



# Nodal Program Update

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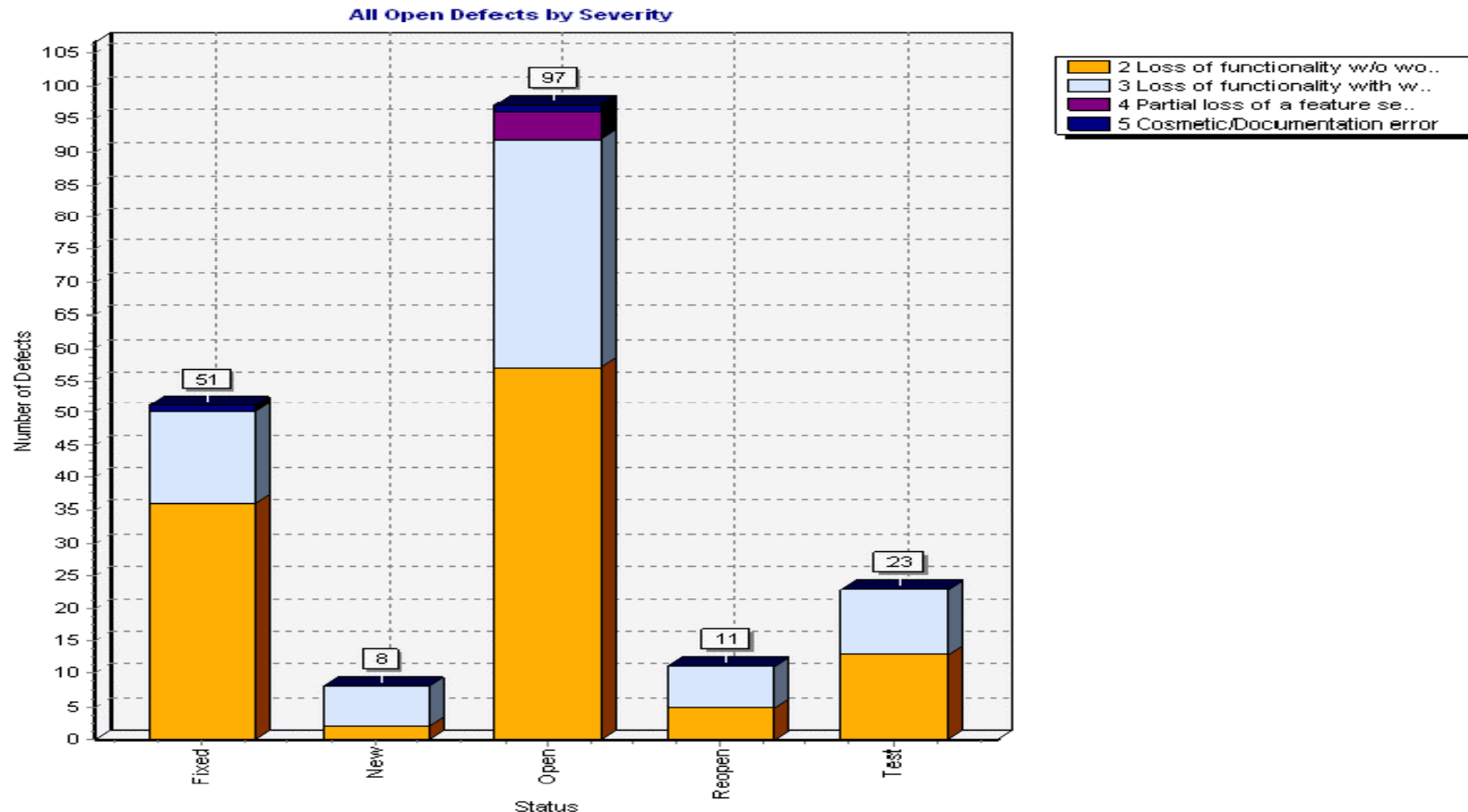
ERCOT Board of Directors

20 September 2010

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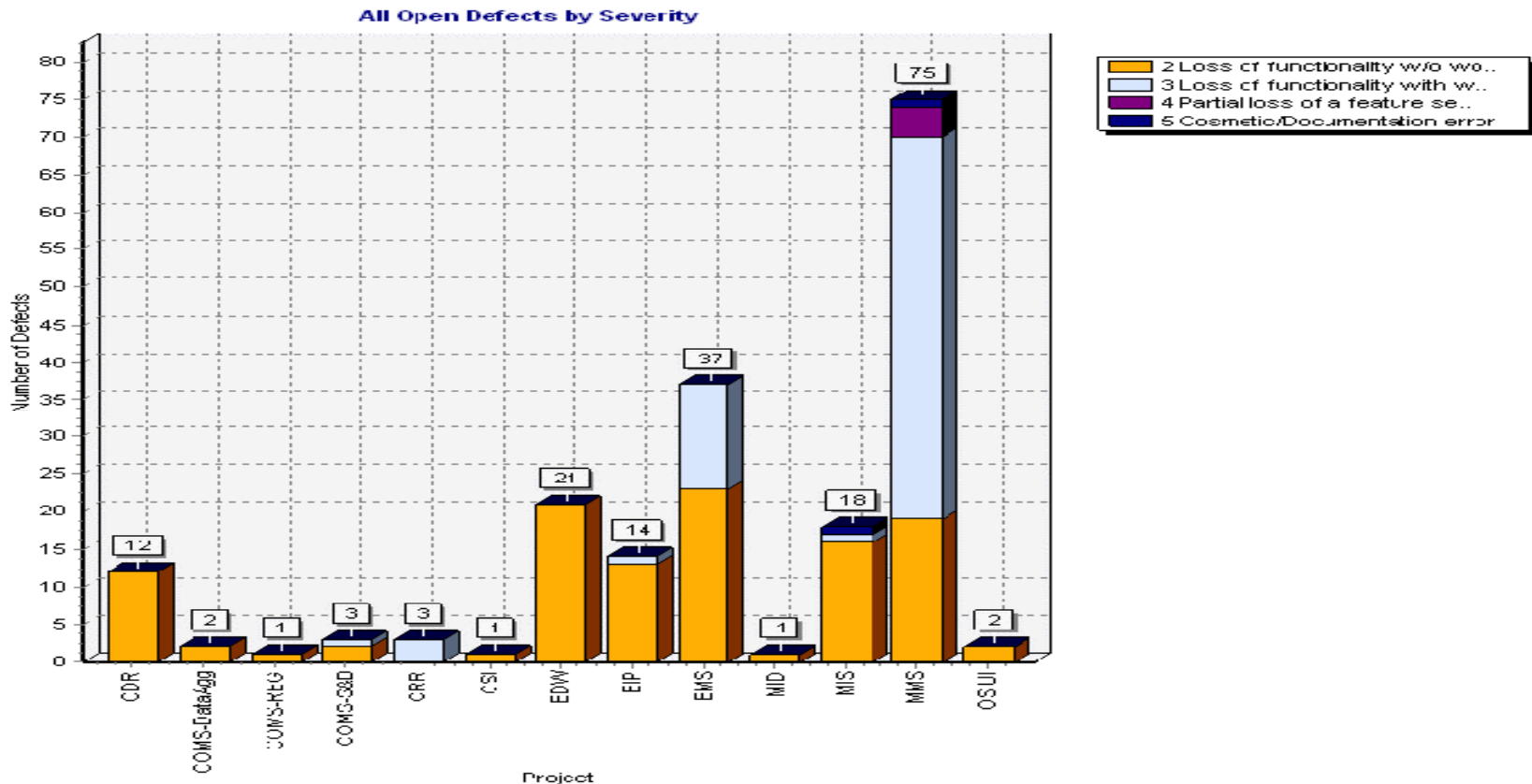
# Appendix

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



- 189 Total Open (Fixed, New, Open, Reopen, Test)
- 112 are Severity 2 and 71 are Severity 3
- 23 are pending test and migration to NPROD
- Highest volume of defects are awaiting Vendor delivery (MMS/EMS)

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



- EDW dependent on data from system generated data to complete testing
- MMS expecting final patch in early September
- EMS expecting final patch delivery in early September

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

Application	Target Completion	Comments
CRR	09/30/2010	Targeting Vendor fix by this date or go live with manual process
CSI	09/30/2010	One new defect
EDW	10/15/2010	
EIP	10/01/2010	
EMS	11/05/2010	Working for final build by 10/01/2010 and additional displays by 11/05/2010
MMS	10/01/2010	Working for final build by this date
MIS	10/01/2010	Goes Live 10/12/2010

# Defects, Issues, Quality of Solution: Definitions

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- **Defects:**
  - A technical error or problem between ERCOT's internal system or between ERCOT and the market
  - Deferred defects are Severity 3 defects, that have been deferred until after Go-Live, but have a confirmed workaround in place
- **Quality of Solution:**
  - Data Issues:
    - Heavily dependant on inputs
    - No significant software issues
    - On-going analysis of results and inputs
  - Performance Issues:
    - ERCOT is constantly looking to improve performance
    - Monitoring in place to detect issues
- **Known Issues / Market Facing Issues**
  - Issues uncovered during internal or market trials that impact Market Participants

# 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

# Nodal Program Risks & Issues: Definitions

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## 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



# Critical Defect Definitions

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- **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

## External Audit Status Summary

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<b>Audit</b>	<b>Audit Points Identified</b>	<b>Audit Points in Execution</b>	<b>Date to Complete Last Point</b>
Utilicast Report 8	6	6 complete	2011*
Utilicast Report 10 (Cleary)	17	17 complete	8/2/10**

\* Audit point required for go-live complete with the construction of the TCC1 expansion in Taylor.

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

## Next 60-days of Nodal Classes/Workshops

Course	Start Date	Location
Economics of LMP	September 13	ERCOT Met Center (Austin)
ERCOT 101 for Wind Generation	September 13	Optim Energy (Dallas)
ERCOT Nodal 101	September 14	StarTex Power (Houston)
Generation 101	September 15	Hilton Austin Airport (Austin)
Basic Training Program	September 20	LCRA (Austin)
Load Serving Entity 201	September 27	ERCOT Met Center (Austin)
Congestion Revenue Rights	September 29	Suez Energy (Houston)
ERCOT Nodal 101	October 5	RBS Sempra (Stamford, CT)
Basic Training Program	October 18	Suez Energy (Houston)
Load Serving Entity 201	October 21	Reliant Energy (Houston)
ERCOT Nodal 101	October 25	ERCOT Met Center (Austin)
ERCOT 101 for Wind Generation	October 27	ERCOT Met Center (Austin)

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

# RED/AMBER Metrics Summary – Market Participant Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
<b>Market Participant Metrics</b>									
MP15(B) CRR Connectivity Qualification	Red	CRRAHs	Even weighting	90%	0.0%	10%	0.0%	Successful submission CRR transactions	88/98 CRRAHs qualified. Greater than 5% RED.
MP16 DAM Participation	Amber	QSEs	Even Weighting	73%	10%	14%	3%	Participation in 50% of the Day-Ahead Market runs	138/188 QSEs w/o Resources
MP21 WGRs ICCP Meteorological Telemetry	Amber	REs (only WGRs)	Registered MW Capacity Ratio Share	66.0%	32.3	1.7	N/A	WGRs must meet reasonability tests for MET ICCP	< 5% RED, so the metric is currently listed at AMBER
<b>ERCOT Metrics</b>									
MO10 DRUC Execution	Amber	ERCOT	N/A	N/A	89%	N/A	N/A	95 percent DRUC execution	8/23–9/6 - 8 out of 9 DRUC runs executed. ERCOT used HRUC results as a substitute for the single missed DRUC execution.

## **MP15(B)**

- 10 CRRAHs past 30 day grace period for qualification \*
- Minimal risk to running the December 2010 Auction

## **MP16**

- QSEs w/o Resources DAM participation between 65%-80% since measurement started in April.
- These QSEs represent 6% of Load.
- Minimal risk to Go-Live

## **MP21**

- 67 WGRs – 55 passed reasonability test, 10 working with ERCOT to resolve, 2 with no response

## **MO10**

- ERCOT was able to use subsequent HRUC results (per its post Go-Live production process) to fill in for the missed DRUC execution

\* 12 new CRRAHs added after 8/13 deadline. Not included in MP15B because they have a 30 day window before ERCOT publishes their CRRAH qualified status.

# CRR Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
<b>Market Participant Metrics</b>									
MP15(B) CRR Connectivity Qualification	Red	CRRAHs	Even weighting	90%	0.0%	10%	0.0%	Successful submission CRR transactions	88/98 CRRAHs qualified. Greater than 5% RED.
CRR3 Operation of CRR Auctions and Allocations	Green	CRRAHs	Even weighting	88%	0%	12%	0.0%	Participation in at least 1 of the last 2 auctions or allocations. > 80% total participating	74/84 CRRAHs with adequate participation in June or July auction or allocation
<b>ERCOT Metrics</b>									
CRR3 Operation of CRR Auctions and Allocations	Green	ERCOT	N/A	N/A	N/A	N/A	N/A	Auction results distributed to participants per schedule in CRR Handbook	September Auction results posted
	Green	ERCOT	N/A	100%	0%	0%	0%	Allocated Revenue Rights in statistical sample = 100% accurate	Source – Sink price/clearing prices quality check performed successfully by CRR team after each auction
CO8 Verify CRR Auction Invoices	Green	ERCOT	N/A	100%	0%	0%	0%	CRR Auction Result for MP(n) – CRR Auction Invoices for MP(n) = 0\$	S&B validated invoices reflected awards for each CRRAH in the March, April, May, June, July, August, and September auctions, .
	Green	ERCOT	N/A	100%	0%	0%	0%	System Generated CRR Auction Invoices not posted = 0	Annual CRR auction invoices submitted to all 52 CRRAHs who participated

# Real-Time Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
<b>Market Participant Metrics</b>									
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	79/81 QSERS qualified
	Green	QSEs	Even weighting	97.3%	0.0%	0.5%	2.2%		182/187 QSEs qualified.
MP15-A Real-time Market Participation	Green	QSERS	Generation Ratio Share	98.8%	1.2%	0.0%	0.0%	Weekly average of daily SCED submissions	78/79 QSERS above 95% weekly average for SCED submissions.
<b>ERCOT Metrics</b>									
MO3 Verify SASM	Green	ERCOT	N/A	100%	N/A	N/A	N/A	Multiple SASMs are successfully executed during Market Trials and the 168 hour test.	SASMs successfully run on 4/28, 4/30, 5/4, 5/6, 5/7, 5/12, 5/14, 6/9, and 6/10. No issues reported.
MO4 Verify SCED Execution Quality	Green	ERCOT	N/A	100%	0%	0%	0%	All successful SCED executions passed the post-execution price validations.	7/27 – 8/9 period – 4,027 Price Validation runs with no rule violations
MO5 Generate 6 Months of LMPs	Green	ERCOT	N/A	99.5%.	0%	.5%	0%	95% of SCED executions completed with LMPs posted on MIS.	7/27 – 8/9 period, 4,015 out of 4,037 SCED runs with LMPs posted.

# Day-Ahead Market Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
Market Participant Metrics									
MP16 DAM Participation	Green	QSERs	Generation Ratio Share	99%	1%	0.0%	0.0%	Participation in 50% of the Day-Ahead Market runs	77/80 QSEs with Resources
	Amber	QSEs	Even Weighting	73%	10%	14%	3%		138/188 QSEs w/o Resources
ERCOT Metrics									
MO9 Generate DAM LMPs	Green	ERCOT	N/A	N/A	N/A	N/A	N/A	95 percent DAM execution as evidenced by DAM LMP postings	8/23–9/6 – 10/10 DAM runs execute(doesn't measure quality)
MO10 DRUC Execution	Amber	ERCOT	N/A	N/A	89%	N/A	N/A	95 percent DRUC execution	8/23–9/6 - 8 out of 9 DRUC runs executed. ERCOT used HRUC results as a substitute for the single missed DRUC execution.

1. MP16 – Metric is based on a 2 week rolling average (8/23– 9/3 10 runs).
2. MP16 – 94% Load participating.

# Network Model Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
<b>Market Participant Metrics</b>									
N2 Telemetry ICCP System Failover	9/22/2010	QSERS	Generation Ratio Share	89.5%	0%	0%	10.5%	ICCP Failover test completed successfully prior to the 8-hour LFC test.	64/79 QSERS completed ICCP telemetry failover test.
MP21 WGRs ICCP Meteorological Telemetry	Amber	REs (only WGRs)	Registered MW Capacity Ratio Share	78%	19.5%	2.5%	N/A	WGRs must meet reasonability tests for MET ICCP	< 5% RED, so the metric is currently listed at AMBER
<b>ERCOT Metrics</b>									
EMO9(A) State Estimator Standards Performance	Green	ERCOT	N/A	N/A	N/A	N/A	N/A	State Estimator converges 97% during monthly test period	97.1% Convergence for State Estimator for the month of August.
EMO9(B) RTCA Modeling Differences	Green	ERCOT	N/A	99.5%	N/A	N/A	N/A	95% of impedance values matched between Zonal/Nodal	99.5% match for impedances for lines and transformers. 6,815 lines and transformers in Nodal.
	Green	ERCOT	N/A	98.3%	N/A	N/A	N/A	95% of dynamic line ratings matched between Zonal/Nodal	98.3% match for ratings for lines. 5,328 lines in Nodal.
	Green	ERCOT	N/A	99.40%	N/A	N/A	N/A	95% of load tap setting values matched between Zonal/Nodal	99.4% Match for transformer tap settings. 1,487 xfms in Nodal.
EMO10 Anomalous / Auto-Disabled Telemetered Points	Green	ERCOT	N/A	1.91%	N/A	N/A	N/A	The % of Anomalous and Auto-Disabled Measurements < 2% of Total Measurements	April Nodal 2.58% May Nodal 1.92% June Nodal 1.91% July Nodal 1.44% August Nodal .92%
EMO9(C) RTCA CSC Comparison	Green	ERCOT	N/A	99.8%	N/A	N/A	N/A	CSC Pre-contingency SE Flows within 5% (Measured at 5-min intervals)	Commercial lines between Zonal and Nodal (8/24-9/6) 99.78%



# S&B – Settlements and Billing, Metering, and Data Aggregation Readiness

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
<b>ERCOT Metrics</b>									
CO3 Verify DAM Settlement Statements/CO7 Verify DAM Invoices	Green	ERCOT	N/A	100%	0%	0%	0%	System Generated RT Statement Dollars-Independently Generated RT Calculation Dollars =\$0	8/25-9/8 2211 DAM Statements and Invoices All validated \$\$ = system generated (with some rounding differences)
	Green	ERCOT	N/A	100%	0%	0%	0%	System Generated RT Statements/Invoices not posted = 0	8/25-9/8 DAM Statements and Invoices All posted on time
CO5 Verify RTM Settlement Statements/CO6 Verify RTM Settlement Invoices	Green	ERCOT	N/A	100%	0%	0%	0%	System Generated RT Statement Dollars-Independently Generated RT Calculation Dollars =\$0	8/25-9/8 7029 RTM Statements and 618 Invoices validated \$\$ = system generated (with some rounding differences)
	Green	ERCOT	N/A	100%	0%	0%	0%	System Generated RT Statements/Invoices not posted = 0	8/25-9/8 RTM Statements and Invoices All posted on time
CO1 Settle Market for 7 days and provide appropriate extracts	Green	ERCOT	N/A	N/A	N/A	N/A	N/A	Process settlements for both Zonal and Nodal markets to test for the period where Zonal and Nodal market settlement will overlap.	Day-Ahead Market was run consecutively from 8/10/2010 through 8/21/2010. DAM statements.
CO4 Zonal/Nodal Coordinated Settlement Operations	Green	ERCOT	N/A	N/A	N/A	N/A	N/A	Settle the DAM and the RTM for 7 consecutive days and determine acceptance by QSEs and CRR Account Holders.	1st Zonal/Nodal Coordinated Settlement test performed in I-Test from End of June to End of July. 2nd Zonal/Nodal Coordinated Settlement test began on 8/9/2010 and completed.

# CMM – Credit Management and Monitoring Go-Live

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
ERCOT Metrics									
CO10 Verify CMM Credit Calculations	Green	ERCOT	N/A	N/A	N/A	N/A	N/A	ERCOT performs and validates credit calculations for a statistical sample of Market Participants.	ERCOT has posted credit and have calculated credit limits throughout Market Trials. Validation testing completed on 8/27 and all patches to address the defects identified are scheduled to be applied by Sept 8th.

## Other Readiness Metrics

Metric Name	Current Score	Applies to	Weight	Green %	Yellow %	Red %	Not Scored %	Primary Criteria	Notes
<b>ERCOT Metrics</b>									
E1 ERCOT Staff Completes Training	Green	ERCOT	N/A	93%	7%	N/A	N/A	Training plans must be adhered to for highly impacted departments	14 out of 15 highly impacted departments are up to date with their training plans.
E9 Develop Nodal Procedures	Green	ERCOT	N/A	100%	N/A	N/A	N/A	Procedures developed 1 month prior and exercised in the appropriate Market Trials Phase	All MT6 procedures exercised as scheduled in MT6.
E6 Develop Nodal Operating Guides	Green	ERCOT	N/A	100%	N/A	N/A	N/A	Readiness will be met when the Operating Guides have been posted to the MIS and approved by ROS and TAC.	Operating guides reviewed and approved by stakeholder groups including TAC. OWG/Task Force reviewed Protocols and Operating Guides to ensure no conflicts exist.