

**PREPARED DIRECT TESTIMONY OF JOE GARDNER
ON BEHALF OF THE MIDWEST INDEPENDENT TRANSMISSION
SYSTEM OPERATOR, INC.
DOCKET NO. ER04-____-000 BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Midwest Independent Transmission)
System Operator, Inc.)

Docket No. ER04-____-000

PREPARED DIRECT TESTIMONY OF
JOE GARDNER

I. INTRODUCTION

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Joe Gardner. I work at 701 City Center Drive, Carmel, Indiana 46032.

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

A. I am employed as the Director of Real-Time Market Operations by the Midwest Independent Transmission System Operator, Inc. (the “Midwest ISO”).

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I hold a Bachelor of Science in Electrical Engineering from the University of Texas at Arlington in Arlington, Texas. I have over 19 years of electric industry experience in electric system operations, and have held numerous engineering and management positions in system operations and system operation support with Central and South West Services, Inc. in Dallas, Texas. I have chaired, been a member of, and participated in numerous regional and electric reliability operations committees, working groups and task forces, including groups in both The Electric Reliability Council of Texas (“ERCOT”) and Southwest Power Pool (“SPP”). I led and/or was actively involved in several of the stakeholder groups responsible for defining new market rules for ERCOT’s

J. Gardner

1 transition to a single control area operation and its transition to retail competition. I am
2 also currently a member of the North American Electric Reliability Council (“NERC”)
3 Interchange Subcommittee.

4 **Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES WITH THE MIDWEST ISO**
5 **AS THEY RELATE TO THIS FILING.**

6 A. My responsibilities with the Midwest ISO include oversight of the existing operational
7 functions of scheduling; Tariff administration and Tariff settlements; and management of
8 generation dispatch, Tariff administration and scheduling implementation issues as
9 related to the implementation of the Energy Markets, including oversight of operations of
10 these functions when the Energy Markets are operational. Accordingly, I am responsible
11 for ensuring that the Energy Markets produce efficient, equitable and reliable results.
12 Importantly, this task involves intimate coordination with Market Participants and
13 Control Areas Operators and other reliability entities, as well as internal administration to
14 ensure efficient market management.

15 **Q. HAVE YOU SPONSORED ANY OTHER TESTIMONY BEFORE ANY**
16 **REGULATORY COMMISSION?**

17 A. Yes. I have submitted prepared direct testimony before the Federal Energy Regulatory
18 Commission involving matters specific to the Midwest ISO.

19 **Q. WHAT IS THE PURPOSE OF YOUR PREPARED DIRECT TESTIMONY?**

20 A. My direct testimony is intended to explain the necessary division of functions and
21 responsibilities between the Midwest ISO and the various entities that operate within the

1 Midwest ISO Region to ensure that the Midwest ISO is able to reliably and successfully
2 operate Energy Markets and the Transmission System.

3 **Q. PLEASE SUMMARIZE YOUR TESTIMONY.**

4 A. My testimony provides an outline and explanation of the steps the Midwest ISO has
5 initiated to integrate the NERC Functional Model into the day-to-day operations of the
6 Energy Markets. As suggested by the Commission in its October 29 Order,¹ the NERC
7 Functional Model is considered the most effective model to utilize to explain how various
8 responsibilities will be allocated under restructured Energy Market operations.
9 Accordingly, my testimony will detail the specific responsibilities of various entities
10 consistent with the concepts laid out in the NERC Functional Model and as determined
11 by the Midwest ISO to ensure robust, reliable and competitive Energy Markets for the
12 future.

13 **II. CURRENT DIVISION OF FUNCTIONS AND RESPONSIBILITIES**

14 **Q. PLEASE DESCRIBE THE COMPOSITION OF THE MIDWEST ISO REGION.**

15 A. The Midwest ISO is made up of seventy (70) members with one (1) of the Members
16 being described as a coordinating company, four (4) being described as stand-alone
17 transmission companies; twelve (12) being described as vertically integrated utilities,
18 seven (7) being described as municipals and cooperatives, and forty-six (46) being
19 described as non-transmission owning Members. In total, there are thirty-five (35)
20 Control Areas in the Midwest ISO Region, including thirteen (13) non-MISO MAPP

¹ *Midwest Indep. Transmission Sys. Operator, Inc.*, 105 FERC ¶ 61,145 (“October 29 Order”), *reh’g denied*, 105 FERC ¶ 61,272 (2003).

1 Control Areas, and the multiple Control Areas vary significantly in the way that they are
2 configured. There are six different types of Control Areas varying on the basis of what
3 functions are performed by the transmission portion of the company versus the merchant
4 portion of the company and in terms of how the companies have divested. Each operator
5 in the various type of Control Area performs certain functions which are not necessarily
6 performed by other Control Areas Operators of different configuration. For its part, the
7 Midwest ISO is the Reliability Coordinator and is responsible for reliability within its
8 Region. Moreover, the Midwest ISO is responsible for the functional operation of the
9 Transmission System for the provision of non-discriminatory transmission service on the
10 Transmission System under the Midwest ISO's operational control. In the Midwest ISO
11 Region, the Transmission Owners and Independent Transmission Companies ("ITCs")
12 actually own and physically operate the transmission facilities. Accordingly, the
13 Transmission Owners and ITCs continue to play a crucial role in the Midwest ISO's
14 operations. The Transmission Owners and ITCs generally perform the function of
15 assisting in the expansion and improvement of the transmission grid through a variety of
16 agreements and development initiatives. Also important to the operations of the Midwest
17 ISO Region are the Generation Owners and Load Serving Entities ("LSEs"). Generation
18 Owners perform the function of ensuring proper generator performance and providing
19 important real and reactive Energy needs in support of grid reliability. LSEs play an
20 undeniably important role by coordinating with other entities and making appropriate
21 arrangements to ensure the successful delivery of Energy throughout the Midwest ISO
22 Region.

1 **Q. PRIOR TO THE START OF THE ENERGY MARKET, WHAT ARE THE**
2 **MIDWEST ISO’S RESPONSIBILITIES?**

3 A. Pursuant to its mandate as a Regional Transmission Organization, initial requirement in
4 the Transmission Owners Agreement,² and according to NERC Policy³ for the Reliability
5 Coordinator, the Midwest ISO is responsible for ensuring the reliable transmission of
6 Energy throughout the Midwest ISO Region. Such responsibilities include ensuring that
7 Ancillary Services are properly provided and acting as the provider of last resort for
8 Ancillary Services, which includes Scheduling, System Control and Dispatch, Reactive
9 Supply and Voltage Control from Generation Resources, Regulation and Frequency
10 Response, Operating Reserve - Spinning, and Operating Reserve - Supplemental. The
11 Midwest ISO also is responsible for providing Firm and Non-Firm Point-To-Point
12 Transmission Service and Network Integration Transmission Service (“NITS”), pursuant
13 to the applicable terms and conditions of the Midwest ISO (“OATT”). As the responsible
14 party for providing NITS, the Midwest ISO plans and operates the Transmission System
15 to provide Network Customers with NITS over the Transmission System. Moreover, in
16 its role as Reliability Coordinator, the Midwest ISO has congestion management and
17 emergency response responsibilities.

18 The Midwest ISO is the Reliability Coordinator for two monitoring zones: the
19 Carmel Zone and the St. Paul Zone. As the Reliability Coordinator, the Midwest ISO has

² Midwest ISO, FERC Electric Tariff, First Revised Rate Schedule No. 1 Appendix E, “Framework for Operational Responsibilities,” available at http://www.midwestiso.org/documents/to_miso_agreement.pdf.

³ See NERC Reliability Standards, available at <https://www.nerc.net/standards/ReliabilityStandards.aspx?tabindex=0&tabid=23>.

1 the authority and responsibility to take and direct timely and appropriate real-time actions
2 during normal and Emergency conditions necessary to maintain electrical reliability
3 within these zones. Accordingly, the Midwest ISO has developed and has in place
4 facilities for appropriate reliable and redundant voice and data communications facilities
5 at operating sites in both zones. The Midwest ISO receives real-time data that allows it
6 to completely monitor conditions on the systems in the two zones, including information
7 on frequency, reserves, ACE of its Control Areas, and the loading and limits of critical
8 transmission and Generation Resources.

9 As the Reliability Coordinator in the two zones, the Midwest ISO receives
10 transmission outage plans from Transmission Operators and coordinates such outages
11 with other reliability coordinators. The Midwest ISO has final-approval authority on all
12 planned transmission outages within on the Transmission System and coordinates
13 generation outages, as necessary.

14 The Midwest ISO calculates the Available Transfer Capacity (“ATC”) for
15 facilities under its Tariff in both of the zones and posts these values on the OASIS. In
16 addition, the Midwest ISO administers the MAPP Schedule Tariff as a service to MAPP
17 and administers the Manitoba Hydro Tariff as a service to Manitoba Hydro. Both of the
18 operations centers in St. Paul and Carmel have access to the NERC IDC and both centers
19 monitor the Transmission System conditions.

1 **Q. PRIOR TO THE START OF THE ENERGY MARKET, WHAT HAVE BEEN**
2 **THE CONTROL AREA OPERATOR’S RESPONSIBILITIES?**

3 A. As I mentioned above, there are six (6) types of Control Area configurations in the
4 Midwest ISO and each Control Area Operator performs various functions. Some of the
5 Control Area Operators perform generation control directly, while others do not. Some
6 of the Control Area Operators monitor transmission conditions, while others do not
7 because they do not have visibility of transmission information. Generally speaking, all
8 Control Area Operators have been responsible for a variety of tasks aimed at ensuring
9 appropriate balancing and the related responsibility to NERC for performance objectives
10 in pursuit of this function. Other responsibilities of Control Areas Operators discussed in
11 NERC and regional policy are met in varying ways, including transmission operation
12 functions in some Control Areas being met by Transmission Operators that are not
13 Control Area Operators.

14 **III. NECESSARY DIVISION OF AUTHORITIES AND RESPONSIBILITIES**
15 **PURSUANT TO THE START OF THE ENERGY MARKETS**

16 **Q. AS A RESULT OF THE ENERGY MARKETS, WHAT ARE THE NECESSARY**
17 **CHANGES TO THE SEPARATION OF RESPONSIBILITIES FOR ENTITIES**
18 **OPERATING IN THE MIDWEST ISO REGION?**

19 A. First and foremost, the Midwest ISO will be operating centralized wholesale Energy
20 Markets which are highly dependent on centralized dispatch of all resources in the
21 Midwest ISO Region. Accordingly, the Midwest ISO must not only be the sole entity
22 that operates the Transmission System pursuant to the Tariff, but it must also be the sole

1 entity that operates a centralized market based on Bids and Offers that allow it to
2 determine the appropriate dispatch that simultaneously produces an optimal economic
3 dispatch while providing generation balancing and congestion management on a five (5)
4 minute basis for the entire Midwest ISO Region.

5 **Q. HOW DO THESE CHANGES RELATE TO THE MIDWEST ISO'S**
6 **RESPONSIBILITIES AS THE RELIABILITY COORDINATOR?**

7 A. These changes are important to the Midwest ISO's role as Reliability Coordinator
8 because they allow the Midwest ISO greater control to address transmission system
9 security. Currently, the Midwest ISO primarily uses NERC Transmission Load Relief
10 ("TLR") procedures to perform congestion management functions. Centralized dispatch
11 allows the Midwest ISO to recognize potential reliability issues and quickly act to ensure
12 transmission security on a more granular and optimal basis than NERC TLR procedures
13 allow.

14 **IV. COMMISSION GUIDANCE ON THE APPROPRIATE DIVISION OF**
15 **RESPONSIBILITIES**

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17 **Q. HAS FERC MANDATED A CERTAIN DIVISION OF OPERATING**
18 **RESPONSIBILITIES BETWEEN REGIONAL TRANSMISSION**
19 **ORGANIZATIONS OR INDEPENDENT TRANSMISSION OPERATORS AND**
20 **THE ENTITIES THAT OPERATE WITHIN THEIR REGION?**

21 A. It is my understanding that FERC has not mandated or provided any specific division of
22 responsibilities for other ISOs and RTOs. FERC has, however, provided extensive
23 guidance regarding the operational authority to be assumed by ISOs and RTOs in the

1 context of market formation. In Order No. 2000, the Commission noted that while
2 control area consolidation is not required,⁴ RTOs must have sufficient operational control
3 to ensure the reliability and success of transmission systems. In more recent orders
4 concerning the Midwest ISO, the Commission has further encouraged the consolidation
5 of multiple control areas to provide for transparent, economical and uniform market
6 formation. Moreover, the Commission has endorsed the notion that ISOs and RTOs may
7 assume the role of a single control area operator as expressed in authorizing orders
8 approving RTOs.⁵

9 **Q. HOW HAVE OTHER ISO/RTOS IMPLEMENTED A DIVISION OF**
10 **RESPONSIBILITIES AS PROPOSED HEREIN?**

11 A. Other RTOs and ISO have not had to deal with this issue because they are the NERC
12 certified control area operator for their regions. New York Independent System Operator,
13 Inc. (“NYISO”), ISO New England, Inc. (“ISO-NE”) and PJM Interconnection, L.L.C.
14 (“PJM”) manage and administer the Energy Market, direct and coordinate the operation
15 of the interconnected transmission facilities within its region, coordinate transmission
16 expansion planning and perform administrative support. Moreover, these entities

⁴ *Regional Transmission Organizations*, Order No. 2000, FERC Stats. & Regs. [Regs. Preambles 1996-2000] ¶ 31,089 at 31,229 (1999), *on reh'g*, Order No. 2000-A, FERC Stats. & Regs. ¶ 31,092 (2000), *petitions for review dismissed sub nom.*, *Public Utility Dist. No. 1 of Snohomish County, Wash. v. FERC*, 272 F.3d 607 (D.C. Cir. 2001).

⁵ *PJM Interconnection, L.L.C.*, 81 FERC ¶ 61,257 (1997) *order on reh'g*, 92 FERC ¶ 61,282 (2000), *appeal docketed sub nom. Atlantic City Elec. Co. et al. v. FERC*, No. 97-1097 (D.C. Cir. Feb. 26, 1997).; *PJM Interconnection, L.L.C.*, 96 FERC ¶ 61,061 (2001) *on reh'g*, 101 FERC ¶ 61,345 (2002); *see also Central Hudson Gas & Elec. Corp. et al.*, 83 FERC ¶ 61,352 at 62,412 & 62,414 (1998), *order on reh'g*, 87 FERC ¶ 61,135 at 61,545 (1999).

1 schedule and dispatch generation on a least-cost, security constrained basis and have the
2 authority to redispatch generation out of economic merit-order to manage the
3 transmission system within reliability defined limits. NYISO and PJM also perform
4 balancing of generation and load, exercises operational control over certain facilities
5 under normal operating conditions and system emergencies to maintain system reliability,
6 coordinates equipment outages and maintenance, maintains the safety and short-term
7 reliability of the system, and may seek to obtain through contract or tariff provisions
8 control over generators, transmission facilities, and other facilities to ensure the reliability
9 of the system.

10 **Q. HOW WILL THE MIDWEST ISO ACCOMPLISH THE NECESSARY**
11 **RESPONSIBILITIES UNDER ITS MULTI-CONTROL AREA ARRANGEMENT?**

12 A. Using the NERC Functional Model, the Midwest ISO and its stakeholders have
13 developed methodologies for separating functions and responsibilities between the
14 various operating entities. This separation of functions and responsibilities will allow the
15 Midwest ISO to achieve centrally dispatched and operated Energy Markets for the
16 purposes of balancing and congestion management in the Midwest ISO Region. The
17 basis for developing the separation of functions is the NERC Functional Model, which
18 Midwest ISO stakeholders used to assist in defining the necessary divisions of
19 responsibilities for operating the markets.

1 includes the Midwest ISO's statement as to the necessary divisions of functions to
2 implement and operate the Energy Markets. This process remains ongoing.

3 **Q. WHAT IS THE RELIABILITY CHARTER?**

4 A. The Reliability Charter was created by the Midwest ISO to reflect the division of
5 operational and market functions between the Midwest ISO and the entities that operate
6 within the Midwest ISO Region. The Reliability Charter was intended to be a working
7 document through which the Midwest ISO codified the principles established through the
8 stakeholder process. Further, the Midwest ISO used these principles as a guide in the
9 creation of Tariff language and the Business Practice Manuals, which will contain more
10 detail regarding the descriptions of functions and responsibilities of the various parties.

11 **Q. HOW HAS THE MIDWEST ISO INCORPORATED WORK PERFORMED ON**
12 **THE APPROPRIATE ASSIGNMENT OF RESPONSIBILITIES INTO THE**
13 **TARIFF?**

14 A. The process of incorporating the division of responsibilities into the Tariff has been an
15 iterative one. The Business Practices Manuals and the Reliability Charter were
16 developed almost in conjunction with each other. While it became apparent that the
17 Midwest ISO needed to develop one document that specifies at a high level the principles
18 that all parties agree to and that must drive the Tariff, it is fair to say that the development
19 of the Business Practices Manuals brought to light elements of the separation of functions
20 and responsibilities that needed to be in the Reliability Charter. The Tariff, at Sections
21 38.1.6, 38.2.6, 38.6.8, and 38.7, describes the functional responsibilities of the Midwest
22 ISO, Control Area Operators, Market Participants and Transmission Operators that was

1 an outgrowth of discussions with the CAWG. In light of the fact that the terminology
2 used in the NERC Functional Model reflects entities that do not exist today and will not
3 exist at market implementation because NERC has not fully implemented its Functional
4 Model, we translated the responsibility assignments found in the NERC Functional
5 Model and applied them to the various entities and assigned the responsibilities to the
6 proper entities in the Tariff. We reviewed the Tariff language with the CAWG to receive
7 their input on whether the responsibilities were properly translated. In some cases,
8 responsibilities for a particular authority have been divided between the Midwest ISO and
9 its Control Areas. In particular, the Balancing Authority responsibilities are divided in
10 this manner. In other cases, responsibilities are assigned to Market Participants and
11 Transmission Operators.

12 **Q. WHAT LEVEL OF DETAIL IS CONTAINED IN THE TARIFF REGARDING**
13 **THE SEPARATION OF FUNCTIONS AND RESPONSIBILITIES?**

14 A. The Tariff contains sufficient detail to define and describe responsibilities under which
15 the Midwest ISO and the operating entities must function. Specifically, the Tariff defines
16 the basic separation of functions between the parties as developed through discussions
17 with the CAWG.⁷

18 **Q. WHERE ARE THE OPERATIONAL DETAILS CONTAINED?**

19 A. The Business Practices Manuals provide further details on the tasks that parties achieve
20 under the functional model and these details will continue to be refined as needed prior to
21 market implementation. It is important to note that in certain instances where it was

⁷ See Sections 38.1.6, 38.2.6, 38.6.8 and 38.7 of the Tariff.

1 necessary to define further the separation of functions, some of this detail was
2 incorporated into the Tariff. (*e.g.* in Section 38.7) .

3 **Q. WHAT IS THE STATUS OF THE BUSINESS PRACTICE MANUAL FOR**
4 **COORDINATED RELIABILITY, DISPATCH, AND CONTROL?**

5 A. An initial draft of the Business Practices Manual for Coordinated Reliability, Dispatch,
6 and Control was publicly released on January 19, 2004, for discussion and informational
7 purposes. The Midwest ISO continues to make improvements to the Business Practices
8 Manuals consistent with provisions contained in the Tariff.

9 **Q. WILL THE BUSINESS PRACTICES BE FILED AT FERC?**

10 A. No. The Business Practices Manuals are intended to serve as operational tools for
11 entities functioning in the Midwest ISO Region. Functions and responsibilities for all
12 parties functioning in the Midwest ISO Region are clearly delineated in the Tariff, which
13 is the document that describes the terms and conditions of the services provided in the
14 Midwest ISO Region. Although the Business Practice Manuals will not be filed with
15 FERC, any changes to the Business Practices Manuals will be subject to stakeholder
16 consultations and review before enactment by the Midwest ISO.

17 **Q. DESCRIBE GENERALLY THE NERC FUNCTIONAL MODEL.**

18 A. The NERC Functional Model defines the set of functions that must be performed on an
19 electric system to ensure that the system is operated reliably. The NERC Functional
20 Model recognizes that within each broad function, there are multiple methods that entities
21 can perform various integral tasks to fulfill the function reliably. Therefore, the NERC
22 Functional Model explains the relationship between authorities that are responsible for

1 performing the necessary tasks within each function. NERC intends to use the NERC
2 Functional Model as the foundation and framework upon which it will establish its
3 reliability standards.

4 **Q. HAS NERC APPROVED AND ADOPTED THE NERC FUNCTIONAL MODEL?**

5 A. The NERC Board of Directors approved version 2 of the NERC Functional Model on
6 January 7, 2004. NERC has not officially approved and adopted a final functional model.
7 Comments continue to be received as submitted by interested parties.

8 **Q. HOW HAS THE MIDWEST ISO APPLIED THE NERC FUNCTIONAL MODEL
9 TO DEVELOP ITS DIVISION OF FUNCTIONS AND RESPONSIBILITIES?**

10 A. Through the hard work of the CAWG, the Midwest ISO and its stakeholders used the
11 NERC Functional Model as a starting point to develop a model that more appropriately
12 addresses the Midwest ISO's operational needs. The Midwest ISO adopted the three (3)
13 broad categories of functions: 1) the Standards Function; 2) the Reliability Service
14 Functions; 2) and the Planning and Operating Functions. The Standards Functions
15 consist of the development of reliability standards and monitoring of compliance with
16 these standards. The Standards Functions are performed by NERC and/or the regional
17 reliability councils. The Reliability Service Functions include the operating reliability,
18 balancing, interchange transmission service, and planning reliability functions. These
19 functions are shared by the Midwest ISO and the various parties that make up the
20 Midwest ISO Region, including Market Participants, Transmission Operators and Control
21 Area Operators. The planning and operating functions consist of transmission ownership,
22 generator ownership, generator operations, load-serving, Transmission Operators,

1 purchasing and selling, transmission planning, distribution and resource planning. These
2 functions are also shared between the Midwest ISO and the various entities functioning in
3 its region. Market Operator is also a function defined by NERC that is not included in
4 the three (3) categories identified above, which the Midwest ISO will provide.

5 **Q. WHAT ROLE DO CONTROL AREA OPERATORS PLAY UNDER THE**
6 **MIDWEST ISO MODEL?**

7 A. As explained above, there are multiple types of Control Areas in the Midwest ISO
8 Region which created a challenge in attempting to define a uniform separation of
9 functions that apply throughout the Region. The NERC Functional Model simplifies this
10 complication by absorbing into its structure the existing NERC designated Control Areas
11 roles and responsibilities. Accordingly, the NERC Functional Model does not speak to
12 the functions of Control Areas *per se*. Instead, it refers to entities that will exist after
13 implementation of the functional model. The Midwest ISO, however, was required to
14 define the roles and responsibilities according to the various participants in the Midwest
15 ISO Region that will exist when it implements the market, while being cognizant of the
16 fact that all Control Areas in its Midwest ISO Region do not share the same functions and
17 responsibilities because of the various forms of Control Areas.

18 **Q. WHAT ARE THE MIDWEST ISO'S RESPONSIBILITIES UNDER THE**
19 **MIDWEST ISO'S APPLICATION OF THE NERC FUNCTIONAL MODEL?**

20 A. The Midwest ISO will act as the Reliability Authority, the Transmission Service Provider
21 and Market Operator for the Midwest ISO Region. The Midwest ISO will share the
22 Balancing Authority with the Control Area Operators and be responsible for determining

1 net interchange schedules. The Midwest ISO will also operate as an Interchange
2 Scheduling Agent. As the Reliability Authority in advance of the Operating Day, the
3 Midwest ISO is responsible for several tasks, including receipt of facility and operational
4 data from Market Participants, Transmission Customers, Transmission Owners, ITCs,
5 and Control Area Operators; the calculation of Interconnection Reliability Operating
6 Limits based on Transmission Owners', ITCs', and Generator Owners' specified
7 equipment ratings; utilization of generation dispatch information to mitigate congestion;
8 utilization of generation operation plans and commitments for reliability analysis; receipt
9 of generation and transmission maintenance plans for reliability analysis; direct
10 Transmission Operators, Transmission Owners, ITCs, and Control Area Operators to
11 revise transmission maintenance plans; and reschedule Generation Outages as required in
12 accordance with Section 38.2.5 h. The Midwest ISO also retains several responsibilities
13 during the Operating Day. Specifically, the Midwest ISO must receive real-time
14 operational information from the Balancing Authorities and Transmission Operator for
15 monitoring; issue reliability alerts to Generator Owners, LSEs, Transmission Operators,
16 Transmission Service Providers, Balancing Authorities, Interchange Authorities,
17 Planning Authorities, regional councils and NERC; coordinate reliability processes and
18 actions with and among other reliability authorities; and issue corrective actions (e.g.
19 Curtailments or load shedding) to Transmission Operators, Transmission Service
20 Providers, Balancing Authorities, and Interchange Authorities.

1 **Q. PLEASE ELABORATE ON THE MIDWEST ISO’S RESPONSIBILITIES AS**
2 **THE MARKET OPERATOR?**

3 A. As the Market Operator, the Midwest ISO shall perform a regional security constrained
4 economic dispatch that provides a dispatch solution for Resources to simultaneously
5 perform balancing and congestion management at a five (5) minute granularity; issue
6 Day-Ahead Schedules resulting from the clearing of the Day-Ahead Energy Market and
7 Dispatch Instructions resulting from its clearing of the Real-Time Energy Market;
8 conduct commitment of Resources; develop and send economic base points for each
9 Generation Resource to Market Participants and Control Areas based on Offers to the
10 Energy Market; and calculate a Net Scheduled Interchange (“NSI”) value for each
11 Control Area. As the Transmission Service Provider, the Midwest ISO will determine
12 that schedules are in conformance with transmission arrangements and ensure appropriate
13 Ancillary Services are in place in accordance with its obligations to do so as specified in
14 Module B.

15 **Q. PLEASE DESCRIBE THE MIDWEST ISO’S RESPONSIBILITIES AS THE**
16 **INTERCHANGE SCHEDULING AGENT?**

17 A. As the Interchange Scheduling Agent, the Midwest ISO shall confirm Interchange
18 Schedules with External Control Areas; confirm ramping information with External
19 Control Areas; provide other transmission providers with the requested Interchange
20 Transactions received from Market Participants using another transmission providers’
21 transmission system; implement Curtailment directives as received from reliability
22 authorities; inform other transmission providers, Market Participants, reliability

1 authorities, and Balancing Authorities of Interchange Schedule implementations and
2 Curtailments; and receive information on Interchange Schedule interruptions due to
3 generation loss or load interruption from the Balancing Authorities.

4 **Q. WHAT OTHER RESPONSIBILITIES WILL THE MIDWEST ISO ASSUME?**

5 A. The Midwest ISO also assumes responsibilities for generation outage scheduling.
6 Specifically, the Midwest ISO coordinates all Generator Maintenance Outages of a
7 Market Participant's Generation Resource within the Midwest ISO Region. The Midwest
8 ISO analyzes a Generator Maintenance Outage schedule to determine its effect on the
9 reliability of the facilities within the Midwest ISO Region and any other relevant
10 reliability effects. Moreover, the Midwest ISO identifies opportunities for rescheduling
11 the Generator Maintenance Outage to enhance the reliability of the facilities within the
12 Midwest ISO Region and reschedules these outages if necessary.

13 **Q. DESCRIBE THE DUTIES OR FUNCTION OF THE BALANCING**
14 **AUTHORITY?**

15 A. The Balancing Authority integrates resource plans in advance of the Real-Time Energy
16 Market, maintains load-interchange-generation balance within a Balancing Authority
17 Area, and supports interconnection frequency in real-time. In the Energy Markets, the
18 Midwest ISO and Control Areas will share Balancing Authority responsibilities. For
19 example, the Midwest ISO and the Control Areas coordinate to perform functions prior to
20 the Operating Day, during the Operating Day, and after the Operating Day to ensure
21 system reliability. The Control Area helps to compile Load Forecasts from LSEs, directs
22 Generator Operators and LSEs to take action to ensure balance in real-time, and requests

1 operating information from Generator Owners. Moreover, the Control Area provides
2 real-time operational information, implements Emergency procedures, and coordinates
3 the use of controllable loads with LSEs. The Midwest ISO is responsible for receiving
4 operational plans and commitments from Generator Owners within the Balancing
5 Authority Area; submitting integrated operational plans to the Reliability Authority for
6 reliability assessment; providing balancing information to the Reliability Authority for
7 monitoring purposes; utilizing approved, valid and balanced Interchange Schedules
8 received in its role as the Interchange Scheduling Agent; confirming Interchange
9 Schedules and ramping capabilities with External Control Areas; and directing resources
10 to take action to ensure balance in the real-time. Moreover, in adherence to its Balancing
11 Authority responsibilities after the Operating Day, the Midwest ISO shall confirm
12 Interchange Schedules with Internal and External Control Areas after the Hour has ended.
13 The Balancing Authorities are performed by the existing Control Areas. As explained
14 above, these are in different companies performed by the Merchant (or generation side of
15 a vertically integrated utility), by the Transmission Owner side of a vertically integrated
16 utility, or by an ITC.

17 **Q. WHAT ARE THE CONTROL AREA RESPONSIBILITIES UNDER THIS**
18 **PROPOSED DIVISION OF RESPONSIBILITY?**

19 A. There are currently six (6) categories of Control Area configurations in the Midwest ISO
20 Region. Because these categories range in scope on a fairly broad basis, it is difficult to
21 categorize the Control Area responsibilities and functions on the basis of Control Area
22 status. For example, while some Control Areas in the Midwest ISO Region perform

1 generation control directly, others do not. Furthermore, certain of these Control Areas
2 share certain operational tasks with the Midwest ISO as the Balancing Authority. This
3 shared responsibility requires the Control Area to be accountable for tasks related to
4 physical, second-to-second balancing of the Balancing Area. Control Areas will also be
5 responsible for issues involving regulation and operating reserves, and will provide the
6 Midwest ISO with Load Forecasts. Moreover, some redispatch for transmission
7 constraints at a lower voltage level than modeled in the Midwest ISO model may be
8 handled by the Control Area's existing tools. Prior to the Operating Day, functions to be
9 performed by Control Areas include: sharing with the Midwest ISO the responsibility of
10 developing Load Forecasts; implementing the Generation Resource commitment and
11 Dispatch Instructions for LSEs and Generator Resources received from the Midwest ISO;
12 and acquiring Ancillary Services from Generation Owners.

13 Control Area operations functions during the Operating Day include: redispatch
14 for transmission constraints at a lower voltage level than modeled in the Midwest ISO
15 model; providing all such constraint information and resulting generation Dispatch
16 Instructions back to the Midwest ISO for use in the regional dispatch function; treating
17 generation redispatch as Self-Scheduled generation in the regional dispatch and thereby
18 making it not eligible to set LMPs; receiving the base points for each generator sent to
19 Market Participants, on a five (5) minute basis; and receiving a ramped NSI every four
20 (4) seconds that includes all scheduled interchange for that Balancing Authority,
21 including Bilateral Transaction Schedules. Moreover, the Control Area, as the Balancing
22 Authority will receive from the Midwest ISO the amount of each Dynamic Schedule

1 included in the dispatch calculation to serve as confirmation to the Balancing Authority
2 that the Midwest ISO included the estimate on the tag and adjusted the NSI provided by
3 the Midwest ISO by the real-time instantaneous dynamic signal. The Control Area
4 Operators will also have the following local operations functions as the Balancing
5 Authority: sharing with the Midwest ISO the responsibility to direct Generator Owners
6 and LSEs to take action to ensure balance in real-time; providing real-time operational
7 information for the Midwest ISO, as the Reliability Authority; complying with reliability
8 requirements specified by the Midwest ISO as the Reliability Authority; verifying
9 implementation of Emergency procedures to the Midwest ISO as the Reliability
10 Authority; coordinating the use of controllable Loads with LSEs (*i.e.* interruptible load
11 that has been bid in as Interconnected Operations Services); and implementing
12 Emergency procedures as directed by the Midwest ISO as the Reliability Authority.
13 After the Operating Day, the Control Area's local operations functions include
14 confirming the Net Actual Interchange with the adjacent Balancing Authority and
15 providing the total of these Actual Interchange data to the Midwest ISO, for its Balancing
16 Authorities responsibilities.

17 **Q. WHERE ARE THESE FOUND IN THE TARIFF OR BUSINESS PRACTICES**
18 **MANUALS?**

19 A. Section 38.6.8 contains provisions related to the operational functions and responsibilities
20 of Control Area Operators. The Business Practices Manuals for Coordinated Reliability,
21 Dispatch and Control contains greater detail concerning the operational role of Control
22 Area Operators.

1 **Q. WHAT RESPONSIBILITIES DO INDEPENDENT TRANSMISSION**
2 **COMPANIES HAVE UNDER THE RELIABILITY CHARTER?**

3 A. The responsibilities of ITCs will be similar to those of Control Areas to the extent that the
4 ITC operates a Control Area. To the extent that the ITC is a Transmission Operator, the
5 ITC will have similar responsibilities as do Transmission Operators.

6 **Q. WHAT RESPONSIBILITIES DO MARKET PARTICIPANTS THAT ARE**
7 **GENERATION OWNERS OR SUBMIT GENERATION OFFERS ON BEHALF**
8 **OF GENERATION OWNERS HAVE UNDER THE RELIABILITY CHARTER?**

9 A. In advance of the Operating Day, Market Participants that are Generation Owners or
10 submit Generation Offers on behalf of Generation Owners will be responsible for
11 providing Balancing Authority and Transmission Operators with generator ratings, limits,
12 and models; requested amounts of Interconnected Operations Services; information
13 related to operating and availability status of units, reports on the status of automatic
14 voltage regulators; report status of automatic voltage regulators to Transmission
15 Operators; and provide requests to Interchange Authorities to implement Interchange
16 Transactions and notify Generator Owners and LSEs if Interchange Transaction requests
17 are approved or denied. During the Operating Day, Market Participants will be
18 responsible for providing Reactive Supply and Voltage Support to Transmission
19 Operators, implementing redispatch and interchange schedules, transact directly with
20 other entities, as required, via Bilateral Transactions for Energy, Capacity, and
21 Interconnected Operations Services products; and providing real-time operating
22 information to the Transmission Operator and Balancing Authority.

1 **Q. WHERE ARE THESE FOUND IN THE TARIFF?**

2 A. Section 38.2.6 of the Tariff describes the specific operational functions and
3 responsibilities of Market Participants.

4 **Q. WHAT RESPONSIBILITIES DO MARKET PARTICIPANTS THAT PURCHASE**
5 **ENERGY HAVE?**

6 A. Market Participants that purchase Energy are responsible for assisting LSEs in defining
7 Interchange Transactions to meet the LSEs' needs. Moreover, such Market Participants
8 shall assist LSEs and other Market Participants in supplying the Interconnected
9 Operations Services needs of the LSEs. Prior to the Operating Day, Market Participants
10 that purchase Energy shall submit requests to Interchange Authorities to implement
11 Interchange Transactions and notify Generator Owners and LSEs if Interchange
12 Transaction requests are approved or denied. During the Operating Day, such Market
13 Participants shall notify the Interchange Authorities of Market Activities as well as
14 cancellations or terminations.

15 **Q. WHERE ARE THESE FOUND IN THE TARIFF?**

16 A. Section 38.2.6 of the Tariff describes the specific operational functions and
17 responsibilities of Market Participants that purchase Energy.

18 **Q. WHAT RESPONSIBILITIES DO MARKET PARTICIPANTS THAT ARE LSES**
19 **OR PURCHASE ON BEHALF OF LSES HAVE?**

20 A. Market Participants that are LSEs, or that purchase on behalf of LSEs, are responsible for
21 securing Energy and transmission service to serve end-use customers. Accordingly, in
22 advance of the Operating Day, LSEs are responsible for providing generation

1 commitments and dispatch schedules to the Balancing Authority and working with the
2 Balance Authorities and Transmission Operators to implement load shedding procedures
3 during Emergency conditions. During the Operating Day, such Market Participants shall
4 be responsible for assisting distribution providers in implementing load shedding during
5 Emergency conditions and Balancing Authorities to provide Load interruption capability
6 as an Interconnected Operations Service. In support of the Energy Markets, such Market
7 Participants will assist end-use customers (Load) to develop and submit load profiles,
8 plans, and forecasts as needed for Balancing Authorities, Generator Owners, other
9 Market Participants, Planning Authority; Resource Planners; Transmission Planner; and
10 Market Operators. Moreover, such Market Participants will assist other LSEs in
11 arranging for the delivery of Energy to a specific metering point for Loads via Bilateral
12 Transactions and assist Market Participants and Generator Owners on behalf of end-use
13 customers (Load) in securing Energy and Interconnected Operations Services needed via
14 Bilateral Transactions.

15 **Q. WHERE ARE THESE FOUND IN THE TARIFF?**

16 A. Section 38.2.6 of the Tariff describes the specific operational functions and
17 responsibilities of Market Participants in this context.

18 **Q. HAS THE MIDWEST ISO EVALUATED THE ADVERSE IMPACTS THAT CAN
19 RESULT FROM THE PROPOSED DIVISION OF RESPONSIBILITIES?**

20 A. Yes. The Midwest ISO understands the important role of oversight and execution
21 concerning the proposed division of responsibilities. The Midwest ISO intends to

1 continue to retain a high degree of examination concerning the activities and
2 responsibilities of those entities accountable for such responsibilities.

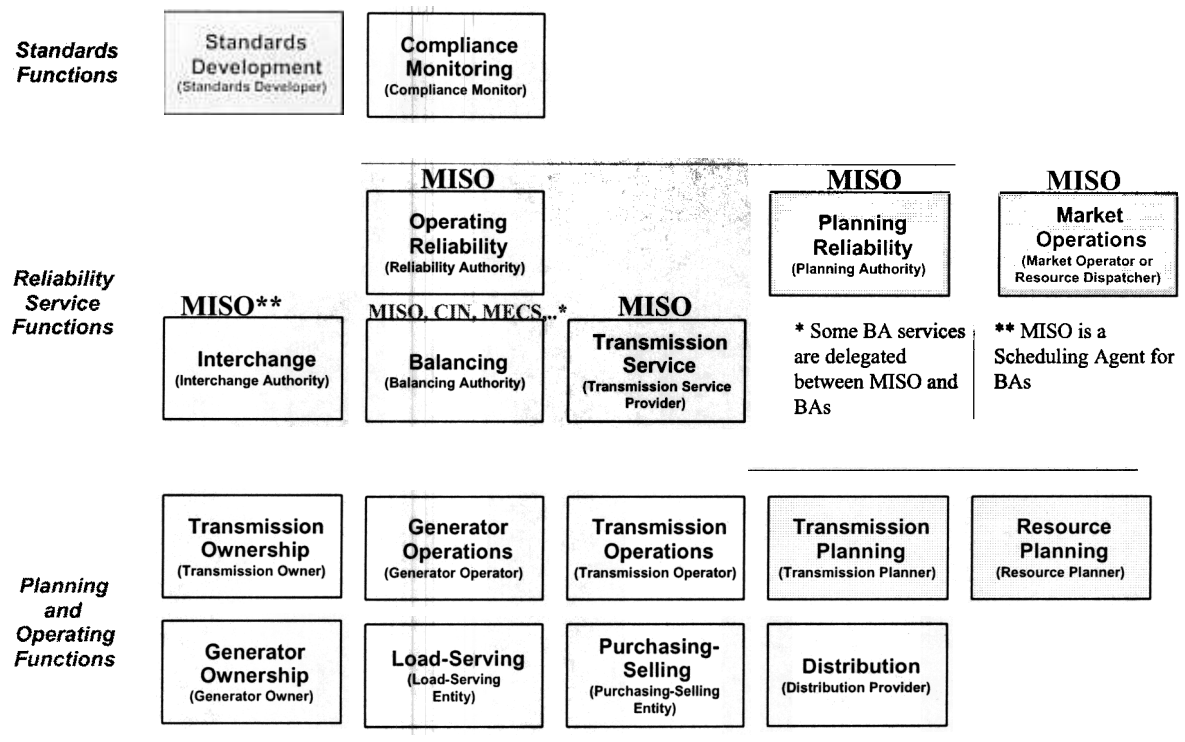
3 **Q. DOES THE PROPOSED DIVISION OF RESPONSIBILITIES PROVIDE**
4 **BALANCING AUTHORITIES AN OPPORTUNITY TO FAVOR ITS OWN**
5 **GENERATION?**

6 A. No. The Midwest ISO as the Market Operator will actually receive all Offers to supply
7 Energy from Market Participants directly. The Midwest ISO will clear the Day-Ahead
8 and Real-Time Energy Markets and send Day-Ahead Schedules and Dispatch
9 Instructions directly to Market Participants. Although the Balancing Authority will
10 receive the Dispatch Instructions, they are expected to implement these Dispatch
11 Instruction and utilize them along with their responsibility for implementation of
12 regulation and operating reserve implementation.

13 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

14 A. Yes, it does.

Separation of Functions and Responsibilities Among Operating Entities



** MISO is a Scheduling Agent for BAs