DIRECT TESTIMONY OF

JERRY SULLIVAN

EXECUTIVE DIRECTOR

TEXAS NODAL MARKET IMPLEMENTATION PROGRAM

ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.

IN SUPPORT OF
ERCOT'S APPLICATION FOR APPROVAL
OF A REVISED NODAL MARKET
IMPLEMENTATION SURCHARGE

DIRECT TESTIMONY OF MR. JERRY SULLIVAN

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jerrold ("Jerry") Sullivan. My business address is 7620 Metro Center Drive, Austin, Texas 78744.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Electric Reliability Council of Texas, Inc. ("ERCOT") as Executive Director for the Texas Nodal Market Implementation Program ("Nodal Program").

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PUBLIC UTILITY COMMISSION OF TEXAS OR ANY OTHER STATE UTILITY COMMISSION?

A. Yes, I filed testimony on behalf of ERCOT in the second phase of Docket No. 32686, *Application of the Electric Reliability Council of Texas For Approval of a Nodal Market Implementation Surcharge and Request for Interim Relief*.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I received a Bachelor of Science degree in 1976 from the United States Military Academy, West Point, New York with an emphasis in Engineering. I received a Master of Business Administration degree in Finance, from the Stern School of Business at New York University in 1987. Prior to joining ERCOT on December 11, 2006, I was a Managing Consultant and a senior member of PA Consulting Group's Global Energy Practice. PA Consulting Group is a management and technology consulting firm with 3,500 employees in over 20 countries with a large and diverse energy practice. At PA Consulting Group (and its legacy companies Theodore Barry & Associates (TB&A), Hagler Bailly, and Putnam,

Hayes & Bartlett), I worked in various capacities on electric market restructuring projects in Illinois, California, Louisiana, and Singapore. Prior to consulting, I worked in various management positions in System Operations, Engineering, and Design/Planning for Consolidated Edison of New York, and in Budgeting/Finance/Business Planning for General Public Utilities in New Jersey and Pennsylvania. I have 10 years of consulting experience in transmission and distribution reliability and customer service projects, and over 25 years of overall experience in the electric and gas utility business.

Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS EXECUTIVE DIRECTOR OF THE NODAL PROGRAM.

A. I am the ERCOT employee responsible for leading the management and delivery of the Nodal Program. I report to Mr. Ronald Hinsley, ERCOT's Vice-President and Chief Information Officer. Mr. Hinsley is the Nodal Program Sponsor, the ERCOT officer responsible for delivering the Nodal market systems, including the hardware and software capabilities necessary for the completion of the Nodal Program. As Executive Director, I am responsible for overseeing the various projects that make up the Nodal Program, providing day-to-day direction, resolving program level issues, monitoring and managing the program budget, and for ensuring alignment of the program's scope, time and quality objectives with the Nodal Protocols and the Commission's Orders.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My testimony provides the rationale and explanation for changes, both increases and decreases, in the Nodal Program projects' costs and cost categories that have experienced change since the Commission approved the Nodal surcharge on May 23, 2007. These changes have resulted in an increase in the Program's estimate at completion ("EAC").

Q. DOES YOUR TESTIMONY PROVIDE SUPPORT FOR THE SPECIFIC SURCHARGE AMOUNT PROPOSED BY ERCOT?

A. Yes. However, the calculation of the specific surcharge amount requested by ERCOT is provided in the testimony of ERCOT Vice –President and Chief Financial Officer Steve Byone. The amount of Nodal Program costs to be recovered via the Nodal Surcharge is $311.3 million. However, ERCOT's Executive Management holds me accountable for the "controllable" Nodal Budget of $319.5 million (*i.e.,* the EAC), which is premised on the Nodal Program achieving the scope defined by the May 2006 Nodal Protocols, as amended by NPRRs and Operating Guides. The $319.5 million budget funds the development of capabilities that will be implemented at Go-Live, a very limited and targeted amount devoted to creating permanent solutions for particular functionalities that will be implemented at Go-Live on a provisional basis, funding for the projects identified as "Zonal/Nodal Interdependencies" in Docket No. 32686, and the capitalized interest for the Nodal project. The Nodal transition costs funded from the Nodal Surcharge include only those items included in the $319.5 million budget approved by the ERCOT Board of Directors. Table 1 below provides an overview of the original and revised Nodal Program budgets.

Table 1

Nodal Program
Financials Depict Changes from Original Budget to Revised Budget
And Resultant Changes to Surcharge Requests

	Original Budget	Revised Budget
Budget	**$ 262,963,042**	**$ 319,461,326**
Zonal/Nodal Dependencies	(37,000,000)	(39,720,226)
Estimated Interest Expense	(10,600,000)	(10,600,000)
Total Nodal Program Development Costs to be Financed	$ 215,363,042	$ 269,141,100
Debt Service	33,472,165	42,180,000
Total Nodal Program Development Costs to be Financed via Surcharge	**$ 248,835,207**	**$ 311,321,100**

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. My testimony consists of three interrelated parts. First, I will discuss the main drivers of cost change in the Program's EAC. Second, I will delineate the changes in costs by project. Finally, I will provide an overview of the steps the Program has taken to ensure that potential future budget increases are minimized, if not avoided altogether.

Q. PLEASE IDENTIFY AND DESCRIBE THE MAIN DRIVERS OF CHANGES IN NODAL PROGRAM COSTS.

A. As depicted in Table 2, the Nodal Program's original EAC of $263 million was premised on the Program achieving the scope defined by the May 2006 Nodal Protocols, adding the costs of Zonal/Nodal Interdependency projects, and the costs of capitalized finance charges. There was a $15 million contingency in the original Nodal budget. The current EAC is $319.5 million, representing an increase of 21.5% over the original Nodal Program EAC. Table 2, below, provides a detailed breakdown of the specific project costs that make up the $56.5 million increase in the EAC.

Table 2

Nodal Program
Summary of Budget Changes by Project

		Factors Contributing to Nodal Program Budget Increases						
by Project	Original Current Budget	Risk mitigation efforts *	Scope changes associated with Nodal Protocol Revision Requests	Post-procurement changes to vendor statements of work	Costs associated with schedule delays	Total Approved Budget Increase	Revised Board Approved Budget	Percent Change
Integrated Design Authority (IDA)	$ 6,770,726	$ 2,942,241	$ -	$ -	$ -	$ 2,942,241	$ 9,712,967	43%
Infrastructure (INF)	63,444,283	2,884,797	200,000	-	-	3,084,797	66,529,080	5%
Network Model Mgmt System (NMMS)	12,289,421	45,902	2,247,293	-	-	2,293,195	14,582,616	19%
Market Management System (MMS)	25,271,320	6,664,296	7,344,659	9,454,506	3,333,760	26,797,221	52,068,541	106%
Energy Management System (EMS)	17,890,950	6,892	1,339,550	-	2,244,116	3,590,558	21,481,508	20%
Congestion Revenue Rights (CRR)	6,258,506	285,950	200,000	756,403	622,375	1,864,728	8,123,234	30%
Commercial Systems (COMS)	14,778,835	1,249,253	382,470	-	924,401	2,556,124	17,334,959	17%
Electronic Data Warehouse (EDW)	4,036,800	87,043	-	-	-	87,043	4,123,843	2%
Market Information System (MER-MIS)	7,221,219	2,034,112	-	-	-	2,034,112	9,255,331	28%
Market Other (MER-OTH)	3,583,680	1,484,997	-	-	-	1,484,997	5,068,677	41%
Market Training (MER-TRN)	10,135,103	(997,600)	-	-	-	(997,600)	9,137,503	-10%
Integration Testing (INT)	16,977,383	1,130,316	53,900	-	1,521,221	2,705,437	19,682,820	16%
Early Delivery System (EDS)	22,571,230	(1,323,276)	-	-	-	(1,323,276)	21,247,954	-6%
ERCOT Readiness & Transition (ERT)	4,668,851	(688,844)	-	-	-	(688,844)	3,980,007	-15%
Enterprise Integration Project (EIP)	12,323,860	6,902,984	737,040	-	-	7,640,024	19,963,884	62%
Program Control (PC)	9,140,875	427,526	-	-	2,000,000	2,427,526	11,568,401	27%
Total Project Costs (Consol EAC)	$ 237,363,042	$ 23,136,589	$ 12,504,912	$ 10,210,909	$ 10,645,873	$ 56,498,283	$ 293,861,325	24%
Contingency	15,000,000	-	-	-	-	-	15,000,000	0%
Total Project Costs w/contingency	252,363,042	$ 23,136,589	$ 12,504,912	$ 10,210,909	$ 10,645,873	$ 56,498,283	308,861,325	22%
Finance Charges	10,600,000	-	-	-	-	-	10,600,000	0%
Total Costs	$ 262,963,042	$ 23,136,589	$ 12,504,912	$ 10,210,909	$ 10,645,873	$ 56,498,283	$ 319,461,325	21%

* Includes rework due to midstream adjustments; efforts to ensure adherence to quality and schedule and requirements that were unforeseen or underestimated. This is a net number including savings/under expenditures.

The four broad categories of change that caused the increase in the EAC, and their respective percentage impact on the change from the original budget, are as follows:

(1) Risk-mitigation efforts, rework due to midstream adjustments, and unforeseen events and requirements – the budget increase in this category represents 8.8% of the original budget: Certain activities were underestimated in terms of the actual work required, while other activities were not foreseen at the time of formulation of the previous EAC.

(2) Scope changes due to Nodal Protocol Revision Requests ("NPRRs") - the budget increase in this category represents 4.8% of the original budget: NPRRs have resulted in an increased program scope and resulted in additional needs for software development. The development of "Baselines 1 & 2" captured the major changes associated with NPRRs.

(3) Post-procurement changes to vendor Statements of Work ("SOW") - the budget increase in this category represents 3.9% of the original budget: Vendor costs that exceeded the original project budget, which was based on the initial estimates from the May 2006 protocols and early requirements definitions.

(4) Schedule delays and staffing issues - the budget increase in this category represents 4.0% of the original budget: Increase in Nodal Program contractor staffing to compensate for fewer available ERCOT employees, as well as for project schedule slippage and rework.

Q. PLEASE DESCRIBE HOW THE FIRST CATEGORY OF CHANGE, "RISK MITIGATION EFFORTS, REWORK DUE TO MIDSTREAM ADJUSTMENTS, AND UNFORESEEN EVENTS AND REQUIREMENTS," AFFECTED PROJECT COSTS?

A. Risk mitigation efforts (to keep on schedule and to ensure quality within the protocols), unforeseen changes and underestimates are a significant component of the requested increase in the Nodal Program budget. In fact, these elements total over $23 million of the $56.5 million request. These changes included items related to risk mitigation, such as activities associated with Nodal system

architecture activities and the Delivery Assurance Group, or "DAG," a team established to provide additional oversight on schedule and issue management, track and manage the coordination of software "drops" into coherent releases for integration, integration testing, and Early Delivery System ("EDS") testing. As critical application software components have experienced delay (whether as a result of scope change, underestimation, or detailed design issues), it has been necessary to "break" software into multiple deliveries in order to preserve overall program progress. This approach necessitated the formation of DAG to control those deliveries and assure timely and successful integration of the various software components.

Other risk mitigation efforts driving cost increases included the need for enhanced Release Management (the technical means – including enhanced processes, tools and associated staff – to manage software into progressively complex test and EDS hardware environments in a reliable and repeatable manner), Current Day Report development (the Nodal Protocols call for the provision and posting of near-real-time reports), and enhanced Market Participant User Interfaces (the Nodal team created these new interfaces in response to market participants' concerns with ERCOT's existing user interfaces).

Software delays also affected the Nodal Program's Integration and Integration Testing projects. Software integration requires the creation of specific interfaces that permit different systems to "talk" to one another. When a software project takes the "best of breed" path of choosing the highest functioning products available from different vendors, integration of interfaces between software product sets becomes critically important. When a software product is affected by a scope change, the need for change often impacts the integration tools under development, either in the revision of the interface or delay in its implementation. The greater the complexity of a software integration project, the more likely there will be the need for revised or additional interfaces as change is introduced at various stages of the development life cycle. Integration software is highly dependent on other software components, and therefore suffers the greatest impact when any of those dependencies change. Further, the overall Nodal

system must be subjected to full integration testing to ensure that it functions in accordance with the Nodal Protocols. This testing can only be completed once the integrated system is completed. The incidence of "upstream" delay (*i.e.*, of the application software components described above) invariably results in rework of these "downstream" activities and the adjustment of plans and priorities.

In terms of underestimates, the most significant was that associated with the Enterprise Integration Project ("EIP"), which had an increase in cost of over $6.9 million. This increase resulted from an underestimate of the amount of effort for the interfaces between various vendor systems. Notably, over one hundred fifty (150) separate interfaces were estimated in the original budget. That estimate, however, did not account for the unexpected level of design and rework for vendor products. We also learned of an additional two hundred fifty (250) interfaces after detailed design, raising the cost further. Included in this underestimate category is an increase in ERCOT indirect support cost. While the original budget implicitly included an amount for indirect support, it has turned out that the amount was insufficient to cover all of the projected charges assigned to the Nodal Program.

On the positive side, along with increased project costs associated with many projects, Nodal Program management has been aggressive in identifying and capturing savings. In fact, various Nodal Program projects have generated over $10 million in savings and/or under expenditures. For example, the EIP project's original projected cost increase was reduced by $3.7 million through aggressive cost management.

Q. PLEASE DESCRIBE HOW ADDITIONAL PROJECT SCOPE, THE SECOND CATEGORY OF CHANGE, CAN IMPACT THE COST OF A PROJECT.

A. In any project, changes in scope affect cost in two ways. First, any change in project scope can increase or decrease project cost. In general, if project scope narrows, costs are likely to decrease; if scope broadens, costs are likely to

increase. Second, scope changes of any kind may increase project costs due to the unanticipated time and labor necessary to analyze and implement the changes associated with the revised project scope. However, even narrowing an ongoing project's scope can result in rework and increased costs both to the project directly affected by changes in functionality as well as to downstream projects (*e.g.*, integration and testing) that are dependent on the changed project's deliverables.

In the context of software development projects, the cost impact of scope changes varies dramatically depending on the point during the life cycle of the project that the scope change is made. The development of new software involves specific phases, each involving unique efforts and skill sets. These phases are known as:

> Requirements: the complete documentation of the capabilities the completed software must perform.
>
> Design: development of software code and associated documentation that will meet the defined requirements.
>
> Testing: running the fully developed software in an environment that simulates its intended use; de-bugging and otherwise correcting design deficiencies discovered in testing.
>
> Implementation: incorporating the newly developed software into systems in which it will be used.

Since each development phase builds upon the one before it, the cost of a scope change increases significantly the later it comes during the development cycle. It is a rule of thumb in software project management that changes during the early Requirements phase will cost much less to incorporate than changes made during the Design phase. Similarly, it costs significantly more to incorporate changes at the Testing phase. If changes are not incorporated until the Implementation phase, from a cost perspective it essentially can be the equivalent of starting the project from scratch. In summary, changes identified and incorporated early in a project may be orders of magnitude less expensive to adopt than those that occur later.

Table 3 depicts graphically software project costs as a function of a software project's life cycle. Introducing changes (such as NPRRs in the case of the Nodal Program) after requirements, design, and system build create increased costs and variance from original estimates. The following table was included in the May 16, 2007 IBM Report to the ERCOT Board of Directors explaining the concepts of variance and risk as they applied to the Nodal program's budget estimates:

Table 3

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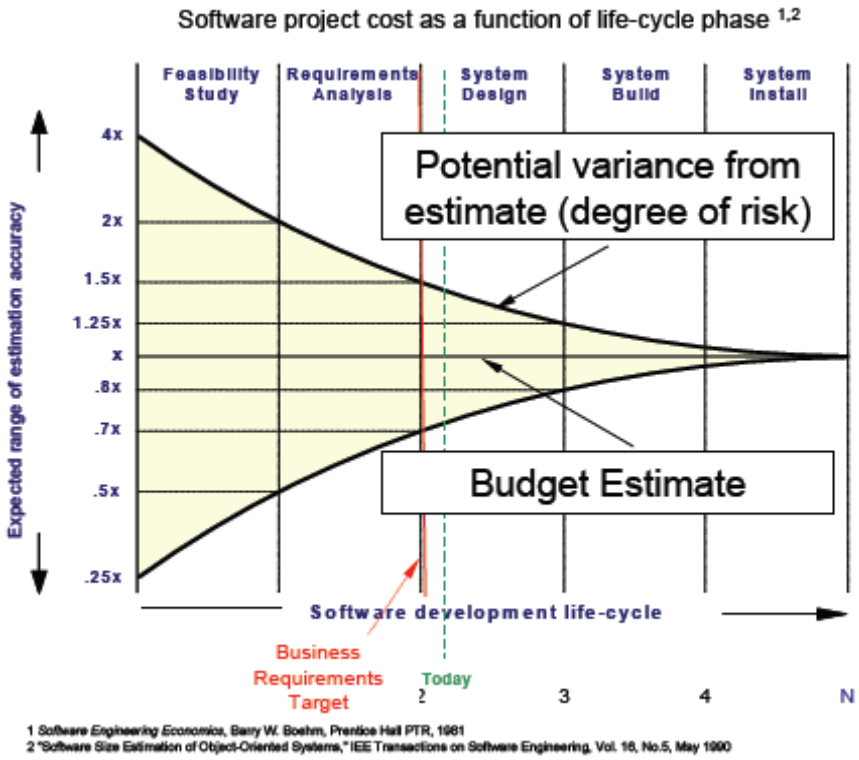

As previously noted, the Nodal project's overall increase in cost due to scope change is less than 5% of the original budget, a relatively modest increase given the Program's size and complexity.

Q. PLEASE SUMMARIZE THE NODAL PROGRAM'S SCOPE CHANGES.

A. The Nodal program team established the original budget on the basis of the version of the Protocols extant in May 2006. Since that time, seventy-four (74) Nodal Program Revision Requests (NPRRs) have been approved, many of a

significant nature. During 2006 and 2007 there were many projects that adopted various approved NPRRs and then, at a later time, received Transition Plan Task Force ("TPTF") approval for the requirements documents. The time to analyze NPRRs, conduct impact assessments, and develop requirements so that vendors can develop code is not a simple or quick task. Every time an NPRR was approved, the process of reviews and requirements approval had to be repeated. In some cases, vendors were not yet engaged on the Nodal Project for the initial impact analysis, or there was not an enterprise-wide view of the downstream affects that one project had on another. In some cases, requirements definition and TPTF approval lagged by several months NPRR approval by the ERCOT Board of Directors.

The major task for the program was to ensure that all projects had requirements documents that were synchronized with the latest set of NPRRs and that all vendors would be developing software code to the same set of requirements. In other words, the projects needed to be "playing to the same sheet of music." The date set to synchronize all the projects to use the same baseline requirements was March 31, 2007. At that time, there were forty-three (43) NPRRs, and white papers (i.e., documents that describe the consistent application of solutions to particular issues – for example, controllable load - across systems) and other change items, that needed to be included in what the Program referred to as Baseline 1. It was estimated at that time that there would be a $5.7 million impact to synchronize all the projects to Baseline 1. During this effort, it was also realized that there were an additional twenty-six (26) draft NPRRs "in flight," or in various stages of development. These additional scope items could seriously jeopardize the ability of the projects to develop useful code if they then had to rework code to incorporate additional NPRRs as they were approved. As a result, the Nodal Program instituted a major effort to expedite the process by encouraging all stakeholders to agree on the draft language of pending NPRRs, the impact to the market and to the Nodal Program, and to hold the necessary meetings to approve the draft NPRRs. The 26 additional draft NPRRs and additional white papers and change items were identified and established in

what became know as "Baseline 2." The impact of incorporating Baseline 2 was estimated at $6.8 million. In summary, there were 43 NPRRs in Baseline 1 and 26 NPRRs in Baseline 2 for a total of 69 NPRRs. The total estimate for Baselines 1 and 2 changes was $12.5 million. Nodal Program leadership hoped that synchronizing and finalizing all the NPRRs in discussion or already approved would lead to a significant reduction in future cost changes to the program. This effort had beneficial effects. Post-Baseline 2, only five (5) NPRRs have been approved to date. The total number of approved NPRRs, including those in Baselines 1 and 2, and post Baseline 2, is 74 (43+26+5).

Consequently, in order to achieve its mission today, the Nodal Program's scope is defined by the May 2006 Nodal Protocols and 74 approved NPRRs to date, as well as by the November 2007 Nodal Operating Guide and other detailed program documents related to detailed implementation of the Nodal Protocols.

Q. WHAT IMPACTS HAVE NPRRs HAD ON THE NODAL PROGRAM?

A. Overall, the changes to the Nodal Protocols since their May 2006 adoption have expanded the scope of the Nodal Program. Most NPRRs adopted and incorporated into the program have either added or refined capabilities that ERCOT and Market Participants found important to the efficient operation of the Nodal market. Some of the NPRRs had no additional cost associated with them; other NPRRs ultimately resulted in millions of dollars of additional project costs. Besides the direct cost of making the changes required by a protocol revision, the Nodal Program incurred numerous indirect costs. For example, changes in scope sometimes necessitate re-negotiation of vendor commitments, temporary slowdowns of ongoing design efforts while new requirements are analyzed, and creation of supporting documentation to flesh out the new Nodal Protocol requirement. As the Nodal Program absorbed the scope changes, it also resulted in increased costs for software integration. In sum, scope changes have caused cost increases across many of the projects making up the Nodal Program.

Q. WHICH NODAL PROGRAM PROJECTS WERE MOST AFFECTED BY BASELINE 1 & 2 SCOPE CHANGES?

A. The major changes and concomitant impacts (representing 93% of cost increases due to scope changes) required to comply with Baselines 1 & 2 affected the following Nodal Program projects and vendors:

- Market Management System ("MMS"); vendor - ABB.; $7.3 million increase
- Network Model Management System ("NMMS"); vendor - Siemens Power Transmission; $2.2 million increase
- Energy Management System ("EMS"); vendor - AREVA; $1.3 million increase
- Enterprise Integration Project (EIP); vendors - UISOL and Perficient; $0.7 million increase

Q. PLEASE DESCRIBE THE THIRD CATEGORY OF CHANGE, "POST-PROCUREMENT CHANGES TO VENDOR STATEMENTS OF WORK."

A. At the inception of the Nodal Program, a fundamental choice needed to be made regarding the procurement process – whether to start the procurement early based on the scope of work outlined in the Protocols and engage vendors in writing requirements, or to first complete requirements definitions. In light of the challenging implementation timeframe, Nodal leadership in 2006 opted to procure early. In essence, procuring vendors through a competitive process early would not only preserve schedule, but it would also provide insight into the overall costs estimate of each project. This approach involved preparing Requests for Proposals ("RFPs") that referenced the Nodal Protocols, and provided rules and instructions to bidders and other qualification requirements. Negotiations were conducted with preferred vendors and contracts concluded that contemplated vendors and ERCOT staff jointly developing requirements and associated documentation. Generally, the joint development approach enabled ERCOT to establish effective working relationships with the vendors and evaluate their performance. In addition, the approach enabled the vendors to become intimately acquainted with ERCOT and the requirements of the Nodal systems. The benefits

of this approach were preservation of schedule and acquiring an early indication on the level of effort (*i.e.*, costs).

The previous EAC (*i.e.*, original budget), however, was established before all the detailed requirements were completed and approved by the TPTF. Therefore, budget allowances were made for an anticipated level of cost variation as a result of requirements being finalized after estimates were completed. In most cases, those allowances proved adequate to include vendor cost increases as a result of requirements completion. The disadvantage of this approach was to rely on estimates before TPTF finalized the requirements. In two cases, that of the MMS and Congestion Revenue Rights projects, those allowances proved inadequate given the large number of questions (and their subsequent resolution) that arose regarding detailed design. Specifically, as shown in Table 2, costs due to post-procurement changes to vendor SOWs increased the original budget 3.9%. **(**In comparison, the current EAC is approximately 21.5% larger than the original budget.) As a practical matter, though, over 92% of the total increase due to post-procurement changes to vendor SOWs was related to a single project, MMS. A detailed description of the changes and impacts affecting MMS is provided below.

Q. WHAT IMPACTS HAVE COSTS ASSOCIATED WITH SCHEDULE DELAYS AND STAFFING ISSUES, THE FOURTH AND FINAL TYPE OF CHANGE, HAD ON THE NODAL PROGRAM?

A. Costs associated with schedule delays, depicted in Table 2, have had a significant affect on project costs, resulting in an increase of $10.54 million, or 4.0%, of the original budget. The major reasons underlying this increase include the following:

(1) Staffing variance associated with additional work required to support the MMS project. ($3.3 million)

(2) The use of higher cost external staff, due to the unavailability of ERCOT resources to support the EMS project. ($2.2 million)

(3) The implementation of a retention program for ERCOT staff. ($2.0 million)

(4) Additional testing requirements needed over an extended period of time. ($1.5 million)

(5) The need to keep COMs staff longer than planned due to schedule delays in upstream projects. ($0.92 million)

(6) Support for the CRR project in Functional Acceptance Testing ("FAT") and EDS testing activities. ($0.62 million)

In sum, staffing issues have resulted for a variety of reasons and have had widespread impacts across the Program.

Q. WHICH NODAL PROGRAM PROJECTS EXPERIENCED THE COST INCREASES?

A. The overall Nodal Program budget is made up of specific budgets for the component projects that make up the overall program. Table 2 provides a comparison of the budget for each Nodal Program project at the time the Nodal surcharge was approved in May 2007 to the current EAC forecast. While all projects showed change, and three of sixteen projects actually decreased in cost, over 60% of the requested increase is associated with two projects, MMS and Enterprise Integration Project ("EIP"). The budget for MMS increased $26.8 million and the budget for EIP is up $7.6 million. The balance of the requested increase, $22.1 million, is spread out over 13 projects, resulting in an average increase of less than $2 million per project. While substantive in total, it is not reflective of excessive activities or inappropriate change management.

Q. THE MARKET MANAGEMENT SYSTEM ("MMS") EXPERIENCED BY FAR THE GREATEST INCREASE IN COST OF ALL THE PROJECTS. PLEASE EXPLAIN WHY.

A. MMS is at the heart of the Nodal Program, and its efficient and reliable operation is central to the Nodal market. The MMS project has always been one of the largest and most expensive Nodal projects. The main components of the MMS include key elements of the Nodal market:

- Day-Ahead Market

- Supplemental Ancillary Services Market
- Reliability Unit Commitment
- Real-Time Security Constrained Economic Dispatch
- Constraint Competitiveness Tests

MMS also involves one of the most complex software development projects undertaken as part of the Nodal Program. Due to its centrality to the Nodal transition, it was often the case that important NPRRs addressed issues affecting the MMS project. In fact, Baselines 1 & 2 had a larger impact on MMS than any other Nodal Program project, because the market system had most of the NPRRs and because many of the other NPRRs not only affected other core projects, but nearly all ultimately affected the downstream market system. In addition, the MMS project experienced the loss of a key staff member to a market participant at a critical stage in the software design process, causing design delays that affected other aspects of the project.

Q. WHAT STEPS HAS ERCOT TAKEN TO CONTROL THE COSTS TO COMPLETE THE MMS PROJECT?

A. Nodal Program and ERCOT leadership have worked directly with the key vendor, ABB Inc., to control the increased costs. ERCOT's requested budget increase reflects numerous specific cost control measures agreed to by ERCOT and ABB management. Specifically, ERCOT and ABB executives have directed the MMS project team to:

- Eliminate design changes not fundamentally demanded by the Nodal Protocols.
- Rigorously control scope, including conforming requirements to the ABB system (assuming adherence to functionality and protocols).
- Optimize the allocation of work between ABB and ERCOT personnel.

ERCOT and ABB have also agreed on an aggressive MMS implementation and testing schedule that is designed to permit other dependent systems to be tested and ready for the December 2008 Go-Live target. Finally,

ERCOT took steps to change the leadership of the MMS project to provide more effective direction and leadership direction to the project team.

Q. WHAT HAS BEEN THE RECENT PROGRESS OF THE MMS PROJECT?

A. ERCOT believes that its efforts to manage the challenges associated with the MMS project are paying off. The software release known as "MMS 2" recently and successfully exited Functional Acceptance Testing (FAT) testing. The release exited FAT with an 89% pass rate with no Severity 1 or 2 errors. This is a major achievement for the MMS project team and increases the Nodal Program leadership's confidence that the last major MMS release (due in April 2008) will also hit the mark on quality. The MMS 2 release is an important one: it includes base functionality for Day-Ahead Market, Hourly Reliability Unit Commitment, Daily Reliability Unit Commitment, Point-to-Point Options De-rating, Simultaneous Feasibility Test, SCED Baseline 1 & 2 requirements, and requirements associated with several other NPRRs and White Papers.

Q. WHAT STEPS ARE NODAL PROGRAM LEADERSHIP TAKING TO PREVENT ADDITIONAL COST INCREASES AS THE NODAL TRANSITION NEARS COMPLETION?

A. The Nodal Program Management Office – in conjunction with the project managers, ERCOT executive leadership, TPTF, the Technical Advisory Committee ("TAC"), and other stakeholder groups – is constantly examining the current and forecasted costs of the program. Project managers are regularly required to identify any areas of cost savings that can be achieved in their projects and are constantly looking for ways to keep the cost as close to forecast as possible. ERCOT's request for a revised Nodal surcharge has taken such cost savings into account. As previously noted, the Nodal Program has identified over $10 million in savings as the Program has progressed. The most important cost-control determinant within ERCOT's control between now and the Go-Live date is to ensure the scope of the program is as settled as possible. Additional changes

in program scope pose the biggest threat to cost containment and timely completion of the Nodal transition.

Q. HOW WILL THE NODAL PROGRAM PREVENT ADDITIONAL SCOPE CHANGES FROM AGAIN INCREASING PROGRAM COSTS?

A. We believe it is critical to have all essential Nodal market functionality in place for the "168-hour" test scheduled for September 2008. For many projects, the Nodal Program has established a "pens down" rule on additional changes. "Pens down" means that no additional scope changes will be permitted if Nodal systems are to meet the schedule for the 168-hour test and, ultimately, for scheduled Go-Live. Currently, the NMMS, EMS, COMS, and MMS projects are "pens down." There is, though, some tolerance for additional changes relating to reports (e.g., those from the Enterprise Data Warehouse), with certain constraints affecting source systems.

Q. HOW DOES THIS AFFECT ADDITIONAL NPRRs?

A. Nodal Program leadership is working with Market Participants to reach agreement on how to treat items that will be changed, but cannot feasibly be changed in time for the 168-hour test or the Go-Live date. These include projects that may not be funded by the Nodal Surcharge because they are not essential to Go-Live in accordance with the Nodal Protocols. At this point in the program, only changes with a systems impact deemed absolutely essential for the operation of the Nodal market will be considered if the program is to hit its Go-Live target. Moreover, due to the crush of work necessary to keep the many Nodal projects on schedule, there is insufficient staff time available to conduct the impact analysis necessary to determine the viability of new NPRRs. In sum, Nodal Program leadership is working diligently with all affected parties to suppress or mitigate any additional changes in program scope that could drive up costs or threaten schedule.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY AT THIS TIME?

A. Yes.