



Nodal Program Update

Mike Cleary

Sr. VP and Chief Technology Officer

ERCOT Board of Directors

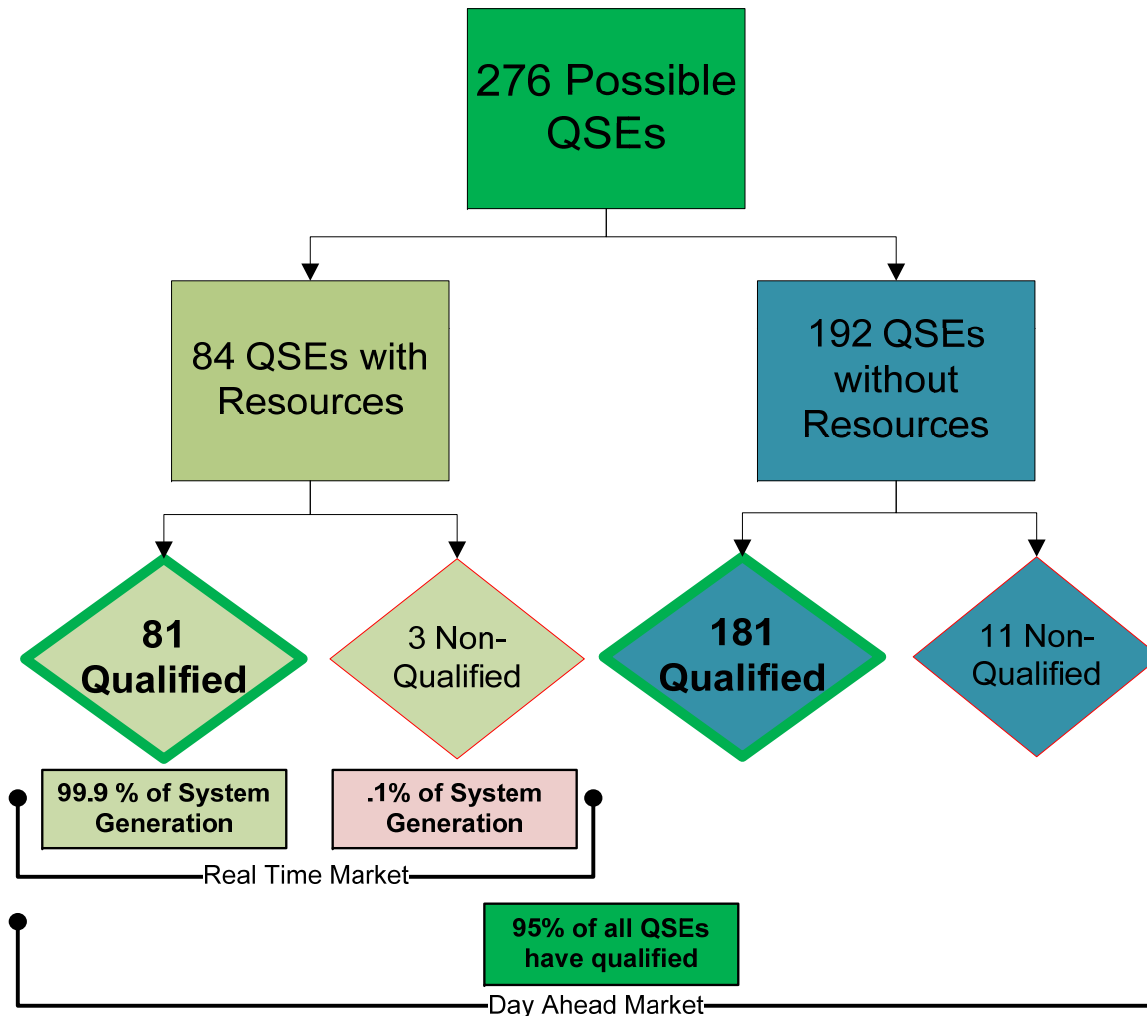
20 April 2010

Agenda

- **Program Status**
- **Market Readiness**
- **Financials**
- **Appendix**

224 Days to Go-Live

22 Days until Phase 5: Full Functionality
0 Items Impacting Go-Live Date



224 Days to Go-Live

22 Days until Phase 5: Full Functionality Market Quality Testing and Operational Readiness

Achievements within Market Trials:

- Market Trials has been running for 10 weeks
- Market Question topics have shifted from qualifications and participation questions to stability and operational inquiries
- Phase 2.1: Market Connectivity
 - Real Time / Day Ahead
- Qualifications
 - 95% of the QSEs have qualified
 - 99% of network model has been validated
- CRR
 - Two monthly CRR auctions have been run and invoiced
- Phase 3.0: Real Time Markets
 - Six month LMP analysis started on March 1st
 - The \$2,250 cap on prices has only been reached a few times since 03/04/10
- Phase 4.0: DAM / RUC
 - Two DAM Market Trials have been completed
 - Running twice a week
 - Strong participation from the Market Participants (150 QSEs on Tuesday)

Upcoming Milestones for Market Trials:

- DRUC
- DAM Settlement
- Reporting support for DAM/RUC/SAS
- Phase 5: Full Functionality
- CMM Module
- DAM / RUC 5x/wk
- 168 HR Test
- System Cut-Over

224 Days to Go-Live

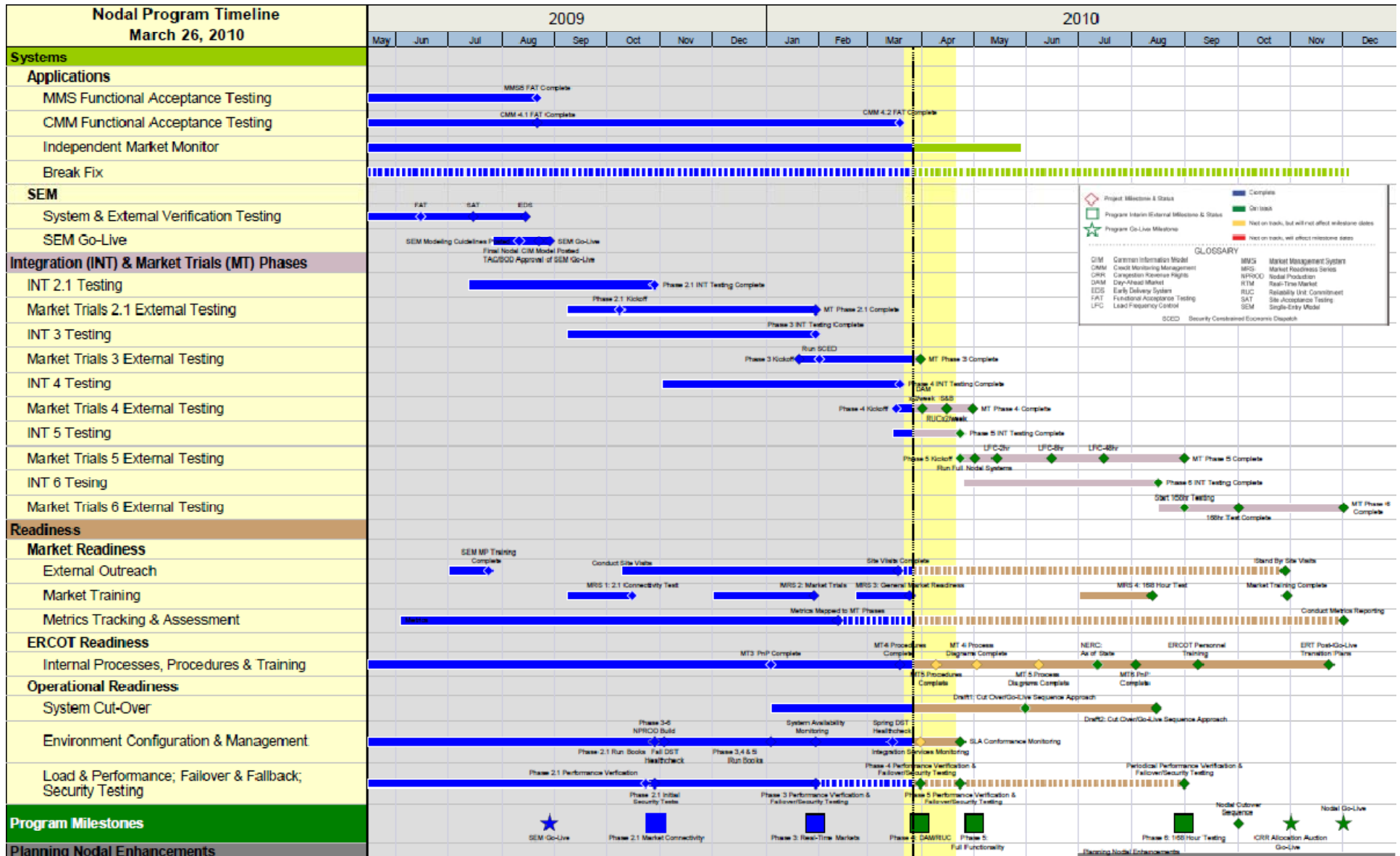
DAM Awards Summary

- **Market Trials 4.0: DAM/RUC:**
 - Thursday April 1st, for Operating Day Friday April 2nd
 - 112 QSEs participated in the first DAM / 100% Self Arranged
 - MWs ranged from 21,000 - 24,800/Hr
 - Prices ranged from \$24.60 - \$36.06/Hr
 - Tuesday April 6th, for Operating Day Wednesday April 7th
 - 80% Forecasted Load / 50% Self-Arranged
 - 150 QSEs participated in the first DAM
 - MWs ranged from 19,738 - 22,860/Hr
 - Prices ranged from \$21.79 - \$29.00/Hr
 - Thursday April 8th, for Operating Day Friday April 9th
 - 120% Forecasted Load
 - Submissions ended at 10am

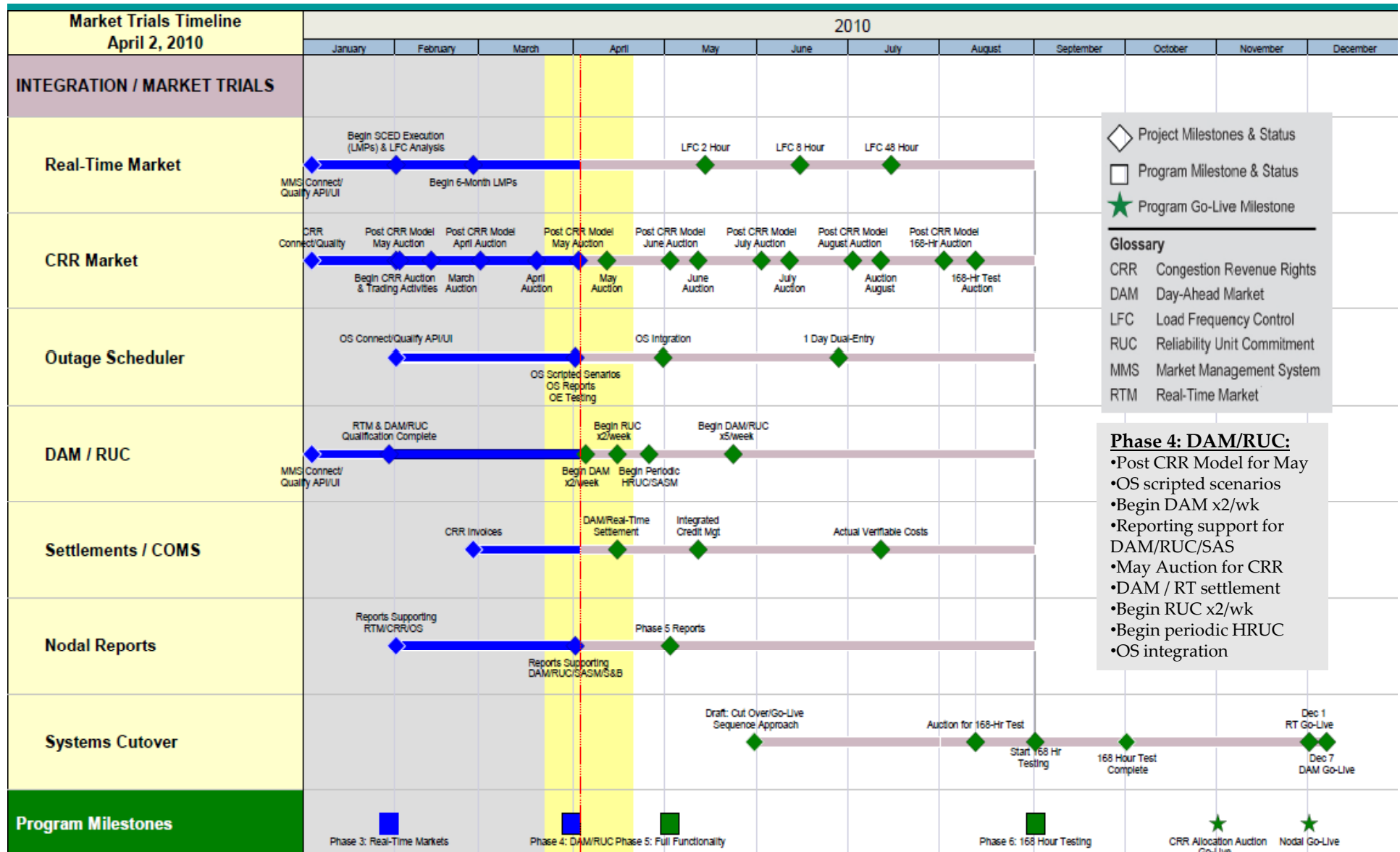
Nodal Internal/External and Vendor Headcount 2010

To be provided before the Board of Directors meeting.

Integrated Nodal Timeline – Go-Live December 1st, 2010



2010 Market Trials Timeline - Go-Live December 1st, 2010



Nodal Program Risks & Issues

Risk/Issue	Impacted Milestone	Target	Category	Probability	Severity	Status
<p>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></p> <ul style="list-style-type: none"> -Network Model Load Frequency -DAM Sizing -CRR sizing -Reporting 	Program	April/ May 2010	Scope / Budget	High	Low	<ul style="list-style-type: none"> • Phase 4 OLA definitions complete • Phase 5 OLA definitions in progress • NATF and NDSWG heavily involved in issue • 10,000 / 10,000 submissions achieved • 200,000 submissions total; NATF is weighing options • On track
<p>Market Design Assessment <i>Risk around the protocol tractability project and the market results as each phase of market trials becomes active.</i></p>	Program	August 2010	Scope / Budget	Low	High	<ul style="list-style-type: none"> • Building experienced market design team to review and assess design and protocol alignment with market trial results

Earned Value for the Nodal Program

Earned Value to be provided before the Board of Directors meeting.

Participant Readiness Touch Points

2010

	April	May	June	July
Meetings	<ul style="list-style-type: none"> • NATF 4/6 	<ul style="list-style-type: none"> • NATF 5/4 	<ul style="list-style-type: none"> • NATF 6/1 and 6/29 	<ul style="list-style-type: none"> • TBD
Training	<ul style="list-style-type: none"> • Nodal 101 • Trans 101 • Generation 101, 201 • CRR – instructor-led • NMMS • Economics of LMP • Combined Cycle Workshop (4/28) 	<ul style="list-style-type: none"> • Nodal 101 • Trans 101 • Generation 101, 201 • CRR – instructor-led • NMMS • Economics of LMP 	<ul style="list-style-type: none"> • Nodal 101 • LSE 201 • Generation 101, 201 • Economics of LMP • Basic Training Program • Ancillary Service Workshop (<i>tentative</i>) 	<ul style="list-style-type: none"> • Nodal 101 • Transmission 101 • Generation 101, 201 • Basic Training Program
Outreach	<ul style="list-style-type: none"> • Standby site visits • TSP Validation • Bi-weekly TSP calls • Phase 4 metrics launch 	<ul style="list-style-type: none"> • Standby site visits • Metrics monitoring • Bi-weekly TSP calls 	<ul style="list-style-type: none"> • Repeat Retail Workshop (Dallas) – <i>tentative</i> • Phase 5 Metrics launch 	<ul style="list-style-type: none"> • Qualification assessment (MP17) • Standby site visits
Market trials	<ul style="list-style-type: none"> • Weekly Trials calls • Phase 4 Market Trials initiates • Phase 5 Handbooks <ul style="list-style-type: none"> • <i>Updates to prior handbooks</i> • <i>Credit</i> 	<ul style="list-style-type: none"> • Weekly Trials calls • 2 hr system-wide LFC test • Phase 5 Market Trials initiates 	<ul style="list-style-type: none"> • Weekly Trials calls • 8 hr system-wide LFC test • Full market trials functionality 	<ul style="list-style-type: none"> • Weekly Trials calls • 48 hr system-wide LFC test • Verifiable costs in execution

Next 60-days of Classes and Settlement Workshops

Course	Start Date	Location
LSE 201	April 7	Suez Energy (Houston)
Generation 101	April 8	Occidental (Houston)
TSP Model Validation	April 9	Webex
Transmission 101	April 14	City of Garland Fire Bldg (Dallas)
Basic Training Program	April 19	Suez Energy (Houston)
Generation 201	April 20	Calpine (Houston)
ERCOT Nodal 101	April 26	Tenaska Power Services (Dallas)
Credit Management Workshop	April 26	ERCOT Met Center (Austin)
Congestion Revenue Rights	April 27	Hilton Garden Inn (Dallas)
Combined Cycle Workshop	April 28	ERCOT Met Center (Austin)
Credit Management Workshop	May 3	ERCOT Met Center (Austin)
Economics of LMP	May 10	Energy Plaza (Dallas)

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



Next 60-days of Classes and Settlement Workshops (continued)

Course	Start Date	Location
ERCOT Nodal 101	May 10	ERCOT Met Center (Austin)
Congestion Revenue Rights	May 11	ERCOT Met Center (Austin)
Transmission 101	May 18	CPS Energy (San Antonio)
Network Model Management	May 20	CPS Energy (San Antonio)
Basic Training Program	May 24	Energy Plaza (Dallas)
Generation 101	June 8	LCRA (Austin)
Generation 201	June 17	LCRA (Austin)
Basic Training Program	June 21	ERCOT Met Center (Austin)
Transmission 101	July 13	CenterPoint Energy (Houston)

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

Nodal Outreach Program Overview Statistics

Statistics were compiled after the completion of the Outreach Site Visits. Below are statistics representing the type of Market Participants visited and their locations:

1	Total Number of Market Participant Site Visits	35
2	Total Number of Market Participants participating in Outreach, including Wind, and Retail Panels	67
3	Total number of attendees	681
4	Percentage of total generation represented by QSEs participating in site visits	96.14%
5	Percentage of total load represented by QSEs participating in site visits	91.96%
6	Total number of states visited	11 states
7	Total regions visited	Austin – 4 Houston (metro) – 11 Dallas (metro) – 5 San Antonio – 1 East Coast – 5 West Coast – 1 Midwest – 3 Florida – 1 Texas (outside metro areas) - 4

Nodal Outreach Program Overview Statistics

Below are the percentages of each topic selected:

	Topics	Percentage of Each Topic Selected
1	Nodal Program Update (mandatory topic)	Mandatory
2	Day-Ahead Market Implementation	100%
3	Real Time Operations Processes & Systems	94.29%
4	Reliability Unit Commitment Implementation	82.86%
5	Nodal Settlements and Billing Processes	74.29%
6	Congestion Revenue Rights Auction Implementation	65.71%
7	Reports and Data Extracts	45.71%
8	Telemetry & Load Frequency Control	42.86%
9	Readiness Center and Scorecard	14.29%
10	Credit Monitoring and Management (topic was made available on February 9, 2010)	11.43%
11	Wind Presentation and Discussion	One-time presentation
12	Retail Presentation and Discussion	One-time presentation

Nodal Outreach Program Overview Statistics

- Market participants received an evaluation to complete
- Each question was given a response regarding the meeting objectives, based on a Likert scale:

4 – Strongly Agree

3 – Agree

2 – Disagree

1 – Strongly Disagree

Topics	Average Response*
Readiness Center and Scorecard	3.68
Nodal Settlements and Billing Processes	3.65
Nodal Program Update	3.63
Wind Presentation and Discussion (one-time presentation)	3.63
Telemetry & Load Frequency Control	3.61
Reports and Data Extracts	3.61
Reliability Unit Commitment Implementation	3.57
Day-Ahead Market Implementation	3.56
Congestion Revenue Rights Auction Implementation	3.56
Goals and purpose of Outreach meeting are appropriate	3.55
Real Time Operations Processes & Systems	3.55
Credit Monitoring and Management	3.24
Retail Presentation and Discussion (one-time presentation)	3.12

* Not all participants returned evaluations or answered every question.

“Provided a great and much needed tool for ERCOT to interface with MPs to answer questions and form needed task lists. Thank all of you for this opportunity.”

“The program was not geared toward a QSE like [us], but rather the generation community”

“Today’s presentation and Q&A was a great eye opener. We have done a lot of work in preparing for Nodal, but today’s presentation clearly shows the gaps between where we are and where we need to be throughout 2010.”

Active Market Participant Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
MP3 Market Submissions Connectivity Qualification	Green	QSERS	Generation Ratio Share	99.0%	1.0%	0.0%	0.0%	Successful submission of RT and DAM transactions	81/84 QSERS Qualified (includes QSEs with Load Resources).
	Amber	QSEs	Even weighting	94.3%	2.1%	1.0%	2.6%		181/192 QSEs qualified. Below 95% threshold for overall GREEN.
MP6 Telemetry Compliance with Nodal Protocols 3.10.7.5	Green	QSERS	Generation Ratio Share	99.9%	0.1%	0.0%	0.0%	Expected State Estimator telemetry submitted.	78/79 QSERS completed. 3501/3502 SE points provided (99.6%).
	Green	QSERS	Generation Ratio Share	99.9%	0.0%	0.1%	0.0%	Expected SCED telemetry submitted.	78/79 QSERS completed. 7621/7629 SCED points provided (99.1%).
	Green/White only	TSPs	Ownership Ratio Share	0.3%	0.0%	0.0%	99.7%	Expected TSP telemetry per ICCP Handbook submitted. No schedule for AMBER/RED scores	1/17 TSPs completed, all other TSPs are in review by ERCOT. ~94% TSP CB and LD points provided.
MP11 Resource Registration	Green	REs	Registered MW Capacity Ratio Share	97.7%	1.82%	.5%	0.0%	Decision Making Authority form submitted, and GENMAP validated	153/157 Resources completed.

Active Market Participant Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
MP14-C TSP Model Validation	Green	TSPs	Ownership Ratio Share	99.4%	.6%	0.0%	0.0%	Network Model data validated by TSP	17/28 TSPs have submitted model validation e-mails to ERCOT.
MP15-A Real-time Market Participation	Green	QSERS	Generation Ratio Share	99.0%	1.0%	0.0%	0.0%	Weekly average of daily SCED submissions	75/79 QSERS above 95% weekly average for SCED submissions.
MP15-B CRR Connectivity Qualification	Red	CRRAHs	Even weighting	91.4%	0.0%	8.6%	0.0	Successful submission CRR transactions	64/70 CRRAHs qualified. Greater than 5% overall RED.
MP16 DAM Participation	Green/White Only	QSERS	Generation Ratio Share	89%	0.0%	0.0%	11.0%	Participation in 50% of the Day-Ahead Market runs	57/79 QSERS with adequate participation.
	Green/White Only	QSEs	Even Weighting	51.6%	0.0%	0.0%	48.4%		93 out of 192 QSEs with adequate participation.
MP20 Outage Scheduler Connectivity Qualification	Green	QSERS	Generation Ratio Share	98.1%	0.0%	0.0%	1.9%	Successful submission of OS transactions. AMBER/RED scores light up 4/13/2010 after OS window closes	74/78 QSERS qualified.
	Green	TSPs	Ownership Ratio Share	99.8%	0%	0%	.02%		18/25 TSPs qualified.

Active Market Participant Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
CRR3 Operation of CRR Auctions and Allocations	Green/White only	CRRAHs	Even weighting	68.1%	0%	0%	31.9%	Participation in at least one of the last two auctions or allocations. AMBER/RED scores light up 5/5/2010 after May bid window closes	49/70 CRRAHs with adequate participation in March or April Auctions or Allocations.

Active ERCOT Metrics

Metric Name	Current Score	Applies to	Percentage (if applicable)	Primary Criteria	Notes
E1 ERCOT Staff Completes Training	Green	ERCOT	100%	Training plans must be adhered to for highly impacted departments	15 out of 15 highly impacted departments are up to date with their training plans.
E9 Develop Nodal Procedures	Green	ERCOT	100%	Procedures developed 1 month prior an to the appropriate Market Trials Phase and/or procedures exercised in the current Market Trials phase.	All MT4 and MT5 are now developed and the MT3 procedures were exercised during MT3 as scheduled. MT4 procedures on target to be exercised by the end of MT4.
MO4 Verify SCED Execution Quality	Green	ERCOT	N/A	All of the successful SCED executions passed the post-execution price validations for the given reporting period.	For the 3/23 – 4/5 period, there were 4,048 * SCED intervals with no price validation error flags.
MO5 Generate 6 Months of LMPs	Green	ERCOT	95.9%	Greater than 95% of the SCED executions produced and posted LMPs for the given reporting period.	For the 3/23 – 4/5 period, 3,887 out of 4,052 SCED runs with LMP posted correctly.

* Discrepancy between SCED and PVT runs due to missing input data during PVT testing.





Monthly Financial Review

Don Jefferis

Interim Director - Nodal Financial Management Office

20 April 2010

Monthly Financial Review

Financials to be provided before the Board meeting

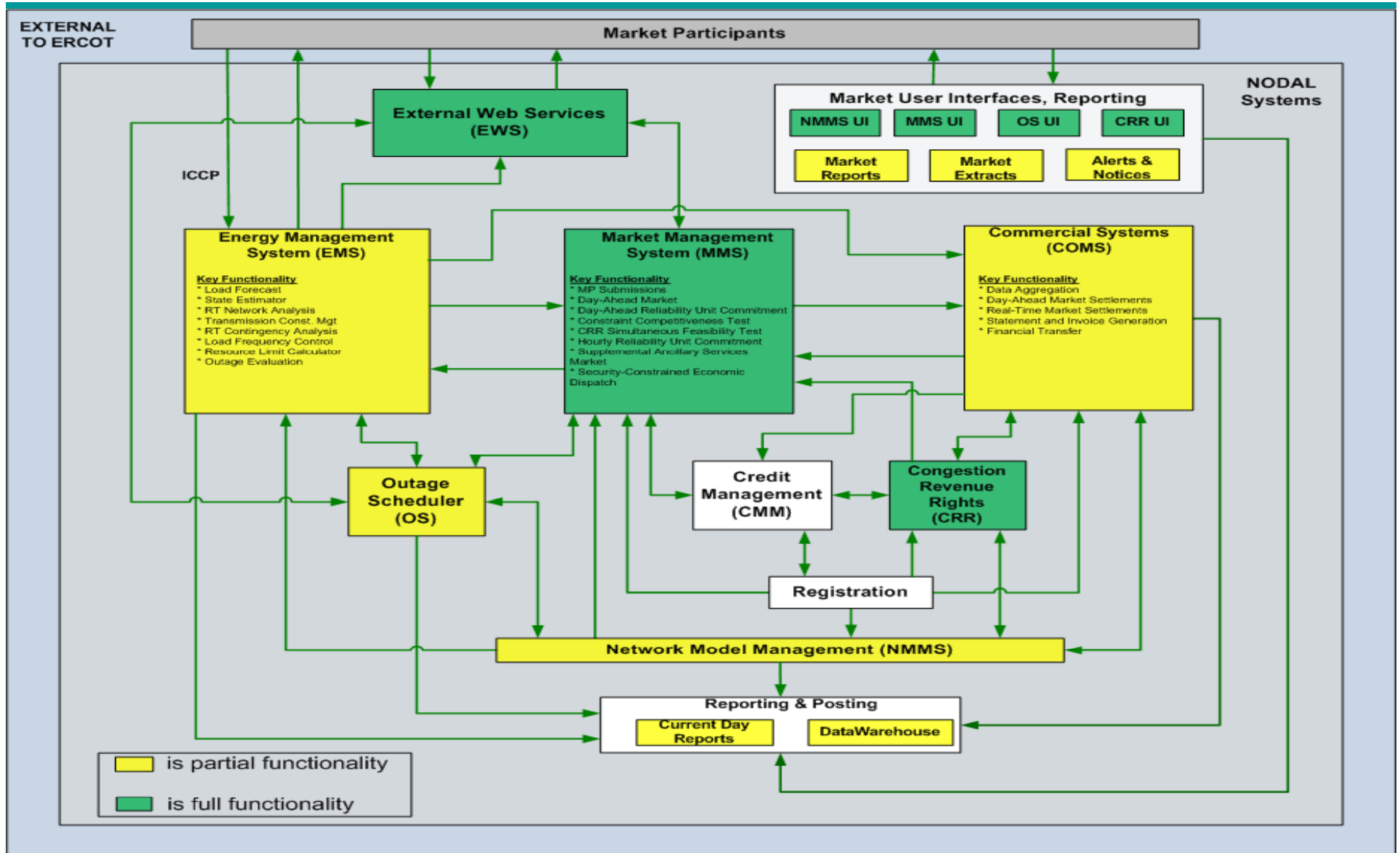
Questions?

Appendix

Market Trials Phase 4 – DAM: Schedule/Key Dates

	Week 1	Week 2	Week 3	Week 4	Week 5
	4/1/2010	4/6/2010 & 4/8/2010	4/13/2010 & 4/15/2010	4/20/2010 & 4/22/2010	4/27/2010 & 4/29/2010
DAM / RUC / SASM					
Objective	Connectivity / Execution	AS co-optimization	Network constrained solution	DAM + DRUC	DAM + DRUC + HRUC + SASM
Network Constraints	None	None	Included	Included	Included
Self-Arranged AS Requested	100%	50%	50%	Actual	Actual
Load Bid MW Requested	80/120% forecasted load	80/120% forecasted load	80/120% forecasted load	80/120% forecasted load	80/120% forecasted load
Virtual Bids / Offers	Up to 5 transactions totaling 50 MW/QSE/hr	Up to 5 transactions totaling 50 MW/QSE/hr	Up to 10 transactions totaling 100 MW/QSE/hr	Up to 10 transactions/QSE/hr	Up to 10 transactions/QSE/hr
PTP Obligations	Up to 5 bids totaling 50 MW/QSE/hr	Up to 5 bids totaling 50 MW/QSE/hr	None	Up to 5 bids totaling 50 MW/QSE/hr	Up to 5 bids totaling 50 MW/QSE/hr (unless the bid represents QSE's load)
NOIE CRR Offers	Allocated CRRs only	Allocated CRRs only	None	Allocated CRRs only	Allocated CRRs only
DRUC	None	None	DRUC after each DAM	DRUC after each DAM	DRUC after each DAM
HRUC	None	None	None	None	Limited
SASM	None	None	None	None	Yes

Nodal Systems Blueprint - Market Trials - Phase 4 - April 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 : Probability to occur is $\geq 90\%$; perceived impact would require a Change Request over the next 1-3 months
 - Medium: Probability to occur is between 31 – 89%; perceived impact would require a Change Request over the next 4 -10 months
 - Low: Probability to occur is $\leq 30 \%$; not expected to require a Change Request
- **Severity**
 - High: Milestone impact, or budget impact $> \$250,000$
 - Medium: Milestone impact - but expected to be mitigated, or budget impact between \$0 - \$250,000
 - Low: No milestone impact, or no budget impact

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