

# **Nodal Program Update**

**Mike Cleary** 

#### **Chief Operating Officer**

**ERCOT Board of Directors** 

15 June 2010

#### Agenda

- Program Status
- Market Readiness
- Financials
- Appendix

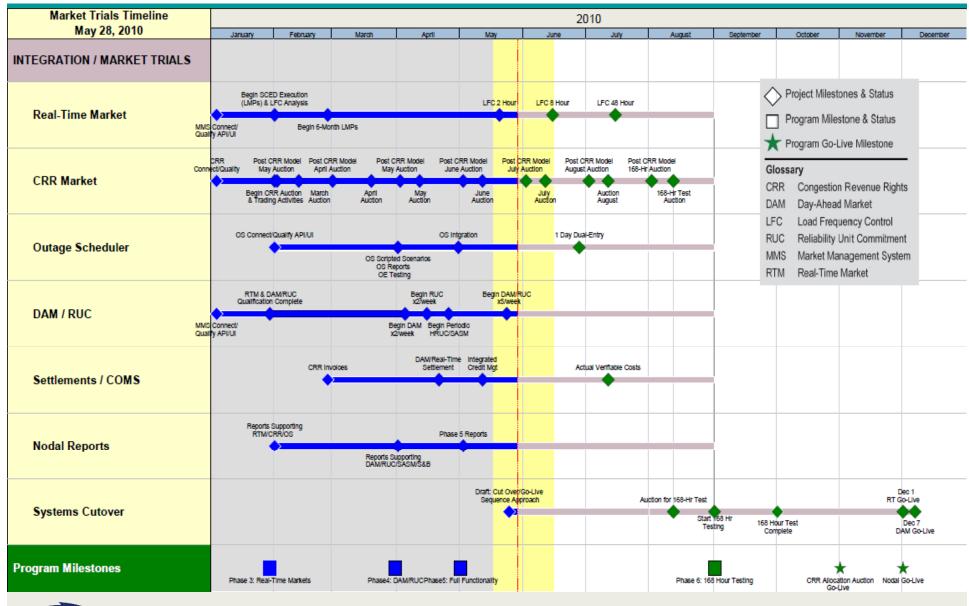


### Integrated Nodal Timeline – Go-Live December 1<sup>st</sup>, 2010

| Nodal Program Timeline                                       |       |                       |                   | 2009            |                         |                    |                  | 2010                    |                 |                           |                           |                      |               |                     |   |                   |                           |   |           |
|--|-------|-----------------------|-------------------|-----------------|-------------------------|--------------------|------------------|-------------------------|-----------------|---------------------------|---------------------------|----------------------|---------------|---------------------|---|-------------------|---------------------------|---|-----------|
| May 28, 2010   | May J | Jun Jul               | Aug               | Sep             | Oct                     | Nov                | Dec              | Jan                     | Feb             | Mar                       | Apr                       | Мау                  | Jun           | Jul                 | Aug   | Sep               | Oct                       | Nov   | De        |
| Systems  |       |                       |                   |                 |                         |                    |                  |                         |                 |                           |                           |                      |               |                     |   |                   |                           |   |           |
| Applications<br>MMS Functional Acceptance Testing            |       |                       | MMSS FAT Co       | mplete          |                         |                    |                  |                         |                 |                           |                           |                      |               |                     |   |                   |                           |   | -         |
|  |       |                       | CMM 4.1 FAT C     | iompiete        |                         |                    |                  |                         |                 | MM 42 FAT Con             | rpi <b>ete</b>            |                      |               |                     |   |                   |                           |   |           |
| CMM Functional Acceptance Testing                            |       |                       | -                 |                 |                         |                    |                  |                         |                 |                           |                           |                      |               |                     |   |                   |                           |   |           |
| Independent Market Monitor                                   |       |                       |                   |                 |                         |                    |                  |                         |                 |                           |                           |                      |               |                     |   |                   |                           |   |           |
| Break Fix  |       |                       |                   |                 |                         |                    |                  |                         |                 |                           |                           |                      |               |                     |   | l                 |                           |   |           |
| SEM  | -     | AT SAT                | EDS               |                 |                         |                    |                  |                         |                 |                           |                           |                      |               | v                   | Mestone & Status  |                   | Complete<br>On track      |   |           |
| System & External Verification Testing                       |       | • <u> </u>            | -                 |                 |                         |                    |                  |                         |                 |                           |                           |                      |               |                     | e Interim External Mile<br>e Co-Live Milestone                          |                   |                           | but will not affect mi                                  |           |
| SEM Go-Live  | SEA   | M Modeling Cuidelines | Posted CiM Mod    | SEM Go-Live     |                         |                    |                  |                         |                 |                           |                           |                      |               |                     |   | GLOSSAR           | Y                         | will effect milestone                                   |           |
| ntegration (INT) & Market Trials (MT) Phases                 |       | T.                    | AC/BOD Approval o | F SEM GO-LIVe   |                         |                    |                  |                         |                 |                           |                           |                      |               | CMM City<br>CRR Cat | nman Information Mod<br>dit Monitaring Manager<br>spestian Revenue Figh | ment              | MRS Market<br>NPROD Nedat | t Management Syst<br>t Readiness Series<br>Production   |           |
| INT 2.1 Testing  |       |                       |                   | Ph              | ase 2.1 Kickoff         | Phase 2.1 INT      | Testing Complete |                         |                 |                           |                           |                      |               | FAT Fun             | -Aread Market<br>Is Delivery System<br>ctional Acceptance Te            | sting             | RUC Relation              | Time Market<br>ility Unit Commitme<br>cooptance Testing | нt        |
| Market Trials 2.1 External Testing                           |       |                       |                   | _               | <b>^</b>                |                    |                  | Phase 3 INT Test        | MT Phase 2.1    | 1 Complete                |                           |                      |               |                     | d Frequency Centrol<br>8080   | Security Constrai |                           | -Entry Vodel<br>atch                                    |           |
| INT 3 Testing  |       |                       |                   |                 |                         |                    |                  | Run D                   |                 |                           |                           |                      |               |                     |   |                   |                           |   |           |
| Market Trials 3 External Testing                             |       |                       |                   |                 |                         |                    | Phase            | 3 Kickoff               |                 |                           | MT Phase 3 Co             | mplete               |               |                     |   |                   |                           |   |           |
| INT 4 Testing  |       |                       |                   |                 |                         | _                  |                  |                         |                 |                           | as 4 INT Testing C<br>DAM | Complete             |               |                     |   |                   |                           |   |           |
| Market Trials 4 External Testing                             |       |                       |                   |                 |                         |                    |                  |                         | Phase 4         | Kickoff 🔷                 | Zheek S&B                 | MT Phase 4           | Complete      |                     |   |                   |                           |   |           |
| INT 5 Testing  |       |                       |                   |                 |                         |                    |                  |                         |                 | _                         | Ph                        | ase 5 INT Tes        | ting Complete |                     |   |                   |                           |   |           |
| Market Trials 5 External Testing                             |       |                       |                   |                 |                         |                    |                  |                         |                 | Phas                      | 5 Kickoff 🔷               | UTC-2hr              | UFC-BW        | LFC-48hr            |   | MT Phase 5        | Complete                  |   |           |
| INT 6 Tesing   |       |                       |                   |                 |                         |                    |                  |                         |                 | _                         | Run Full No               | dal Systema          |               |                     | + Phase   | 6 INT Teeting (   | Complete                  |   |           |
| Market Trials 6 External Testing                             |       |                       |                   |                 |                         |                    |                  |                         |                 |                           |                           |                      |               |                     | 55art 1850  |                   | •                         |   | Corre     |
| Readiness  |       |                       |                   |                 |                         |                    |                  |                         |                 |                           |                           |                      |               |                     |   | 168hr Te          | e Complete                |   | -         |
| Market Readiness   |       |                       | Training          |                 |                         |                    |                  |                         |                 |                           |                           |                      |               |                     |   |                   | Stand By S                |   |           |
| External Outreach  |       | Comp                  | •                 |                 | nduct Site Visits       |                    |                  |                         |                 |                           |                           |                      |               |                     |   |                   |                           | •   |           |
| Market Training  |       |                       |                   | MRS             | 1:2.1 Connectivit       | ty Test            | _                | MRS 2: Mark             | et Trials MR    | tS 3: General Mar         | tet Readiness             |                      |               | M                   | R5 4: 168 Hour Tea  | đ                 | Market Train              | ing Complete  |           |
| Metrics Tracking & Assessment                                |       | Hos                   |                   |                 |                         |                    |                  | Metrics Ma              | cped to MT P    |                           |                           |                      |               |                     |   |                   |                           | Conduct Me  |           |
| ERCOT Readiness  |       |                       |                   |                 |                         |                    |                  |                         | MT4 Pro         | cedures MTS P             | tocedures                 | MT 5 Proces          |               | NERC:               |   | OT Personnel      |                           | ERT Post-G  |           |
| Internal Processes, Procedures & Training                    |       |                       |                   |                 |                         |                    | MT3 PH           | P Complete              | c               | Complete Com              | c C                       | Diagrama Co          | nçiete        | As of State         |   |                   |                           | Transition P  | ans.      |
| Operational Readiness  |       |                       |                   |                 |                         |                    |                  |                         |                 |                           | a Complete                |                      |               |                     | Com   | plete             |                           |   |           |
| System Cut-Over  |       |                       |                   |                 |                         |                    |                  | _                       |                 | -                         | Draft1: Out               | Constantine Constant | Sequence Appr | 1                   | Wer/Go-Live Seque   |                   |                           |   |           |
| Environment Configuration & Management                       |       |                       |                   |                 | Phase<br>NPROD          | 3-8<br>Build       |                  | System Ava<br>Monitorir | liability<br>19 | Spring DST<br>Healthcheck | SLA Conforman             | ce Monitoring        |               | MOTE                | Environment   | nce Approach      |                           |   |           |
| Environment Computation & Management                         |       |                       |                   | Phase 2         | 2.1 Run Books Fa<br>Hea | ll DST<br>Ithcheck | Ptas             | 3,4 & 5<br>Books        |                 |                           | ices Monitoring           |                      |               | Open to Mar         | ket Participante  |                   |                           |   |           |
| Load & Performance; Failover & Fallback;<br>Security Testing |       |                       | Phase             | 2.1 Performance | Verfication<br>Phase 2  | ( Initial          | р                | tase 3 Performance      | - Verfication   | FallownSec                | 6 Darbornanna V           | (artification &      |               |                     | Periodical Perform<br>Fallover/Securit                                  | ty Testing        |                           |   |           |
| Program Milestones   |       |                       | 7                 |                 | Security                | - esta             |                  | Failover/Security       |                 |                           | Failover/Security         |                      |               |                     |   | 5+9               |                           | * `   | t Go-Live |
| Planning Nodal Enhancements                                  |       |                       | SEM C             | io-Live         | Phase 2.1 Mark          | et Connectivity    |                  | Phase 3: Real-T         | me Marketa      | Phase 4:                  | DAWRUC Phan<br>Full Fun   | e 5:<br>actionality  |               | Planning New        | Phase 6: 162  | Hour Testing      | CRR Allo                  | ation Auction   |           |



#### 2010 Market Trials Timeline – Go-Live December 1<sup>st</sup>, 2010





**ERCOT Board of Directors** 

# **168** Days to Go-Live

## Market Trials has been running for 18 weeks Market Quality Testing and Operational Readiness

#### **Achievements within Market Trials:**

- CRR
  - Four monthly CRR auctions and one Balance of the Year auction have been completed and invoiced
  - July Auction in progress until July 17<sup>th</sup>
- Real Time Markets
  - SCED
  - Real Time settlements
- DAM / RUC
  - DRUC has been running in conjunction with DAM for 6 weeks
  - DAM Settlements are being executed
  - Settlement and extract data has been available since Mid-May
  - Continual strong participation from the Market Participants (Averaged 185 QSEs / DAM run)
  - DAM / RUC 5 times per wk
- Ancillary Services
  - SASM
    - Will run as needed with Ancillary Services
- Closed Loop LFC
  - 2 hour test occurred last month
- Credit
  - Credit Module went into effect on May 14<sup>th</sup>



15 June 2010

# **168** Days to Go-Live

### Market Trials has been running for 18 weeks Market Quality Testing and Operational Readiness

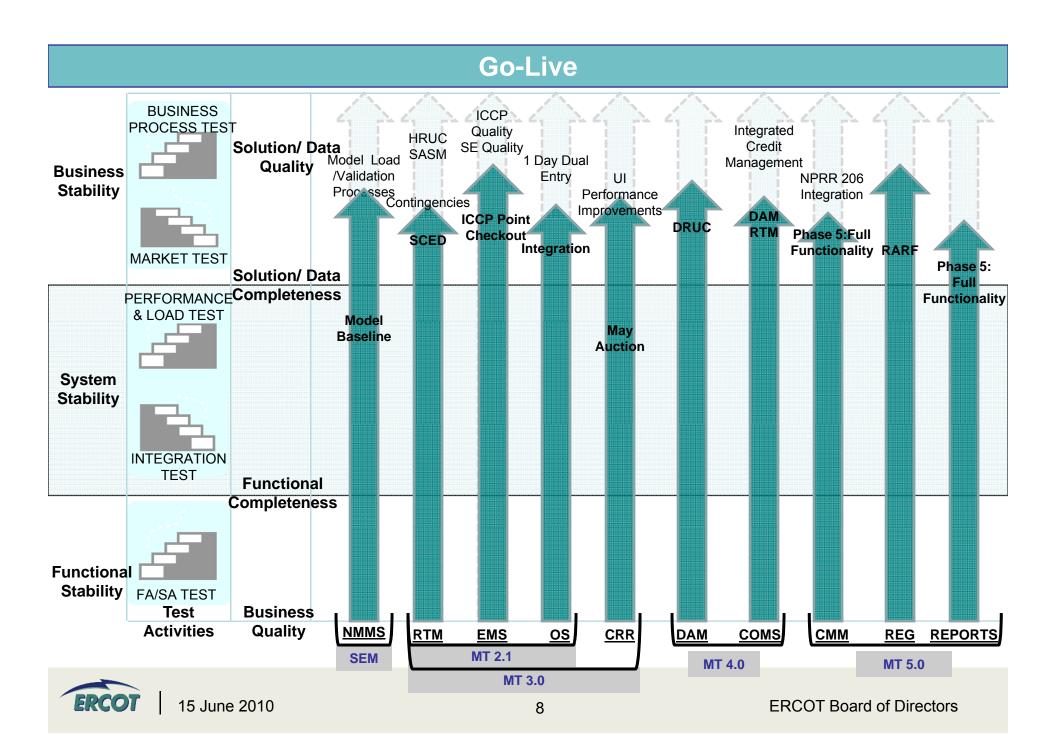
#### **Upcoming Milestones for Market Trials:**

- Closed Loop LFC
  - 8 hour will occur in this week
    - A market notice with go out two days before the selected day
- DAM/RUC/SASM Scenarios
  - Operational scenarios on will run on Tuesdays and Thursdays in June
- CMM Module for NPRR 206
  - Patch to be installed in late June
- 168 HR Test
  - ERCOT will publish the 168-Hour Test Handbook by June 30, 2010
  - ERCOT will review the handbook at a high level at the first NATF in July
  - The 168-Hour Test Workshop will take place in tandem with Market Readiness Seminar #5 on July 28, 2010
- System Cut-Over
- Go-Live



To be provided before Board meeting





# Nodal Program Risks & Issues

| Risk/Issue   | Impacted<br>Milestone | Target             | Category                       | Probability | Severity | Status  |
|--|-----------------------|--------------------|--------------------------------|-------------|----------|---|
| Market Interaction Operating<br>Level Agreements (OLAs)<br>Need to determine operating<br>level agreements associated<br>with market interactions to<br>assist ERCOT in establishing<br>operational thresholds:<br>-Network Model Management<br>-Reporting | Program               | April/<br>May 2010 | Scope /<br>Budget              | High        | Low      | <ul> <li>Phase 4 OLA definitions complete</li> <li>Phase 5 OLA definitions drafted, pending approval</li> <li>Update given at NATF on 06/01; Transition plans discussed at both TAC and NWSG</li> <li>Reports continue to become available as Market Trials activities ramp-up. Performance monitoring continues</li> </ul> |
| Market Design Assessment<br>Risk around the protocol<br>traceability project and the<br>market results as each phase<br>of market trials becomes<br>active.  | Program               | August<br>2010     | Scope /<br>Budget              | Low         | High     | <ul> <li>Building experienced market design<br/>team to review and assess design and<br/>protocol alignment with market trials<br/>results</li> </ul>   |
| <b>Operational Readiness</b><br>Operational readiness of the<br>Nodal systems and business<br>processes are an increasing<br>risk at this point in the<br>program  | Program               | September<br>2010  | Scope /<br>Schedule/<br>Budget | Med         | High     | <ul> <li>Organizational capability assessments<br/>and improvement recommendations<br/>are under review by executive<br/>management</li> <li>The PMO has and will continue to<br/>identify critical deficiencies and<br/>implement mitigation strategies to<br/>ensure delivery</li> </ul>                                  |



## **Participant Readiness Touch Points**

|                  |  | 20   | 10  |   |
|------------------|--|--|---|---|
|                  | June   | July   | August  | September   |
| Meetings         | • NATF 6/1 and 6/29  | • TBD  | • NATF 8/3 and 8/31   | • TBD   |
| Training         | <ul> <li>Nodal 101</li> <li>LSE 201</li> <li>Generation 101, 201</li> <li>Economics of LMP</li> <li>CC Workshop</li> <li>Retail Workshop (6/17)</li> <li>VC Workshop (6/22)</li> <li>AS Workshop (6/30)</li> </ul> | <ul> <li>Nodal 101</li> <li>Transmission 101</li> <li>Generation 101, 201</li> <li>Basic Training<br/>Program</li> <li>NOIE QSE Operations</li> <li>Settlements 301</li> </ul> | Nodal 101<br>Transmission 101<br>Generation 101, 201<br>Basic Training<br>Program<br>NOIE QSE Operations<br>Settlements 301 | <ul> <li>Nodal 101</li> <li>Transmission 101</li> <li>Generation 101, 201</li> <li>NOIE QSE Operations</li> <li>Settlements 301</li> <li>MMS &amp; MIS GUI<br/>(Online only)</li> </ul> |
| Outreach         | <ul> <li>TSP OS Road Show</li> <li>Settlement Metrics</li> <li>Telemetry Quality<br/>Metrics</li> </ul>  | <ul> <li>MRS #5 (7/28)</li> <li>Dispute &amp; Reports<br/>Metrics</li> <li>Standby site visits</li> </ul>  | <ul> <li>Standby site visits</li> </ul>   | <ul> <li>Standby site visits</li> </ul>   |
| Market<br>trials | <ul> <li>Weekly Trials calls</li> <li>8 hr system-wide LFC test</li> </ul>   | <ul> <li>Weekly Trials calls</li> <li>48 hr system-wide<br/>LFC test</li> <li>Verifiable costs in<br/>execution</li> <li>NPRR206 in<br/>execution</li> </ul>                   | <ul> <li>Weekly Trials calls</li> <li>Prepare for 168 hr<br/>test</li> </ul>  | <ul> <li>Weekly Trials calls</li> <li>Execute 168 hr test</li> </ul>  |

ERCC

# Next 60-days of Classes/Workshops

| Course                   | Start Date | Location                                |
|--------------------------|------------|---|
| ERCOT Nodal 101          | June 15    | Suez Energy (Houston)                   |
| Generation 201           | June 17    | LCRA (Austin)                           |
| Credit Workshop          | June 17    | ERCOT Met Center (Austin)               |
| Retail Workshop          | June 17    | Stream Energy (Dallas)                  |
| Basic Training Program   | June 21    | ERCOT Met Center (Austin)               |
| Verifiable Cost Workshop | June 22    | Suez Energy (Houston)                   |
| Load Serving Entity 201  | June 23    | Austin Energy Town Lake Center (Austin) |
| NOIE QSE Operations      | June 23    | Sam Rayburn Plant (Victoria)            |

Enrollment at: <a href="http://nodal.ercot.com/training/courses/index.html">http://nodal.ercot.com/training/courses/index.html</a>



#### Next 60-days of Classes/Workshops - continued

| Course                        | Start Date | Location                     |
|-------------------------------|------------|------------------------------|
| Credit Workshop               | June 24    | ERCOT Met Center (Austin)    |
| ERCOT 101 for Wind Generation | June 28    | ERCOT Met Center (Austin)    |
| Transmission 101              | June 29    | Energy Plaza (Dallas)        |
| Ancillary Services Workshop   | June 30    | ERCOT Met Center (Austin)    |
| Market Settlements 301        | July 6     | ERCOT Met Center (Austin)    |
| Transmission 101              | July 13    | CenterPoint Energy (Houston) |
| Load Serving Entity 201       | July 20    | Optim Energy (Dallas)        |
| Congestion Revenue Rights     | July 21    | Optim Energy (Dallas)        |
| Generation 101                | July 27    | Calpine (Houston)            |
| Market Readiness Seminar #5   | July 28    | ERCOT Met Center (Austin)    |

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



| ACTIVE NODAL ME | ACTIVE NODAL METRICS                          |          |       |       |       |       |        |       |  |  |  |  |
|-----------------|---|----------|-------|-------|-------|-------|--------|-------|--|--|--|--|
| Metric #        | Metrics Name                                  | Category | ERCOT | QSERs | QSEs  | TSPs  | CRRAHs | REs   |  |  |  |  |
| MO4             | Verify SCED Execution Quality                 | RT       | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| M05             | Generate LMPs for 6 months                    | RT       | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| CRR3 (ERCOT)    | Operation of CRR Auctions and Allocations     | CRR      | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| M09             | Generate Day-Ahead LMPs                       | DAM      | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| MO10            | DRUC Execution                                | DAM      | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| CO8             | Verify CRR Auction Invoices                   | COMS     | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| EMO9(B)         | RTCA Modeling Differences                     | NM       | Red   | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| EMO19           | Anomalous/Auto-Disabled Telemeted Points      | NM       | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| E1              | ERCOT Internal Training                       | READ     | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| E9              | Develop Nodal Procedures                      | READ     | Green | N/A   | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| MP3             | Market Submissions Connectivity Qualification | CONN     | Green | Green | Green | N/A   | N/A    | N/A   |  |  |  |  |
| MP15B           | CRR Connectivity Qualification                | CONN     | Red   | N/A   | N/A   | N/A   | Red    | N/A   |  |  |  |  |
| MP20            | Outage Scheduler Connectivity Qualification   | CONN     | Green | Green | N/A   | Green | N/A    | N/A   |  |  |  |  |
| EMO6            | Individual LFC Testing                        | RT       | N/A   | Green | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| MP15A           | Real-Time Market Daily Participation          | RT       | N/A   | Green | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| EMO6            | Individual LFC Testing                        | RT       | N/A   | Green | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| CRR3            | Operation of CRR Auctions and Allocations     | CRR      | N/A   | N/A   | N/A   | N/A   | Green  | N/A   |  |  |  |  |
| MP16            | DAM Participation                             | DAM      | N/A   | Green | Amber | N/A   | N/A    | N/A   |  |  |  |  |
| MP20            | Outage Scheduler Connectivity Qualification   | OS       | N/A   | Green | N/A   | Green | N/A    | N/A   |  |  |  |  |
| N2              | Telemetry/ICCP System Failover                | NM       | N/A   | Green | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| MP6(SE)         | Telemetry Compliance 3.10.7.5                 | NM       | N/A   | Green | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| MP6(SCED)       | Telemetry Compliance 3.10.7.5                 | NM       | N/A   | Green | N/A   | N/A   | N/A    | N/A   |  |  |  |  |
| MP6 (TSP)       | Telemetry Compliance 3.10.7.5                 | NM       | N/A   | N/A   | N/A   | Green | N/A    | N/A   |  |  |  |  |
| MP14B           | Participation in NOMCR Trials                 | NM       | N/A   | N/A   | N/A   | Green | N/A    | N/A   |  |  |  |  |
| MP14C           | Network Model Validation                      | NM       | N/A   | N/A   | N/A   | Green | N/A    | N/A   |  |  |  |  |
| MP11            | Resource Registration                         | RES      | N/A   | N/A   | N/A   | N/A   | N/A    | Green |  |  |  |  |



#### **Market Participant Metrics**

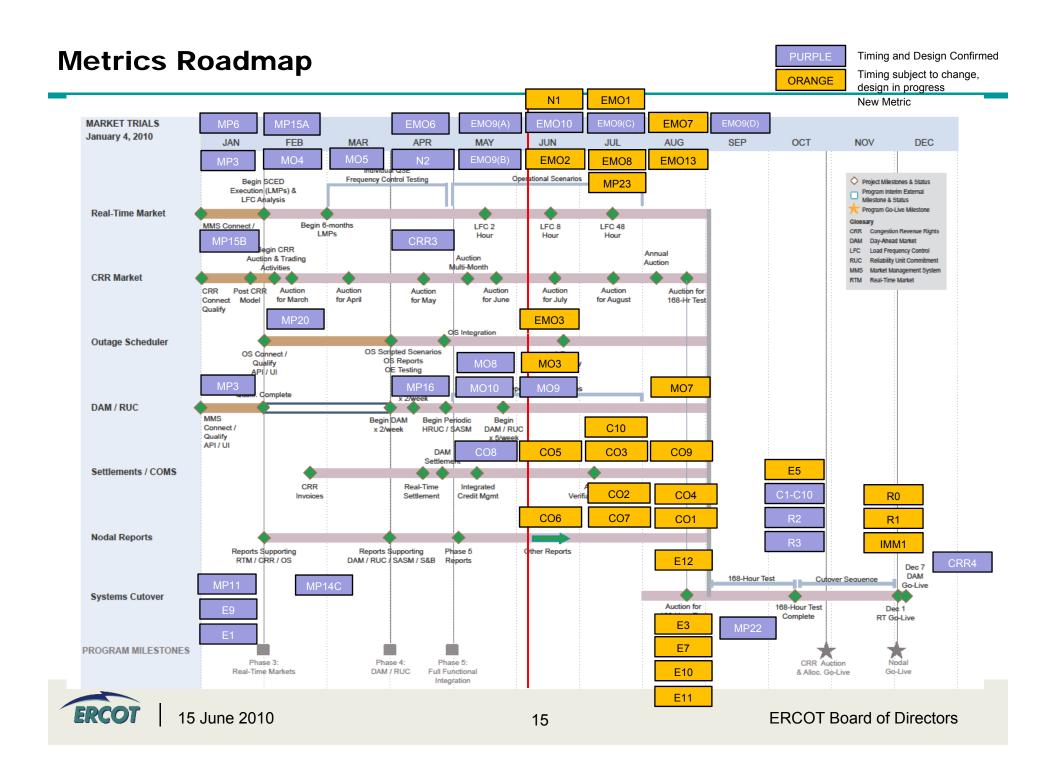
| Metric Name                                    | Current<br>Score | Applies<br>to | Weight            | Green % | Yellow % | Red % | Not<br>Scored % | Primary Criteria  | Notes  |
|--|------------------|---------------|-------------------|---------|----------|-------|-----------------|---|--|
| Market Participant Met                         | trics            |               |                   |         |          |       |                 |   |  |
| MP15(B) CRR<br>Connectivity<br>Qualification * | Red              | CRRAHs        | Even<br>weighting | 94.2%   | 0.0%     | 0.0%  | 5.8%            | Successful submission<br>CRR transactions               | 65/69 CRRAHs<br>qualified. Greater than<br>5% RED. |
| MP16 DAM<br>Participation                      | Amber            | QSEs          | Even<br>Weighting | 74.2%   | 10.4%    | 13.2% |                 | Participation in 50% of<br>the Day-Ahead Market<br>runs |  |

#### **ERCOT Metrics**

| Metric Name                          | Current<br>Score | Applies<br>to | Weight | Green % | Yellow % | Red % | Not<br>Scored % | Primary Criteria   | Notes  |
|--------------------------------------|------------------|---------------|--------|---------|----------|-------|-----------------|--|--|
| ERCOT Metrics                        |                  |               |        |         |          |       |                 |  |  |
| EMO9(B) RTCA<br>Modeling Differences | Red              | ERCOT         | N/A    | 56.3%   | N/A      | N/A   | N/A             | 95% of load tap setting<br>values matched<br>between Zonal/Nodal | 56% Match for<br>transformer tap settings.<br>1464 transformers in<br>Nodal. |

\* ERCOT is also scored on the connectivity metrics, so MP15-B is RED on the ERCOT scorecard as well.





#### **CRR** Metrics

| Metric Name  | Current<br>Score | Applies<br>to | Weight            | Green % | Yellow % | Red % | Not<br>Scored % | Primary Criteria   | Notes  |
|--|------------------|---------------|-------------------|---------|----------|-------|-----------------|--|--|
| Market Participant Met                               | rics             |               |                   |         |          |       |                 |  |  |
| MP15(B) CRR<br>Connectivity<br>Qualification         | Red              | CRRAHs        | Even<br>weighting | 94.2%   | 0.0%     | 0.0%  | 5.8%            | Successful submission<br>CRR transactions  | qualified. Greater than 5% RED.  |
| CRR3 Operation of<br>CRR Auctions and<br>Allocations | Green            | CRRAHs        | Even<br>weighting | 95.4%   | 0%       | 0%    | 4.6%            | Participation in at least<br>one of the last two<br>auctions or allocations.         | 62/65 CRRAHs with<br>adequate participation in<br>BOY or June auction or<br>allocation   |
| ERCOT Metrics  |                  |               |                   |         |          |       |                 |  |  |
| CRR3 Operation of                                    | Green            | ERCOT         | N/A               | N/A     | N/A      | N/A   | N/A             | Auction results<br>distributed to<br>participants per<br>schedule in CRR<br>Handbook | 5/24 2010 June Monthly<br>Auction results posted to<br>market.   |
| CRR Auctions and<br>Allocations                      | TBD              | ERCOT         | N/A               | 100%    | 0%       | 0%    | 0%              | Allocated Revenue<br>Rights in statistical<br>sample = 100%<br>accurate              | Source – Sink prices =<br>CRR Clearing prices for<br>obligations for BOY<br>auction. ERCOT<br>working on similar<br>validation process for<br>options. |
|  | Green            | ERCOT         | N/A               | 100%    | 0%       | 0%    | 0%              | CRR Auction Result for<br>MP(n) – CRR Auction<br>Invoices for MP(n) = 0\$            | S&B validated that<br>auction invoices<br>reflected awards per<br>CRRAH for March, April,<br>and May auctions, .                                       |
| CO8 Verify CRR<br>Auction Invoices                   | Green            | ERCOT         | N/A               | 100%    | 0%       | 0%    | 0%              | System Generated   | March 2010 Monthly =<br>40 of 40<br>April 2010 Monthly = 38<br>of 38<br>May 2010 Monthly = 48<br>of 48   |



#### **Real-Time Metrics**

| Metric Name   | Current<br>Score | Applies<br>to | Weight                    | Green % | Yellow % | Red % | Not<br>Scored % | Primary Criteria   | Notes  |
|---|------------------|---------------|---------------------------|---------|----------|-------|-----------------|--|--|
| Market Participant Met                                | rics             |               |                           |         |          |       |                 |  |  |
| MP3 Market<br>Submissions                             | Green            | QSERs         | Generation<br>Ratio Share | 99.0%   | 1.0%     | 0.0%  | 0.0%            | Successful submission<br>of RT and DAM   | 79/81 QSERS qualified  |
| Connectivity<br>Qualification                         | Green            | QSEs          | Even<br>weighting         | 98.9%   | 1.1%     | 0.0%  | 0.0%            | transactions   | 178/182 QSEs qualified.  |
| EMO6 Individual LFC<br>Testing                        | Green            | QSERs         | Generation<br>Ratio Share | 96.9%   | 0%       | 0%    | 3.1%            | 80% of system-wide<br>generation has<br>completed individual<br>QSE tests for LFC                      | 70/73 QSERs completed<br>their individual LFC test<br>or provided attestation      |
| MP15-A Real-time<br>Market Participation              | Green            | QSERs         | Generation<br>Ratio Share | 98.9%   | 1.1%     | 0.0%  | 0.0%            | Weekly average of<br>daily SCED<br>submissions   | 73/79 QSERs above<br>95% weekly average for<br>SCED submissions.                   |
| ERCOT Metrics   |                  |               |                           |         |          |       |                 |  |  |
| MO3 Verify SASM                                       | 6/2/2010         | ERCOT         | N/A                       | N/A     | N/A      | N/A   | N/A             | Multiple SASMs are<br>successfully executed<br>during Market Trials<br>and the 168 hour test.          | SASMs executed<br>successfully on 4/28,<br>4/30, 5/4, 5/6, 5/7, 5/12,<br>and 5/14. |
| MO4 Verify SCED<br>Execution Quality                  | Green            | ERCOT         | N/A                       | 100%    | 0%       | 0%    | 0%              | All successful SCED<br>executions passed the<br>post-execution price<br>validations.                   | 5/4-5/17 period - 4,055<br>Price Validation runs<br>with no rule violations        |
| MO5 Generate 6<br>Months of LMPs                      | Green            | ERCOT         | N/A                       | 98.1%.  | 0%       | 1.9%  | 0%              | 95% of SCED<br>executions completed<br>with LMPs posted on<br>MIS.                                     | 5/4-5/17 period, 4,076<br>out of 4,058 SCED runs<br>with LMPs posted.              |
| CO5 Verify RTM<br>Settlement<br>Statements/CO6 Verify | 6/2/2010         | ERCOT         | N/A                       | 100%    | 0%       | 0%    | 0%              | System Generated RT<br>Statement Dollars-<br>Independently<br>Generated RT<br>Calculation Dollars =\$0 | Stats available 6/2  |
| RTM Settlement<br>Invoices                            | 6/2/2010         | ERCOT         | N/A                       | 100%    | 0%       | 0%    | 0%              | System Generated RT<br>Statements/Invoices<br>not posted = 0   | Stats available 6/2  |



# **Day-Ahead Market Metrics**

| Metric Name   | Current<br>Score      | Applies<br>to  | Weight                                | Green % | Yellow % | Red % | Not<br>Scored % | Primary Criteria   | Notes   |
|---|-----------------------|----------------|---------------------------------------|---------|----------|-------|-----------------|--|---|
| Market Participant Met                                | rics                  | <u> </u>       |                                       |         |          |       | _               |  |   |
| MP16 DAM  | Green                 | QSERs          | Generation<br>Ratio Share             | 98.7%   | 0.7%     | .5%   | .1%             | Participation in 50% of the Day-Ahead Market   | 77/81 QSEs with<br>Resources  |
| Participation   | Amber                 | QSEs           | Even<br>Weighting                     | 74.2%   | 10.4%    | 13.2% | 2.2%            | runs   | 135/182 QSEs w/o<br>Resources   |
| CO10 Credit<br>Calculations                           | 6/30/2010             | QSERs,<br>QSEs | Gen Ratio<br>Share, Even<br>Weighting | N/A     | N/A      | N/A   | N/A             | <= 25% of MPs credit<br>limits inconsistent with<br>protocols  | To be determined  |
| ERCOT Metrics   |                       |                |                                       |         |          |       |                 |  |   |
| MO8 Verify DAM<br>Execution Quality                   | Report in<br>Progress | ERCOT          | N/A                                   | N/A     | N/A      | N/A   |                 | DAM executions pass<br>the post-execution<br>price validations   | Report in progress  |
| MO9 Generate DAM<br>LMPs                              | Green                 | ERCOT          | N/A                                   | N/A     | N/A      | N/A   | N/A             | 95 percent DAM<br>execution as evidenced<br>by DAM LMP postings  | 5/3-5/17 – 4/4 DAM runs<br>execute(doesn't<br>measure quality)              |
| MO10 DRUC<br>Execution                                | Green                 | ERCOT          | N/A                                   | N/A     | N/A      | N/A   | N/A             | 95 percent DRUC execution  | 5/3-5/17 - 4 out of 4<br>DRUC runs executed<br>(doesn't measure<br>quality) |
| CO3 Verify DAM<br>Settlement<br>Statements/CO7 Verify | 6/2/2010              | ERCOT          | N/A                                   | 100%    | 0%       | 0%    | 0%              | System Generated RT<br>Statement Dollars-<br>Independently<br>Generated RT<br>Calculation Dollars =\$0 | Stats available 6/2   |
| DAM Invoices  | 6/2/2010              | ERCOT          | N/A                                   | 100%    | 0%       | 0%    | 0%              | System Generated RT<br>Statements/Invoices<br>not posted = 0   | Stats available 6/2   |
| CO10 Credit<br>Calculations                           | 6/30/2010             | ERCOT          | N/A                                   | N/A     | N/A      | N/A   | N/A             | ERCOT performs credit<br>calcs for a stat. sample<br>of MPs  |   |

1. MP16 – Metric is based on a 2 week rolling average (5/18-20, 5/24-28 – 8 runs).

2. MP16 – 98% Load participating.



## **Network Modeling Metrics**

| Metric Name  | Current<br>Score    | Applies<br>to         | Weight                                   | Green % | Yellow % | Red % | Not<br>Scored % | Primary Criteria   | Notes  |
|--|---------------------|-----------------------|--|---------|----------|-------|-----------------|--|--|
| Market Participant Met   | rics                |                       |  |         |          |       |                 |  |  |
| MP14-C TSP Model<br>Validation                                       | Green               | TSPs                  | Ownership<br>Ratio Share                 | 99.9%   | .1%      | 0.0%  | 0.0%            | Network Model data validated by TSP  | 24/28 TSPs have<br>submitted model<br>validation e-mail to<br>ERCOT.               |
| MP6 Telemetry  | Green               | QSERs                 | Generation<br>Ratio Share                | 100%    | 0.0%     | 0.0%  | 0.0%            | Expected State<br>Estimator telemetry<br>submitted.                              | 78/78 complete. 3502 total SE points provided                                      |
| Compliance with Nodal<br>Protocols 3.10.7.5                          | Green               | QSERs                 | Generation<br>Ratio Share                | 100%    | 0.0%     | 0.0%  | 0.0%            | Expected SCED telemetry submitted.   | 78/78 complete. 7629<br>SCED points provided                                       |
| F1010C0IS 3.10.7.3   | Green               | TSPs                  | Ownership<br>Ratio Share                 | 99.3%   | 0.0%     | 0.0%  | .7%             | Expected TSP<br>telemetry per ICCP<br>Handbook submitted                         | 14/17 TSPs above 98%<br>threshold for GREEN.<br>143 points outstanding             |
| N2 Telemetry ICCP<br>System Failover                                 | Green/White<br>only | QSERs                 | Generation<br>Ratio Share                | 18.3%   | 0%       | 0%    | 81.7%           | ICCP Failover test<br>completed successfully<br>prior to the 8-hour<br>LFC test. | 22/78 QSERs completed<br>ICCP telemetry failover<br>test                           |
| MP18 Mapping of<br>Resources and Loads<br>in Private Use<br>Networks | 6/30/2010           | QSERs                 | Generation<br>Ratio Share                | N/A     | N/A      | N/A   | N/A             | # of QSE(n) PUN<br>Points Provided / # of<br>QSE(n) PUN Points<br>Expected       | 306 points across 7<br>QSEs with Resources.<br>15 points still assigned<br>to TSP. |
| MP21 WGRs ICCP<br>Meteorological<br>Telemetry                        | 6/30/2010           | REs<br>(only<br>WGRs) | Registered<br>MW Capacity<br>Ratio Share | N/A     | N/A      | N/A   | N/A             | WGRs must meet<br>reasonability tests for<br>MET ICCP                            | To be determined   |
| MP23 Telemetry<br>Quality (MP to ICCP                                | 6/30/2010           | TSPs                  | Ownership<br>Ratio Share                 | N/A     | N/A      | N/A   | N/A             | # of TSP(n)<br>Suspect/Bad points<br>provided / # of TSP(n)<br>points total      | 1356 Suspect/Bad points<br>(97.9% good quality).                                   |
| server)  | 6/30/2010           | QSERs                 | Generation<br>Ratio Share                | N/A     | N/A      | N/A   | N/A             | # of QSER(n)<br>Suspect/Bad points<br>provides / # of<br>QSER(n) points total    | 871 Suspect/Bad points<br>(94.9% good quality)                                     |

1. MP6 does not include 405 QSE CB and DSC points from TSP outreach. ERCOT is determining whether these rollback into the QSER MP6 measurement.



#### **Network Model Metrics**

| Metric Name   | Current<br>Score | Applies<br>to | Weight | Green % | Yellow % | Red % | Not<br>Scored % | Primary Criteria  | Notes   |
|---|------------------|---------------|--------|---------|----------|-------|-----------------|---|---|
| ERCOT Metrics   |                  |               |        |         |          |       |                 |   |   |
| EMO9(A) State<br>Estimator Standards<br>Performance                 | 6/2/2010         | ERCOT         | N/A    | N/A     | N/A      | N/A   | N/A             | State Estimator<br>converges 97% during<br>monthly test period                        | May % available<br>6/2/2010   |
|   | Green            | ERCOT         | N/A    | 96.8%   | N/A      | N/A   | N/A             | 95% of impedance<br>values matched<br>between Zonal/Nodal                             | 97.4% match for<br>impedances for lines<br>and transformers. 5266<br>lines in Nodal.  |
| EMO9(B) RTCA<br>Modeling Differences                                | Green            | ERCOT         | N/A    | 96.8%   | N/A      | N/A   | N/A             | 95% of dynamic line<br>ratings matched<br>between Zonal/Nodal                         | 97.5% match for<br>dynamic ratings for lines<br>and transformers. 5266<br>lines in Nodal.   |
|   | Red              | ERCOT         | N/A    | 56.3%   | N/A      | N/A   | N/A             | 95% of load tap setting<br>values matched<br>between Zonal/Nodal                      | 56% Match for<br>transformer tap settings.<br>1464 xfrms in Nodal.  |
| EMO10 Anomalous /<br>Auto-Disabled<br>Telemetered Points            | Green            | ERCOT         | N/A    | N/A     | N/A      | 3.04% | N/A             | The % of Anomalous<br>and Auto-Disabled<br>Measurements < 2% of<br>Total Measurements | April Nodal 2.58%<br>March Nodal 3.17%<br>May Nodal 1.92%%  |
| EMO9(C) RTCA CSC<br>Comparison                                      | 7/14/2010        | ERCOT         | N/A    | N/A     | N/A      | N/A   |                 | CSC Pre-contingency<br>SE Flows within 5%<br>(Hourly snapshot)                        | Measurement<br>establishes baseline<br>flows on Commercial<br>lines to indicate the<br>significance of Psuedo<br>modeling and multi-<br>section lines on the SE<br>flows. |
| EMO9(D) Validate<br>Zonal and Nodal<br>Security Analysis<br>Results | 9/8/2010         | ERCOT         | N/A    | N/A     | N/A      | N/A   | N/A             | 90% of active<br>constraints in Zonal<br>RTCA are also<br>detected in Nodal<br>RTCA   | To be determined  |



#### **Other Readiness Metrics**

| Metric Name  | Current<br>Score | Applies<br>to  | Weight  | Green % | Yellow % | Red % | Not Scored % | Primary Criteria  | Notes  |
|--|------------------|----------------|---|---------|----------|-------|--------------|---|--|
| Market Participant Metrics                               |                  |                |   |         |          |       |              |   |  |
| MP20 Outage<br>Scheduler                                 | Green            | QSERs          | Generation<br>Ratio Share                       | 98.9%   | 0.0%     | 0.0%  | 1.1%         | Successful<br>submission of OS<br>transactions  | 75/81 QSERS qualified.   |
| Connectivity<br>Qualification                            | Green            | TSPs           | Ownership<br>Ratio Share                        | 99.8%   | 0%       | 0%    | .02%         |   | 23/25 TSPs qualified.  |
| MP11 Resource<br>Registration                            | Green            | REs            | Registered<br>MW<br>Capacity<br>Ratio Share     | 99.6%   | 0.0%     | .4%   | 0.0%         | Decision Making<br>Authority form<br>submitted, and<br>GENMAP<br>validated                            | 154/157 Resources completed.   |
| CO2 Verify Dispute<br>Process                            | 7/14/2010        | QSERs,<br>QSEs | Generation<br>Ratio Share,<br>Even<br>Weighting | N/A     | N/A      | N/A   | N/A          | >=1 dispute submit<br>per MP. # of<br>unprocessed<br>disputes by 168 =<br>0                           | To be determined   |
| ERCOT Metrics  |                  |                |   |         |          |       |              |   |  |
| E1 ERCOT Staff<br>Completes Training                     | Green            | ERCOT          | N/A   | 100%    | N/A      | N/A   | N/A          | Training plans<br>must be adhered<br>to for highly<br>impacted<br>departments                         | 15 out of 15 highly<br>impacted departments<br>are up to date with their<br>training plans.  |
| E9 Develop Nodal<br>Procedures                           | Green            | ERCOT          | N/A   | 100%    | N/A      | N/A   | N/A          | Procedures<br>developed 1<br>month prior an<br>exercised in the<br>appropriate Market<br>Trials Phase | All MT4 and MT5 are<br>developed and the MT4<br>procedures exercised<br>as scheduled in MT4. |
| EMO3 Verify Outage<br>Evaluation System<br>Functionality | 6/30/2010        | ERCOT          | N/A   | N/A     | N/A      | N/A   | N/A          | A test of the<br>Outage<br>Management<br>Process is<br>completed                                      | To be determined   |

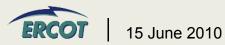




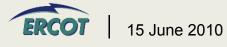
# **Monthly Financial Review**

Don Jefferis Interim Director – Nodal Financial Management Office 15 June 2010

#### Financials to be provided before Board meeting.



# **Questions?**



# Appendix



## Nodal Program Risks & Issues: Definitions

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

#### Category

- <u>Scope</u>: Will require a scope change
- <u>Schedule</u>: Will require a schedule change
- <u>Budget</u>: Will require a budget change

#### Probability

- <u>High</u> : Probability to occur is ≥ 90%; perceived impact would require a Change Request over the next 1-3 months
- <u>Medium</u>: Probability to occur is between 31 89%; perceived impact would require a Change Request over the next 4 -10 months
- <u>Low</u>: Probability to occur is  $\leq$  30 %; not expected to require a Change Request

#### Severity

- <u>High</u>: Milestone impact, or budget impact >\$250,000
- <u>Medium</u>: Milestone impact but expected to be mitigated, or budget impact between \$0 - \$250,000
- <u>Low</u>: 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<br>functionality w/o<br>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<br>functionality with<br>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:<br>Cosmetic/documentation<br>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              |  |  |  |  |

