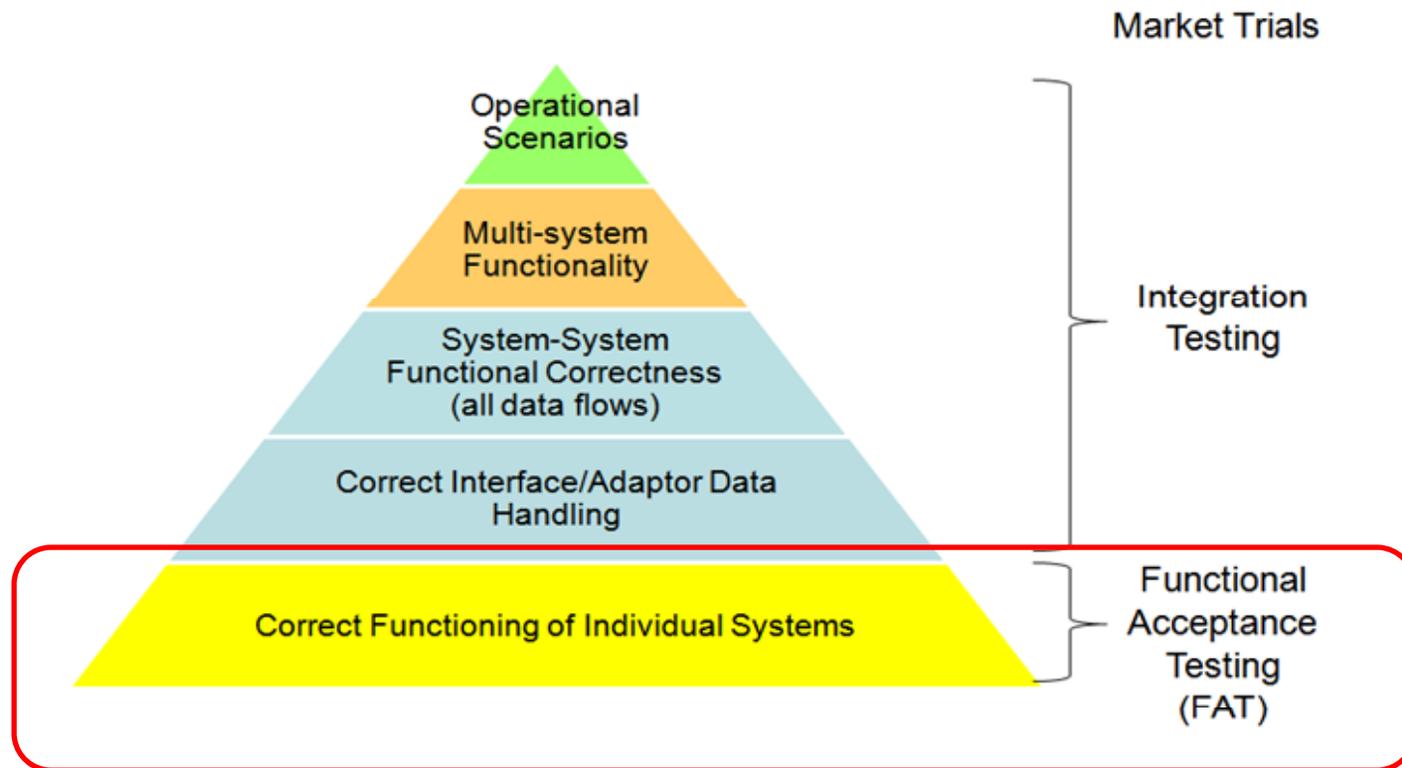| Tier 1 Sections					
	PTE Traced Items	Research Items	In Progress: Business Procedures	In Progress: Reports/ Extracts	PTE Alignment Items
Section 3 – Management Activities for the ERCOT system (Dec NATF)	927	201	509	196	TBD
Section 4 – Day Ahead Operations (Nov NATF)	635	65	65	75	3
Section 5 – Transmission Security Analysis and RUC (Nov NATF)	167	28	75	18	9
Section 6 – Adjustment Period and Real-Time Operations (Dec NATF)	930	180	468	52	TBD
Section 7 – Congestion Revenue Rights (Oct NATF)	445	55	26	27	1
Section 8 – Performance Monitoring (Dec NATF)	225	155	150	2	TBD
Section 9 – Settlement & Billing (Nov NATF)	407	0	131	60	2
Section 16.11 – Financial Security for Counter Parties (Dec NATF)	200	112	69	24	TBD
Section 17 – Market Monitoring & Data Collection (Dec NATF)	25	9	21	1	TBD
Total	3961	805	1547	455	TBD

Protocol Traceability Results Update

- **Status as of December 11th 2009:**
    - **Reported to NATF on Sections 4, 5, 7, & 9**
    - **15 Alignment items identified to date**
        - **Proposed action on Alignment items:**
            - **6 – revise business procedure**
            - **7 – NPRR**
            - **1 – handbook**
            - **1 – revise business requirement**

    - **Sections 3, 16.11, 17 will be presented to NATF on 12/18**
    - **Sections 6 and 8 will be presented to NATF in January**

Requirements to Test Artifact Tracing

- **Test artifact tracing is occurring at the FAT level for maximum coverage**

Incremental Approach to Testing Full Capability

Market Trials

- Operational Scenarios
- Multi-system Functionality
- System-System Functional Correctness (all data flows)
- Correct Interface/Adaptor Data Handling
- Correct Functioning of Individual Systems

Integration Testing

Functional Acceptance Testing (FAT)

Requirements to Protocols

	Network Model Management System (NMMS)	Energy Management Systems (EMS)	Market Management Systems (MMS)	Congestion Revenue Rights (CRR)	Commercial Systems (COMS)	Market Information Systems (MIS)	Enterprise Data Warehouse (EDW)
Tier 1 Requirements by Protocol							
Sec 3	X	X	X	X	X	X	X
Sec 4	X	X	X	X	X	X	X
Sec 5	X	X	X		X	X	X
Sec 6	X	X	X	X	X	X	X
Sec 7	X		X	X	X	X	X
Sec 8	X	X	X		X	X	X
Sec 9		X	X	X	X	X	X
Sec 16.11			X	X	X	X	X
Sec 17	X	X	X	X		X	X

Requirements to Test Artifact Tracing

- ## Status as of December 1st 2009:

Requirements to Test Artifacts			
Project	# of Requirements	# and Type of Traced Test Artifacts	Comments
Energy Management System (EMS)	192	*427 Test Cases/Scripts	Complete as of July 2009 - numbers pending final analysis
Market Management System (MMS)	*231	*1328 Test Cases/Scripts	Complete as of Oct. 2009 - numbers pending final analysis
Outage Scheduler (OS)	*21	*9 Test Cases	Complete as of Jan. 2009 – final analysis in review
Commercial Systems (COMS)	*2160	*8444 Test Cases/Scripts	Under analysis – pending team review of Registration and Commercial Systems Integration Information artifacts
Congestion Revenue Rights (CRR)	50	32 Test Cases	Complete as of Nov. 2009
Credit Monitoring Management (CMM)	*1300	*3000 Test Scripts	In progress - CMM Build 4.2 to be finalized for final analysis of number of requirements & test artifacts
Network Model Management System (NMMS)	*152	*210 Test Cases	Team review of existing documents in progress
Market Information Systems (MIS)	*345	*1235 Test Scripts	Being Reviewed for Final Analysis
Reports and Extracts (EDW, CDR)	*55	*1200 Test Scripts	Team review of existing documents in progress
*indicates that number of requirements or test artifacts are subject to change with completion of artifact tracing			

Protocol Section 4 PTE Trace Report Executive Summary

Section 4 Traceability Overview				
	PTE Traced Items	In Progress Research items (Business / PTE team)	PTE Alignment Items	Full Trace Report
Section 4 Day Ahead Operations	635	60 / 128 Total - 188	3	Posted 11/23/09

Section 4 Alignment Item Review		
#	Summary of Alignment Issue	Resolution Status
A31	**MMS DA SPP Calculations for Resource Nodes, Load Zones, and Hubs** **(sec 4.6.1)**	**Resolution Identified – change functional requirement** **No change control should be required as the system has demonstrated the functionality, at least in testing to date. While the change will likely be done earlier, it should be done by phase 5 market trials.**
A78	**Virtual/Emergency QSE Bid/Offer Limitations** **(sec 4.4.10 / 16.2.6.2(3))**	**Discussed Business Procedure** **Business Procedure needed for Phase 5 of market trials**
A80	**Combined Cycle Modeling in Protocol Sections 4 and 5** **(sec 4.4.9.2.3)**	**Discussed Protocol change** **NPRR to be submitted in January**

Protocol Section 5 PTE Trace Report Executive Summary

Section 5 Traceability Overview				
	PTE Traced Items	In Progress Research items (Business / PTE team)	PTE Alignment Items	Full Trace Report
Section 5 - Transmission Security Analysis and RUC	167	26 / 91 Total - 117	9	Posted 11/23/09

Section 5 Alignment Item Review		
#	Summary of Alignment Issue	Resolution Status
A54	Unacceptable Use of Modified Load Forecast in RUC (sec 5.5.2(9)(b))	Resolution Identified – address in a Business Procedure
A55	Unacceptable Use of Modified Generic Limits in RUC (sec 5.5.2(8)(b))	Resolution Identified – address in a Business Procedure

Protocol Section 5 PTE Trace Report Executive Summary

	Section 5 Alignment Item Review - Continued	
#	**Summary of Alignment Issue**	**Resolution Status**
A56	**Administrative Controls for Use of Updated Load Forecast** **(sec 5.5.2(8)(b))**	**Resolution Identified – address in a Business Procedure**
A57	**Control of Operator Updates to the Load Forecast** **(sec 5.5.2(8)(b))**	**Resolution Identified – address in a Business Procedure**
A58	**Use of Different Computational Modules to Perform the RT/DA/HA Security Analysis** **(sec 5.5.1(2))**	**Resolution Identified – Submit NPRR**
A81	**DRUC Execution when DAM Fails** **(sec 5.5.2(1), 5.1(3))**	**Resolution Identified – Submit NPRR to allow execution of DRUC when DAM fails** **Will bring to NATF for discussion**
A82	**Combined Cycle Additions to Section 5** **(sec 5.5.2(5))**	**Resolution Identified – Submit NPRR to address handling on Combined Cycle in RUC** **Will bring to NATF for discussion**
A83	**Default for Resource Status when COP is Not Available** **(sec 5.5.2(9)(a))**	**Resolution Identified – Submit NPRR to address how Resources will be considered when COP is not available**

Protocol Section 5 PTE Trace Report Executive Summary

Section 5 Alignment Item Review - Continued		
#	**Summary of Alignment Issue**	**Resolution Status**
A91	**QSE Failure to Respond to 5 Year Verifiable Cost Update (sec 5.6.1(9))**	**Business will develop a Procedure and validate internal system processing to address resetting a Resource's verifiable cost to generic cost when the Market Participant fails to respond to ERCOT's request to file a verifiable cost update following the 5 year anniversary of it's Verifiable Cost approval.** **Will bring to NATF for discussion**

Protocol Section 7 PTE Trace Report Executive Summary

Section 7 Traceability Overview				
	PTE Traced Items	**In Progress** **Research items (Business / PTE team)**	**PTE Alignment Items**	**Full Trace Report**
Section 7 Congestion Revenue Rights	**445**	**88 / 82** **Total - 170**	1	**Update posted 11/23/09**

Section 7 Alignment Item Review		
#	**Summary of Alignment Issue**	**Resolution Status**
A20	**CRR Market User Interface Handbook (sec 7.5.3(3))**	**Resolution Identified – Create and publish a CRR Market User Handbook** **Handbook needed for Phase 3 of Market Trials**

Protocol Section 9 PTE Trace Report Executive Summary

Section 9 Traceability Overview				
	PTE Traced Items	In Progress Research items (Business / PTE team)	PTE Alignment Items	Full Trace Report
Section 9 Settlements and Billing	**407**	**0 / 185** **Total - 185**	**2**	**Posted 11/23/09**

Section 9 Alignment Item Review		
#	**Summary of Alignment Issue**	**Resolution Status**
A62	**DAM Short Pay Process (sec 9.7.3(e)(ii))**	**Resolution Identified – Short paid DAM Invoices to be addressed in NPRR147**
A72	**Missing Reject Status for Disputes (sec 9.14.2(3), 9.14.2(4), 9.14.2(5), 9.14.3.(1))**	**Resolution Identified – NPRR to be submitted to add the Reject status category**

Full Trace Report

- **What if there is an alignment item?**

- **What is the process?**

Gap Identification and Resolution Process Flow
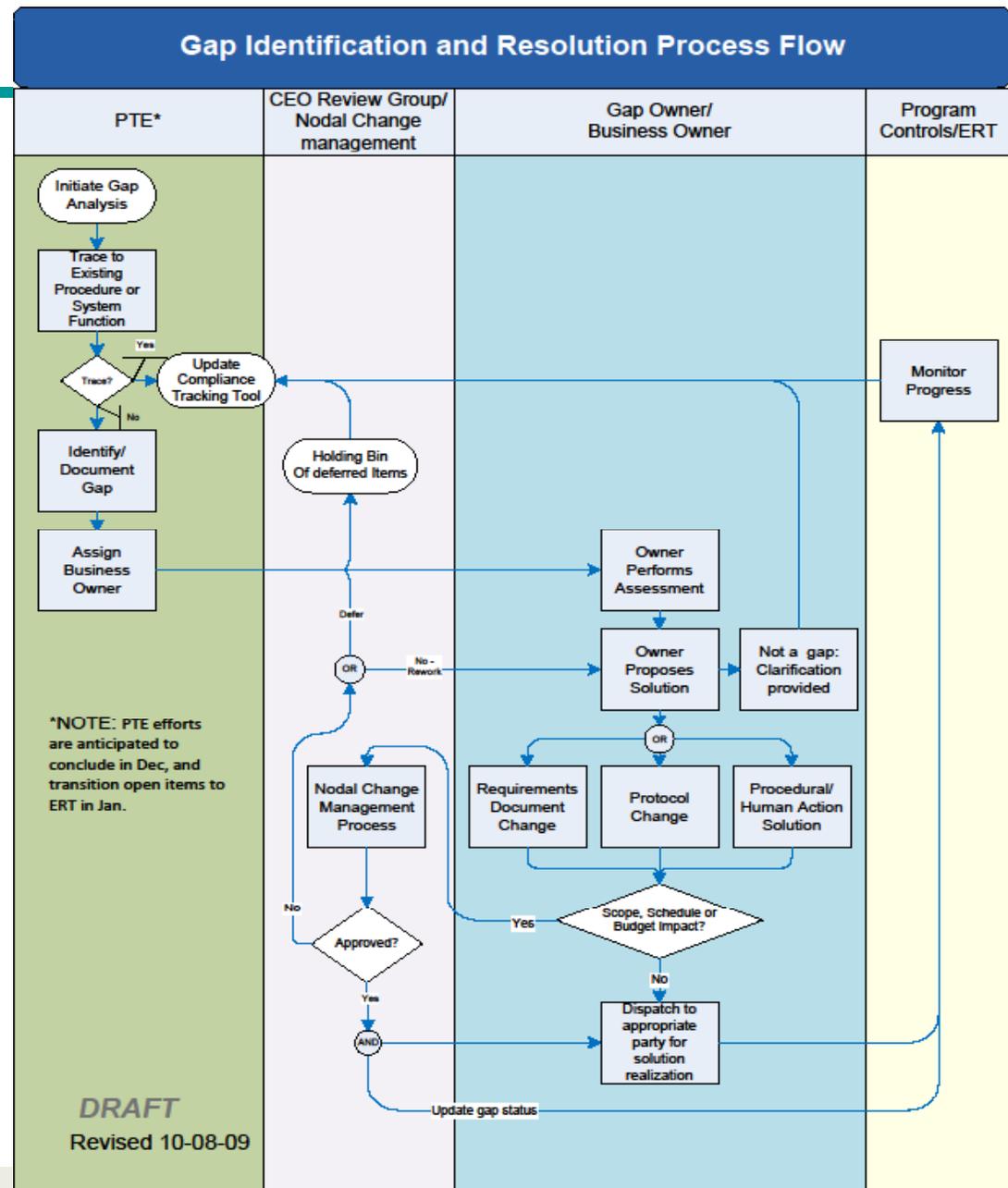
Next Steps

- **Questions about a research item or alignment item should be forwarded via e-mail to NodalMarketTransition@ercot.com. Subject line "Protocol Traceability Question"**

- **Planned dates for Web Ex review**
  - Dec 18 – 9:30 am – 3:30pm – sections 3, 16.11, 17
  - Mid-January – sections 6 & 8

Market Readiness

Vikki Gates

Readiness & Transformation

Special Nodal Program Committee

14 December 2009

Participant Readiness Touch Points

	2009/2010			
	December	January	February	March
Meetings	• NATF 12/8	• NATF 1/5	• NATF 2/2	• NATF TBD
Training	• Nodal 101 • LSE 201 • Generation 101, 201 • Basic Training • Economics of LMP • Transmission 101 ◆ Settlement Workshop	• Nodal 101 • LSE 201 • Generation 101, 201 • CRR – online ◆ Settlement Workshop	• Nodal 101 • LSE 201 • Basic Training • Generation 101, 201 • CRR – instructor-led ◆ Settlement Workshop • Operations Seminar • Economics of LMP	• Nodal 101 • LSE 201 • Basic Training • Generation 101, 201 • CRR – instructor-led ◆ Settlement Workshop • Operations Seminar
Outreach	• 5 site visits • Metrics mapped to future phases	• 7 site visits • Initiate Phase 3 metrics ◆ MRS #2	• 5 site visits • Standby site visit mitigation approach documented	• 4 site visits • Scheduled Site Visits conclude
Market trials	• CRRAH Kickoff: 12/11 • 2.1 environment closed • Sandbox decommissioned • MP Handbooks • *SCED/LFC & CRR*	• Start weekly calls ■ Mandatory QSE/CRRAH re-qualification begins	• Weekly calls • Phase 3 Market Trials initiates • QSE OS qualification	• Weekly calls • Phase 3 Execution
		• MP Handbooks • *DAM/RUC* • *Outage Scheduler* • *COMS*		

Market Participant Site Visits

Confirmed ☐   Completed ☑

15 Outreach Site Visits have been completed

Entity	Date		Entity	Date
☑ LOWER COLORADO RIVER AUTHORITY	9-Oct		☐ NRG TEXAS POWER	15-Dec
☑ CALPINE CORP	14-Oct		☐ DIRECT ENERGY LP	5-Jan
☑ AUSTIN ENERGY	20-Oct		☐ CPS ENERGY	6-Jan
☑ CITY OF GARLAND	21-Oct		☐ BRAZOS ELECTRIC	10-Mar
☑ GDF SUEZ ENERGY MARKETING	29-Oct		☐ BTU (Bryan Texas Utilities) SERVICES	13-Jan
☑ ANP FUNDING	3-Nov		☐ TOPAZ POWER MANAGEMENT	19-Jan
☑ LUMINANT ENERGY	5-Nov		☐ OCCIDENTAL	20-Jan
☑ INVENERGY WIND DEVELOPMENT	10-Nov		☐ SHELL ENERGY	21-Jan
☑ EXELON	11-Nov		☐ TENASKA POWER SERVICES	26-Jan
☑ AMERICAN ELECTRIC POWER SERVICE	12-Nov		☐ OPTIM ENERGY	27-Jan
☑ CONSTELLATION ENERGY	17-Nov		☐ APX	3-Feb
☑ PSEG ENERGY RESOURCES	18-Nov		☐ NEXTERA ENERGY	11-Feb
☑ J ARON	19-Nov		☐ WIND PANEL (Houston)	16-Feb
☑ FULCRUM POWER	2-Dec		☐ RETAIL PANEL (Houston)	17-Feb
☑ EAGLE ENERGY PARTNERS I LP	3-Dec		☐ TRI-EAGLE ENERGY	18-Feb
☑ STEC	9-Dec		☐ XTEND ENERGY LP	2-Mar
☑ BP ENERGY COMPANY	10-Dec		☐ EC AND R QSE	9-Mar
			☐ WESTAR ENERGY SERVICES	TBD

ERCOT Readiness: Outreach Visits

We are 49% through the site visits

| Highlights and Key Findings	If not receiving a one-on-one visit, you can:

- "Like that it spells out what a QSE needs to do for each stage of Market Trials"
- "Helps me to budget for 2010 and get the team [re]engaged"
- Every MP has selected Day Ahead Market Implementation as a topic

- Review presentation materials at nodal.ercot.com/readiness/outreach/index.html
- Attend scheduled training and upcoming Market Readiness Series
- Participate in Wind or Retail Panel on 2/16 and 2/17, respectively

ERCOT Readiness: RTO Site Visits
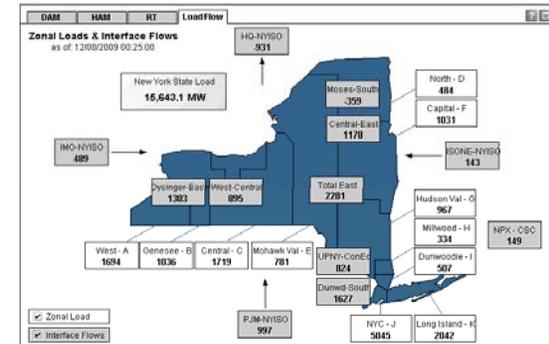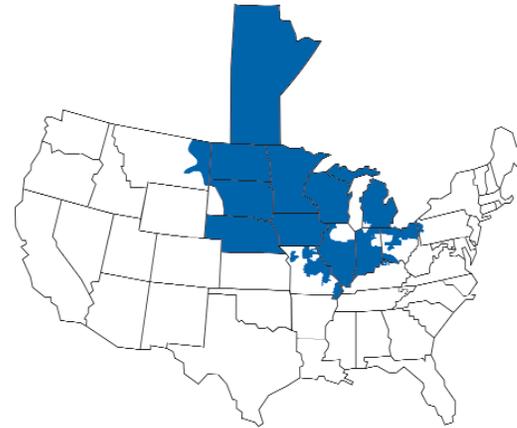
Site visits with:

- CAISO

- Midwest ISO

- NYISO

Lessons Learned from the visits:

- Possible control room configurations and staffing considerations
- Transmission modeling and outage management
- Market processes and day ahead procedures
- Exception handling, data transparency, and reliability
- Market cutover and market participant activity
  - Communications at all levels within the stakeholder organizations is a key factor for success

RARF Status Update

BOSQUE POWER COMPANY LLC ▼
BRAZOS WIND LP ▼
BUFFALO GAP WIND FARM 2 LLC ▼
BUFFALO GAP WIND FARM 3 LLC ▼
BUFFALO GAP WIND FARM LLC ▼
BULL CREEK WIND LLC ▼
CHAMPION WIND FARM LLC ▼
EC AND R PANTHER CREEK WIND ▼
EC AND R PANTHER CREEK WIND ▼
EC AND R PAPALOTE CREEK I ▼
EC AND R PAPALOTE CREEK I ▼
FOREST CREEK WIND FARM LLC ▼
GREGORY POWER PARTNERS LP ▼
INADALE WIND FARM LLC ▼
NAVASOTA ODESSA ENERGY ▼
NAVASOTA WHARTON ENERGY ▼
PYRON WIND FARM LLC ▼
ROSCOE WIND FARM LLC ▼
SAND BLUFF WIND FARM LLC ▼
SNYDER WIND FARM LLC ■
TICONA POLYMER INC ▼

Tag	MP11
Metric Description	This metric shall measure whether Market Participants have completed the resource registration activities required for the Nodal program.
Criteria	Criteria: MP Readiness will be achieved when the MP has completed the required resource registration activities including: - Transmission Asset Registration 11/16/2009 - 12/1/2009 - RARF True-up: Resource Entities complete schedule RARF submittals with updated business rule validations 1/4/2010 - 4/1/2010 - Resource Entities complete refresh of declaration of Resource Decision Making Authority for each network modeled Generation Resource 12/1/2009 - 1/29/2010 - Resource Entities sign-off on verification of Resource Node and Meter Mapping 12/1/2009 - 5/1/2010 RAG Rules||MPs QSERs will be scored based on status of resource registration for all resources represented Red - No submittals have been received according to schedule and/or not responding to escalation calls after the target completion date. Amber - Demonstrating progress in making corrections after target completion date. Score will change to RED after 30-days past target completion date if no corrections are received. Green - All forms received and accepted

Monthly Financial Review

Don Jefferis

Special Nodal Program Committee

14 December 2009

Financial Review – November 2009 Performance

Nodal Program
Approved Forecast to Actual Comparison
Month of November 2009

Line	Cost Summary	Forecast	Actual	Forecast Variance	Forecast Cumulative Variance (Pending Contingency Mgmt Disposition)
1	Internal Labor Costs	$2.1	$2.1	$0.0	($0.1)
2	Backfill Labor Costs	0.1	0.1	0.0	0.0
3	External Resource Costs	3.9	3.1	0.8	1.6
4	Software & Software Maintenance	1.8	1.9	(0.1)	0.9
5	Hardware & Hardware Maintenance	0.5	0.2	0.3	0.1
6	Other	0.0	0.0	0.0	0.0
7	**Sub-total Direct Project Costs**	$8.4	$7.4	$1.0	$2.5
8	**Board Discretionary Fund**	$0.0	$0.0	$0.0	$0.0
9	Allocations	$0.4	$0.4	$0.0	($0.1)
10	Finance Charges	1.8	1.8	0.0	0.0
11	**Sub-total Indirect Project Costs**	$2.2	$2.2	$0.0	($0.1)
12					
13	**Total**	$10.6	$9.6	$1.0	$2.4

Amounts in millions
Favorable / (Unfavorable)

Financial Review - LTD Performance through November

Nodal Program

Approved Forecast to Actual Comparison

Life-to-Date through November 2009

| Line	Cost Summary	Forecast	Actual	Variance	Forecast Remaining
1	Internal Labor Costs	$53.9	$54.0	($0.1)	$33.3
2	Backfill Labor Costs	5.2	5.2	0.0	2.1
3	External Resource Costs	253.3	251.7	1.6	35.5
4	Software & Software Maintenance	25.9	25.0	0.9	4.3
5	Hardware & Hardware Maintenance	50.5	50.4	0.1	3.7
6	Other	1.9	1.9	0.0	2.9
7	**Sub-total Direct Project Costs**	**$390.7**	**$388.2**	**$2.5**	**$81.8**
8	**Board Discretionary Fund**	**$0.0**	**$0.0**	**$0.0**	**$84.8**
9	Allocations	$19.6	$19.7	($0.1)	$4.0
10	Finance Charges	24.5	24.5	0.0	38.3
11	**Sub-total Indirect Project Costs**	**$44.1**	**$44.2**	**($0.1)**	**$42.3**
12					
13	**Total**	**$434.8**	**$432.4**	**$2.4**	**$208.9**

Amounts in millions

Favorable / (Unfavorable)

Note 1: Forecast consists of actuals through September 2009 and re-forecast for October & November

Board Discretionary Fund

Amounts in millions
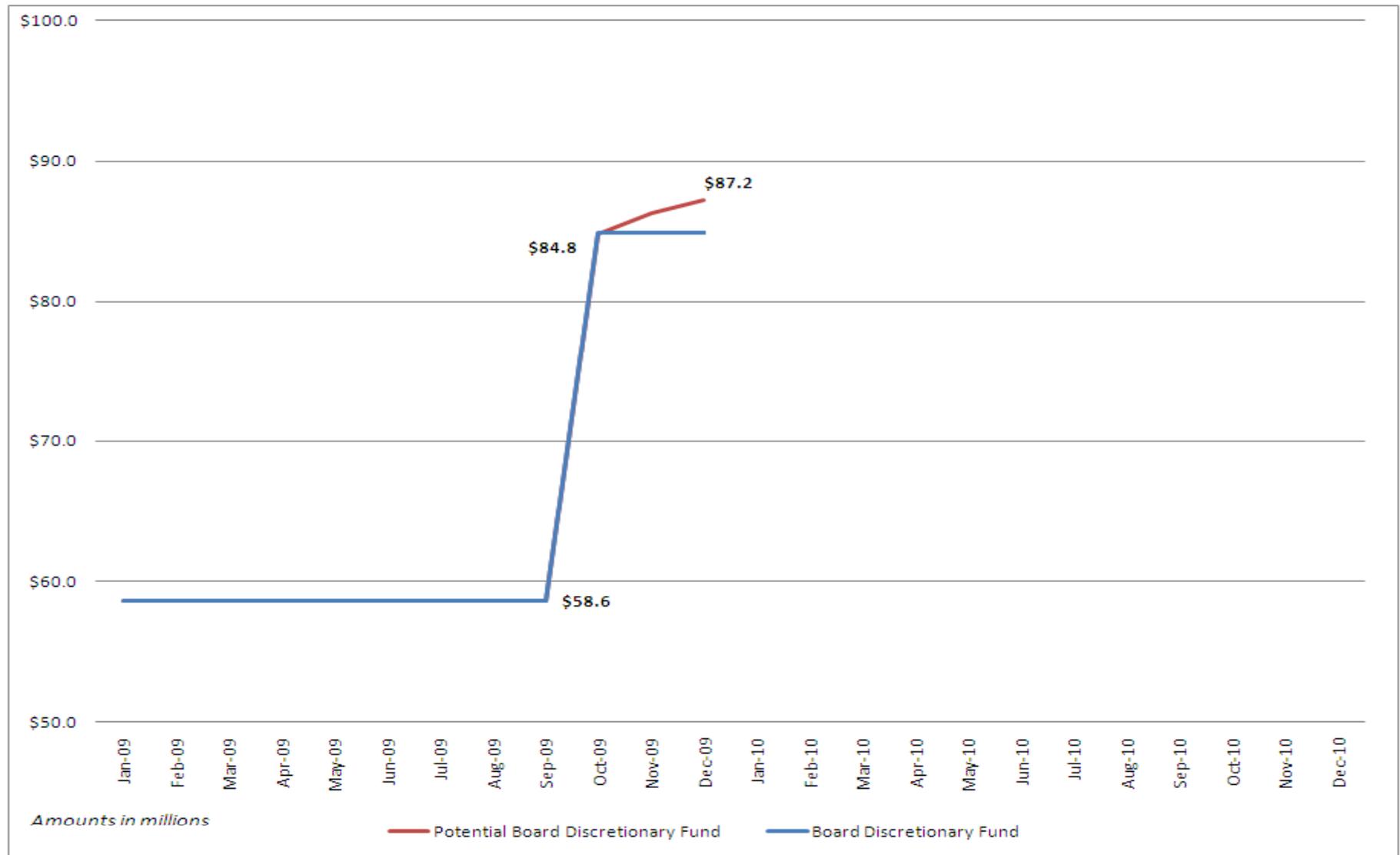
Program Cost Management

Monthly Budget, Forecast and Actual Analysis
(Amounts in millions)

Legend:
- Monthly ReForecast
- Monthly Actual
- Cumulative Reforecast
- Cumulative Spend
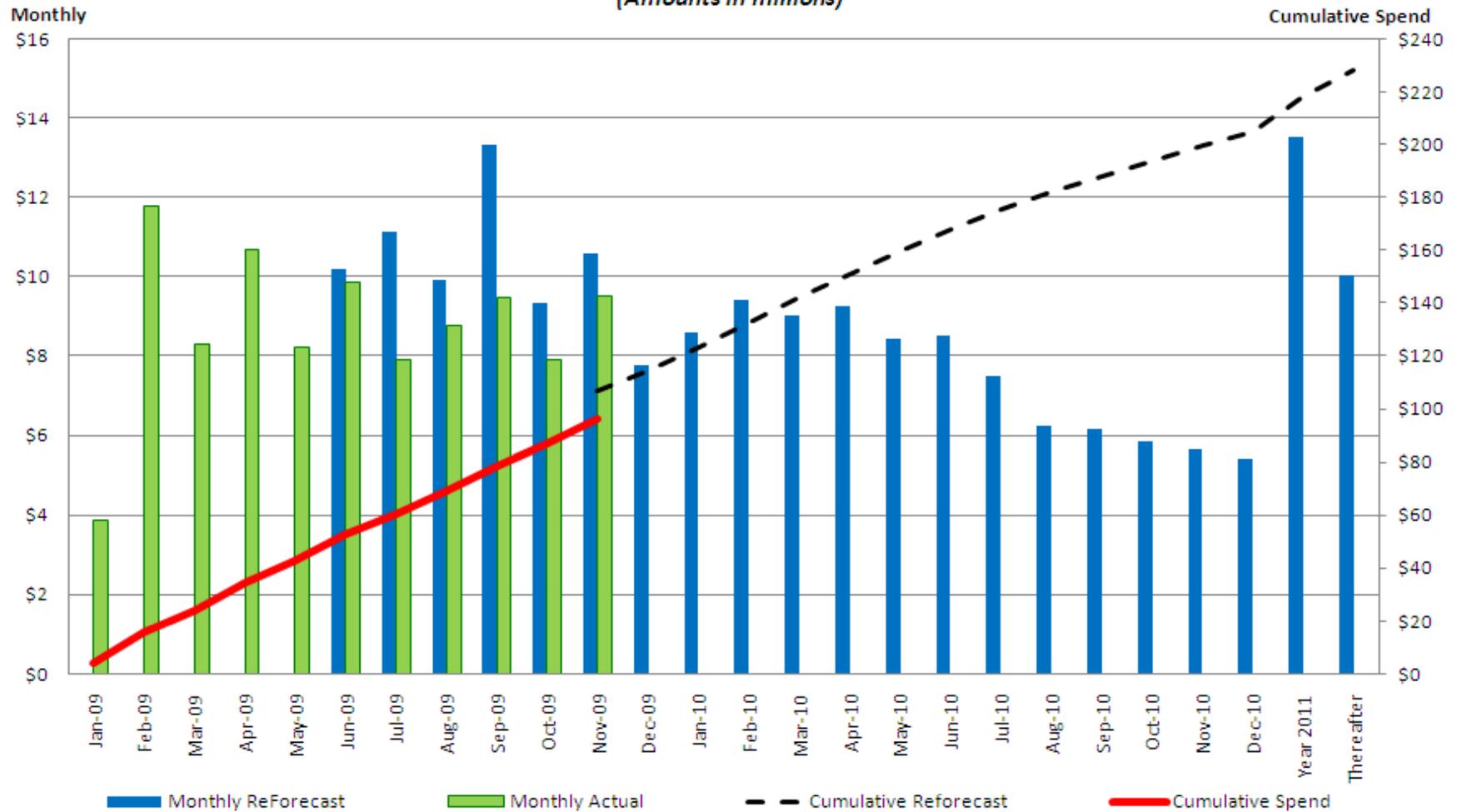
Status Update

- **EAC Q1 2010 Reforecast Preliminary Work Complete**
  - A baseline integrated schedule
  - A baseline budget from the Q4 EAC review
  - Implemented new change controls to assess impact to scope, schedule, and budget
- **EAC Q1 2010 Reforecast Underway**
- **Interest Charge Synchronization**

Questions ?

Appendix

Defect Definitions

Severity	Definition
Severity 1: Data loss/critical error	Defects that render unavailable the critical functions of the system under test. These include errors such as system errors, application failures, loss of data, incorrect calculations, inability to transfer data, failure to access database, and inability to display information to the user.
Severity 2: Loss of functionality w/o workaround	Defects that render unavailable partial functionality of the system under test with no workaround available. These include errors such as incorrect information displayed to the user, information not updating correctly, extracts failing, and missing export files.
Severity 3: Loss of functionality with workaround	Defects that render unavailable partial functionality of the system under test with a workaround available. These include errors such as incorrect message displayed, optional information missing or not displayed correctly, not receiving e-mail notifications, and incorrect defaults.
Severity 4: Partial loss of a feature set	Defects that affect a feature that is not executed on a frequent basis and there is not a significant impact on the system. These include errors such as help information, filtering, and consistent naming.
Severity 5: Cosmetic/documentation error	Defects that are cosmetic and need to be resolved, but are not a factor in the functionality or stability of the system. These include errors such as field alignment, report formatting, drop down list order, fonts, column order and documentation that is inconsistent with the system(s) as tested.

	Prescription in Quality Center
Priority 1	Must fix ASAP
Priority 2	Must fix prior to Go-Live
Priority 3	Not critical to fix before Go-Live
Priority 4	Minor system/user impact
Priority 5	No system/user impact

Critical Defect Definitions

- **Critical defects are required to be fixed before go-live**
- **Critical defects are identified as:**
  - Severity 1
  - Severity 2
  - Severity 3 priority 1 & priority 2
  - Severity 4 priority 1 & priority 2
  - Severity 5 priority 1 & priority 2
- **A continual defect review process will ensure that, after review and approval by the business, non-critical defects are deferred in Quality Center with adequate documentation (e.g., test script results, impacted functions, recreation steps, workarounds)**

  NOTE: All documented workarounds for deferred defects will be provided to the ERCOT readiness team for review and inclusion in desk procedures, when applicable

Program Issue:
Market Interaction Operating Level Agreements

◇ **Potential Milestone Impact: Phase 3 RTM, Phase 4 DAM/RUC, Phase 5 Full, Go-Live**

ISSUE: Market Interaction OLA	Need to determine service level agreements associated with market interactions to assist ERCOT in establishing operational thresholds. ERCOT is responsible for ensuring any market thresholds required before Go-Live are defined, managed through the appropriate stakeholder processes and communicated in a timely fashion.			
Life Cycle State				
Plan	Manage			

Mitigation Plans	Who	Target Date	Current Status
1. ORT to define OLA with business and the market for each phase.	ORT, Market Trials	January	The team has already established an OLA for the Phase 2.1 release and is continuing to define Market OLAs for all subsequent Market Trial Phases as part of the ORT project plan. Phase 3 & 4 OLA Definitions in Progress.
2. PMO working with ORT to ensure consistent communications and work planning is in place to deliver the appropriate OLA and market throttling recommendations for each market release.	PMO, ORT, Market Trials	January, April, May, August	Continuous communication will be delivered to the internal and external stakeholders in support of each market delivery.

Program Risk:
Integration Testing

◇ **Potential Milestone Impact: Market Trials**

Risk: Integration Testing	Continued risk around technology delivery of business systems integration due to complexity and continuing maturing of application and data dependencies.		
Risk Life Cycle State			
Define | Plan | **Manage** | Watch			
Mitigation Plans	**Who**	**Target Date**	**Current Status**
• Planned Integration Test phases and associated functional and technology components. • Created effort-based testing delivery work plan to prioritize and align deliverables to key external milestones. • Instituted daily PMO meetings to manage and mitigate day-to-day risks to scope and schedule deliverables.	PMO	Ongoing	Nodal Program Release Scope and Schedule defined to ensure delivery. Program Status Report and Dashboard in place to track progress.

Program Risk:
Internet Explorer 6 Upgrade

◇ **Potential Milestone Impact: Phase 5 Full Functionality**

Risk: Internet Explorer 6 Upgrade				Nodal Integration testing for the Market Participant (MP) User Interfaces and MIS reporting is using Internet Explorer (IE) version 6. MPs have requested ERCOT support a newer version, IE7. In addition, IE8 is also available. If the Nodal Market-Facing application requires certification against other IE versions, there will be internal and external costs associated with re-testing and updating the web-user interfaces.
Risk Life Cycle State				
Define	**Plan**	Manage	Watch	
Mitigation Plans		Who	Target Date	Current Status
Nodal Impact assessment to be completed in parallel with Integration Testing over the next several weeks.		T. Baum	Complete	Resource assignments will be assigned and load balanced within current Phase 3 Integration Testing activities.
Update Nodal Change Request.		J. Dreyer	12/31/09	Updating based on assessment and impact analysis.
Complete Development Changes		Systems	TBD	Pending Change Request Approval
Complete Regression Testing		INT	TBD	Pending Change Request Approval

Program Risk:
Reconciling Protocols, Systems and Market Expectations

◇ **Potential Milestone Impact: Market Trials**

Risk: Reconciling Protocols, Systems and Market Expectations		Experience with deploying nodal markets by other ISOs has shown that expectations of the market participants are often missed, despite best efforts at defining tariffs or protocol requirements. ERCOT needs to assume such a risk exists for this nodal implementation as well.		
Risk Life Cycle State				
Define	Plan	**Manage**	Watch	
Mitigation Plans		Who	Target Date	Current Status
1. Assess maturity and readiness of software in the initial nodal release, focusing on new/tailored capability for Texas Nodal.		B. Day K. Farley	2/28/10	12/10/09 – SME continue work with business teams. Number of items for research taking longer than estimated. NATF web ex for 12/18/09 and mid-Jan to review full trace reports with Market Participants for Tier 1 sections.
2. Add team members to the nodal program with Texas market experience to ensure readiness for Market Trials. SMEs to discussion alignment issues with ERCOT business owners. SMEs to report the results of the assessment to the ERCOT business owners for resolution.		B. Day K. Farley	Ongoing	12/10/09 – Work is underway to trace protocols, requirements and business processes alignment analyses are in progress.
3. Keep the oversight groups apprised of progress.		M. Cleary	Ongoing	12/10/09 – status reports provided to program, NATF, TAC, Special Nodal Committee monthly.

External Audit Status Summary

Audit	Audit Points Identified	Audit Points in Execution	Date to Complete Last Point
IBM Report 7	4	4 complete*	
Utilicast Report 8	6	1 in progress; 5 complete	2011
Utilicast Report 10 (Cleary)	17	5 in progress; 12 complete	6/1/10**

*IBM Report is complete and has been verified by ERCOT Internal Audit
**Updated end date to reflect date to complete remaining audit points

Audit Points to Address from IBM Report 7

ID	Description	Action Plan	Responsible Director	Responsible Manager	Target Date
IBM07-04	Support a Plan for a Sustainable Procedures Traceability Process	Procedure and SAS 70 Control ownership currently only exists at the individual department level. No function has overall accountability for maintenance of business process and procedure documentation. ERT will recommend a single Business Process owner in a new or an existing department be aligned with this responsibility. This function would have responsibility for managing process and procedure updates when Nodal Protocol Revision Requests (NPRRs) are approved.	B. Day	Karen Farley	Complete

Audit Points to Address from Utilicast Report 8

ID	Description	Action Plan	Responsible Director	Responsible Manager	Target Date
UTI08-05	There should be immediate investment in new data center capacity to allow for expansion of IT infrastructure to support the Nodal Program.	Additional data center space planned as part of the Met Center disposition project (PR-80001). Those data centers should be online in mid-2011. Plans are under development to provide capacity prior to those new data centers becoming available.	R. Morgan	Jeff Floyd	Bastrop DC in production Feb 2011. TCC3 in production May 2011.

Audit Points to Address from Utilicast Report 10-1

ID	Short Description	Recommendation	Action Plan Status	Resp. Dir.	Resp. Mgr.	Target Date
UTI-10 – 06C	End-to-End Business Readiness Activities	Ensure Nodal processes and procedures are completed so they can be exercised during End-to-End testing.	Planning is complete for ensuring that all nodal processes and procedures that will need to be exercised during end-to-end testing are scheduled for completion prior to the execution of those processes and procedures per the end-to-end schedule. The schedule below reflects the Nodal test schedule: 1. MT Phase 3 – SCED, OS Submissions, CRR Auctions due 12/15/09 2. MT Phase 4 & 4.1 - DAM, RUC, OS, CRR Invoices, Settlements and Billing due 2/15/10 3. MT Phase 5 & 6 – Remaining production procedures due 3/15/10 4. Phase 6 – Integrated final code due 6/1/10	V. Gates	J. Adams	06/01/10

Audit Points to Address from Utilicast Report 10-2

ID	Short Description	Recommendation	Action Plan Status	Resp. Dir.	Resp. Mgr.	Target Date
UTI – 10 – 06D	End-to-End Business Readiness Activities	Prior to End-to-End testing, complete a final review of the Protocols to compare against current system capabilities. Such reviews are underway on many of the project teams.	SME's are working with business owners on research and alignment items. Full trace reports will be provided to NATF starting late Oct.	B. Day	K. Farley	02/28/10