Texas Nodal Program Update

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Board of Directors Meeting

April 16 2007

Agenda

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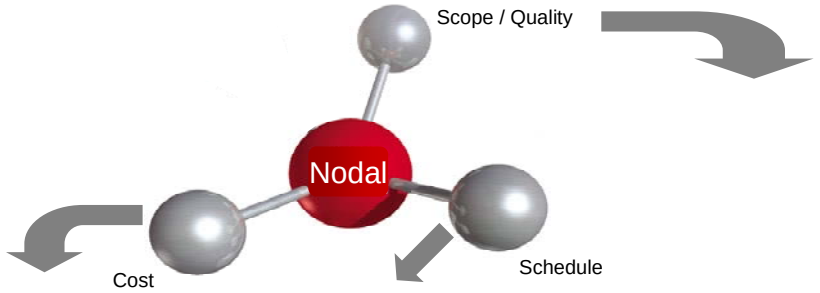
As reported on March 8, program is Amber but is being assessed continually



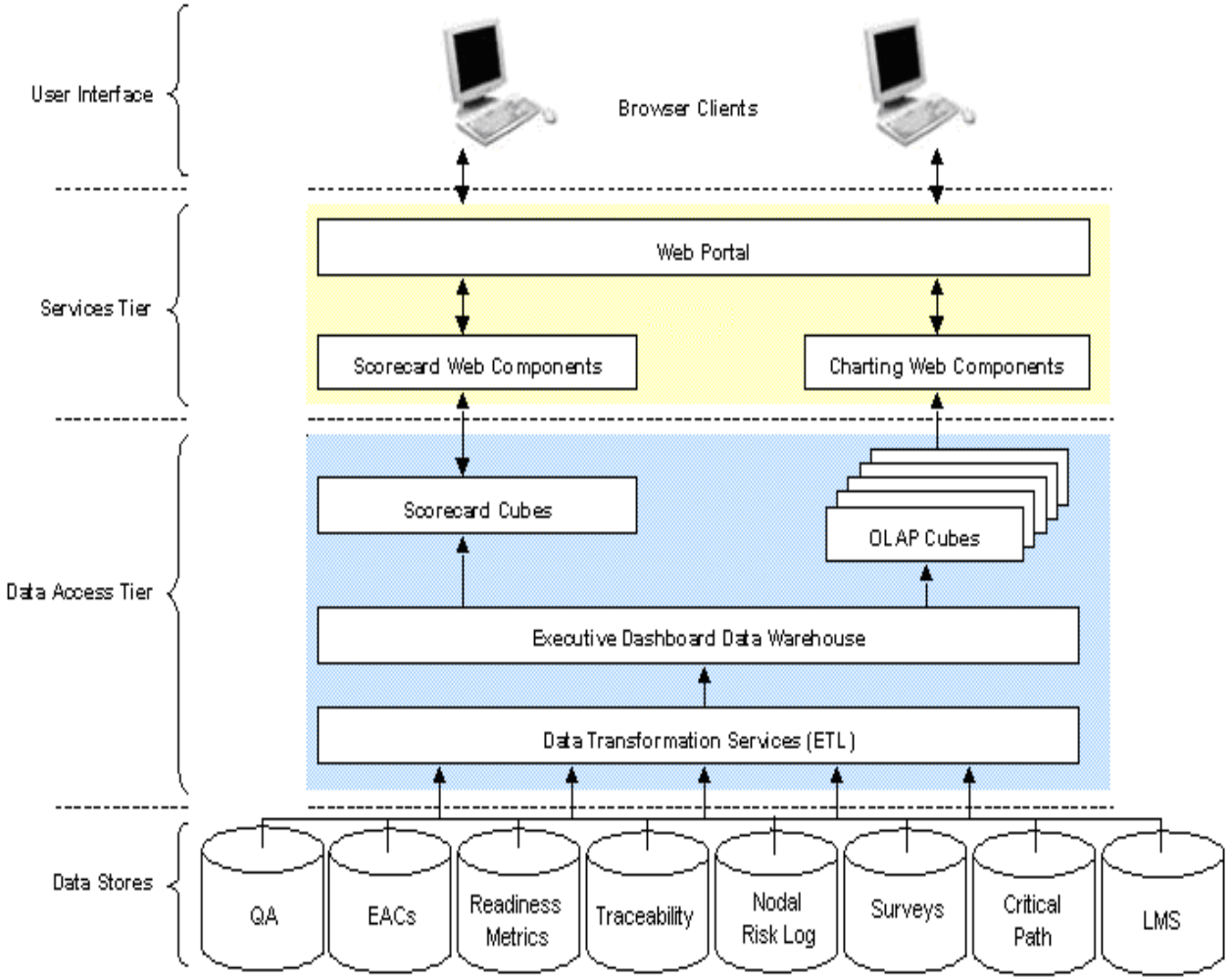
	Cost	Schedule	Scope / Quality
	Amber	Amber	Amber
Summary	Latest monthly committed cost and forecasts are under by 10% of budget to date. Funding for Identity Management and pending Change Requests being defined.	ERCOT / MP web services specifications issued on time. Approach to EDS 2&3 trials completed and submitted to TPTF for approval. Confidence in schedule delivery needs to be improved, working on early releases of EDS 3 trials.	Backlog baseline established & impacts categorized. Projects conducting vendor negotiations to assess cost & schedule impact. QA plans and metrics in definition – baseline target for end of April.
Legend			
Red	Estimate at Complete = >$263m	Go-live = >30 days+	Program is not wholly aligned to protocols
Amber	Estimate at Complete = $248 - $263m	Go-live = <30 days+	Program is aligned to previous version of protocols
Green	Estimate at Complete = <$248m	Go-live = 12/1/08	Program is aligned with current protocols

The PMO has delivered a scorecard to give a one-page view of program progress…

- The one-page dashboard will:
  - Provide detailed measures and greater visibility into Nodal Progress
  - Provide a single source that provides a consolidated picture of progress
  - Deliver a web-based performance management tool based on operational data, which covers the key criteria of Nodal Success

This formula represents the objectives against which Program progress will be measured

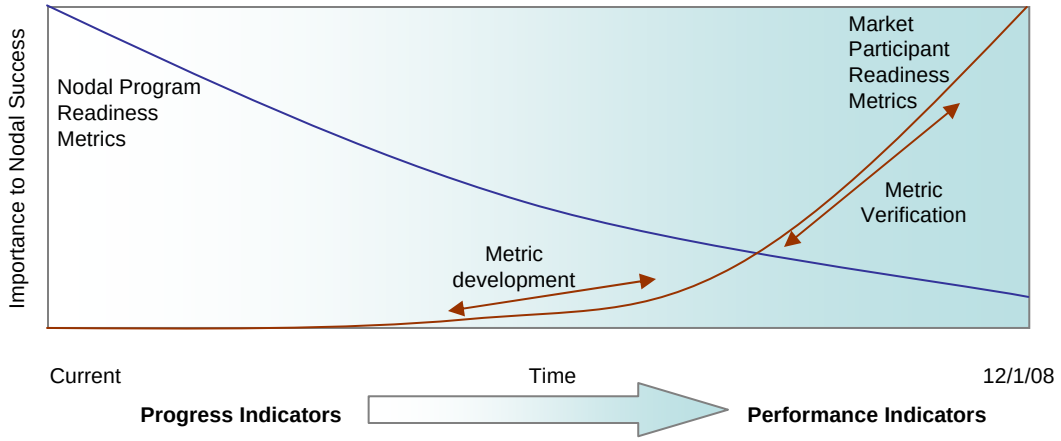
Each measure on the dashboard has been created based on operational data…



The dashboard takes data from existing systems to improve objectivity

The current Dashboard version is displayed below…

Readiness Metrics become important as we approach Go-Live



Metric Development Phase – *Current*

- Facilitate the development of metrics with the TPTF Metric Sub Group and ERCOT Business Managers (metric owners)
- Meet with the TPTF Metric Sub Group (MSG) as necessary to address metric issues
- Baseline readiness metrics with TPTF and TAC

Metric Verification Phase

- Begin collecting metric status
- Incorporate readiness status into program level reports
- Report readiness activities to the TPTF & TAC via nodal program updates
- Report to the main TPTF as necessary to obtain approval for new metrics and changes to existing metrics

Produce Market Readiness Declaration – November 2008

*** New version of presentation**

March / April Major Program Highlights

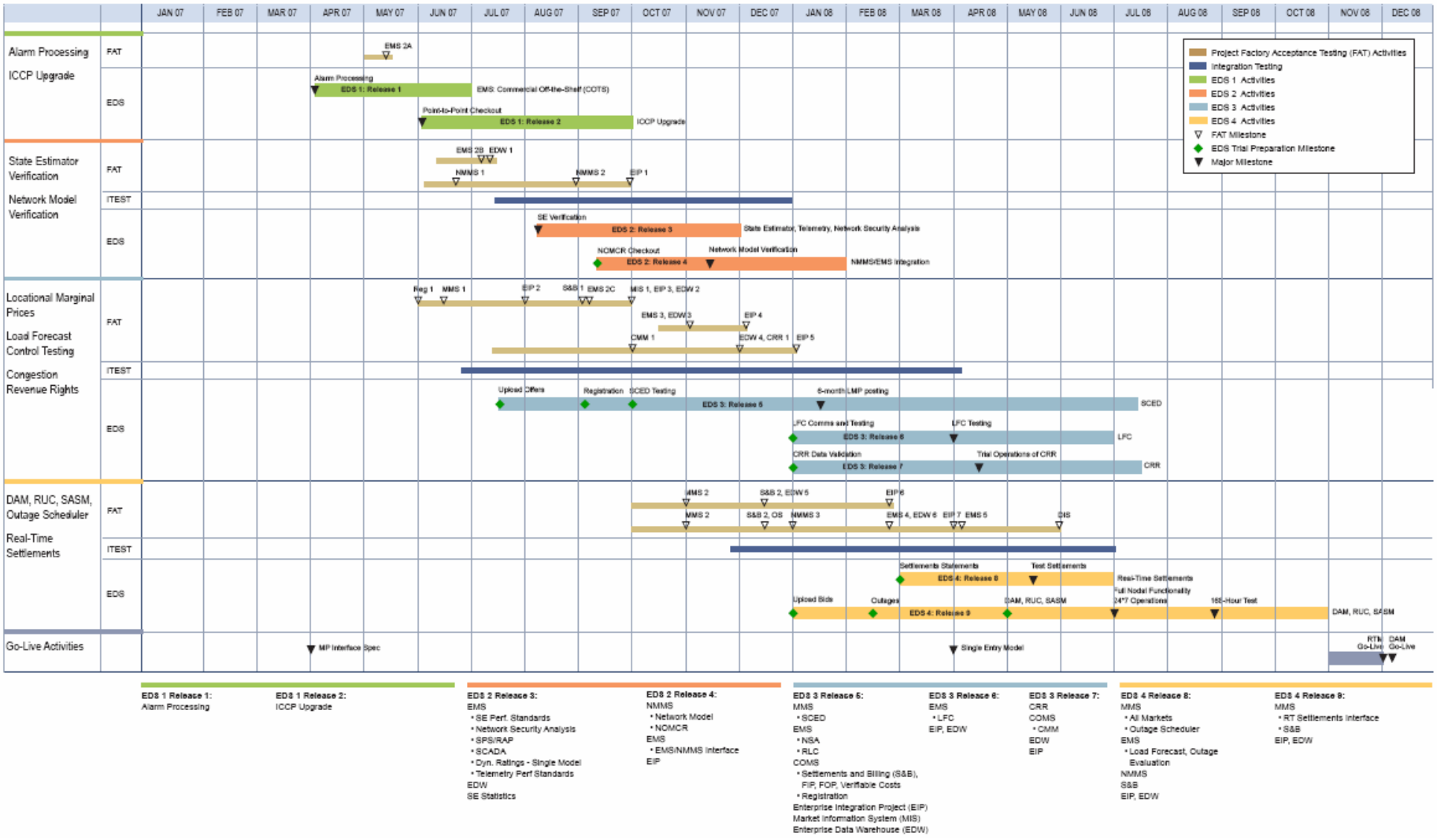
- **EIP: "Bell Ringer" Nodal event: Published Web Service interfaces milestone met on 3/31/2007**
  - MPs data definition for automated (API) communication with ERCOT.
  - Defining point for MPs since this is when they can start building systems to interface with ERCOT
- **EIP: Two way communications messaging and 3-part offer interface exposed to Market Participants on 3/22/2007**
- **MER: Launch 1st web-based training module (ERCOT Nodal 101) 3/23**
- **MER: MIS Prototypes delivered ahead of schedule**
- **Program: Major vendor issues solved:**
  - Nexant (CRR) – SOW and NDA agreements
  - UISOL (EIP) –SOW for integration
  - Areva (EMS) – SOW for data importer and exporter
- **Program: Requirements approved by TPTF**
  - EMS requirements approved 3/1
  - EDW Section 17 requirements submitted 3/22
  - EDW Section 8 requirements to be submitted in May 2007

The short-term milestones are mostly on track

Control Milestone	*Baseline*	*Actual/F'cast*	*Comment*
Requirements approval	10/31/2006	3/31/2007	EDW IMM requirements submitted to TPTF on 3/22. Currently incorporating feedback, vote to take place on 4/23. EDW Compliance requirements to be submitted on 5/7.
EDS 1 Start	5/15/2007	4/01/2007	EDS1 started early as part of a phased approach to testing
Enterprise Integration Build Vendor Selected	3/31/2007	4/09/2007	Vendor interviews being conducted w/c 4/2
Sandbox Release Plan	4/30/2007	4/30/2007	IRT and EIP teams working to identify key features to be exposed to MPs
EMS CSD Submitted to TPTF	4/30/2007	4/30/2007	On schedule
COMS Dispute CSD submitted to TPTF	5/31/2007	5/31/2007	On Schedule

Timeline update (same as brochure / handout)

Early Delivery System Sequence Timeline



EDS 1 Release 1:
Alarm Processing

EDS 1 Release 2:
ICCP Upgrade

EDS 2 Release 3:
EMS
- SE Perf. Standards
- Network Security Analysis
- SPS/RAP
- SCADA
- Dyn. Ratings - Single Model
- Telemetry Perf Standards

EDW
SE Statistics

EDS 2 Release 4:
NMMS
- Network Model
- NOMCR

EMS
- EMS/NMMS Interface

EIP

EDS 3 Release 5:
MMS
- SCED

EMS
- NSA
- RLC

COMS
- Settlements and Billing (S&B), FIP, FOP, Verifiable Costs
- Registration

Enterprise Integration Project (EIP)
Market Information System (MIS)
Enterprise Data Warehouse (EDW)

EDS 3 Release 6:
EMS
- LFC

EIP, EDW

EDS 3 Release 7:
CRR
COMS
- CMM

EDW
EIP

EDS 4 Release 8:
MMS
- All Markets
- Outage Scheduler

EMS
- Load Forecast, Outage Evaluation

NMMS
S&B
EIP, EDW

EDS 4 Release 9:
MMS
- RT Settlements Interface
- S&B

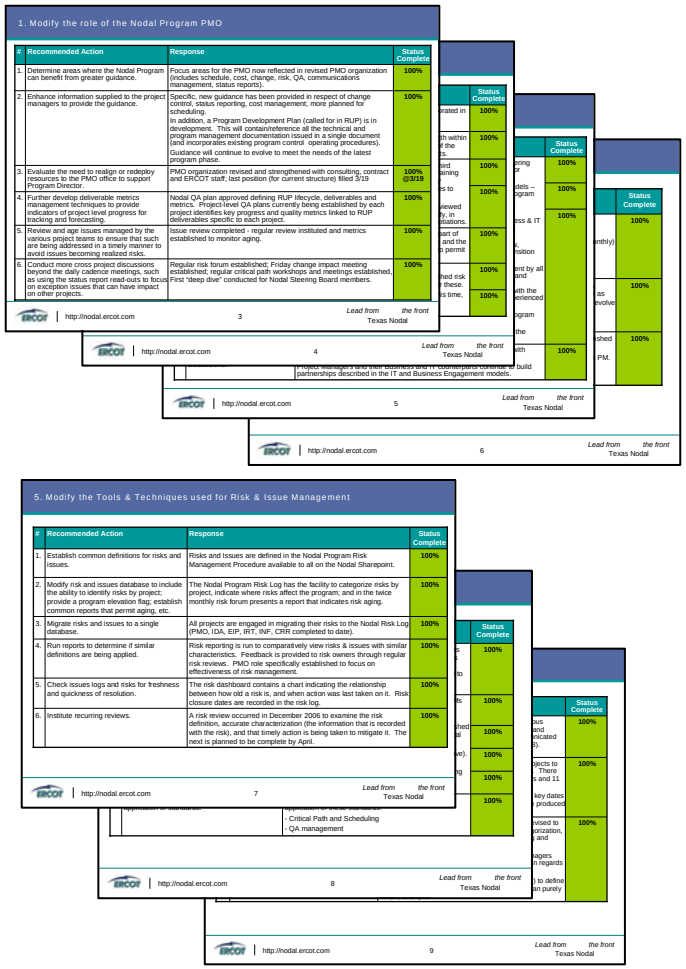
EIP, EDW

The PMO has completed recommended actions by IBM from December 2006…

- All IBM recommended actions from December 2006 completed.
- The high-level recommendations were:
  - Modify the Role of the Nodal PMO
  - Update Program Forecasts and Consider a Higher Cost Contingency
  - Engage Internal Stakeholders in the Nodal Program
  - Increase the Frequency of Integration Discussions
  - Modify the Tools & Techniques Used for Risk & Issue Management
  - Provide Consistent Work Plan Structure with More Tracking Information
  - Complete Change Requests in a Timelier Manner
- Already working on IBM's next report's recommendations.

Note: Higher cost contingency considered but not yet needed.

The slides contain the responses to each recommendation – separate supporting evidence was compiled for the IBM review team



1. Modify the role of the Nodal Program PMO

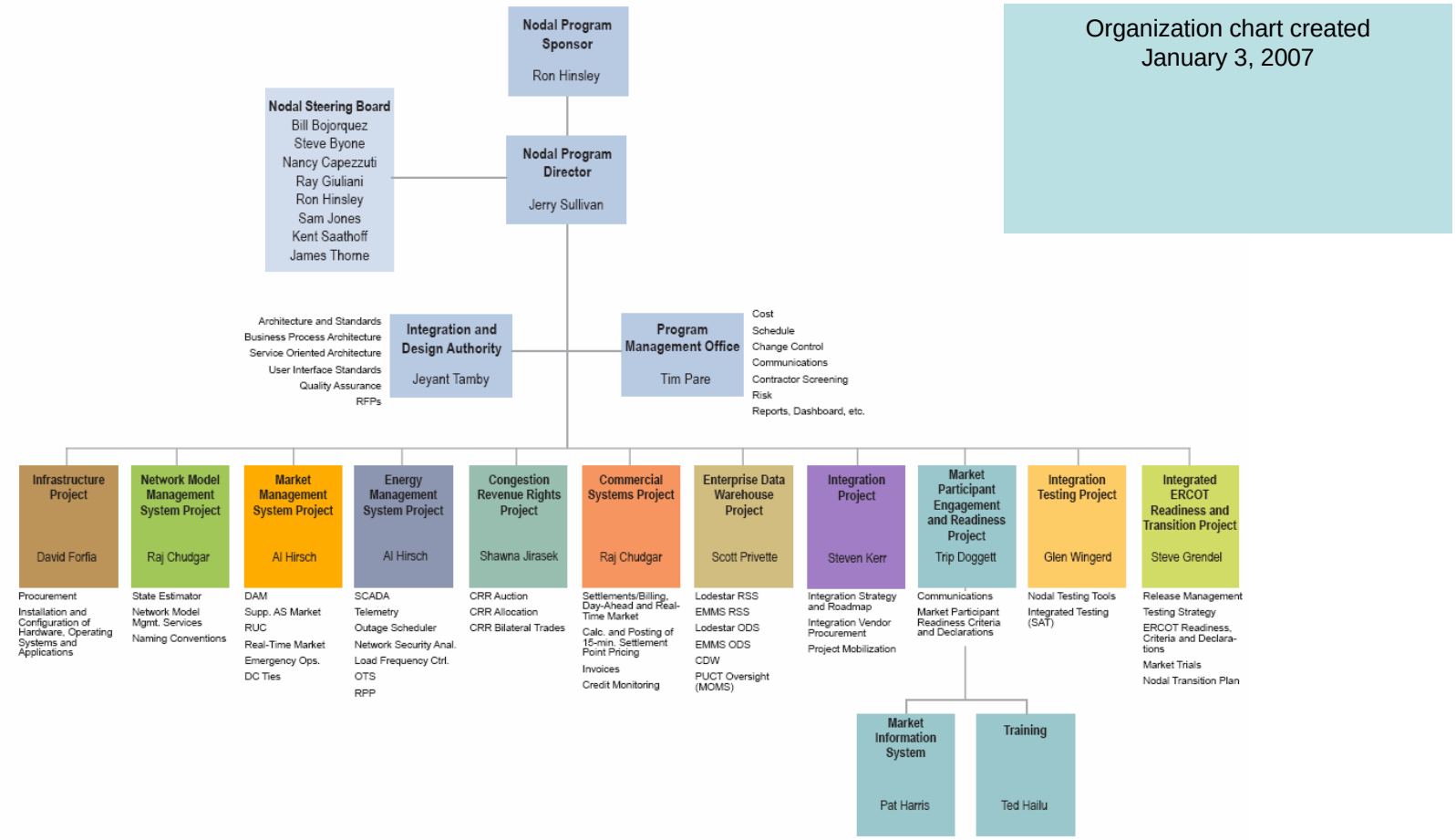
#	Recommended Action	Response	Status Complete
1.	Determine areas where the Nodal Program can benefit from greater guidance.	Focus areas for the PMO now reflected in revised PMO organization (includes schedule, cost, change, risk, QA, communications management, status reports).	100%
2.	Enhance information supplied to the project managers to provide the guidance.	Specific, new guidance has been provided in respect of change control, status reporting, cost management; more planned for scheduling. In addition, a Program Development Plan (called for in RUP) is in development. This will contain/reference all the technical and program management documentation issued in a single document (and incorporates existing program control operating procedures). Guidance will continue to evolve to meet the needs of the latest program phase.	100%
3.	Evaluate the need to realign or redeploy resources to the PMO office to support Program Director.	PMO organization revised and strengthened with consulting, contract and ERCOT staff; last position (for current structure) filled 3/19	100% @3/19
4.	Further develop deliverable metrics management techniques to provide indicators of project level progress for tracking and forecasting.	Nodal QA plan approved defining RUP lifecycle, deliverables and metrics. Project-level QA plans currently being established by each project identifies key progress and quality metrics linked to RUP deliverables specific to each project.	100%
5.	Review and ape issues managed by the various project teams to ensure that such are being addressed in a timely manner to avoid issues becoming realized risks.	Issue review completed - regular review instituted and metrics established to monitor aging.	100%
6.	Conduct more cross project discussions beyond the daily cadence meetings, such as using the status report read-outs to focus on exception issues that can have impact on other projects.	Regular risk forum established; Friday change impact meeting established; regular critical path workshops and meetings established. First "deep dive" conducted for Nodal Steering Board members.	100%

5. Modify the Tools & Techniques used for Risk & Issue Management

#	Recommended Action	Response	Status Complete
1.	Establish common definitions for risks and issues.	Risks and Issues are defined in the Nodal Program Risk Management Procedure available to all on the Nodal Sharepoint.	100%
2.	Modify risk and issues database to include the ability to identify risks by project; provide a program elevation flag; establish common reports that permit aging, etc.	The Nodal Program Risk Log has the facility to categorize risks by project, indicate where risks affect the program; and in the twice monthly risk forum presents a report that indicates risk aging.	100%
3.	Migrate risks and issues to a single database.	All projects are engaged in migrating their risks to the Nodal Risk Log (PMO, IDA, EIP, IRT, INF, CRR completed to date).	100%
4.	Run reports to determine if similar definitions are being applied.	Risk reporting is run to comparatively view risks & issues with similar characteristics. Feedback is provided to risk owners through regular risk reviews. PMO role specifically established to focus on effectiveness of risk management.	100%
5.	Check issues logs and risks for freshness and quickness of resolution.	The risk dashboard contains a chart indicating the relationship between how old a risk is, and when action was last taken on it. Risk closure dates are recorded in the risk log.	100%
6.	Institute recurring reviews.	A risk review occurred in December 2006 to examine the risk definition, accurate characterization (the information that is recorded with the risk), and that timely action is being taken to mitigate it. The next is planned to be complete by April.	100%

Nodal Organization Chart

Key emphases for organization success are leadership, positive morale, communication, and retention



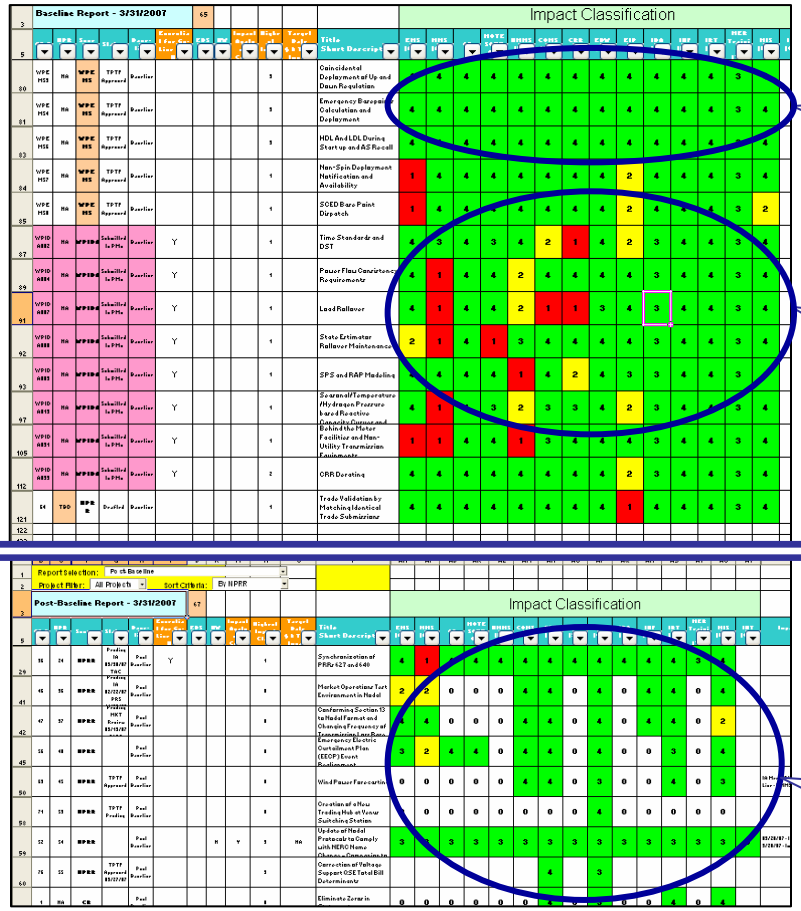
We continually look at NPRRs, Draft NPRRs and White Papers for impact…

The "Impact Categorization Matrix" helps triage the impacts for all the items across all the projects

Backlog list of 65 items including –
- ❑ Approved NPRRs
- ❑ Draft NPRRs
- ❑ White Papers

Baseline for Synchronization (March 1, 2007)

Ongoing NPRRs & white papers



25 of the 65 (35%) items have all projects with a minimal or no impact (category 3 or 4)

42 of the 65 (65%) items have at least 1 project with a high or a medium impact (category 1 or 2)

Impact categorization continues for new items to get ahead for the next synchronization – work in progress

We have now come up with an agreed approach to evaluate the system wide impacts…

The next steps and … **… some implications**

- **Group the items for implementation synergies/efficiencies**
- **Assign owners to produce suitably packaged "Change Requests"**
- **TCCB analysis – Identify high level recommendations & time frame for implementations (i.e. EDS1/2/3 etc.)**
- **Update schedule, budget and system architecture. Validate timeframes.**
- **TCCB reviews the budget, schedule and technical impact**
- **Submit to CCB for approval**

TCCB = Technical Change Control Board, a cross-program group of subject matter experts with deep protocol, business and technical knowledge

- **All NPRRs to go through the Nodal PMO initially, instead of being directly forwarded to PRS for their second review**
- **A draft NPRR that is not essential for go-live should be "tabled"**
- **For the backlog, category 3 & 4 will be accepted within the existing budget/contingency**
- **For the backlog, categories 1 & 2 will have a cost and schedule impact leading to suitably packaged change requests**
- **Going forward, categories 1, 2 & 3 will be subject to potential change requests (as designs and development will have progressed that much further)**

Nodal spending to date

EXPENDITURE CATEGORY	MAR	Program Total
❑ O&M Expenses ($000's):		
▪ Internal Labor	50	1,767
▪ Equipment, Tools, Materials & Supplies	10	65
▪ Outside Services/Consulting	232	5,157
▪ Software license	54	231
▪ Hardware	50	248
▪ Facilities & Utilities	0	1
▪ Employee Expenses	2	37
▪ Interest and Fees	76	568
▪ Depreciation and Amortization	478	4,300
▪ Other	586	3,302
▪ Sub-Total	1,538	15,676
❑ Capital Expenditures ($000's):		
▪ Sub-Total	9,658	65,536
❑ Total Expenditures ($000's)	11,196	81,212 *
❑ Commitments		$46,637

Notes:

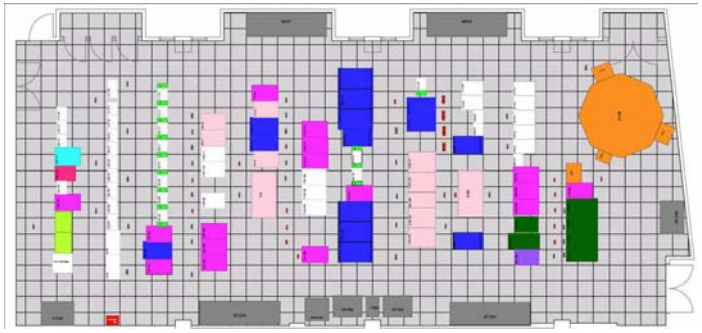
* Total spending through February was $70.0 MM.

Texas Nodal Market Implementation

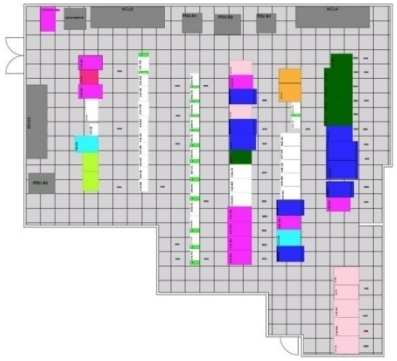
Data Center Data Migration

Current Situation

- **ERCOT Data Centers**
  - There is a need to increase storage and test environments due to Nodal demands along with Zonal projects
  - We have a proven technology solution in the Nodal budget
  - Nodal already paid for the new technologies
  - The new solution has lower operating costs, higher reliability, and reduces the space and electric requirements

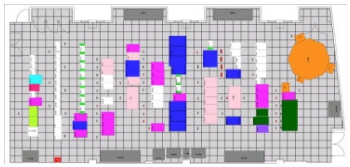


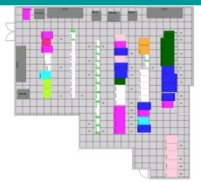
TCC-1 Data Center (floor schematic)



Austin Data Center (floor schematic)

Nodal data requirements are immense but being covered





		TCC-1	Austin
Currently operating all data centers at or near maximum power capacity • Computing capacity needs have grown over the past 4 years with each subsequent project implemented	Max Storage Capacity	~600 TB	~600 TB
	Current Level	234 TB	226 TB
	Max Usable Power	202 KVA	180 KVA
	Current Level	185 KVA	183 KVA
	Annual Costs	$2.4 M	$1.3 M

Recovered enough data center capacity for the Texas Nodal Market Implementation to date			
• Replacing older equipment with more efficient newer equipment	Replaced	• Storage Arrays • Dell Servers • Sun Servers	• Storage Arrays • Dell Servers
• Currently at power threshold in Austin Data Center until EMMS production migration complete	Criticality is:		Austin
• New equipment is installed along with old equipment and more equipment coming	New vs. Old	• Production EMMS • Citrix • IBM Unix Servers	• Production EMMS • Citrix • IBM Unix Servers

Nodal is migrating 73 servers to 4 AIX servers

- **We will do this with the minimum disruption**
- **We have a plan to:**
  - Minimize the risk
  - Maximize the benefit
  - Lower overall costs
  - Safeguard Market Operations
  - Improve service levels
  - Not affect Texas Set 3.0

- **However, there are always risks to be aware of in server migration**

- **We are working with all the project managers and ERCOT committees to reduce risk and to optimize the timing.**

Questions?