



Nodal Program Update

Jason Iacobucci

Nodal Program Manager

Special Nodal Program Committee
15 February 2010

Today's Agenda

- **Program Status**
- **Defects Reporting & Program Risks**
- **Market Readiness**
- **Traceability**
- **Financials**
- **Appendix**

289 Days to Go-Live

0 Items Impacting Go-Live Date

• Market Trials 3.0:

- 191 of 293 QSEs Qualified for MMS transaction submittal
 - 72 / 115 QSEs w/ Resources
- 92.5 % of Generation Qualified

– **Congestion Revenue Rights (CRR)**

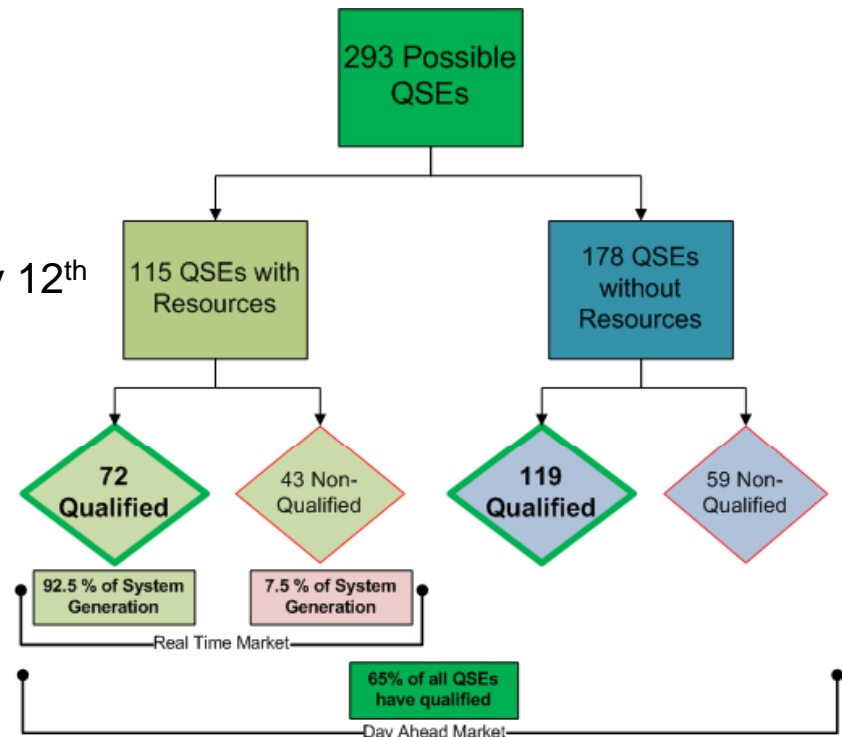
- 48 of 80 CRRAH Qualified to date
- 1st Monthly Auction for March begins February 12th
 - CRR allocation starts on Feb 1st

– **Real Time Markets / Outage Scheduler**

- Started Feb 1st
 - Window Closes for Qualification on Aug 13th
 - Real-Time LMPs posting every 5 minutes
 - Reports available on Nodal MIS to all MPs
 - Running on CIM model NMMS/EMS/MMS
 - QSE dashboards posting Fridays to reflect submission performance (metrics Feb 11)

- Outage Scheduler available to QSEs and TSPs

– **March 1st starts Six month LMP analysis**



289 Days to Go-Live

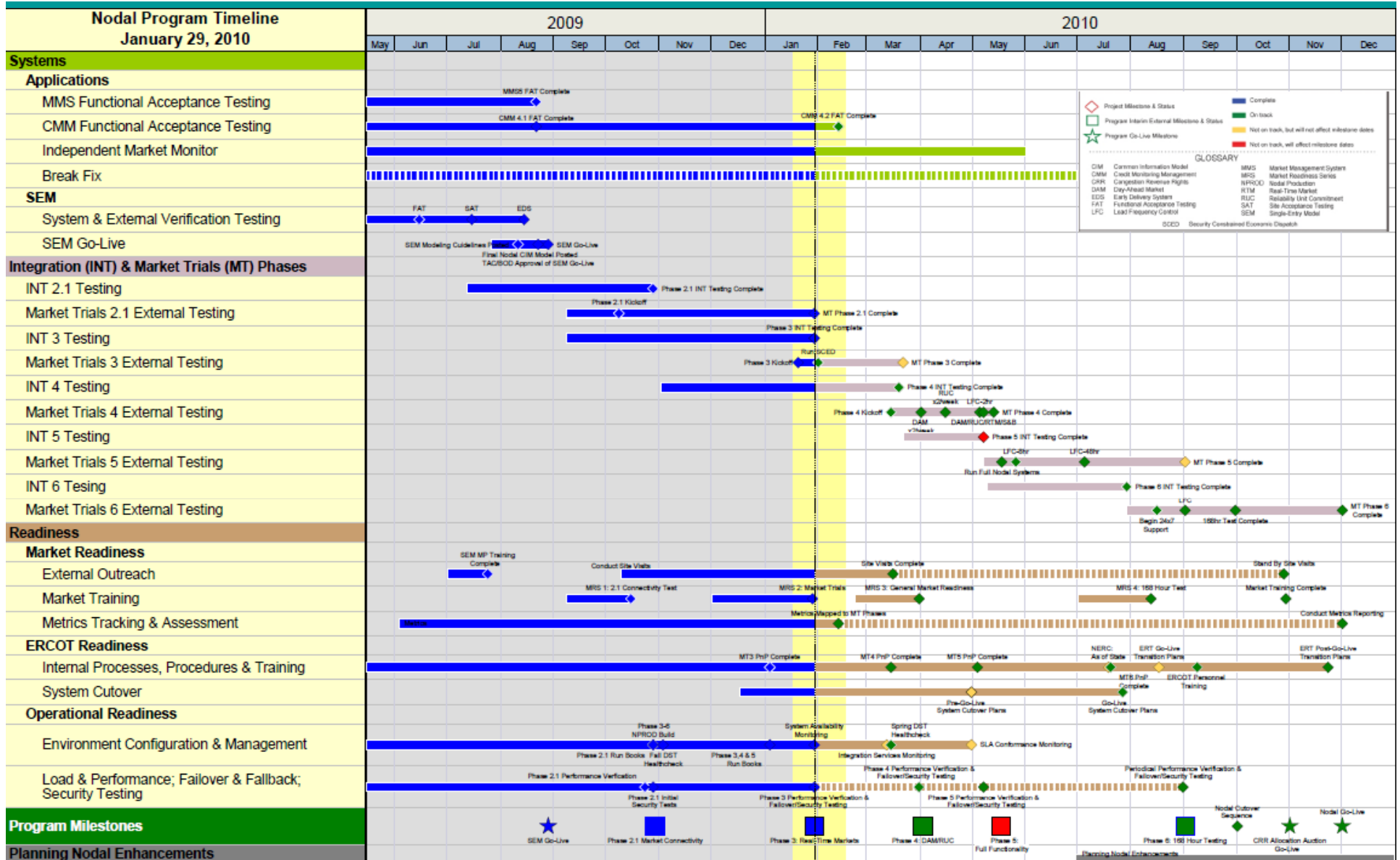
0 Items Impacting Go-Live Date

- **Market Trials 4.0: DAM/RUC**
 - Starting Thursday Apr 1st, for Operating Day Friday April 2nd
 - On Schedule
 - Submission Qualifications underway in Market Trials 2.1
- **Market Trials 5.0: Full Functionality**
 - Starting May 17th
 - 2 Week Slippage
 - Mitigation plan in place to pull back on track
 - » Overtime and budget monitoring
- **Market Readiness**
 - 26 of 34 outreach sessions completed
 - Market Trials Kickoff
 - Executive Briefing

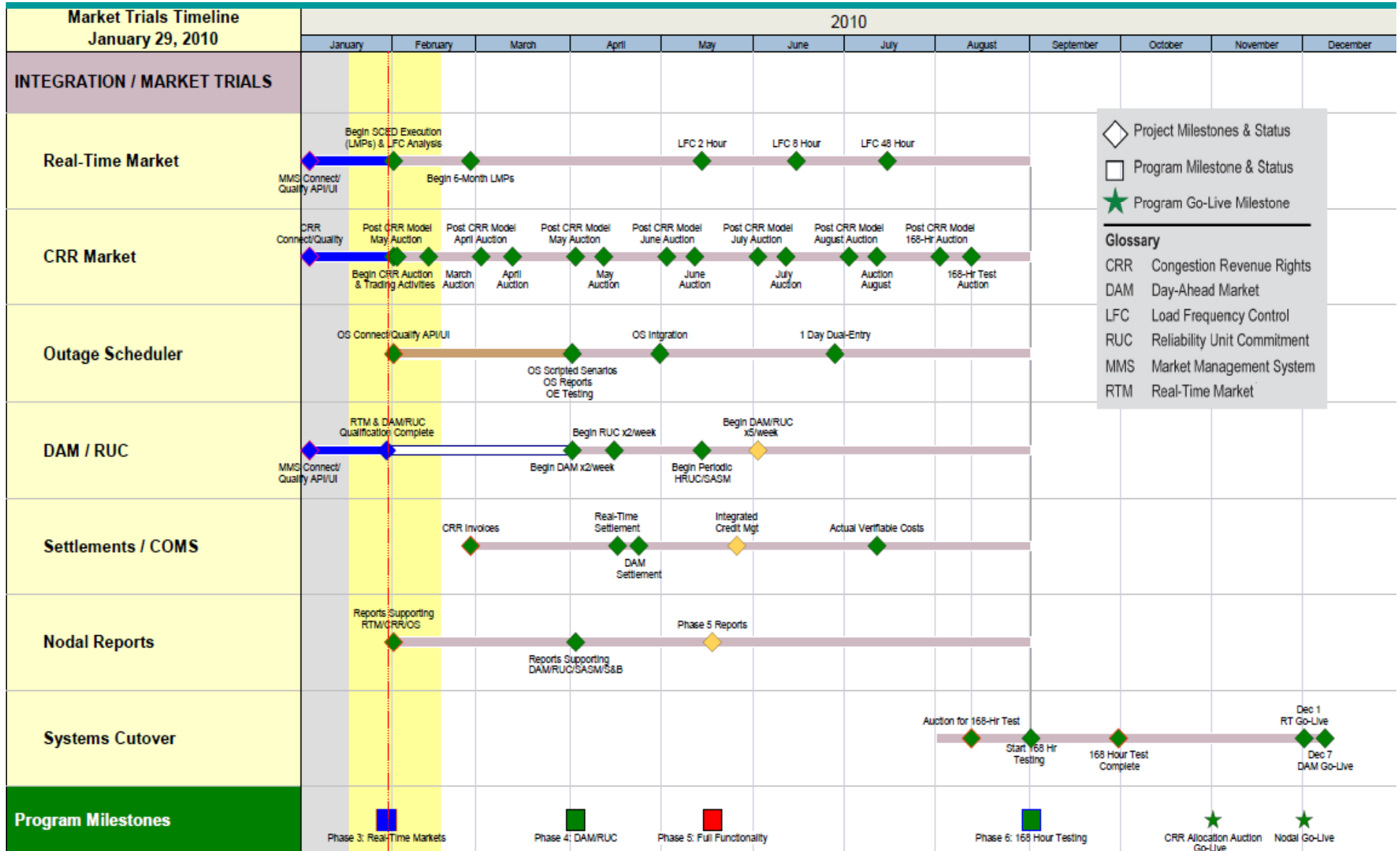
Key Takeaways from Phase 3:

- Progression from connectivity to market execution is key for Real-Time Market and CRR Auction
- Realistic RTM LMPs depend on consistent QSE resource offers across all hours of the week
- CRR Auction activities and Outage Schedule testing encouraged

Integrated Nodal Timeline



2010 Market Trials Timeline



Program Milestone Schedule Mitigation

■ Phase 5: Full Functionality

Integration Testing Schedule is still two weeks behind: No Impact on Go-Live

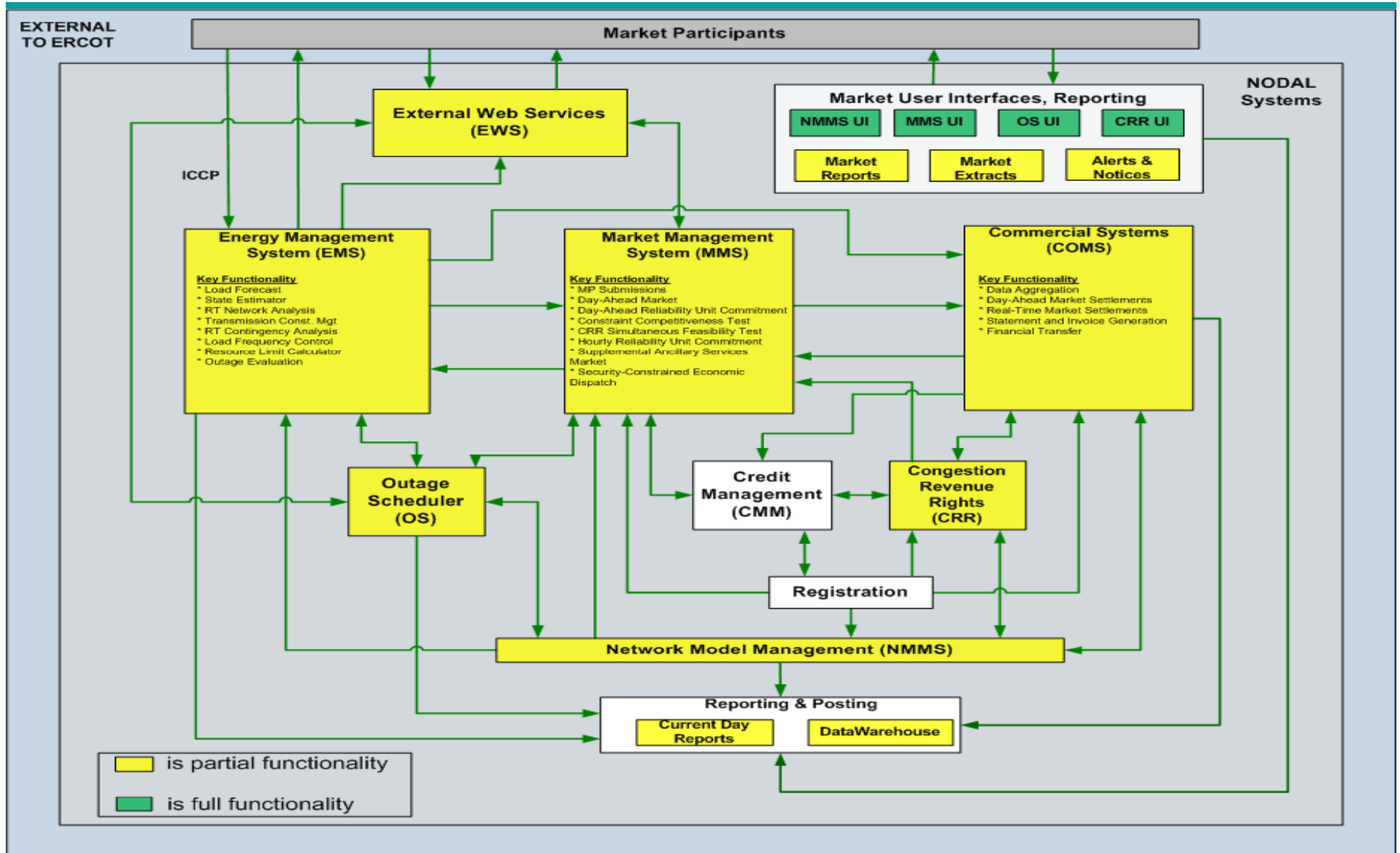
– Scope

- End to end integration testing
- Begin HRUC/SASM
- Daylight Savings time change verification
- Phase 5 performance verification

– Mitigation Strategy

- Continue to leverage weekend overtime for Phase 5 test
- Prioritize and phase in the delivery of reports during Market Trials
- Prioritize Testing to ensure the critical functionality and reports are completed first
- Prioritize must have End-to-End scenarios
- Continue to efficiently schedule testing and release management windows

Nodal Systems Blueprint - Market Trials - Phase 3 - Feb. 1st



Nodal Program Risks & Issues: Definitions

Definitions for Category, Probability and Severity of Risks & Issues:

- **Category**

- Scope: Will require a scope change
- Schedule: Will require a schedule change
- Budget: Will require a budget change

- **Probability**

- High: Expected to require Change Request over the next 1-3 months
- Medium: Expected to require Change Request over the next 4-10 months
- Low: Not expected to require a Change Request

- **Severity**

- High: Milestone impact, or budget impact >\$500,000
- Medium: Milestone impact - but expected to be mitigated, or budget impact between \$0 - \$500,000
- Low: No milestone impact, or no budget impact

Nodal Program Risks & Issues

Risk/Issue	Impacted Milestone	Target	Category	Probability	Severity	Status
Integration Testing - Risk <i>Continued risk around technology delivery of business systems integration due to complexity and continuing maturing of application and data dependencies.</i>	Program	May 2010	Scope / Schedule / Budget	Low	Med	<ul style="list-style-type: none"> Phase 3 On track; planning complete, execution in progress.
Market Interaction Operating Level Agreements (OLAs) <i>Need to determine operating level agreements associated with market interactions to assist ERCOT in establishing operational thresholds:</i> <i>-Network Model Load Frequency</i> <i>-DAM Sizing;</i> <i>-CRR sizing</i> <i>-Reporting</i>	Program	April/ May 2010	Scope / Budget	High	Low	<ul style="list-style-type: none"> On track. Phase 3 complete. Phase 4 and 5 OLA definitions in process. NATF and NDSWG heavily involved in issue. Joint working session scheduled for 02/16/10 On track; presented to NATF on 02/02/10 On track; ERCOT is researching comparable CRR market sizes in PJM, CAISO, and MISO On track

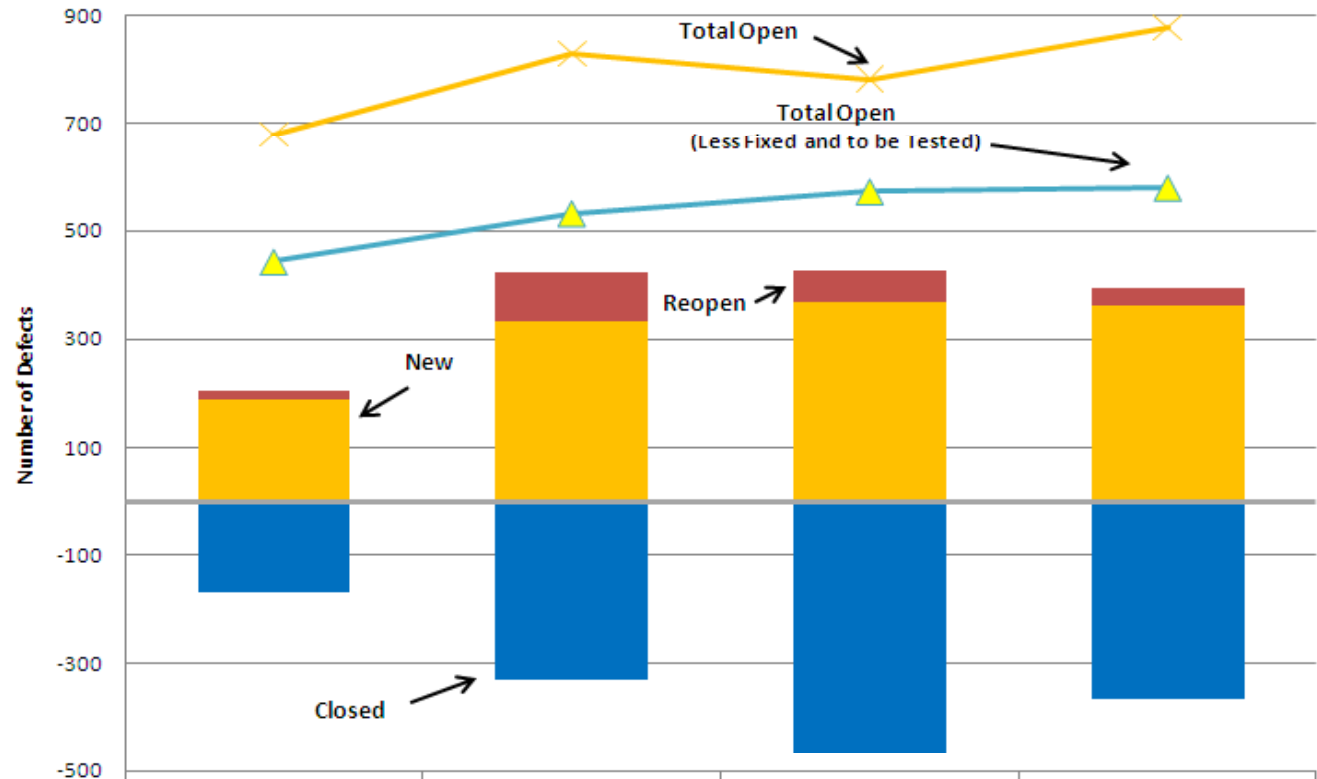
Nodal Program Risks & Issues

Risk/Issue	Impacted Milestone	Target	Category	Probability	Severity	Status
<p>Reconciling Protocols, Systems and Market Expectations <i>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.</i></p>	Phase 3	Feb 2010 (Change control submitted)	Scope / Schedule / Budget	Med	Low	<ul style="list-style-type: none"> • Work underway to trace protocols, requirements and business processes alignment analyses are in progress. • SMEs added to the team in May.
<p>Credit Management – Business & Technical Exposure <i>Credit Management rules and exposure calculations will change significantly with the implementation of the Nodal Program. During the requirements and design phase of the program stakeholder concerns have been expressed that may result in requested system changes as the program moves into Market Testing of Credit Management.</i></p>	Phase 5	July 2010	Scope / Schedule / Budget	High	Med	<ul style="list-style-type: none"> • ERCOT business and Nodal Program reviewing Credit concerns and next steps.

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

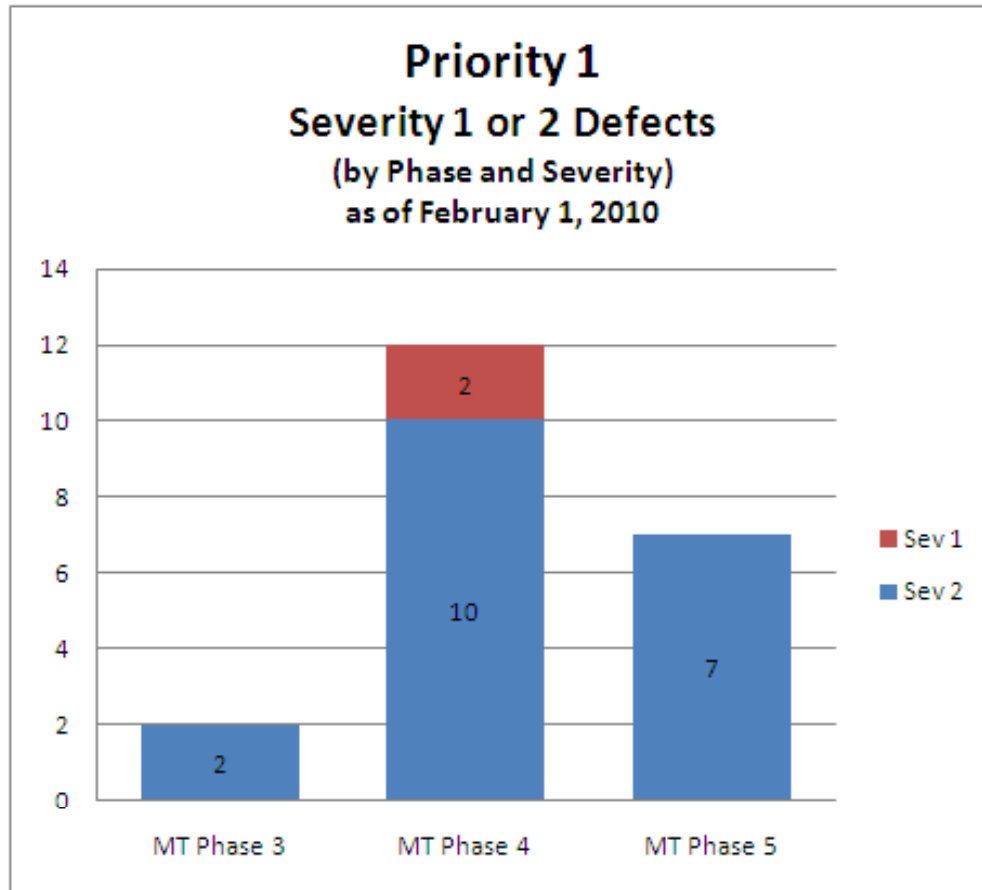
- Defect counts increased as expected due to planned software migrations into Nodal iTest and extensive integration testing efforts.

**Nodal Defects
Total Open vs. Monthly Variation**



	October	November	December	January
Closed	-167	-328	-464	-364
Reopened	18	91	61	31
New	187	333	367	362
Total Open	679	830	783	878
Total Open - (Fixed & to be Tested)	443	532	572	579

Nodal Defect Reporting



Severity 1 – High Level Description

Phase 3:

None

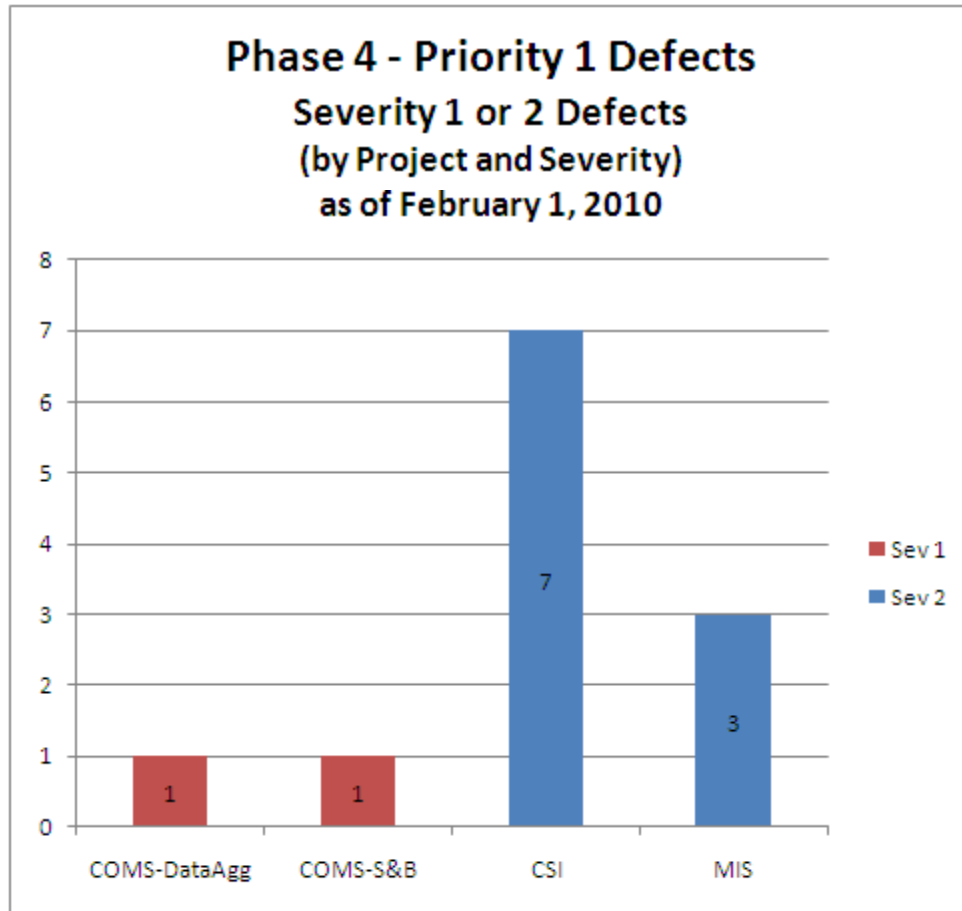
Phase 4:

Configuration Error (1) – New
Data Error (1) – Test

Phase 5:

None

Nodal Defect Reporting



Severity 1 – High Level Description

Market Trials Phase 3:

None

Market Trials Phase 4 by Project:

COMS-Data Agg:

Data Error (1) – Test

COMS – S&B:

Configuration Error (1) – New

Earned Value for the Nodal Program

To be updated and provided before SNPC meeting.



Market Readiness

Matt Mereness
Readiness & Transformation

Special Nodal Program Committee
15 February 2010

Participant Readiness Touch Points

2010

	February	March	April	May
Meetings	<ul style="list-style-type: none"> • NATF 2/2, 2/16,2/19) 	<ul style="list-style-type: none"> • NATF 3/2 	<ul style="list-style-type: none"> • NATF 4/6 	<ul style="list-style-type: none"> • NATF 5/4
Training	<ul style="list-style-type: none"> • Nodal 101 • LSE 201 • Basic Training • Generation 101, 201 • CRR – instructor-led ◆ Settlement Workshop • Operations Seminar 	<ul style="list-style-type: none"> • Nodal 101 • LSE 201 • Basic Training • Generation 101, 201 • CRR – instructor-led ◆ Settlement Workshop • Operations Seminar 	<ul style="list-style-type: none"> • Nodal 101 • Trans 101 • Generation 101, 201 • CRR – instructor-led • NMMS • Economics of LMP ★ Combined Cycle Workshop 	<ul style="list-style-type: none"> • Nodal 101 • Trans 101 • Generation 101, 201 • CRR – instructor-led • NMMS • Economics of LMP
Outreach	<ul style="list-style-type: none"> • 5 site visits • Additional Phase 3 metrics • Standby site visits mitigation approach 	<ul style="list-style-type: none"> • 4 site visits • Scheduled Site Visits conclude ◆ MRS #3 March 25th 	<ul style="list-style-type: none"> • Standby site visits • Phase 4 metrics launch 	<ul style="list-style-type: none"> • Standby site visits • Metrics monitoring
Market trials	<ul style="list-style-type: none"> • Weekly calls • Phase 3 Market Trials initiates • QSE OS qualification • Phase 4 Handbooks <ul style="list-style-type: none"> • DAM/RUC • MIS 	<ul style="list-style-type: none"> • Weekly calls • Phase 3 Execution • Phase 4 Handbooks <ul style="list-style-type: none"> • Updates to prior handbooks • LFC individual QSE tests 	<ul style="list-style-type: none"> • Weekly calls • Phase 4 Market Trials initiates • Phase 5 Handbooks <ul style="list-style-type: none"> • Updates to prior handbooks • Credit 	<ul style="list-style-type: none"> • Weekly calls • 2 hr system-wide LFC test • Phase 5 Market Trials initiates

Next 60-days of Classes and Settlement Workshops

Course	Start Date	Location
Generation 201	February 9	Suez Energy (Houston)
Generation 101	February 16	Austin Airport Marriott South (Austin)
Network Model Management	February 18	ERCOT Met Center (Austin)
★ Settlements Workshop –RUC/RTM	February 23	ERCOT Met Center (Austin)
ERCOT Nodal 101	February 25	ERCOT Met Center (Austin)
Load Serving Entity 201	March 3	ERCOT Met Center (Austin)
Economics of LMP	March 8	Norris Conference Center (Houston)
Basic Training Program	March 8	Austin Airport Marriott South (Austin)
Congestion Revenue Rights	March 9	Norris Conference Center (Houston)
★ Settlements Workshop –RUC/RTM	March 9	City of Garland Fire Building (Dallas)
★ Settlements Workshop –RUC/RTM	March 23	Calpine (Houston)

Enrollment at: <http://nodal.ercot.com/training/courses/index.html>

Readiness Workshops

Wind Panel

Hosted by Horizon Wind

February 16, 2010

Houston, TX

9-3pm

Retail Panel

Hosted by StarTex

February 17, 2010

Houston, TX

9-3pm

- **Outreach: Program Update**
- **Outreach: Real-Time Market**
- **Outreach: Merged DAM&RUC**
- **Credit Management**
- **Wind Resource discussion**

- **Outreach: Program Update**
- **Outreach: Merged DAM&RTM**
- **Outreach: CRR Auction**
- **Credit Management**
- **Retail operations discussion**

RSVP required due to room limitations, but WebEx available

Wind- <http://www.ercot.com/calendar/2010/02/20100216-MT>

Retail- <http://www.ercot.com/calendar/2010/02/20100217-MT>

Market Participant Site Visits

26 Outreach Site Visits have been completed

Confirmed Completed

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

Active MP Metrics (as of 2/3/2010)

Metric Name	Current Score (as of 2/3/2010)	Applies to	Weight	Green %	Red %	Yellow %	Not Scored %	Primary Criteria	Notes
MP3 Market Submissions Connectivity Qualification	Green/White goes to Amber/Red Feb 11	QSERS	Generation Ratio Share	93%	0%	0%	7%	Successful submission of RT and DAM transactions (293 total entities included sub-QSEs)	72/115 QSERS Qualified (including sub-QSEs). First "AMBER" & "RED" scores will be released 2/11/2010.
	Green/White goes to Amber/Red Feb 11	QSEs	Even weighting	67%	0%	0%	33%		119/178 QSEs qualified (including sub-QSEs). First "AMBER" & "RED" scores will be released 2/11/2010.
MP6 QSER and TSP Compliance with the Nodal Telemetry Criteria	Green	QSERS	Generation Ratio Share	71%	0%	0%	29%	100% expected State Estimator telemetry submitted.	39 out of 45 QSERS completed. For the 6 QSEs in review, most issues have been resolved, leaving an estimated 23 SE points to be resolved out of 3957 required points (99%)
	First scores - 2/11/2010	QSERS	Generation Ratio Share					100% expected SCED telemetry submitted.	
	First scores - 2/11/2010	TSPs	Ownership Ratio Share					100% expected TSP telemetry per ICCP Handbook submitted	
MP11 Resource Registration	Green	REs	Registered MW Capacity Ratio Share	98%	2%	0%	0%	RARF validated, Decision Making Authority form submitted, and GENMAP validated	
MP15-B CRR Connectivity Qualification	Green/White goes to Amber/Red Feb 11	CRRAHs	Even weighting	60%	0%	0%	40%	Successful submission of CRR transactions	48/80 CRRAHs qualified. First "AMBER" & "RED" scores will be released 2/11/2010.

GREEN	Submissions complete
AMBER	Submissions not complete, but actively working with ERCOT
RED	Submissions not complete, participation not adequate





Traceability

Betty Day
Program Control & Review

Special Nodal Program Committee
15 February 2010

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)	928	171	550	193	67
Section 4 – Day Ahead Operations (Nov NATF)	635	66	63	76	3
Section 5 – Transmission Security Analysis and RUC (Nov NATF)	166	30	53	15	10
Section 6 – Adjustment Period and Real-Time Operations (Jan NATF)	926	71	441	55	39
Section 7 – Congestion Revenue Rights (Oct NATF)	445	54	58	27	1
Section 8 – Performance Monitoring (Jan NATF)	226	32	130	82	9
Section 9 – Settlement & Billing (Nov NATF)	408	0	128	55	2
Section 16.11 – Financial Security for Counter Parties (Dec NATF)	198	2	33	25	3
Section 17 – Market Monitoring & Data Collection (Dec NATF)	25	7	21	1	6
Total	3956	433	1477	529	140



Alignment Item Categories

	Total	Category of Alignment Items				
		Alignment Items	NPRR	TBD / need category	Business Requirement Update	Business Procedures Revision
Section 3 – Management Activities for the ERCOT system	67	6	31	19	7	4 - Report
Section 4 – Day Ahead Operations	3	2	0	1	0	0
Section 5 – Transmission Security Analysis and RUC	10	5	0	2	3	0
Section 6 – Adjustment Period and Real-Time Operations	39	11	6	12	6	4- Report
Section 7 – Congestion Revenue Rights	1	0	0	0	0	Handbook
Section 8 – Performance Monitoring	9	2	1	3	2	1- Report
Section 9 – Settlement & Billing	2	2	0	0	0	0
Section 16.11 – Financial Security for Counter Parties	3	1	0	1	1	0
Section 17 – Market Monitoring & Data Collection	6	1	2	1	1	1- Report
Total	140	30	40	39	20	11

Transition to ERT

The SMEs are transitioning to ERT team.

ERT and PMO will prioritize the remaining work within the ERCOT Readiness activities.

- **NPRRs – SMEs work with Business Owners to draft NPRRs to put through CEO review process and governance process**
- **Alignment Items**
 - TBD Category
 - Business Requirement Updates
 - Business Procedures Revisions
 - Other
- **Research Items**
- **In Progress Business Procedures**
- **In Progress Reports / Extracts**

ERT and PMO will report to market closure of items

Protocol Traceability Effort Update

Tier 2 (Moderate): 10, 11, 12, 13, 16 – no alignment items

- For each Tier 2 section, reviewed all NPRR, reviewed the Impact Analysis for system impacts
 - Reviewed business requirements and listed appropriate sections for coverage
 - Reviewed business procedure lists and listed appropriate titles for coverage
 - Reviewed reports/extracts list on ERCOT Master Information List (EMIL) and listed appropriate

Tier 3 (Low): 1, 2, 14, 15, 18, 19, 20, 21, 22, 23, 24 – no alignment items

- For each Tier 3 section, reviewed all NPRR, reviewed the Impact Analysis for system impacts
 - Reviewed business requirements and listed appropriate sections for coverage

Full presentation can be found at ERCOT Readiness Page, under Key Documents (<http://nodal.ercot.com/readiness/index.html>)

Title – Protocol Traceability Tier 2/3 Presentation (as of 1/20/10)



Monthly Financial Review

Don Jefferis

Special Nodal Program Committee

15 February 2010

Monthly Financial Review

Financials to be provided before SNPC meeting.

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	March	Continuing to define Market OLAs for all subsequent Market Trial Phases as part of the ORT project plan: Phase 2.1: Complete Phase 3: Complete Phase 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
<ul style="list-style-type: none"> 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 Issue: Network Model Load Frequency

◇ Potential Milestone Impact: Overall Program

ISSUE: Network Model Load Frequency		<i>Model updates for Nodal will require more attention and coordination by both MPs and ERCOT to ensure alignment. ERCOT has determined that a bi-monthly Nodal database load represents the most manageable solution for updating the real-time environment when Nodal begins in December 2010.</i>		
Life Cycle State				
Plan	Manage			
Mitigation Plans		Who	Target Date	Current Status
1. Define and document Initial Model Load Process.		ERT	Complete	Initial Process Documented, to be updated based on feedback from Testing and Operations teams.
2. Validate and improve the Model Load Process over the next several months based on a Zonal Bi-Weekly load timeframe.		INT, INF	January - March	Initial loads completed, targeting mid January Model load to align with Zonal schedule.

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	Complete	02/02/10 – Met with NATF on 1/29/10 to finalize reporting and traceability effort . Transitioned open items to ERT to track to completion.
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.				V. Gates	Ongoing	02/02/10 – Transitioned to ERT in order to track closure of alignment items
3. Keep the oversight groups apprised of progress.				M. Cleary	Ongoing	02/02/10 – 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
Utilicast Report 8	6	1 in progress; 5 complete	2011
Utilicast Report 10 (Cleary)	17	5 in progress; 12 complete	6/1/10**
Opportune Report 1	10	10 complete	1/31/10

**** Updated end date to reflect date to complete remaining audit points**

Audit Points to Address from Utilicast Report 8

ID	Description	Action Plan	Responsible Director	Responsible Manager	Target Date
UT108-05	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	David Forfia	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.	<p>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.</p> <p>The schedule below reflects the Nodal test schedule:</p> <ol style="list-style-type: none"> 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.	Met with NATF on 1/29/10 to finalize reporting and traceability effort. Transitioned open items to ERT to track to completion.	V. Gates	V. Gates	02/28/10

Audit Points to Address from Opportune Report 1

ID	Short Description	Recommendation	Action Plan Status	Resp. Dir.	Resp. Mgr.	Target Date
OPT 01-01	Central Storage Location for Documentation	Maintain timesheet support, project status reports and other key documents in a central location with access restrictions and backup capabilities.	Vendor Manager (VM) and Project Manager (PM) are working with the Financial Management Office (FMO) to create a centralized repository on the FMO SharePoint site with restricted access.	J. Iacobucci	J. Fruit J. Robinson	Complete
OPT 01-02	Reconciliation of Invoices to Timesheets and AP Disbursements	Maintain a documented reconciliation of hours submitted on timesheets, hours invoiced and hours paid. Maintain the reconciliation real-time as invoices and timesheets are received	All ABB invoices are being generated off the ERCOT issued weekly timesheet. The PM verifies the invoice against the tracking spreadsheet and sends confirmation with the invoiced hours.	J. Iacobucci	J. Fruit J. Robinson	Complete
OPT 01-02	Consolidation of All Timesheet Entries for Analysis	Maintain weekly spreadsheets for all hours, time reports and status reports. Conduct weekly and periodic checks to review all ABB issued timesheets	All hours, time reports and status are being maintained weekly by the VM and PM. A central repository will be created to store weekly reports and review all ABB issued timesheets.	J. Iacobucci	J. Fruit J. Robinson	Complete

Audit Points to Address from Opportune Report 1

ID	Short Description	Recommendation	Action Plan Status	Resp. Dir.	Resp. Mgr.	Target Date
OPT 01-04	Standard Work Descriptions	When possible, require standard work descriptions for certain phases, deliverables and tasks and obtain buy-in agreement from ABB.	All entries are controlled for standard work descriptions by the PM during the time collection process and are being maintained in an Access database. The contract has been updated to reflect the new categories.	J. Iacobucci	J. Fruit J. Robinson	Complete
OPT 01-05	Invoicing Controls	Install a control that will provide greater assurance that the invoiced hours are accurately supported by the original time entered by employees and approved by their supervisors.	<p>The following steps will be or have been implemented:</p> <ol style="list-style-type: none"> 1. The ABB staff working for ERCOT will submit (via emails) their ERCOT-billable time, with date, hours and description, to the PM each Friday. 2. The PM transfers the data to a reporting spreadsheet. 3. The PM provides the reporting spreadsheet to the VM on the following Thursday. 4. The VM compares the spreadsheet to the timekeeping system entries. 5. The VM and PM reconcile any discrepancies. 6. ABB Invoices ERCOT for the final agreed upon hours. 7. The VM validates the invoice back to the original reporting spreadsheets for the PM. 	J. Iacobucci	J. Fruit J. Robinson	Complete

Audit Points to Address from Opportune Report 1

ID	Short Description	Recommendation	Action Plan Status	Resp. Dir.	Resp. Mgr.	Target Date
OPT 01-06	Duplicate Billing of Hours	A search of duplicate payments found a total of 43 hours duplicated. Recommendation to request a refund from ABB for the over billing amount.	ABB agrees to this finding and the PM will request a correction.	J. Iacobucci	J. Fruit J. Robinson	Complete
OPT 01-07	Blank Work Descriptions	Prior to November 2007, there were a number of instances where work descriptions were not provided in the invoice support documentation (timesheets/timecards). The PM needs to remain alert to proper short text descriptions being provided.	All entries are being controlled for standard work descriptions by the PM during the time collection process.	J. Iacobucci	J. Fruit J. Robinson	Complete
OPT 01-08	Recap of Invoices and Cumulative Hours by SOW	Maintain the recap of invoices and cumulative hours by SOW on a current basis.	A spreadsheet will be maintained that tracks all monthly invoices as well as the date the actual hard copy invoice is received by the PM and the date of payment.	J. Iacobucci	J. Fruit J. Robinson	Complete

Audit Points to Address from Opportune Report 1

ID	Short Description	Recommendation	Action Plan Status	Resp. Dir.	Resp. Mgr.	Target Date
OPT 01-09	Receipt of Payment Milestones Unclear	The parties need to emphasize the need for clearly describing payment milestones on invoices, both in preparation of invoices by ABB, and in reviewing/approving invoices by ERCOT.	All invoices will have a cover sheet attached that the VM will document what deliverable was achieved with the invoice, along with the e-mail confirmation from the PM that the invoice matches the hours contained within the hour tracking spreadsheet being maintained.	J. Iacobucci	J. Fruit J. Robinson	Complete
OPT 01-10	Signed Contractor Ethics Agreement Forms Were Incomplete	Furnish ABB with copies of the Contractor Ethics Agreement and related policies. Require all ABB employees and contractors to execute the Contractor Ethics Agreement signature page indicating that they have read and understood all of the relevant policies.	Copies of the Contract Ethics Agreement will be made available for distribution to all ABB resources who are working on the ERCOT project/program. The PM will then provided a targeted timeframe in which the agreement should be reviewed and agreed. Other ERCOT policies will be observed based on the need of the ABB employee/contractor.	J. Iacobucci	J. Fruit J. Robinson	Complete

DAM Status

- **Current and Testing Target**

- Currently testing 5000 Energy-Only Bids/Offers & 5000 PTP Obligation Bids:
 - Received patch MMS5 P4 (delivered end of 2009)
 - Able to process 5K DAM Energy-Only Offers/Bids and 5K PTP Obligation Bids
 - Good Quality of Solution
 - Need better performance
 - » Tuning configuration parameters
 - » Identifying performance bottlenecks
 - Patch MMS5 P5 will be delivered mid-February 2010
 - The MMS5 P5 to be the version that goes into the START of Market Trials Phase 4
 - Expecting that with MMS5 P5 we will get further improvements especially in the Network Application processing of NOIE CRR Offers
 - Scoping the changes for MMS5 P6 – primarily in the area of more efficient transmission constraint management
- Goal of 10,000 Energy-Only Bids/Offers & 10,000 PTP Obligation Bids

CRR - Bid Limitations in the CRR Market in ERCOT

- **In the ERCOT CRR Market there is a need to limit bids**
- **In each CRR Auction, the total number of bids+previously awarded CRRs cannot go over 200,000**
 - Short term issue is dimension sizing in auction engine
 - Long term issue is serious doubts about length of time to solve extremely complex auction with large number of bids
- **Probable bid limits for first six monthly auctions**
 - Number of Allocated PCRRs ~500
 - Number of registered market participants currently ~80
 - Number of bids per participant ~ 2400
 - $[(200,000-500)/80 = 2493]$
- **Bid Limit is per month in Monthly Auction**
- **Bid Limit is per year in Annual Auction**

CRR - ERCOT Auction considerably more complex than other Nexant Markets

- **Multiperiod**
 - Monthly solves over three models simultaneously
 - Annual solves over twelve models simultaneously
- **Larger number of contingencies**
 - ~2000 for ERCOT
 - ~200 or less for CA-ISO and MISO
- **Both of these (protocol required) features have huge (~ 2 orders of magnitude) implications in the complexity of the auction**
 - Protocol 7.5.5.3 (1)
 - “The auction must be a single-round, simultaneous auction for selling the CRRs....”
 - Protocol 7.5.1 (2)
 - “The CRR Network Model must, to the extent practicable, include the same topology, contingencies, and operating procedures as used in the Network Operations Model...”

CRR - Comparison of other ISOs

	Transaction Cost per Bid	PTP Buy Bid Structure	Auction Collateral Check	Limits on # of submitted Bids	Contingency analysis	Obligations and/or Options	Multi-period used
MISO	No	Price sensitive bid (Bid-curve)	Pre-process	2,000 per participant	~100-200 contingencies	Obligations	No
CAISO	No	Price sensitive bid (Bid-curve)	Pre-process	100,000 per participant	~100 contingencies	Obligations	No
ERCOT	TBD	Flat bid price	Budget Constraint within Optimization	200,000 in aggregate	~2000 contingencies	Obligations and options	Yes

Model Load Frequency - Current Status

- **ERCOT trying to achieve a Nodal market load schedule of 2 database loads/month in our test program**
 - This is a compromise between the Nodal protocol requirement of 10 Database loads/year; and the proposal of daily loads perceived by the market
- **ERCOT will continue to discuss the frequency of the model load with NATF**
 - In Zonal, it has taken ERCOT ~3 days to validate and load a database
- **ERCOT is encouraging feedback from Market Participants**
 - Feedback via NATF regarding development of a database load business process which minimizes risk and complexity for the entire participant base
 - **Joint meeting with NDSWG and NATF scheduled for Feb 16, 2010**