

Program Overview



Program Overview Outline

Introductions

Nodal Program Organization (15 min)

Participant Touch Points (15 min)

Nodal Progression for 2010 Market Trials (45 min)

Objectives

Using the information in this presentation...
...you will be able to

Describe the ERCOT Nodal Organization

Identify the communications with ERCOT

Identify high-level implementation path to Nodal



I. Nodal Program Organization

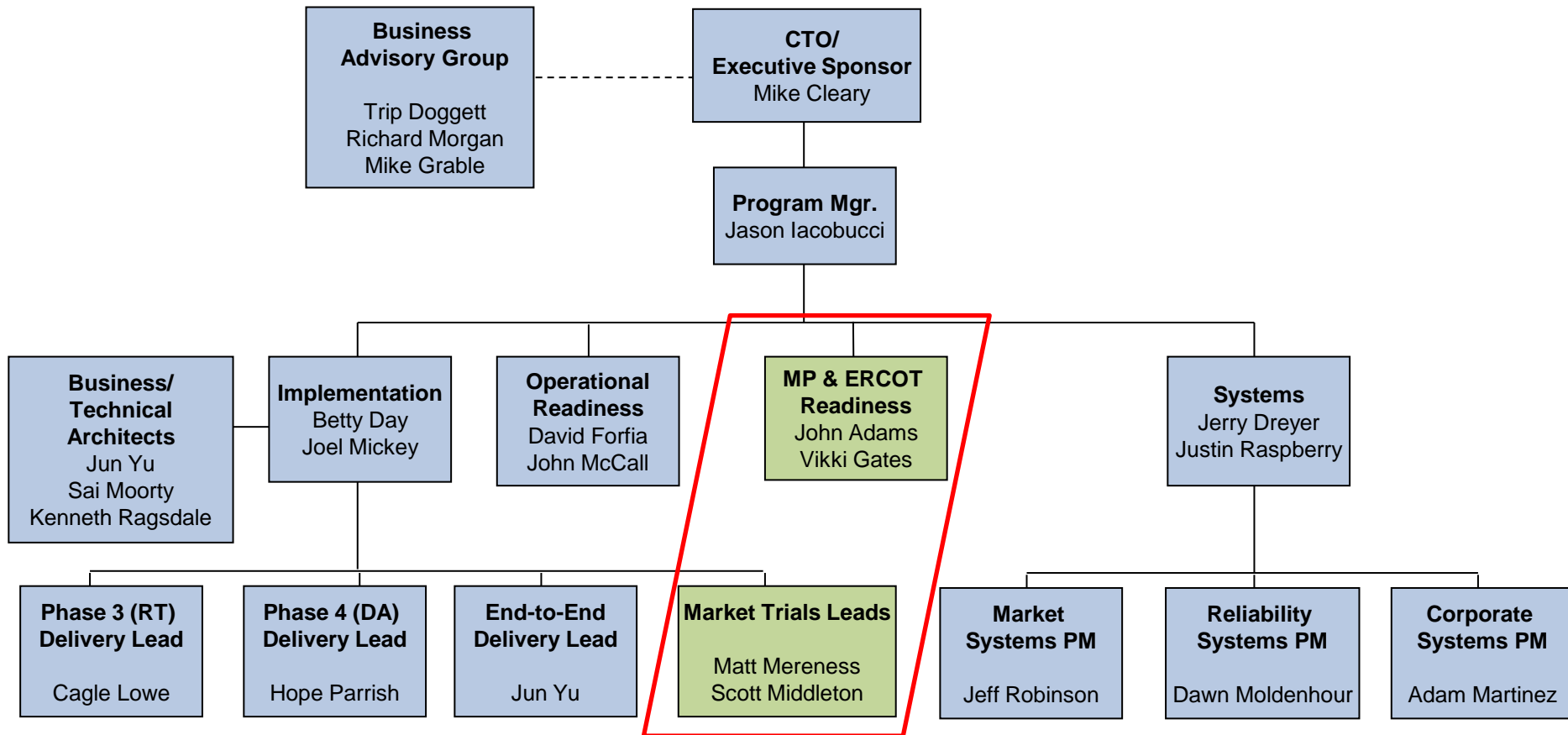
Nodal Program Organization

Nodal Program Schedule

Market Participant Outreach Program

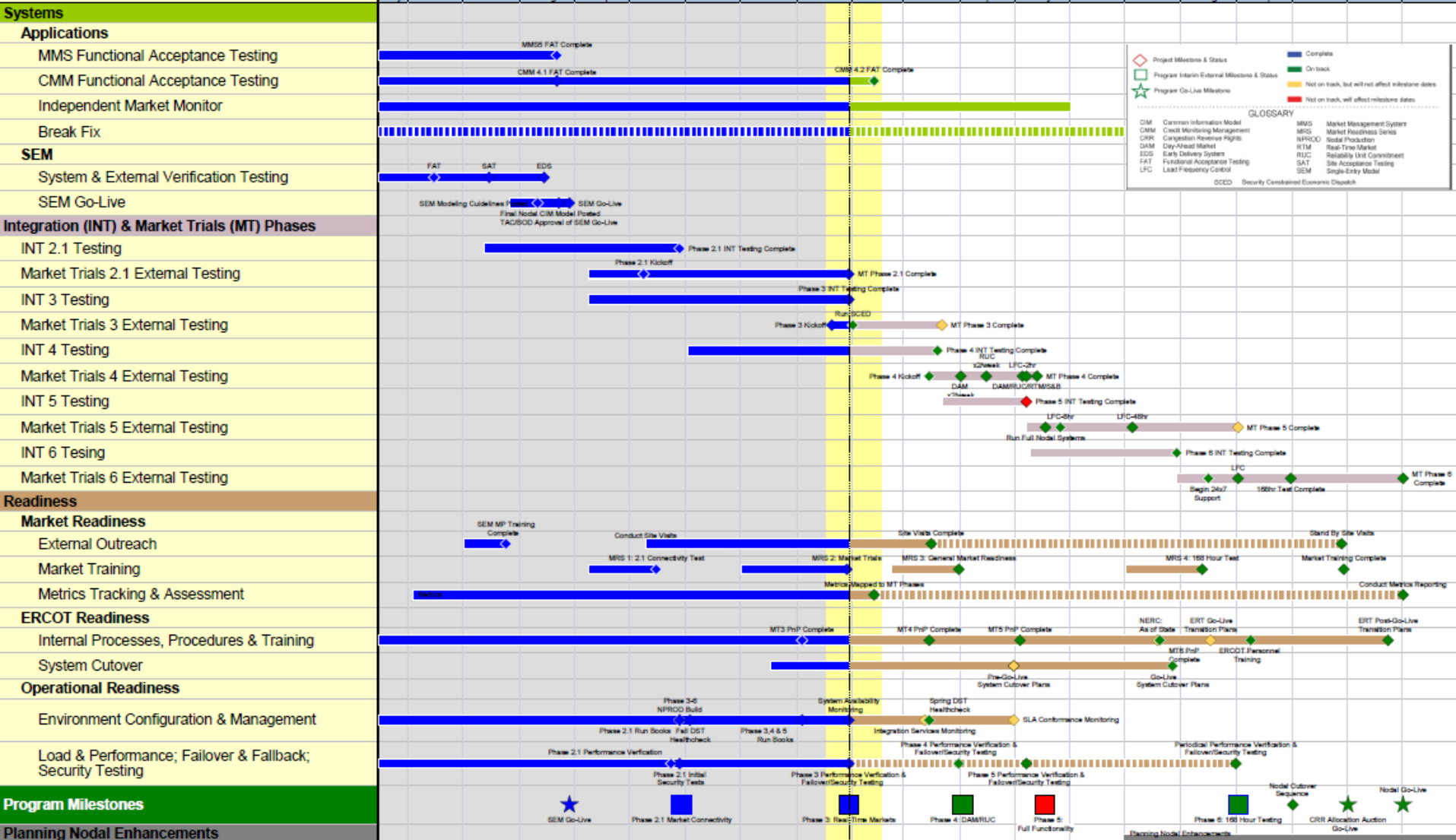
Nodal Program Organization

ERCOT Nodal Program Organization



Nodal Program Schedule

Nodal Program Timeline
January 29, 2010



Market Participant Outreach Program

	Timing	Method
Stakeholder meetings	<ul style="list-style-type: none"> Scheduled meetings Topic based workshops 	<ul style="list-style-type: none"> TAC NATF Multiple working groups
Market training	<ul style="list-style-type: none"> Ongoing – November 2010 	<ul style="list-style-type: none"> Curriculum courses cycle every 6-8 weeks Several as needed workshops in development Many courses available through online Learning Management System
Outreach	Scheduled site visits	<ul style="list-style-type: none"> September 2009 – March 2010 <ul style="list-style-type: none"> MP-selected content Technical and Functional expertise delivered to site visits
	Standby site visits	<ul style="list-style-type: none"> March 2010 – November 2010 <ul style="list-style-type: none"> Triggered by metric change Pre-emptive site visit prior to formal reporting Jointly-developed mitigation plan to improve readiness metric
	Readiness Center	<ul style="list-style-type: none"> Now – Go-Live <ul style="list-style-type: none"> Nodal.ercot.com Scorecard.ercot.com

Market Participant Outreach Program

There are two components to the Outreach Program:

Scheduled 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.

Standby Site Visits

- Triggered by Readiness Scorecard metric change going Yellow or Green and unable to resolve without onsite evaluation.
- Specifically being conducted to collaboratively develop a mitigation plan to 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.

Market Participant Outreach Program

ERCOT Outreach Team

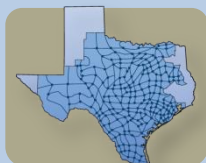
Subject Matter Experts & Representatives from:

- ERCOT Client Services
- ERCOT Market Operations Support
- ERCOT Settlements
- ERCOT Readiness Project Team



Market Participant Outreach Program

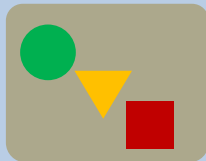
Market Participant Outreach Topics: <http://nodal.ercot.com/readiness/outreach/index.html>



Nodal Program Update
Mandatory Topic (60 min)



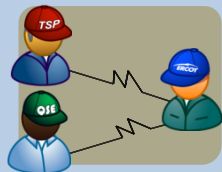
Reliability Unit Commitment
Implementation (60 min)



Readiness Center &
Readiness Scorecard (45 min)



Real Time Market Processes
& Systems (60 min)



Telemetry & Load
Frequency Control (30 min)



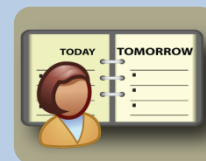
Nodal Settlement &
Billing Processes (60 min)



Congestion Revenue Rights
Auction Implementation (60 min)



Nodal Reports &
Data Extracts (30 min)



Day-Ahead Market
Implementation (60 min)



Credit Monitoring and
Management (45 min)

Market Participant Outreach Program

Outreach Site Visits continue through March 2010

Confirmed ☐ Completed ☒

Entity	Date
<input checked="" type="checkbox"/> LOWER COLORADO RIVER AUTHORITY	9-Oct
<input checked="" type="checkbox"/> CALPINE CORP	14-Oct
<input checked="" type="checkbox"/> AUSTIN ENERGY	20-Oct
<input checked="" type="checkbox"/> CITY OF GARLAND	21-Oct
<input checked="" type="checkbox"/> GDF SUEZ ENERGY MARKETING	29-Oct
<input checked="" type="checkbox"/> ANP FUNDING	3-Nov
<input checked="" type="checkbox"/> LUMINANT ENERGY	5-Nov
<input checked="" type="checkbox"/> INVENERGY WIND DEVELOPMENT	10-Nov
<input checked="" type="checkbox"/> EXELON	11-Nov
<input checked="" type="checkbox"/> AMERICAN ELECTRIC POWER SERVICE	12-Nov
<input checked="" type="checkbox"/> CONSTELLATION ENERGY	17-Nov
<input checked="" type="checkbox"/> PSEG ENERGY RESOURCES	18-Nov
<input checked="" type="checkbox"/> JARON	19-Nov
<input checked="" type="checkbox"/> FULCRUM POWER	2-Dec
<input checked="" type="checkbox"/> EAGLE ENERGY PARTNERS I LP	3-Dec
<input checked="" type="checkbox"/> STEC	9-Dec
<input checked="" type="checkbox"/> BP ENERGY COMPANY	10-Dec

Entity	Date
<input checked="" type="checkbox"/> NRG TEXAS POWER	15-Dec
<input checked="" type="checkbox"/> DIRECT ENERGY LP	5-Jan
<input checked="" type="checkbox"/> CPS ENERGY	6-Jan
<input checked="" type="checkbox"/> BTU (Bryan Texas Utilities) SERVICES	13-Jan
<input checked="" type="checkbox"/> DIRECT ENERGY	14-Jan
<input checked="" type="checkbox"/> APX	19-Jan
<input checked="" type="checkbox"/> OCCIDENTAL	20-Jan
<input checked="" type="checkbox"/> TENASKA POWER SERVICES	26-Jan
<input checked="" type="checkbox"/> OPTIM ENERGY	27-Jan
<input checked="" type="checkbox"/> E.ON	9-Feb
<input type="checkbox"/> WIND PANEL (Houston)	16-Feb
<input type="checkbox"/> RETAIL PANEL (Houston)	17-Feb
<input type="checkbox"/> TRI-EAGLE ENERGY	18-Feb
<input type="checkbox"/> NEXTEra	26-Feb
<input type="checkbox"/> XTEND ENERGY LP	3-Mar
<input type="checkbox"/> TOPAZ POWER MANAGEMENT	4-Mar
<input type="checkbox"/> BRAZOS ELECTRIC	10-Mar
<input type="checkbox"/> SHELL ENERGY	11-Mar
<input type="checkbox"/> FORMOSA UTILITY VENTURE	16-Mar
<input type="checkbox"/> Westar	18-Mar

II. Engagement Opportunities

Meetings & Market Calls

Email Notifications

Websites

Training Courses

Engagement Opportunities

Key Stakeholder Meetings

Technical Advisory Committee & Board Mtgs

- Monthly Nodal Program updates

Nodal Advisory Task Force (NATF)

- Monthly Nodal implementation updates, issues



Other Stakeholder Meetings

- PRS- Nodal Protocol Revisions
- COPS- Nodal Settlements Issues
- WMS & ROS- Specific nodal market and reliability issues
- Verifiable Cost Working Group
- Credit Working Group

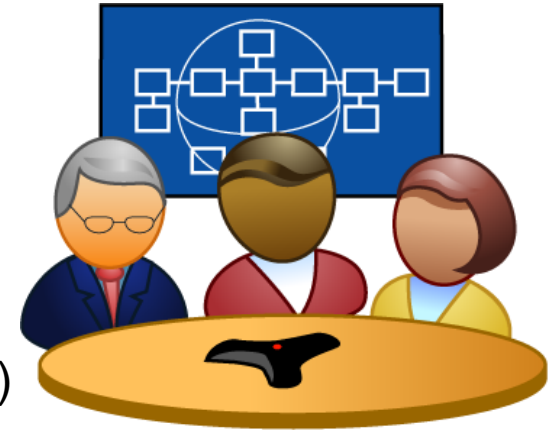
[\(http://www.ercot.com/committees/\)](http://www.ercot.com/committees/)

Engagement Opportunities

Nodal Market Calls:



Market Trials Calls

- QSE calls and separate CRRAH call:
 - Mondays:
 - **Market Trials Engagement Q&A Market Call** (9-10am CT)
 - 22-Feb, 25-Mar
 - Thursdays:
 - **Outage Scheduler Market Call**
 - 18-Feb, 25-Feb
 - Fridays:
 - **Real-Time Market/LFC Market Call** (9-10am CT)
 - 19-Feb, 26-Feb
 - **CRR Market Call** (10:30-11:30am CT)
 - 19-Feb, 26-Feb
- Detailed updates, upcoming activities, outages, Q&A, known issues, etc.



Engagement Opportunities

Four Market Readiness Series (MRS) are planned through Market Go-Live

	Oct 2009	Market Trials Kick-Off (Phase 2.1 and 2010 Roadmap)
	Jan 2010	Real-Time and Day-Ahead Market
	Mar 2010	Commercial Operations
	Aug 2010	168-Hour Test and Transition to Go-Live

Each MRS will supports web conferencing for remote participation, and meeting materials will be posted

Engagement Opportunities

Email / Nodal Market Notices

- ERCOT Client Relations

NodalMarketTransition@ercot.com



Archived on site →



Posted online at: <http://nodal.ercot.com/readiness/notices/index.html>

Engagement Opportunities

Nodal Email Distribution Lists:

- Sign up on NATF distribution (<http://lists.ercot.com>)
- Receive emails regarding nodal stakeholder information



Market Trials Communications

- ERCOT is asking MPs to update their Nodal contact information
 - Accountable Executive, Nodal PM, etc
 - ERCOT will use contact information for creating distribution lists
 - Update, add, delete contact names and info by sending email to: nodalmarkettransition@ercot.com

Engagement Opportunities

Emails for Nodal Questions:

General Questions

NodalMarketTransition@ercot.com

Market Trials Questions

MarketTrials@ercot.com

NATF Questions / Agenda

natfstakeholderservices@ercot.com

Readiness Scorecard Questions

nodalscorecard@ercot.com



Issues may also be escalated by your ERCOT Account Manager

Engagement Opportunities

Nodal Websites

Readiness Center – Improved & Redesigned

- Contains key engagement information including Calendar, Notices, Market Trials, Outreach, etc
- <http://nodal.ercot.com/readiness/index.html>

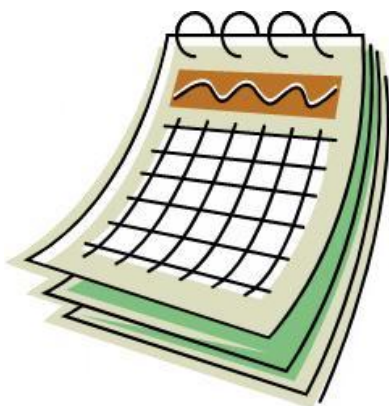
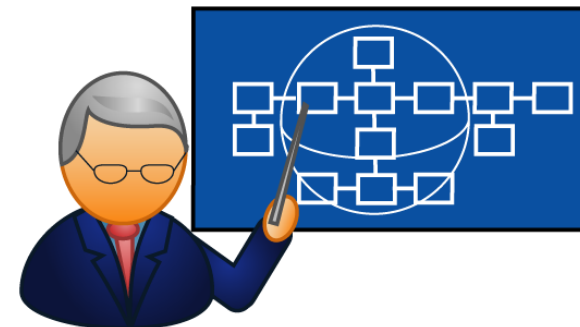
Nodal Website

- <http://nodal.ercot.com>
 - [Training Center](#)
 - [Nodal Business Requirement and Design Documentation](#)
 - [Nodal Protocols](#)
 - [Nodal Operating Guides](#)

Engagement Opportunities

Nodal Market Education Courses

- Designed to facilitate entry into Nodal Market
- Focus on Nodal topics
 - Nodal terms and processes
 - Nodal processes, roles
 - Market impacts on business and operations



Course Schedules Online

- Most courses offered on 6-week cycle
- Classes usually offered in Austin, Houston & Dallas
- Web-Based Training (WBT) available
- <http://nodal.ercot.com/training/courses/index.html>

Engagement Opportunities

Nodal Market Education – Training (<http://nodal.ercot.com/training/index.html>)

Day	Date	Course	Location
Tue	16-Feb	Generation 101	Austin Airport Marriott South (Austin)
Thu	18-Feb	Network Model Management	ERCOT MET Center (Austin)
Tue	23-Feb	Settlements Workshop - RUC / RTM	ERCOT MET Center (Austin)
Thu	25-Feb	ERCOT Nodal 101	ERCOT MET Center (Austin)
Wed	3-Mar	Load Serving Entity 201	ERCOT MET Center (Austin)
Mon	8-Mar	Economics of LMP	Norris Conference Center (Houston)
Mon	8-Mar	Basic Training Program	Austin Airport Marriott South (Austin)
Tue	9-Mar	Settlements Workshop - RUC / RTM	City of Garland Fire Admin Bldg
Tue	9-Mar	Congestion Revenue Rights	Norris Conference Center (Houston)
Tue	23-Mar	Settlements Workshop - RUC / RTM	Calpine (Houston)
Mon	29-Mar	ERCOT Nodal 101	Calpine (Houston)
Mon	29-Mar	Settlements Workshop - RUC / RTM	PSEG (New Jersey)
Tue	30-Mar	Generation 201	ERCOT MET Center (Austin)
Thu	8-Apr	Load Serving Entity 201	Suez Energy (Houston)
Thu	8-Apr	Generation 101	Occidental (Houston)
Mon	19-Apr	Basic Training Program	Suez Energy (Houston)
Tue	20-Apr	Generation 201	ERCOT MET Center (Austin)

Engagement Opportunities

Nodal Market Education

Who should attend?

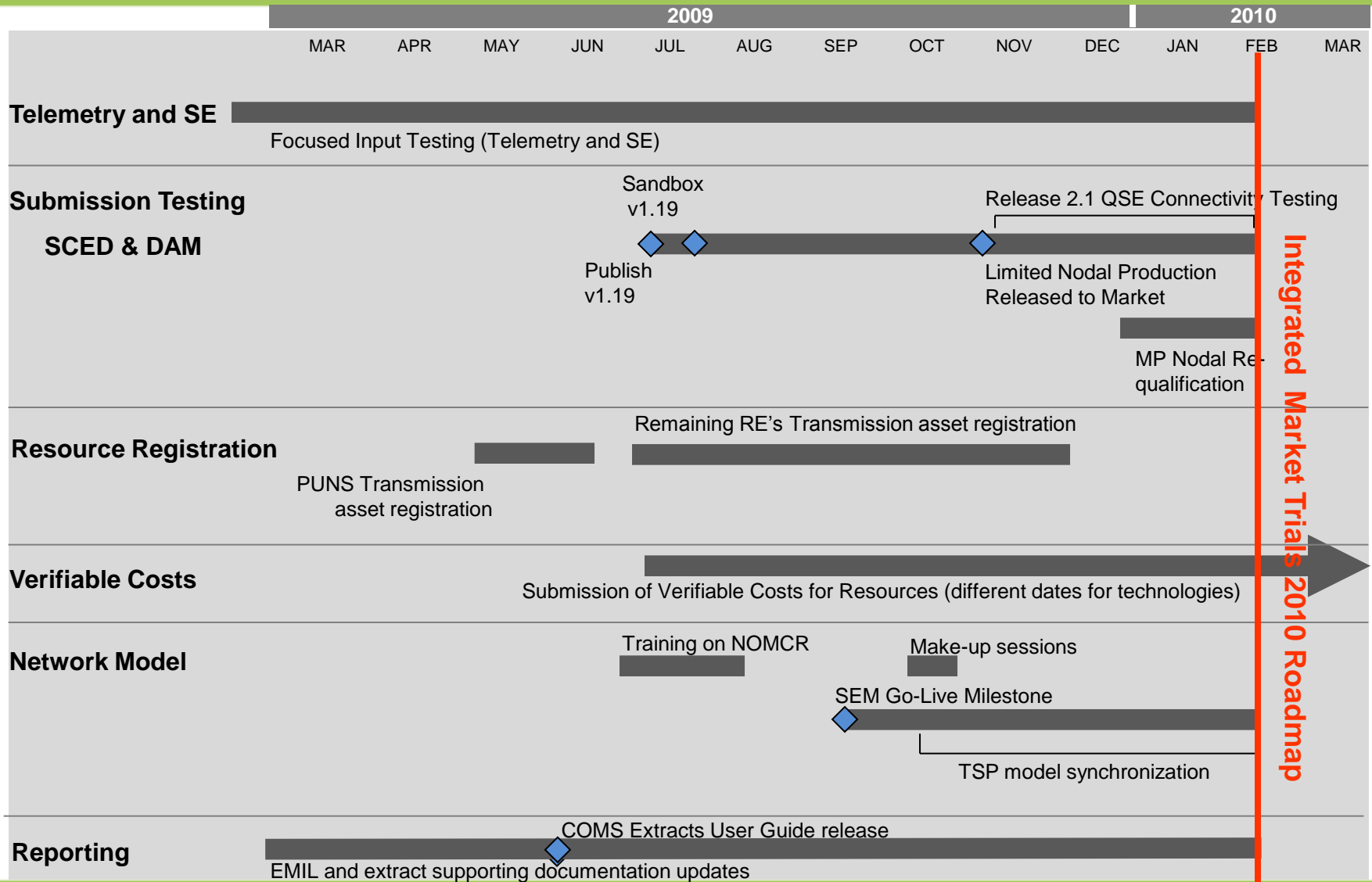
- Target audience varies by course
- For details: <http://nodal.ercot.com/training/readiness/index.html>

Course Content and Prerequisites

- Detailed course descriptions available at:
<http://nodal.ercot.com/training/courses/index.html>

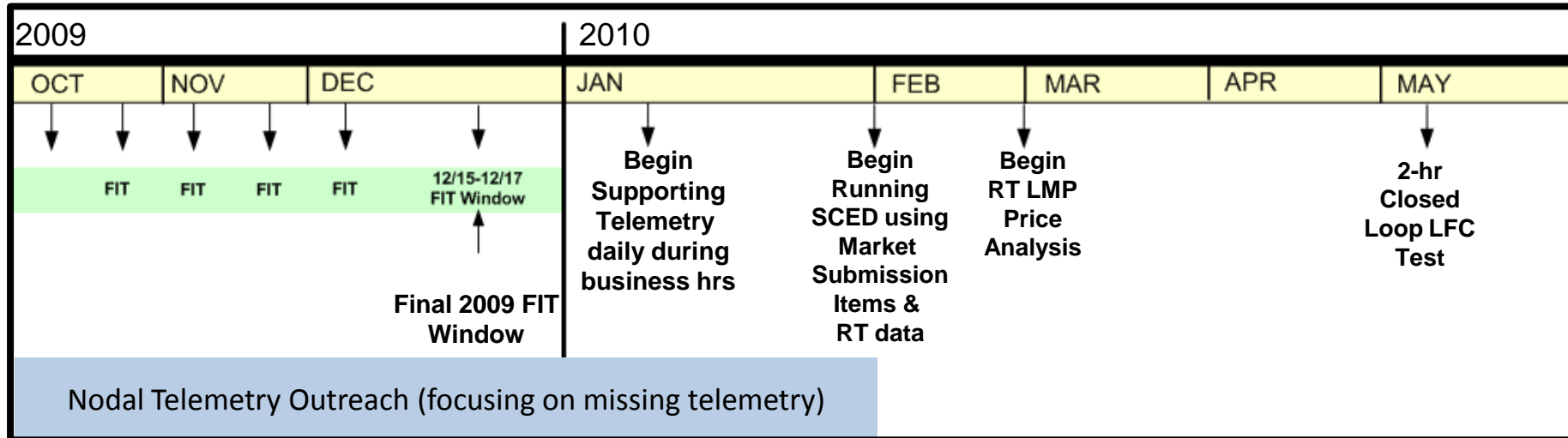
III. Nodal Progression and Schedule for 2009 & 2010 Market Trials

Nodal Telemetry Activities



Nodal Telemetry Activities

Nodal Telemetry Outreach Timeline



Required SE Telemetry is requested:

- Nov to Dec 2009
- If able, send SCED telemetry early to support internal testing

Required SCED Telemetry is requested:

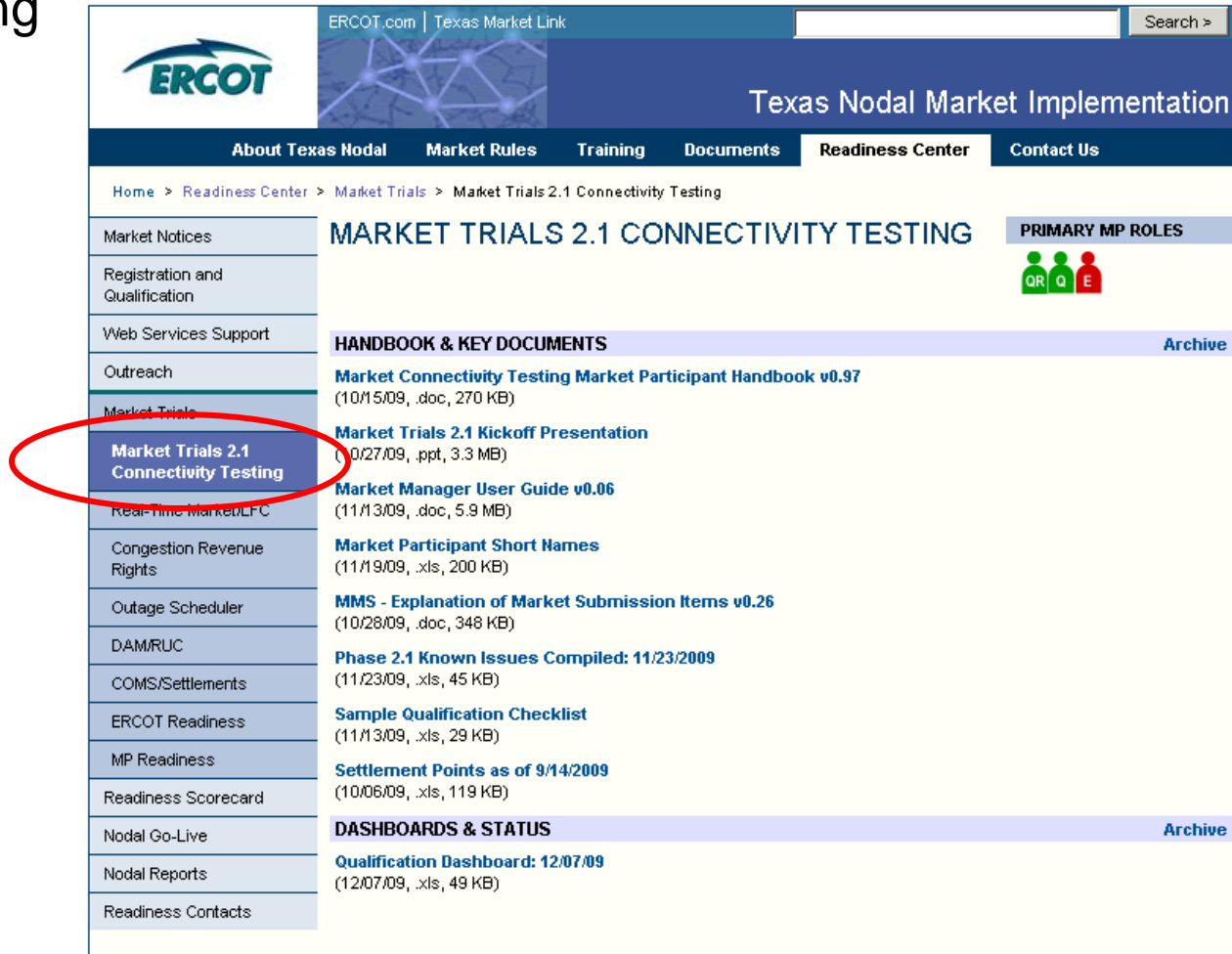
- Starts Jan 2010

Goal:

Resolve all ICCP telemetry issues by Feb 2010

Submission Testing Supporting Documents

- Supporting documentation posted on Readiness Center for Submission Testing



The screenshot shows the ERCOT website's Readiness Center for the Texas Nodal Market Implementation. The left sidebar contains a list of links, with 'Market Trials 2.1 Connectivity Testing' highlighted by a red circle. The main content area is titled 'MARKET TRIALS 2.1 CONNECTIVITY TESTING' and includes a 'PRIMARY MP ROLES' section with icons for QR, Q, and E. Below this is a 'HANDBOOK & KEY DOCUMENTS' section with an 'Archive' link, listing several documents such as 'Market Connectivity Testing Market Participant Handbook v0.97', 'Market Trials 2.1 Kickoff Presentation', 'Market Manager User Guide v0.06', 'Market Participant Short Names', 'MMS - Explanation of Market Submission Items v0.26', 'Phase 2.1 Known Issues Compiled: 11/23/2009', 'Sample Qualification Checklist', and 'Settlement Points as of 9/14/2009'. A 'DASHBOARDS & STATUS' section with an 'Archive' link follows, listing 'Qualification Dashboard: 12/07/09'.

ERCOT.com | Texas Market Link

Search >

Texas Nodal Market Implementation

About Texas Nodal Market Rules Training Documents **Readiness Center** Contact Us

Home > Readiness Center > Market Trials > Market Trials 2.1 Connectivity Testing

Market Notices

Registration and Qualification

Web Services Support

Outreach

Market Trials

Market Trials 2.1 Connectivity Testing

Real-time Market/LFC

Congestion Revenue Rights

Outage Scheduler

DAM/RUC

COMS/Settlements

ERCOT Readiness

MP Readiness

Readiness Scorecard

Nodal Go-Live

Nodal Reports

Readiness Contacts

MARKET TRIALS 2.1 CONNECTIVITY TESTING

PRIMARY MP ROLES

QR Q E

HANDBOOK & KEY DOCUMENTS Archive

Market Connectivity Testing Market Participant Handbook v0.97
(10/15/09, .doc, 270 KB)

Market Trials 2.1 Kickoff Presentation
(10/27/09, .ppt, 3.3 MB)

Market Manager User Guide v0.06
(11/13/09, .doc, 5.9 MB)

Market Participant Short Names
(11/19/09, .xls, 200 KB)

MMS - Explanation of Market Submission Items v0.26
(10/28/09, .doc, 348 KB)

Phase 2.1 Known Issues Compiled: 11/23/2009
(11/23/09, .xls, 45 KB)

Sample Qualification Checklist
(11/13/09, .xls, 29 KB)

Settlement Points as of 9/14/2009
(10/06/09, .xls, 119 KB)

DASHBOARDS & STATUS Archive

Qualification Dashboard: 12/07/09
(12/07/09, .xls, 49 KB)

2010: Market Trials Activities

Market Trials 2010 discussion outline

- History of EDS
- Market Trials Approach
- Detailed view of 2010 Market Activities as Roadmap

2010: Market Trials Activities

History of EDS- What execution occurred in 2007/2008

- Nodal 2-hour LFC test executed
 - Real-Time nodal systems controlled ERCOT systems
- CRR Auctions executed
 - Annual and Monthly Auctions executed with market
- DAM/DRUC/HRUC/SASM executed 2x/week for 2 months
- Outage Scheduler submission testing conducted
- Subset of Settlements Invoices produced

- Market Trials stopped due to lack of integration readiness
 - Most significant issue was no common network model in NMMS/EMS/MMS

2010: Market Trials Activities

What has been done to create 2010 Market Trials Roadmap

Project focus and milestones are aligned to track:

- Integration testing monitored well ahead of market trials
- Tests executed in dedicated/integrated environment (iTest)
- Execution of integrated scripts across upstream/downstream systems

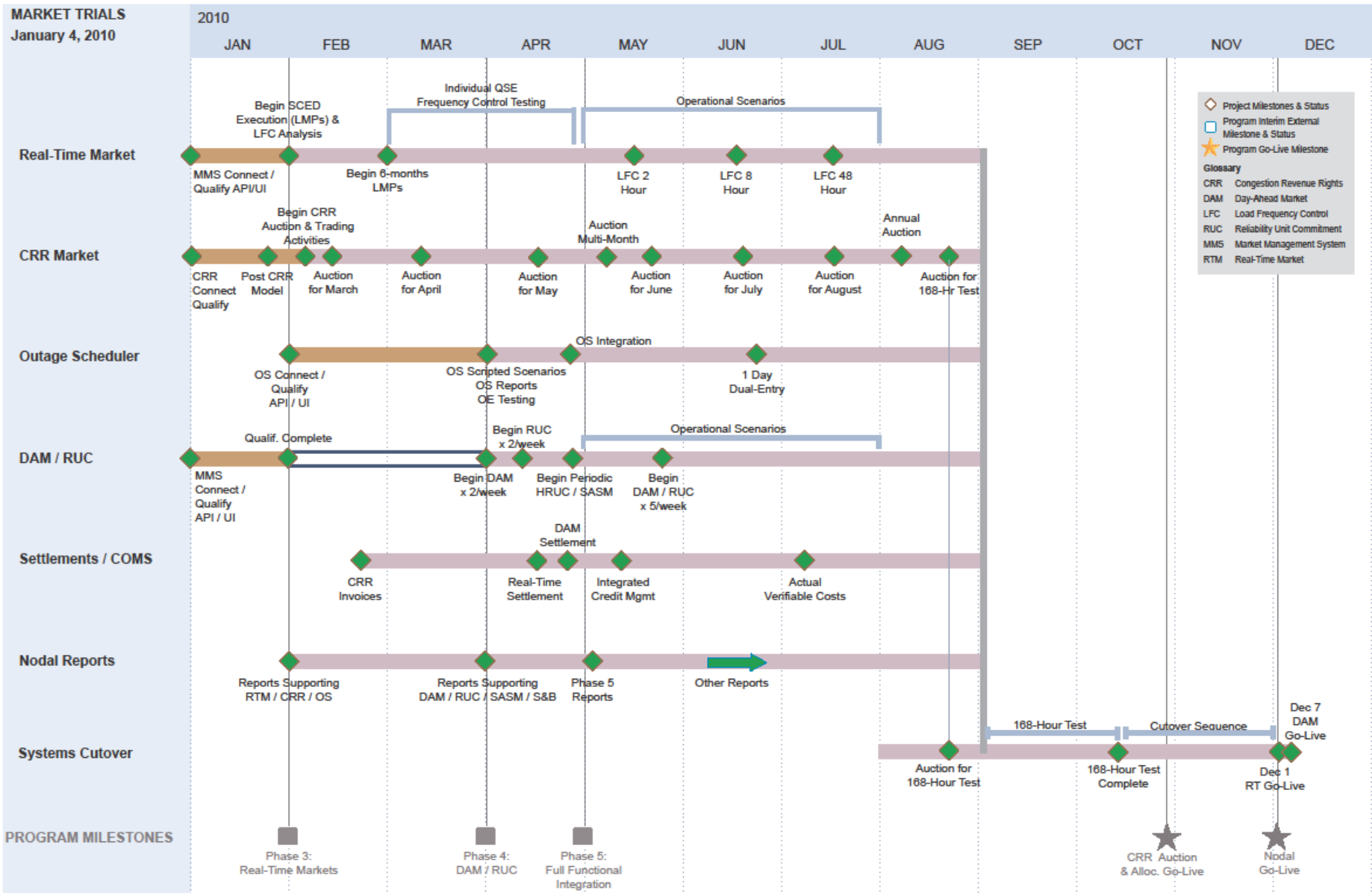
Lessons Learned:

- Recognized durations and execution activities from 2008 trials
- Aligned market trials sequence with Integrated Program Schedule
- Developed in alignment with PMO delivery plans for phases 2.1, 3, 4, 5

Objective of 2010 Market Trials Roadmap is to provide next level of detail for program/market engagement

- Details to be developed in subsequent Market Trials Handbooks

Nodal 2010 Roadmap (through Go-Live)



2010: January Market Activities

Jan

Feb

Mar

Apr

May

June

July

Aug

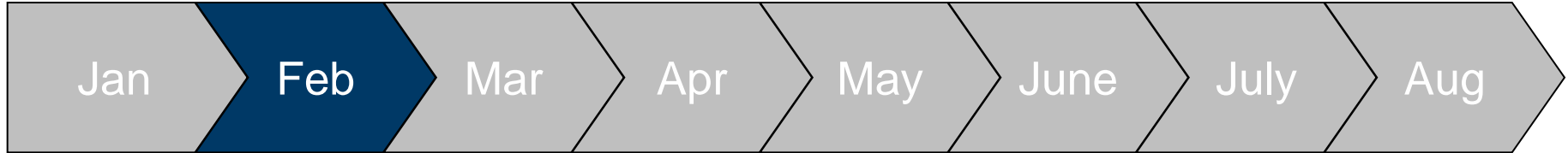
Functional Area

- ✓ Real-Time Market
- ✓ Congestion Revenue Rights
- ✓ Day-Ahead Market
- Reliability Unit Commitment
- Outage Scheduler
- COMS/Settlements
- ✓ Network Modeling
- Nodal Reports

Targeted Activities for January 2010

- SCED/DAM submission qualification
- CRR Account Holders qualify on CRR Submission
- ERCOT posts CRR Network Model

2010: February Market Activities



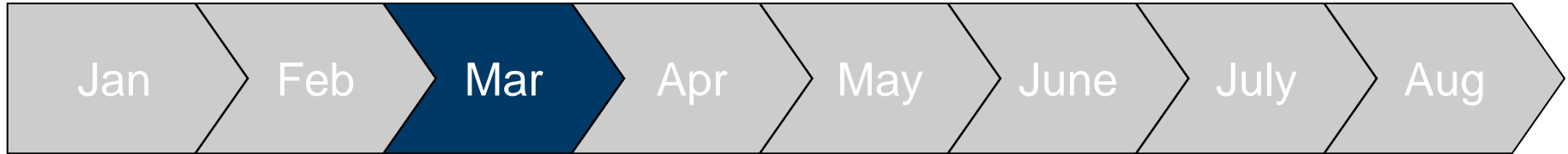
Functional Area

- ✓ Real-Time Market
- ✓ Congestion Revenue Rights
- Day-Ahead Market
- Reliability Unit Commitment
- ✓ Outage Scheduler
- COMS/Settlements
- ✓ Network Modeling
- ✓ Nodal Reports

Targeted Activities for February 2010

- QSEs submit SCED offers and Real-Time submissions daily
- ERCOT executes SCED and posts results/reports on MIS/ICCP
- ERCOT notifications are active
- ERCOT executes “Special” Monthly Allocation & CRR Auction and posts results
- ERCOT posts CRR Auction Invoices
- QSE/TSP begins Outage Scheduler submission testing
- Reports supporting RTM, CRR, Outage Scheduler

2010: March Market Activities



Functional Area

- ✓ Real-Time Market
- ✓ Congestion Revenue Rights
- Day-Ahead Market
- Reliability Unit Commitment
- ✓ Outage Scheduler
- COMS/Settlements
- ✓ Network Modeling
- ✓ Nodal Reports

Targeted Activities for March 2010

- ERCOT executes Monthly CRR Auction
- CRR bilateral trading tested
- Individual QSE LFC Closed Loop Testing begins (include Emergency Base Point and Non-Spin deployments)
- Initial DST Test (short day for Mar 14)
- CIM/Network Model loading process operational for bi-weekly loads
- ERCOT posts CRR network model for multi-month auction

2010: April Market Activities



Functional Area

- ✓ Real-Time Market
- ✓ Congestion Revenue Rights
- ✓ Day-Ahead Market
- ✓ Reliability Unit Commitment
- ✓ Outage Scheduler
- ✓ COMS/Settlements
- ✓ Network Modeling
- ✓ Nodal Reports

Targeted Activities for April 2010

- Market submits Day-Ahead Market bid/offers
 - Late March, early April
- Execute DAM, DRUC, HRUC, SASM two days/week with Market
- Execute DAM Settlements & Publish Statements/Extracts
- Execute RT Settlements & Publish Statements/Extracts
- Outage Scheduler integration supported (MMS, EMS, NMMS)
- Execute Monthly CRR Auction
- Day-Ahead reports and Settlement reports/extracts

2010: May Market Activities



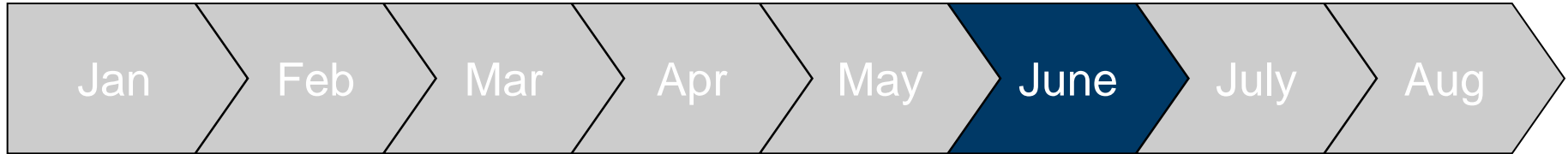
Functional Area

- ✓ Real-Time Market
- ✓ Congestion Revenue Rights
- ✓ Day-Ahead Market
- ✓ Reliability Unit Commitment
- ✓ Outage Scheduler
- ✓ COMS/Settlements
- ✓ Network Modeling
- ✓ Nodal Reports

Targeted Activities for May 2010

- Execute 2-hour LFC Closed Loop test
- Increase DAM/RUC execution to be 5 days/week
- Integrated Credit Management
- Dispute Submission testing
- Execute “Balance of Year” Auction
- ERCOT executes “Standard” Monthly CRR Auction

2010: June Market Activities



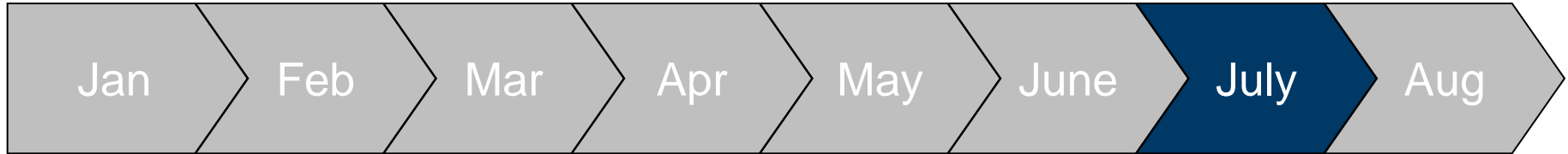
Functional Area

- ✓ Real-Time Market
- ✓ Congestion Revenue Rights
- ✓ Day-Ahead Market
- ✓ Reliability Unit Commitment
- ✓ Outage Scheduler
- ✓ COMS/Settlements
- ✓ Network Modeling
- ✓ Nodal Reports

Targeted Activities for June 2010

- Execute 8-hour LFC Closed Loop test
- Execute operational scenarios (such as EEA)
- ERCOT executes “Standard” Monthly CRR Auction
- Outage Scheduler 1-day dual entry for TSP/QSE into both zonal/nodal

2010: July Market Activities



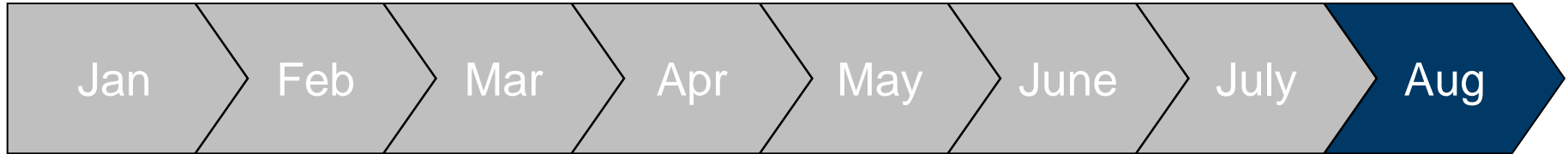
Functional Area

- ✓ Real-Time Market
- ✓ Congestion Revenue Rights
- ✓ Day-Ahead Market
- ✓ Reliability Unit Commitment
- ✓ Outage Scheduler
- ✓ COMS/Settlements
- ✓ Network Modeling
- ✓ Nodal Reports

Targeted Activities for July 2010

- Execute full nodal functionality
- Execute 48-hour LFC Closed Loop test
- ERCOT posts CRR network model for annual auction
- ERCOT executes “Standard” Monthly CRR Auction
- Verifiable costs used in execution

2010: August Market Activities



Functional Area

- ✓ Real-Time Market
- ✓ Congestion Revenue Rights
- ✓ Day-Ahead Market
- ✓ Reliability Unit Commitment
- ✓ Outage Scheduler
- ✓ COMS/Settlements
- ✓ Network Modeling
- ✓ Nodal Reports

Targeted Activities for August 2010

- ERCOT executes annual CRR Auction
- Execute systems for 48-hours with no Sev1/Sev2 defects
- ERCOT executes 168-hour Monthly CRR Auction

Conclusion

Thanks for your attention!

Questions? Comments?

