Nodal Program Update

Mike Cleary

Sr. VP and Chief Technology Officer

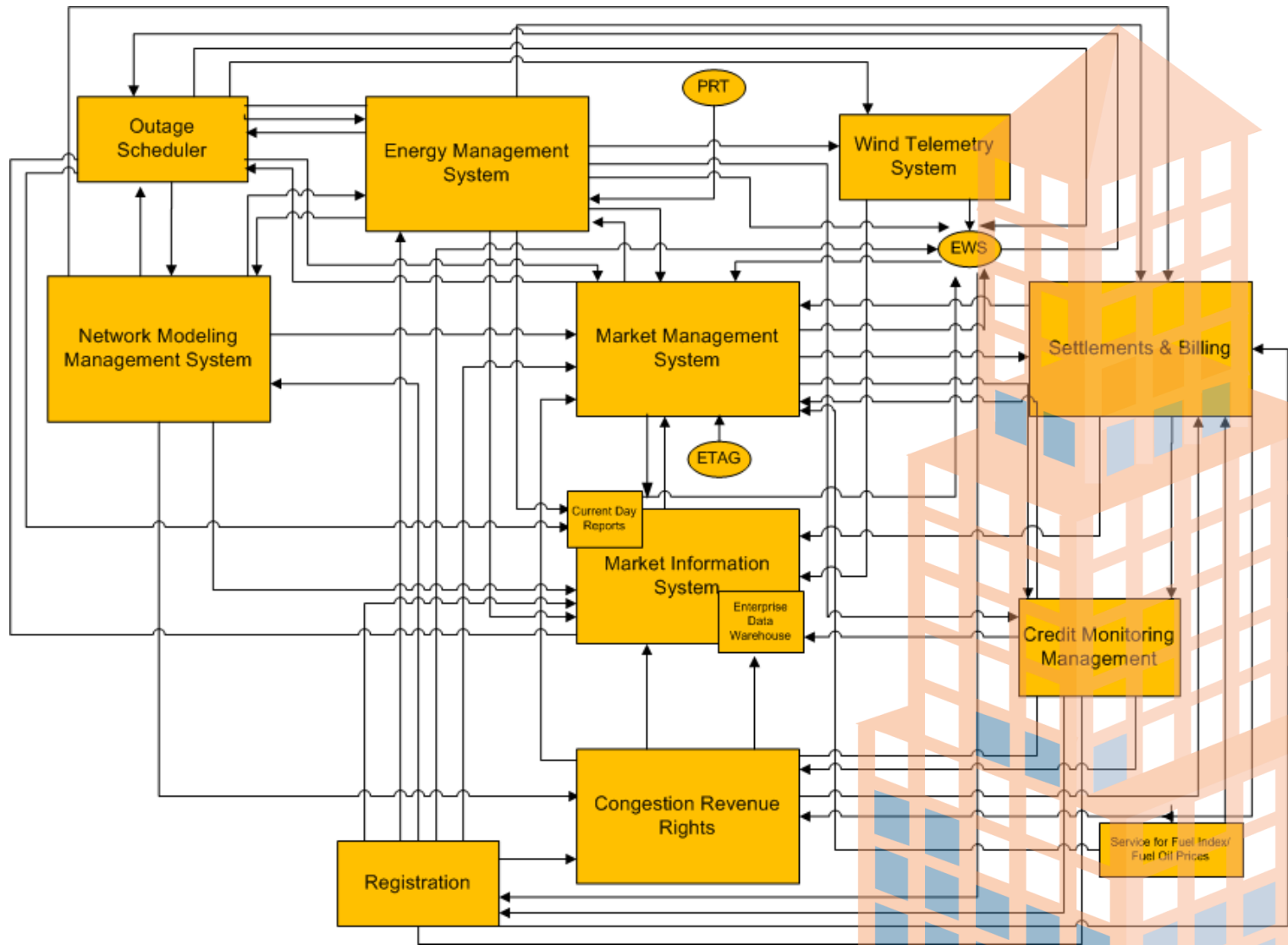**ERCOT Board of Directors**

20 October 2009

- **Program Status**

- **Market Readiness**

- **Financials**

- **Appendix**

Program Milestone: Phase 2.1 Market Connectivity

◆ Included the following project milestones

- Readiness/Market Readiness/External Outreach & Training
    - Market Readiness Seminar Oct. 8 (approx. 140 MPs)
    - MP site visits began Oct. 9 with LCRA; first of 35 visits
    - Phase 2.1 Market Connectivity Handbook posted Oct. 2
- Market Trials/Phase 2.1 Connectivity Testing/MT External Testing
    - Phase 2.1 kickoff Oct. 8
- Readiness/Market Readiness/Metrics Tracking & Assessment
    - Phase 2.1 Commencement Criteria met (environment built and validated)

◆ Project Milestones

- Readiness/Operational Readiness/Environment Configuration & Management
    - Phase 2.1 NPROD build complete
        - Hardware installed, baseline code set on schedule; final build scheduled Oct. 16

■ Program Milestones

– Phase 2.1: Market Connectivity

◆ Project Milestones (October look-ahead)

Project Milestone	Status	Detail
Integration/ Phase 2.1 Connectivity Testing/ Integration Testing	• On target	• MMS UI: initial test cycle 100% complete • MMS EWS: initial test cycle 100% complete • 17 open defects (no Sev 1s) in regression test: 92% complete
Readiness/ Operational Readiness/ Environment Configuration & Management	• On target.	• Phase 2.1 run books, monitoring
Readiness/ Operational Readiness/ Security Testing	• On target.	• Performance testing: 50% NPROD, 100% iTest (web service stability and loading, UI stability and loading)

Phase 2.1 Market Connectivity Defect Update

Project	Sub-Project	Status	Open Critical Defects Sept. 30/Oct. 15		
MMS	Core Application	• MMS Release 5 with several patches currently being used for Market Connectivity testing. • A portion of the outstanding defects have been fixed in a patch that is currently in the MMS FAT environment, with testing underway. Once that testing is complete, the patch will be migrated to iTest; remaining defects have been logged with the vendor and are being worked into an upcoming patch.	**MMS5**		
			Sev 1s Sev 2s Sev 3s (P1/P2)	0 2 17*	0 2 16*
MMS	Market Manager UI	• Market Manager UI release 1.16.1 with additional patches currently being used for Market Connectivity testing. • All outstanding defects have been logged with the in-house development team; development/testing/deployment cycles to address critical defects are in progress.	**MMS MM UI 1.16.1**		
			Sev 1s Sev 2s Sev 3s Sev 4s Sev 5s (P1/P2)	0 3 5* 3* 2*	0 2 1* 1* 1*
EIP	EWS-MMS Interface	• EIP external Web Services spec release1.19 with several patches currently being used for Market Connectivity testing. • All outstanding defects have been logged with the in-house development team; development/testing/deployment cycles to address critical defects are in progress.	**EIP 1.19**		
			Sev 1s Sev 2s (P1/P2)	0 2	0 2

* Sev 3s, 4s and 5s are priority 1 or 2 (must fixes); see slide 26 in appendix for further explanation.

Future Program Milestones
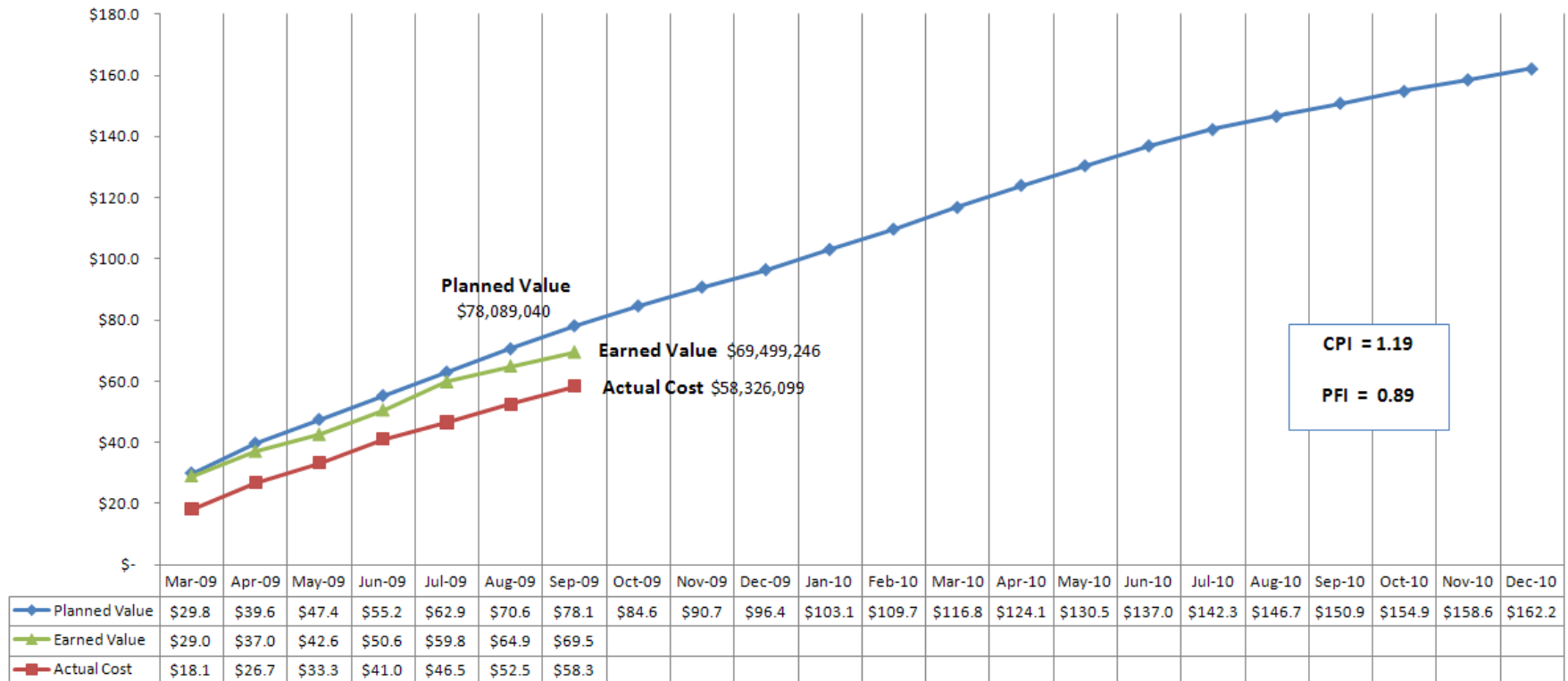
Phase	When	Scope	Status
2.1: Market Connectivity	Oct. 28	• MP interface testing (API, Market Manager UI) • Market System Rules Validation (Phase 1)	• On track • Migrated 2.1 software into Nodal Production environment • Functional regression and final performance testing under way
3: Real-Time Markets	Mid January-Early February	• MMS-SCED execution • SCED results, report publishing • CRR auction execution (CRR UI) • OS submissions (API, OS UI)	• Planning complete • Integrated testing under way (CRR, OS, SCED) • Running Real-Time operating scenarios twice weekly
4: DAM/RUC	Late March-Early April	• MMS-DAM, DRUC, HRUC, SCED execution • Market results, report publishing • Initial S&B execution • Outage, CRR integration	• Planning in progress • Integrated testing under way • Executing DAM mechanics
5: Full Functionality	Late April-Early May	• Run full nodal systems	• Planning in progress • Internal DST test scheduled Nov. 1

Nodal Program

Chart only uses the values associated with the Internal Labor Costs, External Resource Costs, Administrative & Employee Expenses, Vendor and Backfill

Planned Value $78,089,040

Earned Value $69,499,246

Actual Cost $58,326,099

CPI = 1.19

PFI = 0.89

	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10
Planned Value	$29.8	$39.6	$47.4	$55.2	$62.9	$70.6	$78.1	$84.6	$90.7	$96.4	$103.1	$109.7	$116.8	$124.1	$130.5	$137.0	$142.3	$146.7	$150.9	$154.9	$158.6	$162.2
Earned Value	$29.0	$37.0	$42.6	$50.6	$59.8	$64.9	$69.5															
Actual Cost	$18.1	$26.7	$33.3	$41.0	$46.5	$52.5	$58.3															

NOTE: Amounts in Millions

Nodal Program Risks & Issues

Risk/Issue	Target	Status
Integration Testing *Continued risk around technology delivery of business systems integration due to complexity and continuing maturing of application and data dependencies.*	**May 2010**	• On track. • Test phase planning, associated work plan complete. • Execution of work plan, with specific focus on October Market Trials functionality, under way. • Daily meetings being held.
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.*	**12/15/09**	• On track; work underway to trace protocols, requirements and business processes alignment analyses are in progress. • SMEs added to the team in May.
Data Center Expansion Capacity Concerns *Data center capacity, space and power may be inadequate for Nodal Go-Live, unless plans for expansion are adequate.*	**11/01/09**	• Nearing completion; all but one server migration has been successfully completed. • Taylor expansion/risk-mitigation steps for Met facility provide sufficient space for Go-Live.
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.*	**10/30/09**	• On track. • ERCOT Enterprise Architecture team currently working on estimates to conduct impact analysis and develop options. • Zonal analysis complete, corporate analysis 70% complete.
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.*	**April/May 2010**	• On track. • Phase 2.1 OLAs established and communicated to the market during Oct. 8 Market Readiness Seminar.

Participant Readiness Touch Points

	2009/2010			
	October	**November**	**December**	**January**
Meetings	• NATF 10/13 • NATF 10/27		• NATF 12/8	• NATF tbd
Training	• Nodal 101 • LSE 201 • Generation 101 • Basic Training: http://nodal.ercot.com/training/index.html	• Nodal 101 • LSE 201 • Generation 101, 201 • Economics of LMP • Transmission 101 ◆ Settlement Workshop	• 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
Outreach	◆ Readiness Center • Limited ERCOT metrics • 5 site visits	• Additional ERCOT & MP metrics • 6 site visits	• 3 site visits	• 8 site visits • Initiate Phase 3 metrics
Market trials	• Bi-weekly calls ◆ 2010 Market Trials Roadmap: Oct. 8 ◆ Technical Workshop: Oct. 28 ■ Market Connectivity open to MPs Oct. 28	• Bi-weekly calls • Voluntary MP connectivity testing	• Bi-weekly calls • Voluntary MP connectivity testing	• Start weekly calls • MP re-qualification begins

		◆ MP Handbooks
		   • *SCED/LFC*
		   • *CRR*
			• *DAM/RUC*
			   • *Outage Scheduler*
			   • *COMS*	

Tentative Outreach Site Visits

Entity	Date
☑ LOWER COLORADO RIVER AUTHORITY	9-Oct
☑ CALPINE CORP	14-Oct
☐ AUSTIN ENERGY	20-Oct
☐ CITY OF GARLAND	21-Oct
☐ GDF SUEZ ENERGY MARKETING	29-Oct
☐ ANP FUNDING	3-Nov
☐ LUMINANT ENERGY	5-Nov
☐ INVENERGY WIND DEVELOPMENT	10-Nov
☐ EXELON	11-Nov
☐ AMERICAN ELECTRIC POWER SERVICE	12-Nov
☐ CONSTELLATION ENERGY	17-Nov
☐ PSEG ENERGY RESOURCES	18-Nov
☐ FULCRUM POWER	2-Dec
☐ EAGLE ENERGY PARTNERS I LP	3-Dec
☐ STEC	9-Dec
BP ENERGY COMPANY	10-Dec

Entity	Date
NRG TEXAS POWER	15-Dec
DIRECT ENERGY LP	5-Jan
CPS ENERGY	6-Jan
BRAZOS ELECTRIC	12-Jan
BTU (Bryan Texas Utilities) SERVICES	13-Jan
TOPAZ POWER MANAGEMENT	19-Jan
OCCIDENTAL	20-Jan
SHELL ENERGY	21-Jan
TENASKA POWER SERVICES	26-Jan
OPTIM ENERGY	27-Jan
APX	3-Feb
NEXTERA ENERGY	11-Feb
WIND PANEL (Houston)	16-Feb
RETAIL PANEL (Houston)	17-Feb
TRI-EAGLE ENERGY	18-Feb
XTEND ENERGY LP	2-Mar
EC AND R QSE	9-Mar

Confirmed ☐   *Completed* ☑

Monthly Financial Review

Mike Cleary
Senior Vice President & Chief Technology Officer
October 20, 2009

Nodal Program

Approved Forecast to Actual Comparison

Month of September 2009

					Favorable / (Unfavorable)
				Forecast	Forecast Cumulative Variance
Line	Cost Summary	Forecast	Actual	Variance	(Pending Contingency Mgmt Disposition)
1	Internal Labor Costs	$2.3	$2.3	$0.0	$3.7
2	Backfill Labor Costs	0.1	0.1	0.0	(0.1)
3	External Resource Costs	4.9	3.5	1.4	13.5
4	Software & Software Maintenance	0.6	0.5	0.1	0.6
5	Hardware & Hardware Maintenance	3.7	1.7	2.0	3.6
6	Other	0.1	0.0	0.1	0.3
7	**Sub-total Direct Project Costs**	**$11.7**	**$8.1**	**$3.6**	**$21.6**
8	**Board Discretionary Fund**	**$0.0**	**$0.0**	**$0.0**	**$0.0**
9	Allocations	$0.5	$0.4	$0.1	$1.8
10	Finance Charges	1.0	1.0	0.0	1.1
11	**Sub-total Indirect Project Costs**	**$1.5**	**$1.4**	**$0.1**	**$2.9**
12					
13	**Total**	**$13.2**	**$9.5**	**$3.7**	**$24.5**

Amounts in millions

Nodal Program
Approved Forecast to Actual Comparison
Life-to-Date through September 2009

Line	Cost Summary	Forecast	Actual	Favorable / (Unfavorable) June-September 2009 Forecast Variance	January-May 2009 Budget Variance	Forecast Cumulative Variance
1	Internal Labor Costs	$49.9	$49.6	$0.3	$3.4	$3.7
2	Backfill Labor Costs	5.0	4.9	0.1	(0.2)	(0.1)
3	External Resource Costs	250.2	245.3	4.9	8.6	13.5
4	Software & Software Maintenance	24.1	22.9	1.2	(0.6)	0.6
5	Hardware & Hardware Maintenance	51.7	49.7	2.0	1.6	3.6
6	Other	2.0	1.9	0.1	0.2	0.3
7	**Sub-total Direct Project Costs**	**$382.9**	**$374.3**	**$8.6**	**$13.0**	**$21.6**
8	**Board Discretionary Fund**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**
9	Allocations	$19.1	$18.9	$0.2	$1.6	$1.8
10	Finance Charges	21.5	21.7	(0.2)	1.3	1.1
11	**Sub-total Indirect Project Costs**	**$40.6**	**$40.6**	**$0.0**	**$2.9**	**$2.9**
12						
13	**Total**	**$423.5**	**$414.9**	**$8.6**	**$15.9**	**$24.5**

Amounts in millions

Board Discretionary Fund Summary

- **The Board Approved Budget is $643.8M as of February 17, 2009 which included the Board Discretionary Fund (BDF) of $58.6M. This remains a sound not-to-exceed budget.**

- **Direct Program Costs: January 2009 through September 2009 underspend is $21.6M**
    - $10.1 million reprogrammed by projects to forward months
    - $2.3 million reprogrammed for Risk Identified Items
    - $9.2 million added to BDF from Direct Program Costs

- **Indirect Program Costs: January 2009 through September 2009 underspend is $2.9M**
    - $1.8 million of support and facilities allocations added to BDF from indirect program costs
    - $1.1 million of financing costs added to BDF from indirect program costs

- **Financing Costs, forward months to full Nodal Costs recovery: reduction of $14.0M added to BDF due to interest rate hedging program and changes in Nodal borrowing levels**

- **Board Discretionary Fund of $58.6M increased by $26.2M to $84.8M**

As of September 30, 2009		Amounts in millions
Preliminary Board Discretionary Fund		**$58.6**
Direct Program Costs Underspend	$21.6	
Less Direct Program Costs reprogrammed	(10.1)	
Less Direct Program Costs Risk Items	(2.3)	
Plus Direct Program Costs Underspend		9.2
Plus Allocation & Facilities Costs Underspend		1.8
Plus Finance Charge Underspend		1.1
Plus Finance Cost Reduction		14.0
Updated Board Discretionary Fund		**$84.8**

ERCOT

Direct Program Costs: Reprogram by Project of $12.4M

Nodal Systems Category	Nodal Projects	2/17 Board Approved Budget	Underspend Thru September 2009	Reprogrammed Amount	Estimate at Completion
			Favorable / (Unfavorable)		
Market Trials	Early Delivery Systems	$35.0	$1.5	$8.9	$24.5
Integration Testing	Intergration & Product Testing	40.2	3.9	1.9	34.4
Corporate Applications	Enterprise Integration Project	27.1	(1.3)	1.6	26.8
	Enterprise Data Warehouse	6.8	0.6	(0.6)	6.7
	Market Information System	6.0	0.0	(0.9)	7.0
Infrastructure	Infrastructure	131.5	7.8	(0.2)	123.9
ERCOT Readiness	ERCOT Readiness & Transition	30.7	3.8	(3.3)	30.2
Market Systems	Congestion Revenue Rights	9.1	0.2	0.3	8.6
	Commercial Systems	28.2	1.6	(2.1)	28.7
	Market Management System	79.2	2.4	(2.5)	79.3
Reliability Systems	Network Model Management System	15.7	0.4	(2.8)	18.1
	Energy Management System	34.0	0.4	(3.7)	37.3
Program Controls,	Program Control	20.3	0.3	(9.3)	29.4
Administration, & IDA	Administration	$6.9	($0.3)	$0.3	$6.9
	Integration & Design Authority	11.2	0.2	0.0	11.0
	Direct Program Costs	**$481.8**	**$21.6**	**($12.4)**	**$472.6**
	Board Discretionary Fund	**$58.6**		**($26.2)**	**$84.8**
	Allocations	$25.7	$1.8	$0.1	$23.7
	Finance Charges	77.7	1.1	13.9	62.7
	Indirect Program Costs	**$103.4**	**$2.9**	**$14.0**	**$86.4**
	Total Program Costs	**$643.8**	**$24.5**	**$0.0**	**$643.8**

Direct Program Costs: Reprogramming of the $12.4 million

	Major Activities/Adjustments	Amount (Increase) / Decrease
	Underspend through September 30, 2009	**$21.6 million**
Market Trials (EDS)	• Shifted start of Market Trials from 2009 to 2010 • Transferred scope to ERT & ORT budgets (e.g. internal training, metrics, IT support during cutover) • Reduction in support level required to deliver Market Trials	$8.9
Integration Testing	• Aligned Integration Testing Approach with Market Trials releases • Displacement of external contractors with internal effort	$1.9
Corporate Applications	• Accelerated transition of tasks to Home Team resources • Requirements and maintenance/support through go-live • Approved scope change (CI316) ; NOGRR025 Compliance	$0.1
Infrastructure / ORT - Operational Readiness	• TCC data center expansion equipment (Brocade Capacity & Cisco Switches, racks) • Delay in purchase of IMM/OTS hardware due to back order @ vendor	($0.2)
Direct Program Costs for Risk Items	• Infrastructure Hardware Purchases- hardware switches to support the nodal environment infrastructure • Traceability- ensuring effort is completed by end of year to identify known gaps and impacts to system remediation are planned • Orchestration/Business Continuity- effort to define, plan and implement processes for interaction of market timelines and supporting business and technology activities, particularly in the event of specific business and technology scenario failures	($2.3)
ERCOT Readiness	• Increase in scope from EDS transfer (Internal training, metrics tracking) • Market Participant site visits • Metrics tracking	($3.3)
Market Systems	• Delay in the start of IMM development; strategic shift to in-house development • Roll forward of ABB/MMS development/break fix support • CMM Phase II internal development	($4.3)
Reliability Systems	• Requirements and maintenance/support through go-live • Deferred the start of new task order for Operator Training Simulator (OTS) to align with Black Start testing • Approved scope change (CI322) RID EPS meters	($6.5)
Program Controls & Admin	• New program management structure (CTO, HR, FMO) • Increase use of 3rd party audits • Protocol traceability effort	($6.7)
Total Reprogrammed		**($12.4)**

Version: 9/30/09	2/17/2009 Approved Budget	Actuals Through September	Estimate to Complete			Estimate at Completion	Favorable / (Unfavorable) Change from 2/17/2009 Approved
			2009	2010	Total		
COST SUMMARY ($)							
Internal Labor	$86.1	$49.6	$6.4	$31.2	$37.6	$87.2	($1.1)
Backfill	8.5	4.9	0.4	1.9	2.3	7.2	1.3
Contingent Labor (External)	292.5	245.3	11.4	32.1	43.5	288.8	3.7
Software	37.1	22.9	3.4	3.9	7.3	30.2	6.9
Hardware	54.4	49.7	1.1	3.5	4.6	54.3	0.1
Travel & Miscellaneous	3.2	1.9	0.1	2.9	3.0	4.9	(1.7)
Total Direct Project Costs	**$481.8**	**$374.3**	**$22.8**	**$75.5**	**$98.3**	**$472.6**	**$9.2**
Board Discretionary Fund	$58.6			$26.2	$26.2	$84.8	($26.2)
Allocations	$25.7	$18.9	$1.1	$3.7	$4.8	$23.7	$2.0
Finance Charges	77.7	21.7	3.7	37.3	41.0	62.7	15.0
Total Direct Project Costs	**$103.4**	**$40.6**	**$4.8**	**$41.0**	**$45.8**	**$86.4**	**$17.0**
Total Program Costs	**$643.8**	**$414.9**	**$27.6**	**$142.7**	**$170.3**	**$643.8**	**$0.0**

Amounts in millions

Examples of Major Changes Identified

- **Misses**
  - EMS requirements and maintenance/support through go-live
  - NMMS requirements and maintenance/support through go-live
  - EDW maintenance/support through go-live
  - Performance awards on successful completion
  - Allocation for ERCOT Directors (25% allocation) within Project Controls through go-live
 - Business validation of Performance Testing (ORT)
- **New scope**
  - New program management structure (CTO, HR, key project directors)
  - Increase in use of 3rd party audits
  - 3rd party negotiator
  - Protocol traceability project
  - TCC data center expansion equipment
  - EDW Scope Change item #CI316
  - EMS Approved scope change for item CI322 RID EPS meters
  - New Financial Management Office

- **Delayed Work**
  - IMM/OTS hardware; P5 upgrade; Brocade capacity
  - Replanned the INT Testing Approach
- **Validated Labor effort (bottom-up estimates)**
  - ERT: Reduced Internal Processes, Procedures & Training; External Outreach & Training; & Metrics Tracking & Assessment
    - NERC Standards, Data Retention and Standards
    - Market Participants site visits reduced in scope and scale of effort
    - Metrics tracking
  - ORT: Reduced Environment Configuration & Management and Production Support by displacing External Contractors
    - Release Management
    - Retail Operations Support
  - EDS: Phase 4 & 5 general support levels adjusted for phased in functionality development and support levels with Market Participants
    - Market Operations Support
    - Settlements and Billing Operations
  - INT: Developed bottom up estimate and aligned INT Test Approach to with Market Trials releases
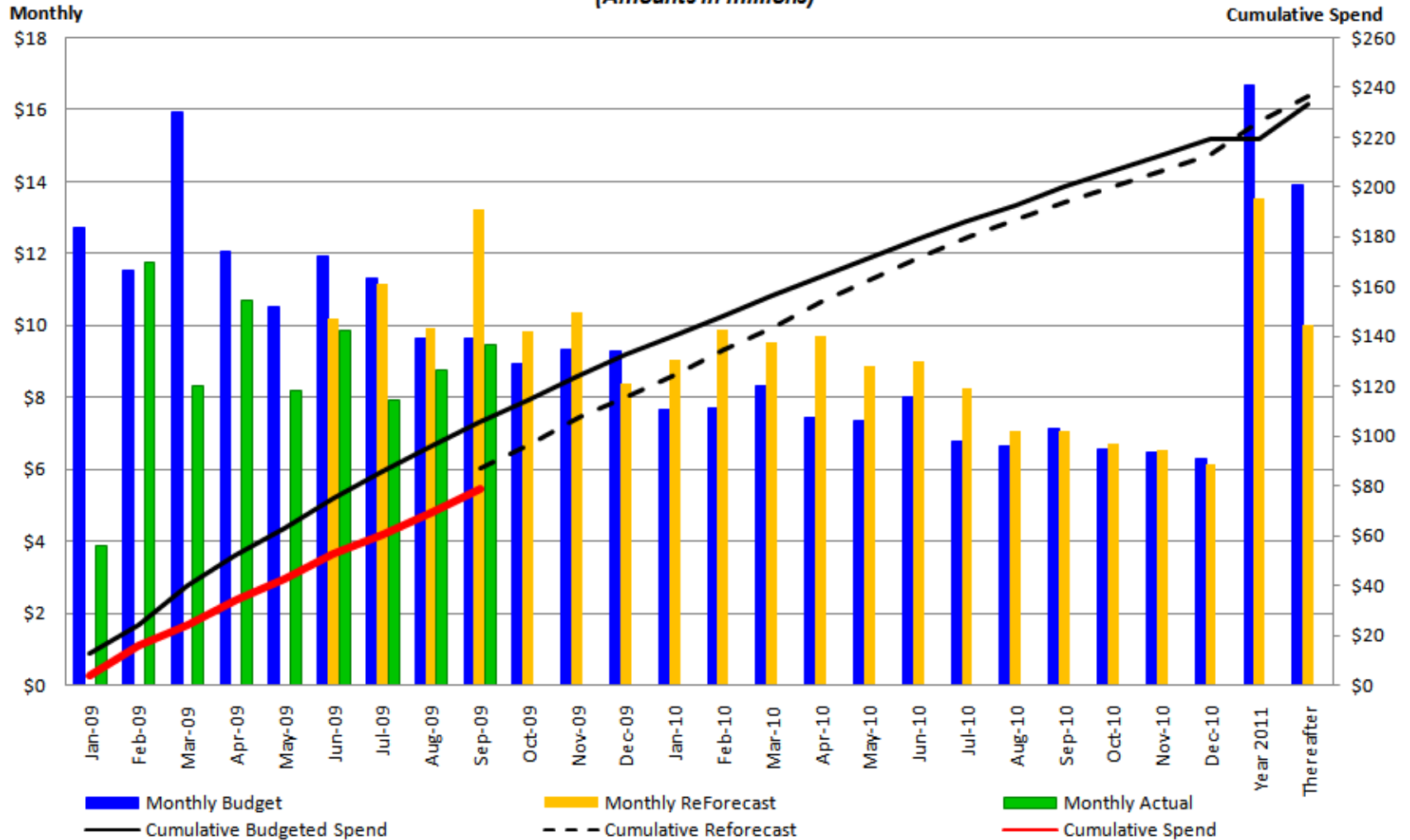
Board Discretionary Fund
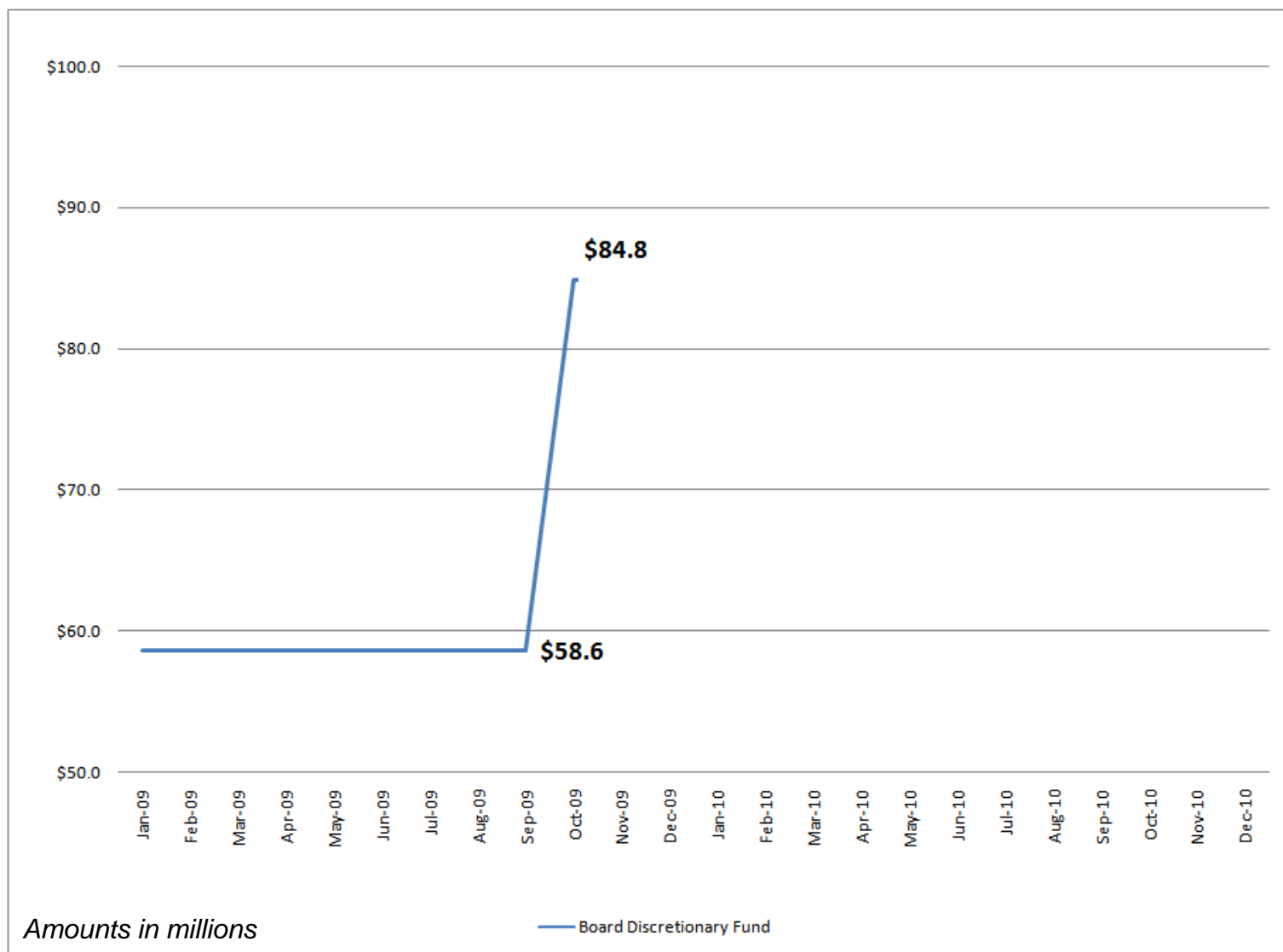
Amounts in millions

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

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**

ERCOT Readiness: Process and Procedures

◆ **Process & Procedures**

– Levels are defined with increasing detail

	Process Level	Description	Example	# *
Level 1	Conceptual Level	Core Business Processes	Operate Power Systems & Markets	5
Level 2	Process Identification Level	Functional Breakout of Core Processes	Operate RT Power Systems	21
Level 3	Implementation Level	Depiction of Discrete Business Processes	Balance Load and Generation	111
	Procedure Level	Procedures	Monitor & Control Time Error Correction	429
				566

* Numbers subject to change and development of process and procedures continues

Review control room setup and nodal procedures at other ISOs

Site Visits (1,000 Hr)

Receive instructor-led training on concepts or system functions

Classroom Training (5,000 Hr)

Train all users of developed procedures on the changed or new approach using hands-on experience and simulating scenarios

Process/Procedure & Hands On Training (19,000 Hr)

~25,000 Hours
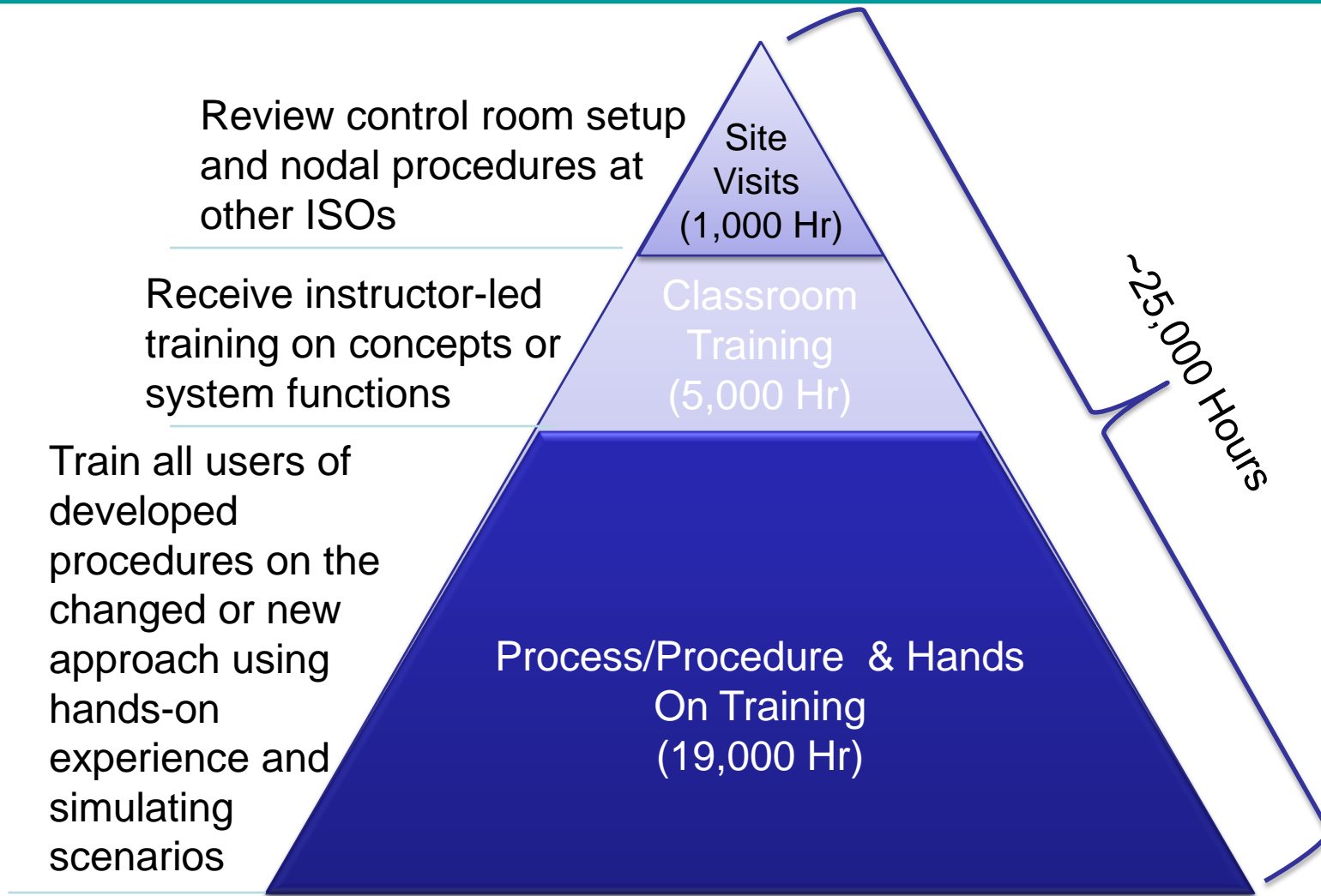
* Additional Hands-On Training received through testing (e.g. Market Trials) in separate project scope

Market Trials Roadmap

Market Trials Timeline — October 8, 2009
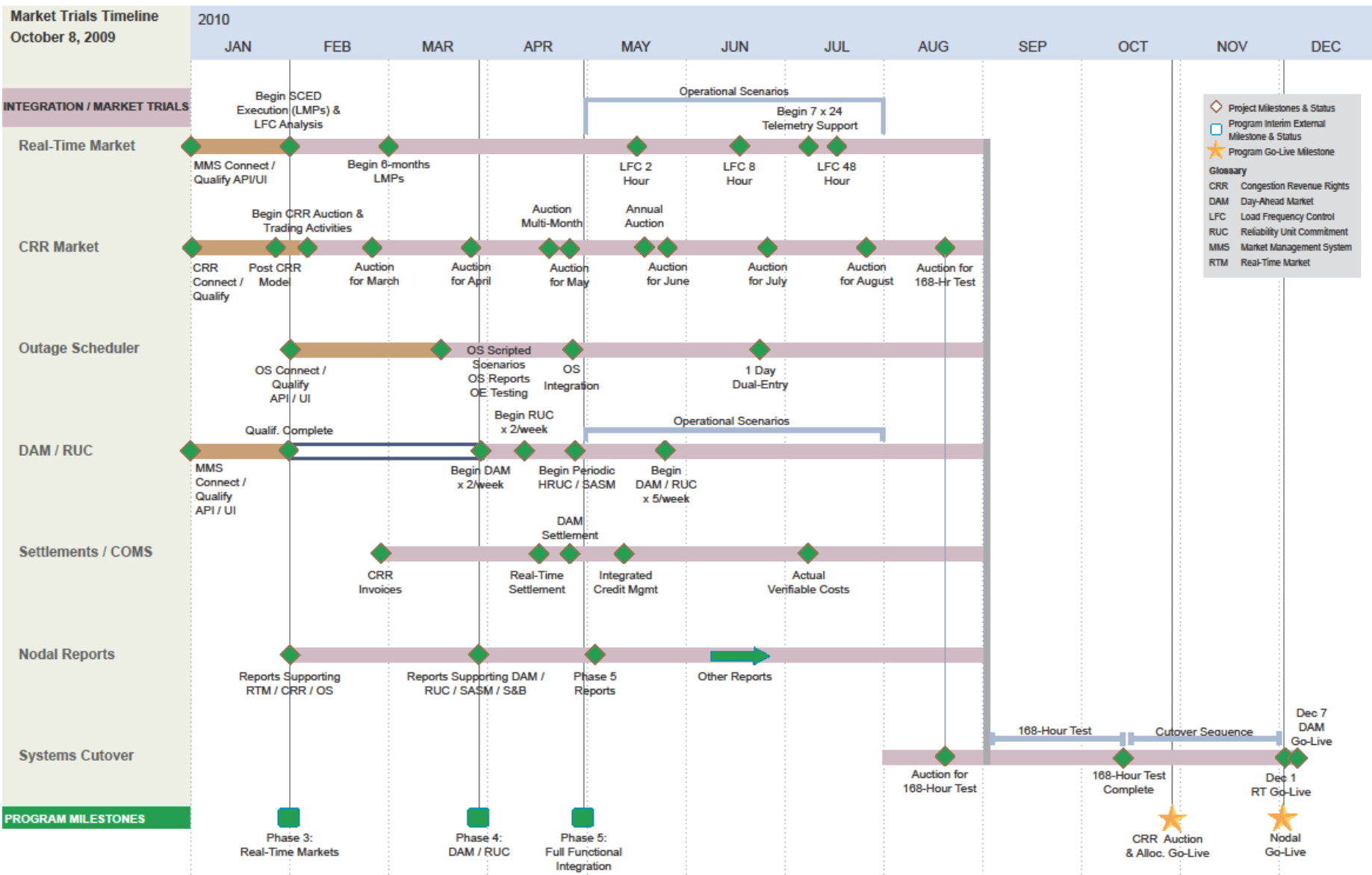
There are two components to the Outreach Program:

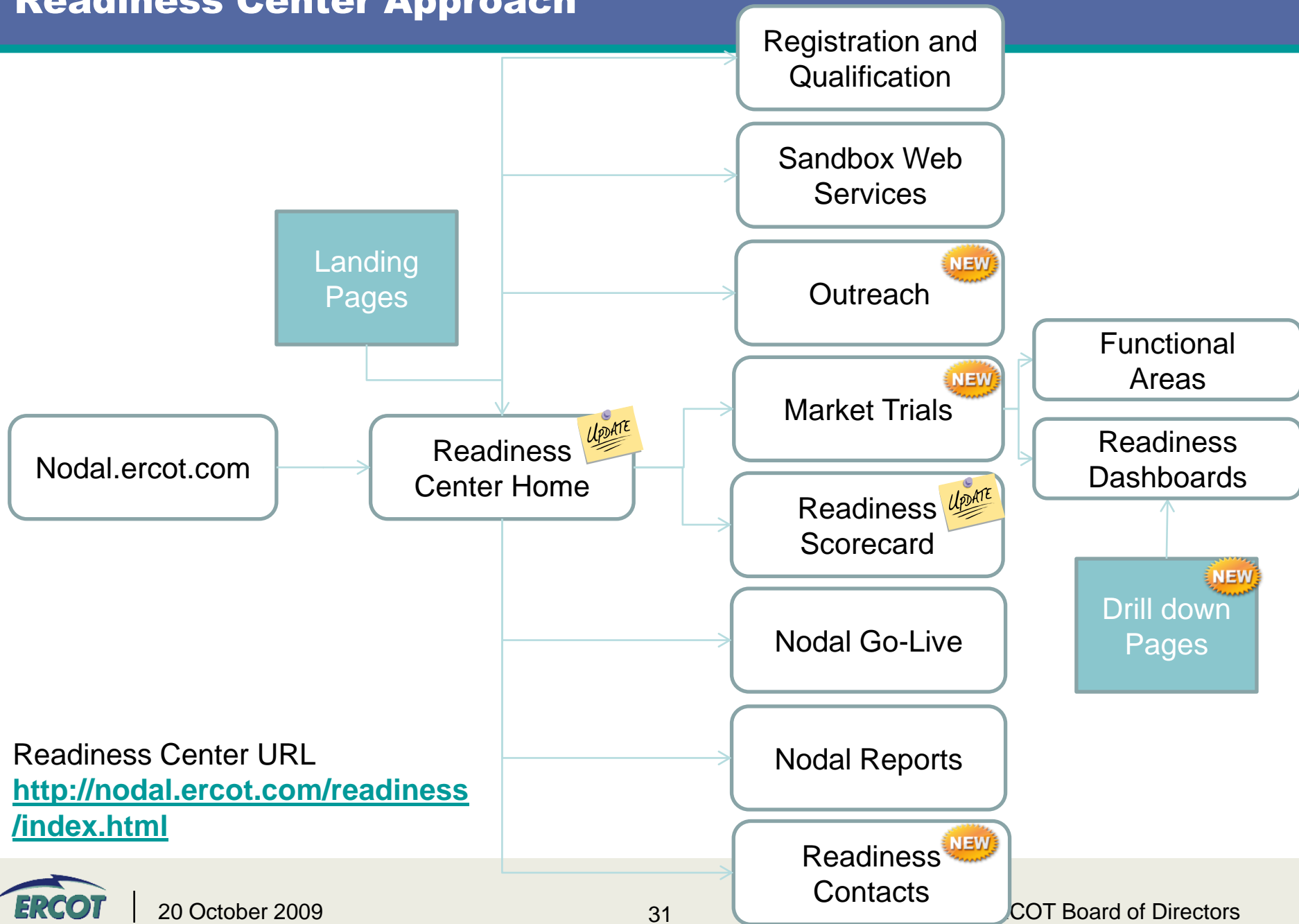| Scheduled Site Visits	Standby Site Visits
■ A Market Participant will receive a "menu" with a number of offerings available to the Market Participant and duration of the offering. ■ The Market Participant will be able to prioritize and select up to 6 hours of the available offerings to build what its scheduled site visit will entail. ■ The Scheduled Outreach site visits will occur between October 2009 and March 2010 ■ 34 site visits are tentatively planned.	■ Triggered by Readiness Scorecard metric change going Yellow or Red and unable to resolve without onsite evaluation. ■ Specifically being conducted to collaboratively develop a mitigation plan to the get market participant "back to green." ■ Mitigation plans will document the issue and the findings. ■ Standby site visits may occur between March 2010 and September 2010.

Readiness Center Approach

Landing Pages

Nodal.ercot.com → Readiness Center Home (UPDATE)

Registration and Qualification

Sandbox Web Services

Outreach (NEW)

Market Trials (NEW)

Readiness Scorecard (UPDATE)

Nodal Go-Live

Nodal Reports

Readiness Contacts (NEW)

Functional Areas

Readiness Dashboards

Drill down Pages (NEW)

Readiness Center URL
http://nodal.ercot.com/readiness/index.html

Readiness Center Home Page

- Calendar with Market Calls, Training Classes, Outreach Visits, and Seminars.

- ERCOT will release a graphical, downloadable calendar.

- Key documents: 2010 Market Trials Road Map, and the Nodal Integrated Program Schedule.

Readiness Scorecard Approach

ERCOT   MP

View Details   View Details

(example)

Market Readiness

- Measures MP's responsibilities through Market Trials and Go-Live.

- Rollup by MP type.

- Measurements weighted by Load Ratio Share where applicable.

- Secure view of individual MP's progress.

ERCOT Readiness

- Measures ERCOT's responsibilities through Market Trials and Go-Live.

- Measures internal areas outside of Market Trials like procedures and training.

http://scorecard.ercot.com

Readiness Scorecard Sitemap

Readiness Scorecard

ERCOT Readiness

ERCOT Scorecard
- By Overall Readiness
  - Training
  - Procedures
- By Market Trials Functional Area

MP Readiness

MP Scorecard
- By MP Type
- By Market Trials Functional Area

SECURE SECTION
- MP's individual metrics by Market Trials Functional Area
- MP's Summary Page of all metrics
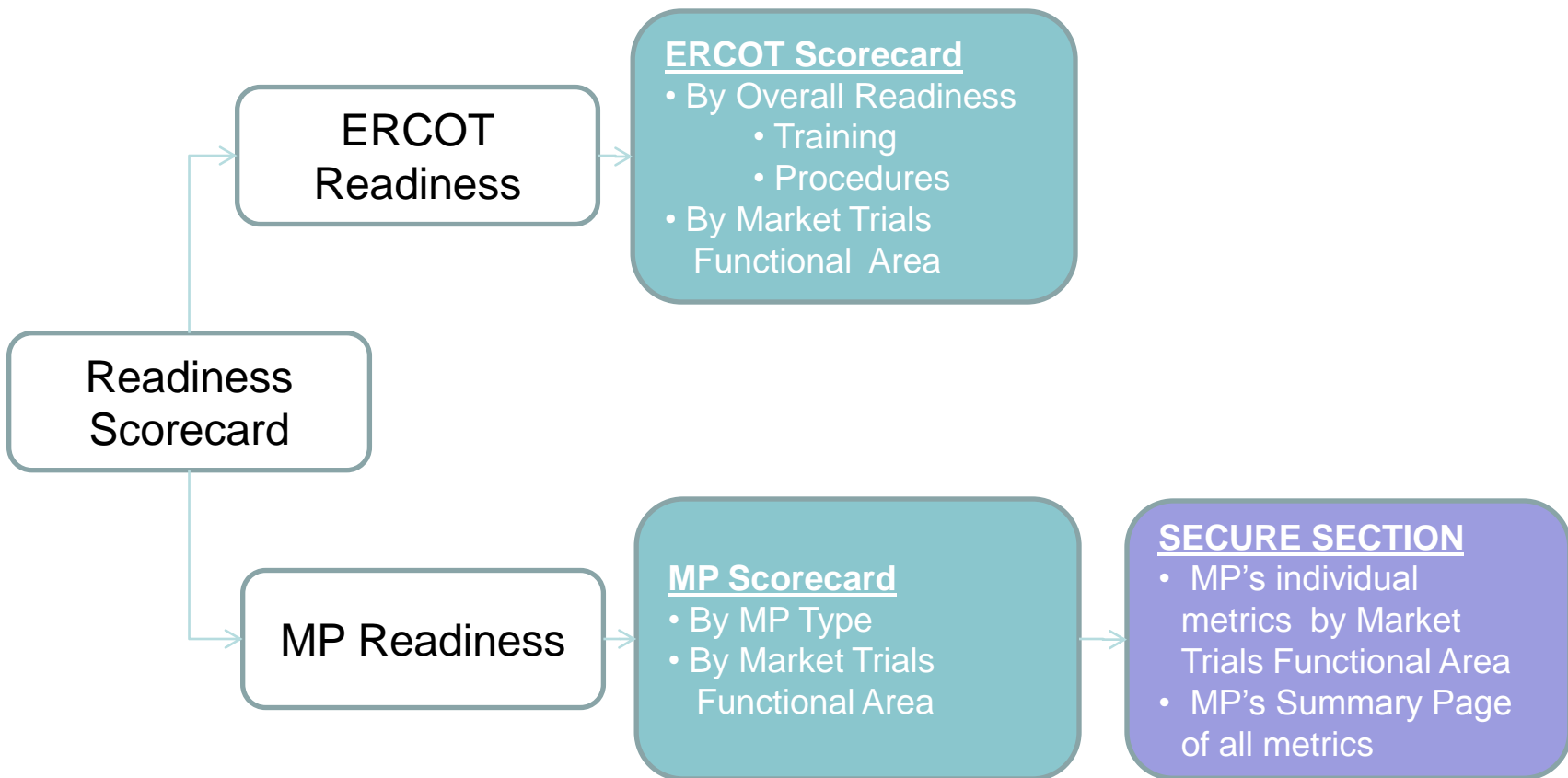
Protocol Traceability Effort Update

<table>
<tr><td colspan="5" align="center">**Tier 1 Sections**</td></tr>
<tr><td></td><td align="center">**Definition**</td><td align="center">**SME Analysis/Validation**</td><td align="center">**Begin Reviews w/Business**</td><td align="center">**Target for NATF reports**</td></tr>
<tr><td>**Section 7**</td><td>Congestion Revenue Rights</td><td align="center">**90%**</td><td align="center">**In progress**</td><td align="center">**Oct**</td></tr>
<tr><td>**Section 8**</td><td>Performance Monitoring</td><td align="center">**75%**</td><td align="center">**In progress**</td><td align="center">**Dec (revised)**</td></tr>
<tr><td>**Section 3**</td><td>Management Activities for the ERCOT system</td><td align="center">**70%**</td><td align="center">**In progress**</td><td align="center">**Nov**</td></tr>
<tr><td>**Section 4**</td><td>Day Ahead Operations</td><td align="center">**80%**</td><td align="center">**In Progress**</td><td align="center">**Nov**</td></tr>
<tr><td>**Section 5**</td><td>Transmission Security Analysis and RUC</td><td align="center">**70%**</td><td align="center">**In Progress**</td><td align="center">**Nov**</td></tr>
<tr><td>**Section 9**</td><td>Settlement & Billing</td><td align="center">**70%**</td><td align="center">**In Progress**</td><td align="center">**Nov**</td></tr>
<tr><td>**Section 6**</td><td>Adjustment Period and Real-Time Operations</td><td align="center">**65%**</td><td align="center">**10/20**</td><td align="center">**Dec**</td></tr>
<tr><td>**Section 17**</td><td>Market Monitoring & Data Collection</td><td align="center">**50%**</td><td align="center">**10/22**</td><td align="center">**Dec**</td></tr>
<tr><td>**Section 16.11**</td><td>Financial Security for Counter-Parties</td><td align="center">**65%**</td><td align="center">**10/27**</td><td align="center">**Dec**</td></tr>
</table>

Tier 2 (Moderate Impact): 10, 11, 12, 13, 20, 22 (Dec. '09 completion target)
Tier 3 (Low Impact): 1, 2, 14, 15, 18, 19, 21, 23, 24 (Dec. '09 completion target)

Protocol Traceability Effort Update

Tier 1 Sections				
	PTE Traced Items	PTE Research Items (All)	Business Research Items	PTE Alignment Items
Section 7 – Congestion Revenue Rights	481	30	28	1
Section 8 – Performance Monitoring	204	88	85	TBD
Section 3 – Management Activities for the ERCOT system	905	262	256	TBD
Section 4 – Day Ahead Operations	640	127	118	TBD
Section 5 – Transmission Security Analysis and RUC	161	27	27	TBD
Section 9 – Settlement & Billing	411	7	1	TBD
Section 6 – Adjustment Period and Real-Time Operations	920	169	164	TBD
Section 17 – Market Monitoring & Data Collection	25	0	0	TBD
Section 16.11 – Financial Security for Counter Parties	203	75	67	TBD
Total	3,950	785	476	TBD

Protocol Traceability Effort Update

Tier 1 Sections				
	PTE Traced Items	**PTE Full Trace Report**	**PTE Research Items**	**PTE Alignment Items**
Section 7 – Congestion Revenue Rights	**481**	**Will post for Oct NATF**	**30**	**1**
Section 3 – Management Activities for the ERCOT system	**905**	**Will post for Nov NATF**	**262**	**TBD**
Section 8 – Performance Monitoring	**204**	**Will post for Dec NATF**	**88**	**TBD**

Details	
	Overview of PTE Alignment Items
Section 7 – Congestion Revenue Rights	**Alignment – 1. CRR Handbook – assigned, due 12/31/09**
Section 3 – Management Activities for the ERCOT system	**Research items in progress**
Section 8 – Performance Monitoring	**Research items in progress**

Nodal Internal/External and Vendor Headcount
for 2009
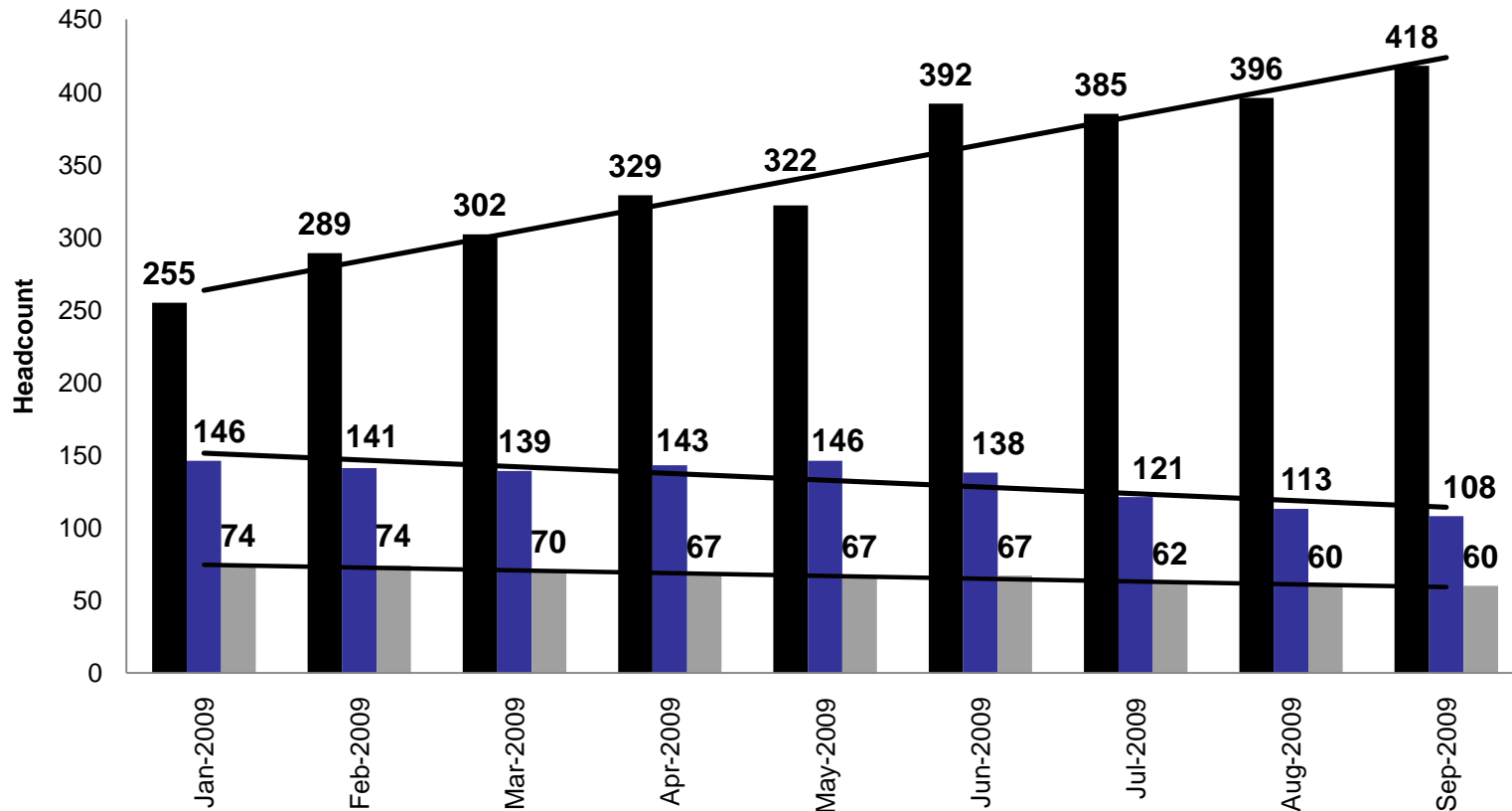
	Jan-2009	Feb-2009	Mar-2009	Apr-2009	May-2009	Jun-2009	Jul-2009	Aug-2009	Sep-2009
■ ERCOT Employees	255	289	302	329	322	392	385	396	418

Program Risk:
Market Interaction Operating Level Agreements (OLAs)

◇ **Potential Milestone Impact: Phase 2.1 Market Connectivity**

Risk: Market interaction 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.
Risk Life Cycle State				
Define	**Plan**	Manage	Watch	

Mitigation Plans	Who	Target Date	Current Status
Operational Readiness Team to define OLAs for the nodal services defined in the ERCOT IT Services Catalog: • RT Generation Control • RT Sequence and SCED • RT Reporting and Notifications • Market Transactions and Clearing • Outage Schedules Management • Network Model Management • Enterprise Information Services • Congestion Revenue Management • MP Relationship Management • Financial Clearinghouse	J. McCall	April/May 2010	10/12/2009: Phase 2.1 OLAs established and communicated to the market during the Oct. 8 Market Readiness Seminar. ERCOT will continue to define OLAs for each subsequent Market Trial Release via the ORT project.

◇ **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	9/2/09 – Planning of Test phases and associated work plan has been completed Execution of work plan, with specific focus on October Market Trials functionality has begun

Program Risk:
Internet Explorer 6 Upgrade

◇ **Potential Milestone Impact: Phase 2.1 Market Connectivity**

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
Currently the ERCOT Enterprise Architecture team is researching to assess impact.	S. Catoe	10/30/09	9/30/09 – Zonal analysis is complete and Corporate analysis is at 50 percent. Currently working on estimates to conduct impact analysis.

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	12/15/09	10/09/09 – SME's are working with business owners on research and alignment items. Full trace reports will be provided to NATF starting late Oct.
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	10/09/09 – 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	10/09/09 – status reports provided to program, NATF, TAC, Special Nodal Committee monthly.

ERCOT-Wide Risk:
Data Center Expansion Capacity Concerns

◇ **Potential Milestone Impact: Nodal Go-Live**

Risk: Data Center Expansion Capacity Space Concerns	Data center capacity, space, and power may be inadequate for Nodal Go-Live, unless plans for expansion are adequate.		
Risk Life Cycle State			
Define	Plan	**Manage**	Watch

Mitigation Plans	Who	Target Date	Current Status
1. Establish an Information Lifecycle Management approach to manage the life cycle of data being managed.	D. Forfia	Implementation expected Q1 2010 for Retail Applications	ERCOT project PR 90006_01 Commercial Systems Information Lifecycle Management Project will be presenting as an update during the October Board of Directors Meeting, and will request Execution and Funding approval at the November Board of Directors Meeting.
2. Expand current data center space, and build out new data center, to increase ERCOT data center capacity.	D. Forfia	11/01/09	10/12/09 All but one server has been successfully migrated to expanded space. TCC1 expansion and risk-mitigation steps for Met Data Center provide sufficient space for Nodal Go-Live in December 2010.
3. Validate and monitor Nodal data capacity assumptions for Go-Live	D. Forfia	Ongoing	Status reports are provided to the Board of Directors in executive sessions.