

BEFORE

## THE PUBLIC UTILITIES COMMISSION OF OHIO

In the Matter of the Commission's )  
 Investigation into the Value of ) Case No. 09-90-EL-COI  
 Continued Participation in Regional )  
 Transmission Organizations. )

Initial Comments of the Midwest Independent Transmission System Operator, Inc.Introduction

The Midwest Independent Transmission System Operator, Inc. (the "Midwest ISO") welcomes and appreciates the opportunity to submit comments in response to the Commission's March 4, 2009 RTO inquiry. These comments focus on the Midwest ISO and its activities, and the value, both quantifiable and qualitative, that the Midwest ISO creates and makes available to member Ohio companies and ultimately to Ohio consumers.

The questions being posed by the Public Utilities Commission of Ohio ("PUCO"), in this docket are very important and consistent with the same fundamental questions that are posed by the Midwest ISO Board of Directors and management team on a daily basis – how can we continue to provide value, reliability, and efficiencies to our customers. To ensure this continued focus, the Midwest ISO has adopted the following mission statement to dictate and guide its operations:

Mission

*The Midwest ISO will provide our customers with valued services, reliable systems and operations, dependable and transparent pricing, open access to markets, and planning for long-term efficiency.*

The Midwest ISO provides below, in response to each of the specific questions presented by the PUCO, the information and details demonstrating that it does provide value and stays true to the straightforward principles set forth in its mission statement. However, a brief history of the Midwest ISO's creation and evolution into a leader in the bulk electric market is in order to allow necessary context and background. Upon reading through the following information and responses, we submit that this PUCO will also conclude that the Midwest ISO is following its strategic plan's Vision statement to continually: *drive value creation through efficient reliability, market operations, planning and innovation.*

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## **Brief History of the Midwest ISO**

The Midwest ISO was initially formed in 1996 to address several needs identified by several Midwestern transmission owners – primarily a need for an independent regional entity to oversee a more regional transmission system and its operations. This need for an independent entity was driven by FERC Order 888<sup>1</sup> requiring equal access to the transmission system and a need to protect the reliability of an interconnected transmission system not originally designed to accommodate the effects of open access. Shortly thereafter, the Federal Energy Regulatory Commission (the "FERC") issued its "Order 2000"<sup>2</sup>, which called for the establishment of regional transmission organizations ("RTOs"). Order 2000 established 4 key characteristics<sup>3</sup> and 8 key functions<sup>4</sup> of RTOs. The Midwest ISO demonstrated that it met each of these key functions and characteristics, and became the first nationally recognized RTO in December 2001.

The Midwest ISO is a voluntary, public interest, non-profit, member-based RTO. Its scope of operations ("footprint") includes:

- At present, all or portions of 13 U.S. Midwestern states and one Canadian province (Manitoba) – approximately 750,000 square miles in all
- Generation capacity of more than 131,000 MWs (market) and 159,000 MWs (reliability)
- 93,600 miles of transmission, including 865 kV down to 69 kV facilities

A map of the Midwest ISO's *current* footprint is provided on the following page.

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<sup>1</sup> "Promoting Wholesale Competition Through Open Access Non-Discriminatory Transmission Services by Public Utilities; Recovery of Stranded Costs by Public Utilities and Transmitting Utilities", Docket Nos. RM95-8-000 and RM94-7-001, 18 C.F.R. Parts 35 and 385, 75 FERC ¶ 61,080 (Apr. 24, 1996)

<sup>2</sup> "Regional Transmission Organizations," Docket No. RM99-2-000, 18 C.F.R. Part 35, 89 FERC ¶ 61,285 (Dec. 20, 1999)

<sup>3</sup> Independence, scope and regional configuration, operational authority, and short-term reliability.

<sup>4</sup> Tariff administration and design, congestion management, parallel path flows, ancillary services, open access same-time information system (OASIS), planning and expansion, and interregional cooperation.



### **Transmission System Operations and Energy Markets**

Prior to the Midwest ISO's creation, the region operated as a decentralized, utility-by-utility bilateral market. While there was no open and transparent common market for energy, there were sub-regions that coordinated with regard to maintaining reliability of their shared and interconnected transmission systems, led by various reliability councils (MAPP, MAIN, ECAR, and the SERC). These reliability councils reported up to the North American Electric Reliability Council ("NERC"), a self-regulating organization that developed voluntary industry standards and best practices. Transmission operations and bilateral power transactions in the region were characterized by physical transmission contracts, high transaction costs/low market transparency, pancaked transmission rates, and decentralized unit commitment and dispatch by individual power companies and balancing authorities.

Following the formation of the Midwest ISO, it took on responsibilities for reliability coordination in late 2001 and early 2002, when it assumed functional control of its transmission-owning members' transmission facilities. Additionally, the Midwest ISO assumed open access transmission tariff administration responsibilities under the FERC required Open Access Transmission Tariff ("OATT"), which is commonly referred to as "**Day 1**". The Midwest ISO's Day 1 structure and activities have provided significant value to transmission customers by:

- Eliminating transmission rate pancaking on a regional scale, thereby producing an overall reduction in the cost of transmitting electricity within the region;
- Fostering competition with sellers having access to more buyers for their products and buyers having greater access to sources of supply, through bilateral transactions;
- Offering "one-stop shopping" for transmission service;
- Establishing uniform and centralized rules and procedures;
- Separating control over transmission facilities from generating and marketing functions;
- Allowing large scale regional coordination and planning of transmission; and
- Enhancing reliability.

Although Day 1 was a significant step forward, it still did not provide market-based congestion management and imbalance service as required by the FERC<sup>5</sup> of RTOs. In order to fulfill these requirements, the Midwest ISO pursued and created day-ahead and real-time locational marginal price ("LMP") energy markets (with LMP prices composed of marginal energy, marginal congestion, and marginal loss components). These LMP-based energy markets have enabled the Midwest ISO, and ultimately its customers to efficiently and more cost effectively manage transmission congestion all-the-while establishing more transparent market-clearing prices at each location on the transmission network, for each time period. This pricing regime has the effect of highlighting areas of congestion within the marketplace thereby enhancing planning efforts. The LMP pricing regime also allowed the Midwest ISO to create and implement a market for Financial Transmission Rights ("FTRs"), providing market participants the opportunity to address and hedge their locational price risk associated with these congestion points through acquisition of commensurate FTRs.

Midwest ISO launched its real-time and day-ahead energy markets in April 2005 ("**Day 2**"), using security constrained unit commitment and centralized economic dispatch in order to optimize the use of all resources within the region based on bids and offers provided to the Midwest ISO. The day-ahead market is a forward financial market for energy, and its clearing process produces a set of financially binding schedules according to which sellers are financially responsible to deliver and purchasers are financially responsible to buy energy at defined locations. The day-ahead market process is based upon a unit commitment model that minimizes total production costs over 24 hours. The primary purpose of the day-ahead energy market is to clear and schedule sufficient supply to satisfy cleared day-ahead demand, *using a set of resources that minimize production costs*. The day-ahead energy market also provides customers the opportunity to hedge real-time market price volatility caused by unanticipated generation or

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<sup>5</sup> *Id.*

transmission outages. The purpose of the real-time market is similar, but is based on actual rather than bid demand and must also function to determine economic redispatch to manage congestion dynamically. Furthermore, because these energy markets provide price transparency the Load Serving Entities (“LSEs”) have better information and ability to more efficiently buy and sell energy needed to serve their load from and to, respectively, a growing number of participants. This larger-in-scope energy market also provides LSEs with another vastly important option which was not as readily present under the previous regulatory regime. The thriving energy market place provides an LSE and its regulatory body with the confidence it needs to know there will be sources of energy available to delay and eventually smooth out and better manage the inevitable significant capital or similar financial commitments that will be required to accommodate load growth or generation plant retirements. This difficult to quantify benefit of the Midwest ISO energy markets has taken on new proportions with the proliferation of state renewable energy standards, the similar national initiatives, as well as highly important impacts environmental considerations such as carbon will have on the existing generation fleet. One could legitimately argue that trying to tackle any single one of these important evolutionary energy issues without a relying upon a thriving energy marketplace would be extremely more challenging, expensive and vastly less efficient.

The Midwest ISO Ancillary Service Markets (“ASM”), which commenced in January 6, 2009, was a follow on requirement of the development of the energy market. The ASM commits and dispatches contingency reserves and regulation in a co-optimized manner with energy. This allows portions of cost-efficient resources that were previously held back to address local system operating reserves to now be dispatched for either energy needs or centrally coordinated operating reserves in order to minimize overall energy and ancillary service costs while also ensuring reliable transmission system operation. The Midwest ISO recognized the importance of and its responsibilities to its stakeholders and crafted, with stakeholder input, agreed upon mechanisms to track and measure the ASM cost savings. These particular cost savings will be discussed in further detail below, but ASM is on track to and is expected to create and provide approximately \$212 million in annual benefits. This is but one of many examples of the Midwest ISO’s regular processes of self assessment and business responsibility and accountability, all of which rolls up into its Value Proposition, which illustrates the ongoing value created by the Midwest ISO.

Module E of the Midwest ISO's Transmission and Energy Markets Tariff (“TEMT”) provides requirements and standards to be met by LSEs to ensure access to adequate resources to meet demand on the transmission system. The resource adequacy requirements initially established in Module E were based upon the pre-existing reliability mechanisms of the states within the Midwest ISO region and within the Regional Reliability Organizations (“RRO”), as adapted to the Midwest ISO region. The current Module E of the TEMT thus represented an *interim* resource adequacy plan to ensure an adequate level of reliability; those interim Module E requirements sunset on May 31, 2009, and will be replaced on June 1, 2009 with a permanent resource adequacy construct that has been approved by FERC. Under the new resource adequacy provisions contained in Module E the Midwest ISO establishes a minimum level of planning reserve requirements based upon reliability principles and standards to meet a loss of load event one day in ten years (“LOLE”). The LOLE study results have been used to establish the minimum reserve margins for LSEs. Under the Module E construct, individual states

continue to have the flexibility to establish their own planning reserve margin requirements for their jurisdictional entities. The implementation of Module E has resulted in significant reductions in the required level of reserves as compared with what was in place before. Prior to the implementation of Module E, the average reserve margin under state and NERC regional entity requirements was 15.4 percent of forecast load. Regional coordination under Module E has reduced the average LSE reserve margin to 12.697%. This reduction translates into direct savings to customers by reducing the level of capacity that must be held above forecast peak load. Based on the 2009 forecast non-coincident summer peak of 107,149 MW, this would result in reduced customer capacity needs of 2,893MW. Monetary savings from this reduction are substantial and would not otherwise be attainable absent the larger Midwest ISO regional footprint and the access its market provides.

The Midwest ISO is the NERC Planning Authority for its member footprint, and performs **regional transmission planning** in accordance with FERC Planning Principles outlined in FERC Order 890. In Order No. 890, FERC identified nine planning principles that must be satisfied for a transmission provider's planning process to be considered compliant with the Final Rule. The Midwest ISO has incorporated each of the following principles into its planning process,: (1) Coordination; (2) Openness; (3) Transparency; (4) Information Exchange; (5) Comparability; (6) Dispute Resolution; (7) Regional Participation; (8) Economic Planning Studies; and (9) Cost Allocation for New Projects. This structured open planning process saves all involved time, expense by adding a coordinated approach to a heretofore isolated, individualized efforts that many times created neighbor to neighbor inconsistencies and sometimes contradictions. The Midwest ISO open and coordinated approach provides the best and most cost effective result which translates into value and enormous benefit.

In addition to meeting FERC planning principles, the Midwest ISO regional Transmission Planning process has as its goal the development of a comprehensive expansion plan that meets both reliability and economic expansion needs. The planning process identifies solutions to reliability issues that arise from the expected dispatch of network resources. These solutions include evaluating alternative costs between capital expenditures for transmission expansion projects, and increased operating expenses from redispatching network resources or other operational actions. At the start of 2006, the Midwest ISO Board of Directors adopted five planning principles to guide the Midwest ISO regional plan: (1) make the benefits of a competitive energy market available to customers by providing access to the lowest possible electric energy costs; (2) provide a transmission infrastructure that safeguards local and regional reliability; (3) support State and Federal renewable energy objectives by planning for access to all such resources (e.g. wind, biomass, demand-side management); (4) create a mechanism to ensure that investment implementation occurs in a timely manner; and (5) develop a transmission system scenario model and make it available to State and Federal energy policy makers to provide context and information regarding potential policy choices.

The Midwest ISO develops a Transmission Expansion Plan (MTEP) designed to ensure the reliability of the Transmission System that is under the operational and planning control of the Midwest ISO. Additionally, the plan is to identify expansion that is critically needed to support the competitive supply of electric power by this system. The Plan is to consider all

market perspectives, including demand-side options, generation location, and transmission expansion. The Midwest ISO's planning principles provide mechanisms to ensure that the regional planning process is open, transparent, coordinated, includes both reliability and economic planning considerations, and includes mechanisms for equitable cost sharing of expansion costs. Further, the Midwest ISO regional planning process integrates the local planning processes of its member companies into a coordinated regional transmission plan and identifies additional expansions. The planning activities are performed collaboratively between the Midwest ISO planning staff and the planning staffs of the Transmission Owners, including Independent Transmission Companies (ITCs), with regular input from stakeholder groups.

## **The Midwest ISO's Responses to the Commission's Specific RTO Inquiries**

### **RTO Value**

- 1. Are FERC's Order 2000 goals and objectives being realized to promote efficiency in wholesale electric markets and to ensure that electric consumers pay the lowest price possible for reliable service?**

There is no question that FERC's Order 2000 goals of promoting wholesale electric market efficiency and ensuring lowest possible electric prices have been realized and continue to be improved upon in the Midwest ISO. The following discussion details the operational monetary benefits for electric consumers resulting from the formation and operation of the Midwest ISO RTO. What has not been presented and is very difficult to quantify is precisely what is at the core of this particular question – namely a quantification of market efficiencies. These types of wholesale market benefits are what have been identified and reviewed in further detail in the Midwest ISO Value Proposition under the general category of “qualitative value drivers”. Reliability has been improved by a reduction in the size, duration and number of outages. The operation of Midwest ISO's Day 1 (functional control of transmission), Day 2 (day-ahead and real-time LMP energy markets) and the ancillary services market ensure that all electric energy needs in the Midwest ISO footprint are met by the most cost effective, deliverable generation available in the footprint.

### **The Midwest ISO's Value Proposition**

The inquiry being formally pursued in this docket is exactly the type of inquiry that should be pursued at this point in the evolution of the bulk electric marketplace. With the creation of RTOs and the ongoing evolution of the bulk wholesale energy market, questions about efficiencies and cost effectiveness regularly arise. In an effort to address these issues head on, the Midwest ISO Board and management team took on the challenging task to identify legitimate methods to quantify the many intuitively beneficial aspects that a regional RTO provides. These efforts culminated in the Midwest ISO publishing its initial Value Proposition in the fall of 2007. This analysis examined several distinct categories where the Midwest ISO was creating additional value for its members and of equal importance - for the ultimate electric consumers in the footprint. The Midwest ISO Value Proposition was, from the outset, designed to be a living, iterative document that would regularly be updated and refined as more and better information became available. The Midwest ISO is currently in the final steps of such an update

of the 2007 analysis. The financial and mathematical aspects have been completed for many of the elements, but the feedback and criticism assimilation is not yet complete. The following discussion provides a broad summary of the analyses distinct categories as well as the current financial calculations flowing from the most recent updates.

In the 2007 Value Proposition, the Midwest ISO's services were estimated to provide annual benefits range between **\$555 million and \$850 million**, *net of Midwest ISO capital and operating costs*<sup>6</sup>. In the current 2009 draft of the updated Value Proposition that reflect the continued improvements of the Midwest ISO markets, the same annual benefit range increased to between **\$755 million and \$981 million**, once again *net of Midwest ISO capital and operating costs*. Further details including supporting calculations and methodologies on the Midwest ISO Value Proposition can be reviewed at:

<http://www.midwestiso.org/page/Value%20Proposition>

As shown in the summary detail below, these benefits flow from a number of areas. The following briefly describes each benefit area, but the reader is encouraged to review the complete Midwest ISO Value Proposition at the site listed above.

**Improved Reliability – annual benefits between \$225 million and \$340 million.**

Since the establishment of the Midwest ISO, the use of the region's electric transmission system has undergone significant change because infrastructure that was built primarily for local use is now being operated on a regional basis. Despite this increased pressure on the grid, analysis of disturbance data available from the North American Electric Reliability Corporation (NERC) shows that Regional Transmission Organizations reduce the size, duration and number of outages in their footprints. The Midwest ISO has either created or adopted state of the art, best practices systems and processes to mitigate the effects of outages. NERC has openly recognized the Midwest ISO for its practices stating that the Midwest ISO practices are "extremely effective in maintaining the reliability of the interconnected bulk electric system."<sup>7</sup> A more in-depth review of the basis of the reliability benefit calculation is contained in the full report.

- **Commitment and Dispatch of Energy – annual benefits between \$200 million and \$250 million.**

Through the Day-Ahead and Real-Time Energy Markets, the Midwest ISO is able to optimize the dispatch of energy throughout the region, ensuring that energy needs are met by the most cost effective, deliverable generation available in the region. This ability to centrally dispatch the generation facilities has created efficiencies that allowed for the

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<sup>6</sup> These quantifications and the data and calculations supporting them have been presented to and scrutinized by the numerous stakeholders, including the Ohio Commission Staff, during the Midwest ISO presentations made in 2007 and throughout 2008. The Value Proposition analysis withstood further scrutiny and was subjected to cross examination in a contested docket before the Missouri Public Service Commission, *In the Matter of Aquila*, and MoPSC Docket No. EO-2008-0046.

<sup>7</sup> NERC 2006 Midwest ISO Reliability Coordinator Readiness – Audit Report.

increased utilization of base load plants while reducing reliance on more costly peaking plants. An analysis based on production cost modeling examined differences in commitment and dispatch patterns between a decentralized model (pre-market) versus a centralized model (post-market). The model also accounted for the elimination of pancaked transmission rates and increased transmission utilization made possible for improved congestion management in the centralized market model. This analysis results in the annual savings noted above.

- **Contingency Reserves – Requirement and Procurement** – annual benefits of **\$135 million to \$145 million** (2007 analysis); and the updated calculation is showing estimated annual benefits of **\$170 million**.

Through the participation and cooperation of its stakeholders, the Midwest ISO has also been able to facilitate the organization and coordination of a Generation Reserve Sharing Group. As its name implies, this group's function is to reduce the contingency reserve requirements for the individual members throughout the region while continuing to maintain system reliability. This overall reduction in the contingency reserve requirements allows generation that would have otherwise been held back to meet individualized contingency reserve requirements, to now be released and made available to sell into the regional energy marketplace. By sharing and coordinating their efforts, the respective load serving entities have been able to significantly reduce the individual and overall contingency reserve requirements for the region resulting in the annual benefits noted above – all-the-while still maintaining system reliability. With the launch of ASM, contingency reserves are committed and dispatched in a co-optimized manner with energy resources and this change in procurement mechanism (and resulting pricing) also is factored into the benefits analysis.

- **Regulation– Requirement and Procurement** – annual benefits between **\$115 million and \$205 million** (2007 analysis); and the updated calculation is showing estimated annual benefits of **\$165 million**.

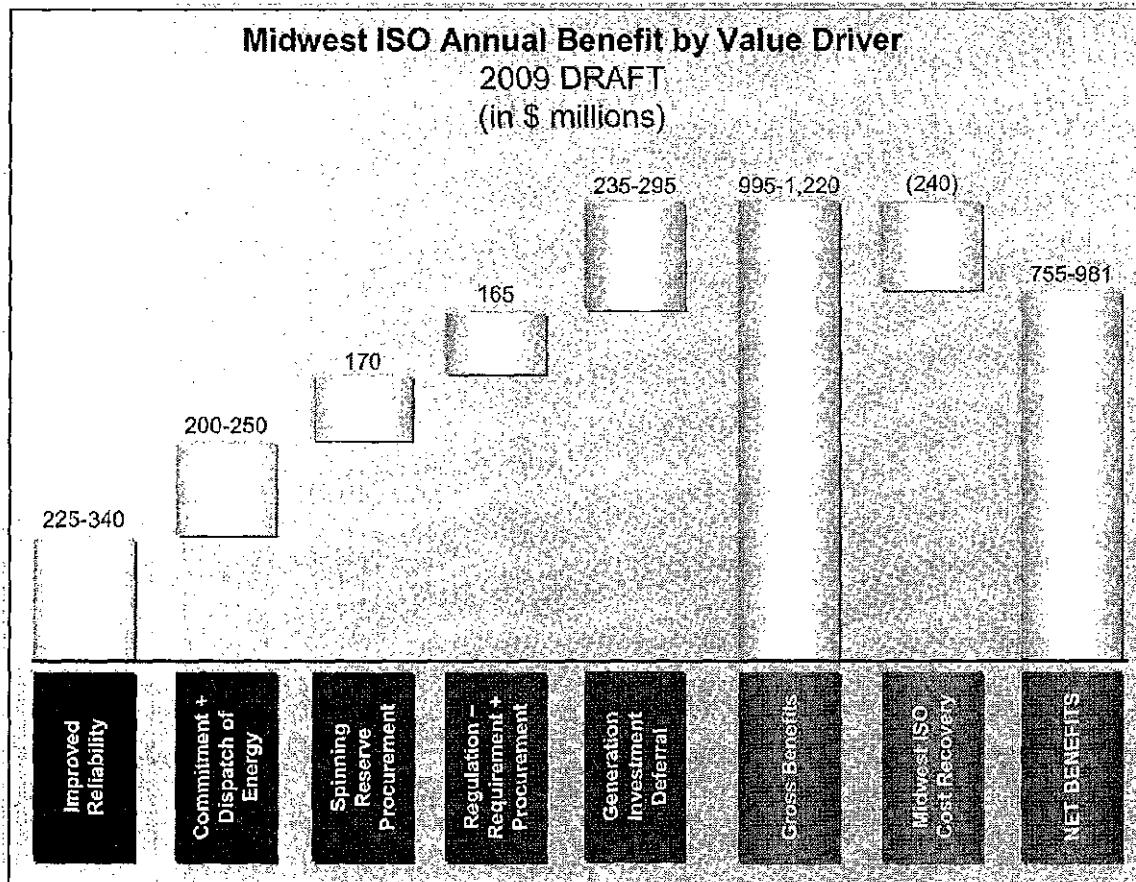
The Midwest ISO Regulation Market, implemented in January 2009, commits and dispatches regulation in a co-optimized manner with energy and contingency reserves. Centralizing management of regulation results in a reduced regulation requirement and the implementation of a co-optimized commitment and dispatch shifts the regulation burdens to more appropriate locations and the best suited resource locations while still maintaining system reliability. This also frees up additional resources, which can, in turn, be sold into the market, further improving the market effectiveness and lowering overall costs for the region.

- **Generation Investment Deferral** – original analysis showed an annual benefit of **\$135 million to \$150 million**; updated annual benefit analysis shows **\$235 million to \$295 million**.

The regionalization of the electrical system provides for a much larger and diversified risk pool when setting planning reserve margins for the region. Even a conservative

estimate of a 1 percent to 1.25 percent drop in the planning reserve requirement results in annual benefits as shown in the original 2007 analysis. The planning reserve margin for the region was recently set at 12.69% versus the 15.40% average planning reserve margin that existed prior to the Midwest ISO. Based on this planning reserve synergistic reduction, the above noted resulting benefit occurs.

All of the discrete, benefit categories described above have been visually presented in the following chart that is part of the more formal Midwest ISO Value Proposition that has further details including supporting analyses and detail<sup>8</sup>:



While the Midwest ISO has not performed any specific studies attempting to quantify the benefits that can be attributed just to Duke Energy – Ohio and each of the First Energy operating entities in Ohio, the Midwest ISO has evaluated the numerous benefits that accrue to the region served by the Midwest ISO as a result of its operations. The actual recipient of the benefits varies depending on many factors including the element under study (for instance improved reliability is a benefit enjoyed by the ultimate consumer of electricity that would have been interrupted but for the efforts of the Midwest ISO), the relative generation and transmission

<sup>8</sup> See the full 2007 Midwest Value Proposition at: <http://www.midwestiso.org/page/Value%20Proposition>

position of individual members, and the nature of the retail regulatory compact of the individual member or participant. It is virtually impossible to accurately predict to whom individual benefits accrue. However, there is reason to believe that these same types of benefits are available and realized throughout the Midwest ISO footprint. Further, it seems reasonable that over time as the relative positions of individual members and participants change it is likely that these benefits will be fairly evenly distributed across the region.

Since Ohio's load that participates in the Midwest ISO represents approximately 15.6% of the total load within the Midwest ISO footprint it is reasonable to assume that Ohio could realize benefits in a roughly proportionate share. Extrapolating further one could utilize the load ratio share purely as a proxy to approximate the magnitude of the potential benefits for an entity's participation in the Midwest ISO. Assuming that Ohio consumers who are served within the Midwest ISO footprint realize benefits in roughly the same proportionate share of the overall Midwest ISO Value Proposition identified *net* benefits of \$755 million to \$981 million, Ohio customers have the opportunity to realize between \$118 million to \$153 million in annual benefits. It must be stressed that this is not an empirical, in-depth, rate case type of analysis and is merely provided as an illustrative proxy to relate the Midwest ISO region-wide Value Proposition analyses to the issues presented in this inquiry. It must also be stated that there are numerous variables and assumptions that are required when doing the type of analysis that underpins the Midwest ISO's Value Proposition and this load share ratio illustration has no direct link to the results that may or may not be actually realized or achievable by the individual Ohio Midwest ISO members and its electric customers.

**2. Are RTOs providing value to Ohio's customers through more effective management and use of the grid by:**

**(a) Addressing discrimination in access to transmission service?**

Yes. The Midwest ISO is the sole provider in its footprint of transmission and interconnection services and provides non-discriminatory access through its Open Access Transmission Tariff to all transmission customers. As an independent provider with clear, transparent process and procedures for granting these services and with no financial stake in the allocation of these services, the Midwest ISO eliminates both real discriminatory practices and the appearance of any discrimination. See also Reply to Question 13 below.

**(b) Eliminating of pancaked transmission rates?**

Yes. There are no pancaked rates within Midwest ISO and pancaked rates between RTOs have been virtually eliminated. See Reply to Question 14 below.

**(c) Regional transmission scheduling, tariff administration, and settlements?**

Yes. See Replies to Questions 1, 9 and 13 below.

**(d) Enhancing reliability?**

Yes. There is no question that since the establishment of the Midwest ISO, significant changes have taken place that have enhanced electric reliability. Utilities are required to report certain outage data to the NERC Analysis of that data demonstrates that RTOs reduce the size, number and length of outages. Increased reliability in the Midwest ISO provides annual benefits in the range of \$225 million to \$340 million.

**(e) Improved utilization of transmission assets and management of transmission congestion?**

Yes. Prior to the establishment of the real-time energy market, management of congestion on the transmission system was accomplished by the Transmission Loading Relief (TLR) Procedure. This procedure is a standard process established by the NERC. This process effectively manages congestion, but due to a number of factors does so in a relatively inefficient manner. Managing congestion using the TLR process takes time (30 to 60 minutes) and often results in some degree in uncertainty in exactly how much relief will be accomplished. As a result, transmission operations have accounted for the inefficiency of the TLR process by adopting more conservative operating practices in order to maintain the high degree of reliability that is expected. Therefore, typical practices in a system that uses the TLR process include limiting transmission line loading, often to 90% - 95% of actual line limits, and in the event of congestion asking for more TLR relief than is actually required in order to account for the delay and uncertainty of the resulting congestion relief.

In comparison, the Midwest ISO's market congestion is managed through the market's security constrained unit dispatch. This security constrained unit dispatch sends new dispatch signals to every generation unit on the system every five minutes. Therefore, if congestion is observed in the system, the next dispatch cycle will adjust for that congestion and redispatch the generation units to relieve that congestion, all within that five minute window. The ultimate result of this market management of congestion versus the TLR process is increased utilization of the transmission system while actually increasing the reliability. Standard transmission line loading in the footprint is based on the actual line limits and congestion relief is only sought to the level needed to maintain loading at those line limits.

Since transmission congestion is the result of low cost generation trying to serve load, operating the transmission systems to its actual limits and managing congestion efficiently is a huge value driver. Within the Midwest ISO's Value Proposition, these benefits are captured as a part of the dispatch of energy component, which are incorporated as a component of the \$200 to \$250 million annual benefit.

**(f) Regional unit commitment and security constrained economic dispatch?**

Yes. Through its Day-Ahead and Real-Time Energy Markets, the Midwest ISO has optimized the commitment of units and the dispatch of energy in the most efficient,

cost effective manner. Annual benefits from economic commitment and dispatch to Midwest ISO members range from \$200 million to \$250 million.

**(g) Regional procurement of Ancillary Services and consolidation of Balancing Authorities?**

Yes. With the launch of the Ancillary Service Markets and consolidation of Balancing Authorities in January 2009, the region moved to market based procurement of regulation, spinning reserves and supplemental reserves. Based on analysis of the first four months of operations and analyzing those results for a full year, the cost of providing regulation for the region has decreased by \$165 million per year. This is the result of a 60% reduction in the regulation requirement (which frees up those low cost generation resources to serve the energy market) as well as market based procurement of regulation. In addition, the procurement of spinning reserves on a market basis has also resulted in approximately \$47 million per year in savings. This is in addition to the \$123 million saving that resulted from the implementation of the Contingency Reserve Sharing Group which resulted in a substantial reduction in the reserve requirement. See also Reply to Question 4 below.

**(h) Regional transmission planning?**

Yes. The Midwest ISO has a developed and continues to work on a regional planning process that ensures that coordinated transmission expansion occurs to ensure reliable and efficient supply of electricity at the lowest reasonable cost. The Midwest ISO is fully compliant with FERC Orders 2000 and 890. These requirements and the principles that they embody provide value to Ohio's customers, as described further in Reply to Question 7 below.

**3. Are the RTOs' locational marginal pricing (LMP) policies providing value to Ohio's consumers?**

Yes. The Midwest ISO's LMP policies provide significant value to its participating LSEs. The fundamental obligation and duties under the Midwest ISO's regional transmission tariff require the Midwest ISO to reliably balance generation supply and customer demand to assure that demand is satisfied in a dependable and efficient manner. As part of that process, the Midwest ISO must manage transmission congestion that arises due to physical limitations of, and load conditions on, the regional transmission system. These services are provided, in part, by use of the Midwest ISO's coordinated competitive market for electric energy and operating reserves – more specifically, through Midwest ISO's day-ahead and real-time energy markets.

The Midwest ISO energy markets operate by matching offers to sell with bids to buy through a process that determines market clearing quantities and prices while assuring total demand (“load”) is satisfied *at the lowest possible cost*, and while honoring the physical limitations of the transmission facilities used to deliver energy from generation to load. These market procedures have been and continue to be scrutinized

by the FERC, the Midwest ISO stakeholder community, including the many state and local regulatory bodies that operate within the Midwest ISO footprint. The energy market continues to evolve and improve as more and more entities participate and as more data and information is obtained and made available through the Midwest ISO webpage and market portals. An important element of this open market process is establishing prices that provide incentives for efficient behavior of both supply and demand. Settlement of all market transactions at the marginal value of those transactions based on LMP assures those incentives are in place.

In broad terms, LMP is the market clearing price at a specific commercial pricing node in the Midwest market that is equal to the cost of supplying the next increment of load at that location. These clearing prices are a function of competitive offers to sell and competitive bids to buy energy (and ancillary products). LMPs vary by location, because they reflect differences in the cost of meeting load at different locations due to the physical limitations of (and the then-existing load conditions on) the transmission system.

LMP values are separated into three components for settlement purposes: a marginal energy component, a marginal congestion component, and a marginal loss component. LMP pricing thus simply reflects the relative value of energy, based on where (and when) it is both generated and consumed. While energy and losses have historically been explicitly priced out in power purchases, the explicit inclusion and pricing of congestion is new. However, it is important to recognize that congestion has always existed and has always imposed a cost on the system – that cost was just hidden. And in the absence of LMP pricing, transmission congestion was managed, often by simply curtailing schedules under the transmission loading relief mechanism (“TLR”), a clumsy, economically suboptimal means, rather than by creating a mechanism that redispatches generation or demand response resources to cost effectively manage the congestion and incorporate the cost of congestion management into economic price signals. Under market based congestion management, economic efficiency is maximized, and physical constraints are less prevalent.

In contrast to non-market based processes, LMP market prices determine the economic cost of congestion, and provide a mechanism for efficient, regional dispatch. Congestion priced markets reflect the value of both generation and location, providing equal footing to generation, transmission investments, and demand resources. LMPs also provide investors with price signals to optimize new transmission and generation siting decisions. Thus, the use of LMPs signals investment priorities through directly valuing the transmission within the Midwest ISO region.

The Midwest ISO calculates and produces LMP prices at some 1760 points along the transmission grid at 5-minute intervals. In addition, the Midwest ISO has created 5 financial trading hubs – Cinergy, First Energy, Illinois, Michigan, and Minnesota – that provide market participants with convenient trading locations with corresponding price indices to facilitate bilateral trading and settlements. These hubs provide stable trading

locations, reduce price uncertainty, improve liquidity, and generally support the development of a more robust wholesale market in the region.

The markets and prices described above provide substantial benefits to customers throughout the region including those in Ohio. Through the Day-Ahead and Real-Time Energy Markets, the Midwest ISO is better able to optimize the dispatch of energy throughout the region, ensuring that energy needs are met by the most cost effective, deliverable resources available in the region. As more fully described above and in the Midwest ISO's Value Proposition, this results in annual benefits between \$200 million and \$250 million.

In addition to these quantifiable benefits that are due to greater efficiency in resource utilization, competitive market outcomes and the useful information provided by Midwest ISO's transparent market operations; the Midwest ISO market also provides efficient wholesale price signals that, among other things: (i) highlight areas where investment opportunities are available to improve generation output at existing and/or new facilities or where transmission solutions are needed to address a specific issue or more generally meet growing demand; and (ii) help efforts to educate consumers and promote demand response and conservation behavior. In addition to information about the value of generation and transmission enhancements, market prices provide incentives for such investment as savings associated with those investments translate directly into reduced cost to consumers by reducing the cost of supply and/or the cost of transmission congestion.

In short, LMP is the keystone of the Midwest ISO's market and its ability to manage transmission congestion in an economically efficient manner. LMP is also a key ingredient to transparent and efficient day-ahead and real-time energy markets. Thus, LMP provides value to customers in terms of reliability, efficiency, price transparency, and identification of, and incentives for, optimal system enhancements.

**4. Are the RTOs' ancillary services markets and the integration or co-optimization of those markets with the RTOs' energy markets efficient and providing benefits to Ohio's consumers?**

The Midwest ISO's Ancillary Service Markets ("ASM") and the integration of ASM with Midwest ISO's energy market is efficient and provides additional benefits to Ohio consumers. ASM supports transmission reliability. The ancillary products provided through the Midwest ISO's ASM are regulation, spinning and supplemental reserves. Regulation is required to provide for the instantaneous balancing of supply and demand. Spinning reserves are required to replace resources that may be lost due to a forced outage. Supplemental reserves are held to assure spinning reserves are promptly replaced as spinning reserves are deployed to respond to an outage. The incorporation and roll up of ancillary reserves into the Midwest ISO markets provides real, meaningful, and measurable benefits.

These benefits derive first and foremost by allowing the region to consolidate twenty-four (24) separate Balancing Authorities or Control Area Operators into a single entity. This consolidation increases reliability, reduces cost by reducing the quantity of ancillary services required in the region and also provides cost savings by assuring that all ancillary products are procured at the lowest possible cost. The Midwest ISO ASMs will commit and dispatch operating reserves and regulation co-optimized with energy. This will allow portions of cost-efficient resources that are now held for operating reserves to be dispatched for energy needs, while shifting the operating reserve locations to less cost-efficient resources and still maintain reliability. This lowers overall costs for the region, providing annual benefits for all customers in the Midwest ISO footprint. This ASM benefit has been tracked using the stakeholder crafted methodology since its start. The first four months of savings have exceeded the forecast results. Footprint wide, the annual benefits have been calculated to be \$165 million for regulation and a \$47 million reduction in spinning reserves.

In sum, it is clear that all Midwest ISO participants, including Ohio's consumers are benefiting from Midwest ISO's ASM.

**5. Are the RTOs' market monitoring and mitigation policies effective in ensuring competitive prices and providing value to Ohio's consumers?**

The Midwest ISO's market monitoring and mitigation policies are effective in ensuring competitive prices, which is critical to consumers ultimately realizing value. The Midwest ISO energy markets include numerous safeguards to assure they remain competitive under all conditions. The Midwest ISO has an Independent Market Monitor,<sup>9</sup> or "IMM," that monitors, reports and mitigates potential or actual attempts to exercise market power, or any inappropriate manipulation, gaming or abuse of the energy markets. The IMM has the authority to limit maximum allowable offers and therefore maximum price in identified local constraint areas. The market monitoring and mitigation measures in the Midwest ISO energy market include constant monitoring and immediate mitigation when warranted, thereby removing the ability to exercise market power and assuring that the market remains competitive. Further, the Midwest ISO's tariff requires the IMM to not only monitor and mitigate, but also to report instances of potential market power abuse to the FERC which may refer, either based on the IMM's reports or upon complaint by other market participants, this conduct to the FERC's enforcement staff for further investigation and punitive action.

It is also important to remember that the Midwest ISO has a very large footprint (over 130 GW) and allows any and all planning resources to participate in its voluntary capacity auction, so long as the planning resources are universally deliverable. More than 95 percent of the capacity in the Midwest ISO's footprint has been shown to be universally deliverable. Most of the remaining five percent of resources that are not

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<sup>9</sup> Independence of the Market Monitor is key. The IMM is, and must be, free from influence by generation owners, transmission owners, load-serving retail distribution interests, retail purchasers, and the RTO itself.

currently designated as universally deliverable are resources that are awaiting study by the Midwest ISO. Such a large and robustly competitive market would make it extremely difficult for any entity to exercise market power, as acknowledged by the FERC. The Midwest ISO has robust interfaces with capacity resources located in PJM Interconnection, L.L.C., Ontario, Manitoba, the Southwest Power Pool, the Tennessee Valley Authority, as well as other potential sources of capacity.

The Midwest ISO recognizes and agrees with the PUCO's need to and desire to closely scrutinize market monitoring functions of an RTO. This aspect plays a central role in ensuring smooth and transparent functioning of an effective and organized electric market. While the importance of having an independent and effective market monitor cannot be refuted, the counterbalance must also be resisted, namely, an overly aggressive market monitor. The FERC has considered this very issue and has recognized that there are significant dangers associated with imposing mitigation in the absence of market power. In a recent decision involving the Midwest ISO, for example, the FERC held that "over-mitigation means more frequent intervention in the market, and *some competitive market results* will be mitigated. *Mitigation is counterproductive* to the extent it penalizes suppliers trying to resolve constraints, and when their higher offers reflect higher costs, not manipulation."<sup>10</sup>

The Midwest ISO's IMM has direct computer access to unfiltered information of the Midwest ISO. Where necessary to achieve the objectives of the Midwest ISO's Market Monitoring Plan, the Energy Markets Tariff also authorizes the IMM to obtain information directly from market participants and establishes a process for that purpose.<sup>11</sup> The Midwest ISO has a designated Market Monitoring Liaison Officer, who is appointed by the Midwest ISO board of directors, to assist the IMM with collecting necessary data and information from the Midwest ISO.<sup>12</sup> Because the IMM is an external monitor, its relationship with the Midwest ISO is contractual, thereby ensuring that it has adequate resources. While the Energy Markets Tariff does not require the IMM "to report to the FERC any concerns it has with inadequate access to market data, resources, or personnel, and describe the steps it has taken with the RTO or ISO to resolve these concerns," there is no prohibition on such reporting and, in fact, the IMM is specifically authorized to take this step if necessary.<sup>13</sup> Furthermore, there is an explicit prohibition in the Midwest ISO Tariff that is imposed on all persons, including the Midwest ISO, to "screen, alter, delete or delay IMM investigations or the preparation of findings conclusion, and recommendations developed by the IMM that fall within the scope of market monitoring responsibilities contained in the [Midwest ISO Market Monitoring] Plan."<sup>14</sup>

Importantly, the Midwest ISO's IMM may bring any matter to the attention of interested governmental agencies, including a state regulatory commission, as it may

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<sup>10</sup> *Midwest Independent Transmission System Operator, Inc.*, 115 FERC ¶ 61,158, p. 12 (2006). (Emphasis added).

<sup>11</sup> See Energy Markets Tariff § 54.2.

<sup>12</sup> *Id.* § 51.

<sup>13</sup> *Id.* § 52.3b.

<sup>14</sup> *Id.* § 50.1.

deem necessary or appropriate to achieve the purposes, objectives and effective implementation of the market monitoring plan.<sup>15</sup> In addition, the IMM *is required* to notify the FERC and the affected state regulatory commissions in the event it identifies a significant market problem or a potential tariff violation that may require further investigation, a change in the tariff or market rules, or action by the FERC or state regulatory commissions.<sup>16</sup> The Midwest ISO Energy Markets Tariff also provides a detailed procedure for such referrals.<sup>17</sup> Specifically, §53.3 of Module D of the Tariff sets out detailed requirements concerning referring the name, dates, rules or tariff provisions allegedly violated, specific acts or conduct that allegedly violated rules or tariff provisions, consequences of such acts or conduct, *etc.* The Midwest ISO submits that these provisions, along with its open stakeholder process to regularly review, amend and improve Midwest ISO procedures, establish ample safeguards and methods to ensure the integrity of the market monitoring functions.

Finally, the IMM has an obligation to report to the Midwest ISO Board of Directors on the performance of the Midwest ISO markets and the Midwest ISO's process, procedures and operational staff performance in carrying out their duties administering the Midwest ISO's markets. Such reporting also includes recommendations for tariff or other changes to enhance the operation and efficiency of the Midwest ISO's markets.

**6. Are the RTOs' resource adequacy requirements and the resulting capacity markets (or, in the case of PJM, its Reliability Pricing Model and Fixed Resource Requirement) reasonable and providing benefits to Ohio's consumers? Are these policies effective in promoting needed resource investment and long-term contracts which could help finance such investment? Do these policies promote an appropriate level of investment that is consistent with the needs and preferences of Ohio consumers?**

To be able to fully and properly respond to this question, we must first discuss and recognize the benefits that come from Midwest ISO's large geographic footprint and the inherent diversity that such a large footprint provides. These footprint diversity benefits have been and continue to be realized and systematically provide benefit and value to all participants of the Midwest ISO. The recognition of this footprint diversity value and the benefits that flow from the larger scope should not be ignored and does impact both the future investment needs as well as the long term contracting opportunities. After recognizing and factoring in the scope and scale diversity impacts the Midwest ISO's footprint provides, the Midwest ISO's new Resource Adequacy requirements, contained in Tariff Module E, along with other policies and practices certainly facilitate and even encourages the addition of additional resources, when and where appropriate. In addition, when considering the current renewable energy standards that many states in the Midwest ISO footprint are adopting, the resource investment and the capability for those resources to participate in both the energy and resource adequacy

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<sup>15</sup> See Energy Markets Tariff, § 52.3b.

<sup>16</sup> *Id.*

<sup>17</sup> *Id.* § 53.3.

markets further supports the value proposition components of reliability and market efficiency.

The second phase of the Midwest ISO's long-term resource adequacy plan will go into effect on June 1, 2009. This requirement has been developed with input and participation from numerous stakeholders, including the Organization of Midwest ISO States ("OMS"). Module E requires LSEs to have adequate resources to meet their forecasted load, plus a planning reserve margin (PRM). In addition to generation capacity, acceptable resources include bilateral purchase power contracts, including contracts with resources outside the Midwest ISO footprint with appropriate transmission rights, demand response resources, interruptible load, and behind the meter generation. The latest version of Module E makes LSEs accountable for variances below the required reserves through an administrative deficiency charge equal to the cost of new entry ("CONE"), which equates to the capital, operating and other costs incurred to develop a combined cycle gas turbine resource in the Midwest ISO.<sup>18</sup>

The Midwest ISO's resource adequacy construct is premised historically on the LSE's meeting their planning reserve requirements primarily via bilateral contracting and is consistent with a market predominantly managed by traditional, vertically-integrated utilities and spans multiple state and local jurisdictions. However, with multiple retail access states in the Midwest ISO footprint, including Ohio, the resource adequacy construct provides the capability for individual states to conduct load auctions (as was the case in the recent FirstEnergy Ohio load auction and the Ameren Illinois load auctions) with the footprint-wide analysis, accountability, and data accuracy provided by the Midwest ISO. In this role, the Midwest ISO oversees and determines a number of critical components of the resource adequacy requirements, including: (i) the calculation of a loss of load expectation, (ii) diversity factor, (iii) the Planning Reserve Margin (PRM) for the footprint, (iv) individual unit unforced capacity ratings, (v) accreditation and confirmation of Demand Resources, Behind-the-Meter Generation (BTMG), and External resources, and (vi) strenuous after-the-fact measurement and verification of generator performance, (vii) emergency availability compliance, (viii) load forecast error, (ix) unit testing, (x) must-offer requirement compliance and (xii) reporting requirements to all states in the Midwest ISO footprint.

Within Module E, individual LSEs maintain planning reserves based on their monthly peak load forecasts. These peak forecasts do not sum to the system coincident peak because they are reported based solely on the individual entities own peak, which could occur at a different time than the system peak. To account for this diversity within the system, a reserve margin was calculated for application to individual LSE peaks utilizing a 2.35 % diversity factor. This was the lowest diversity experienced on the system since Midwest ISO market start and resulted in an individual LSE planning

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<sup>18</sup> Note, as more fully discussed in Response 4, above, the Midwest ISO's Ancillary Services Market along with the pre-ASM annual benefits attained through the Generation Reserve Sharing Group provide an accumulated annual benefit range of between \$172 million and \$396 million, as noted in the initial 2007 Midwest ISO Value Proposition.

reserve level of 12.69%, reduced from what would otherwise be a 15.4% planning reserve without accounting for diversity.

This diversity factor is one of the primary driver components of the Midwest ISO's Value Proposition subcategory entitled "Generation Investment Deferral". The lower planning reserve margin calculated and to-be-implemented by the Midwest ISO translates into a significantly lessened need to construct or contract for new electric resources in the future. This, in turn, reduces the corresponding typically significant capital costs associated with new generation that otherwise would have to be recovered from end use customers. The shift from localized use of the electrical system to regional use allows more efficient and effective use of the generation assets and allows for a reduction in the planning reserve margins for the region.

Each megawatt of new generation deferred or eliminated due to the need to carry fewer planning reserves creates considerable savings. Collectively, the impact of this significant planning reserve reduction under Module E translates into annual benefits of \$235 million to \$295 million for our stakeholders<sup>19</sup>.

Since the second phase of resource adequacy does not begin until June 2009, the Midwest ISO must first examine the benefits and issues associated with this construct before implementing any significant market changes or enhancements to its resource adequacy requirements. However, the Midwest ISO will continue to work with its stakeholders, including the OMS, to determine the effectiveness of the second phase of resource adequacy, including the pursuit of implementing new market mechanisms to assure longer-term adequacy of regional supply resources.

As a part of its transmission expansion planning process, the Midwest ISO, in MTEP 08, included Regional Resource Forecasting for the first time. MTEP 08 includes regional resource plans for four different future states. These future resource plans provide independent analyses of future resource needs in the Midwest ISO footprint under a variety of possible futures. In addition to providing this independent assessment of future needs, the Midwest ISO facilitates needed resource investment by providing transparent market signals that simply were not available prior to the inception of RTOs. These transparent market prices provide valuable, reliable information to support investment analysis for new supplies.

In addition to providing independent information with respect to need and market information, the Midwest ISO provides another critical element for future generating resources—transmission services. Load serving entities want reasonable assurances that congestion costs will be predictable in accessing generating resources with which they contract. The Midwest ISO generator interconnection and long term planning practices provide for these assurances. Generators seeking to interconnect to the grid may elect Network Resource Interconnection Service. This service evaluates the network upgrades

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<sup>19</sup> See also additional details regarding the Midwest ISO Value Proposition - Generation Investment Deferral, on the Midwest ISO webpage at: <http://www.midwestiso.org/page/Value%20Proposition>

that are needed to enable the deliverability of the connecting generator to market loads, without being “bottled up” by the operation of other network resources. LSEs are then eligible for Auction Revenue Rights (“ARRs”)<sup>20</sup>, subject to Tariff provisions from deliverable Network Resources with which they have contracted, in order to offset congestion costs. Transmission customers are also eligible for Long Term Transmission Rights (LTTR) which, once allocated, have annual rollover rights lasting ten (10) years or more. The long term expansion planning process reflects the use of resources with LTTR in the planning for Baseline Reliability upgrades, further ensuring the infrastructure necessary to support the feasibility of these rights into the future.

**7. Are RTOs effective in facilitating transmission planning and needed transmission investments that benefit Ohio's consumers? Are they effective in facilitating transmission planning and investment that may be needed for the development of renewable energy resources?**

The Midwest ISO performs regional transmission planning in accordance with the Guiding Principles for Expansion Planning, established by the Midwest ISO Board of Directors in July of 2006. These Guiding Principles include the following statement:

“The transmission system expansion plans established for the Midwest ISO and its member companies must support national energy policy goals, and enable a competitive energy market to benefit all customers. The plan must identify and support development of delivery infrastructure that is sufficiently robust to meet local reliability standards, and enable competition among wholesale energy suppliers. Specifically, Midwest ISO regional expansion plans should identify efficient investments in the transmission infrastructure system to:

1. Make the benefits of a competitive energy market available to customers by providing access to the lowest possible electric energy costs
2. Provide a transmission infrastructure that safeguards local and regional reliability
3. Support state and federal renewable energy objectives by planning for access to all such resources (e.g. wind, biomass, demand side management).
4. Create a mechanism to ensure investment implementation occurs in a timely manner
5. Develop a transmission system scenario model and make it available to state and federal energy policy makers to provide context and inform the choices they face.”

The Midwest ISO produces transmission expansion plan reports annually, based on these above core principles. On December 4, 2008, the Midwest ISO's board of directors approved the fifth regional transmission expansion plan, MTEP08. MTEP08 includes transmission and improvement projects totaling \$2.4 billion in investment in the electric grid, to be in service by 2015, including more than 1,900 miles of new transmission line construction. As these projects, and others approved by Midwest ISO are placed into service, Midwest ISO estimates they will begin to produce approximately

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<sup>20</sup> ARR's are the monetized value of FTRs, described further in section 10, below.

\$1 billion in annual savings by 2013<sup>21</sup>. Overall, working collaboratively with our transmission owning members, the Midwest ISO coordinated regional planning process has recommended, and the Midwest ISO Board of Directors has approved, 42 transmission expansion projects totaling \$88 million in Ohio since June of 2005.<sup>22</sup>

The Midwest ISO is the NERC Planning Authority for its members' footprint and performs regional planning in accordance with FERC Planning Principles delineated in FERC Order 890<sup>23</sup>, which provides mechanisms to ensure that the regional planning process is open, transparent, coordinated, and includes both reliability and economic planning considerations, and includes mechanisms for equitable cost sharing of expansion costs, designed to align costs with the benefits. Fair and open access planning for new generators seeking interconnections ensures a level playing field for all competing generation, including renewable energy resources, so that customers may exercise energy options in the future based upon costs and energy policy decisions.

Order 890 requires an open planning process. The Midwest ISO not only does so with the transmission customers, it opens its process up to all stakeholders who can scrutinize what is done, including its ongoing coordination efforts with customers regarding future system plans, and the sharing of necessary planning information. Nearly all Midwest ISO member utilities and stakeholders alike, including the Ohio utilities and stakeholders, rely on the Midwest ISO to provide compliance with these open, transparent, and coordinated planning practices. This service that the Midwest ISO provides to our members greatly improves the efficiency of the stakeholder processes that are needed to ensure that all transmission customers are appropriately informed of and engaged in the planning processes. More importantly, it ensures that transmission customers and stakeholders are made aware of plans before they are finalized by the utilities, so that they may have input to guide the final recommended solutions.

Another added benefit is that the Midwest ISO planning process ensures that the individual plans of the member Transmission Owners are more fully and better coordinated and avoids individual members working at cross-purposes to one another. The Midwest ISO evaluates the system performance as a whole. This aggregate analysis tests to ensure that the individual local plans function together effectively. Further, the Midwest ISO validates the need for all major member proposed projects, to ensure that the projects are necessary cost effective system additions. The Midwest ISO planning process has on several occasions brought to light instances where there was either duplication or contrary efforts proposed that were discovered earlier on saving many man-hours of effort and streamlining the overall process. This annual review provides an

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<sup>21</sup> Page 1, MTEP 08 Report, published November 2008.  
[http://www.midwestiso.org/publish/Document/279a04\\_11db4d152b9\\_-7d8d0a48324a/2008-11\\_MTEP08\\_Report.pdf?action=download&\\_property=Attachment](http://www.midwestiso.org/publish/Document/279a04_11db4d152b9_-7d8d0a48324a/2008-11_MTEP08_Report.pdf?action=download&_property=Attachment)

<sup>22</sup> The MTEP Reports are available on the Midwest ISO website:  
[http://www.midwestiso.org/publish/Folder/193f68\\_1118e81057f\\_-7f900a48324a](http://www.midwestiso.org/publish/Folder/193f68_1118e81057f_-7f900a48324a)

<sup>23</sup> *Preventing Undue Discrimination and Preference in Transmission Service*, Docket Nos. RM05-17-000 and RM05-25-000, 18 C.F.R. Parts 35 and 37 (Feb. 16, 2007)

independent assessment of the benefits of proposed transmission expansion plans throughout the Midwest ISO footprint.

Since the beginning of the 2008 planning cycle, the Midwest ISO has developed a sub-regional approach to more fully engage stakeholders in the development of transmission plans. In addition to regular planning meetings held in Carmel, Indiana, new sub regional meetings have been held in locations throughout the Midwest ISO footprint. Without these local planning forums, each utility would need to schedule parallel meetings with their local customers in order to ensure the proper exchange of ideas needed to develop a transmission system that is responsive to, and is informed by, the review of and input on plans by stakeholders.

Responding to unprecedented volumes of new interconnection requests, fueled by state and federal renewable energy policy initiatives, the Midwest ISO has undertaken a Queue Reform program.<sup>24</sup> As a first phase, this program engaged stakeholders to redesign the FERC required pro forma interconnection procedures in order to streamline the interconnection process. The new, more efficient process is in place. Overall, in the seven months since these modifications the Midwest ISO has processed twice as many requests as in the seven months prior.

A second and arguably more important phase of Queue Reform is currently underway. These more current efforts focus on developing regional expansion plans to provide for the outlet of sufficient new renewable generation to address and meet the needs of existing Midwest ISO state renewable portfolios standards. These efforts, known generally as the Regional Generation Outlet Studies (RGOS), are being pursued to assist and support state initiatives such as the Upper Midwest Transmission Development Initiative, and the Midwest Governors Association. The RGOS objectives are to provide Ohio and the other Midwest ISO states with analysis surrounding the underlying infrastructure needs that may be required which will, in turn, provide policy makers with requisite background information to best craft the policies and procedures needed to support the mandated and in some cases,, evolving renewable energy standards. In developing this supportive information, the Midwest ISO is cognizant of the fact that each state may define their renewable energy policies somewhat differently. The planning process has been designed to be flexible enough to accommodate differences while at the same time meeting the aggregate needs of the entities operating within the Midwest ISO's footprint – and beyond.

**8. Are the RTOs policies and practices effective in facilitating long-term contracts between load serving entities and generation developers or suppliers that may be needed to support the construction of additional base load generation facilities?**

Please see Response to Questions 6 and 7, above.

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<sup>24</sup> See also Response to Question 13, below

**9. Are the RTOs' transmission cost allocation methodologies and policies resulting in value for Ohio's consumers?**

Cost allocation policies applied under the FERC approved Midwest ISO tariff define transmission expansions with select characteristics, such as scale and connectivity, as providing reliability benefits beyond the borders of the utility constructing them. The Midwest ISO allocation algorithm<sup>25</sup> is heavily weighted towards localizing the reliability benefits to areas of the grid in greater proximity to the upgrades, rather than broadly spreading the costs. This approach recognizes that while the impacts of grid failures due to reliability can indeed be far reaching, not all upgrades impact the grid equally, and not all areas are impacted equally by the reliability benefits of a given upgrade.

As a result of these considerations and resulting policies, about 59% of the total transmission upgrade costs since regional cost sharing began in 2006 have been classified as eligible for cost sharing. Of the total transmission upgrade investment only 12% of the associated costs have been shared with zones outside of the constructing zone. The average per kW cost of the cost-shared upgrades is about \$30 / kW. Reflecting the fact that the Ohio Utilities have not needed to construct as many new upgrades in the past few years as in some other parts of the system, the Ohio customer's cost for the upgrades qualifying as providing broader system benefits has been about \$7 / kW.

However, cost allocation or cost sharing is a contentious issue, and the Midwest ISO expects that this issue will become more contentious in the future as the level of costs proposed to be shared increases. Over time those paying for increasing costs must derive proportional benefits. This is particularly true in an RTO where participation is voluntary. The Midwest ISO expects that the determination of beneficiaries will become increasingly complex in the future as public policies, such as requirements for renewable energy, continue to evolve and develop. The Midwest ISO has recently created a task force, The Regional Expansion Criteria & Benefits Task Force, chaired by Commissioner Luran Azar of Wisconsin, to address many of these important issues and to work with all stakeholders and attempt to reach a workable resolution.

**10. Are the RTOs' Financial Transmission Rights and other transmission congestion hedging policies and practices effective and providing value to Ohio's consumers?**

Financial transmission rights ("FTRs") are an important element of the Midwest ISO's markets and provide a means to effectively hedge congestion costs that may arise in the Day Ahead market due to transmission constraints. The purpose of the Midwest ISO FTR market is to support a liquid energy market by providing tradable financial instruments for the hedging of transmission congestion. FTRs allow market participants to eliminate or greatly reduce the cost uncertainties resulting from transmission congestion charges, thereby encouraging competitive energy trading, where the costs of congestion might otherwise be an impediment. By providing a financial

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<sup>25</sup> This allocation process was a hotly contested matter that was fully vetted in numerous stakeholder meetings and processes, as well as several FERC proceedings. See, e.g., *Midwest ISO*, 114 FERC ¶ 61,106 (2006); *order on reh'g*, 117 FERC ¶ 61,241 (2006); *order on reh'g*, 118 FERC ¶ 61,208 (2007); see also *Midwest ISO*, 118 FERC ¶ 61,209 (2007); *order on reh'g*, 120 FERC ¶ 61,080 (2007); see also *Midwest ISO*, 112 FERC ¶ 61,081 (2008).

congestion cost hedge, market participants are encouraged to purchase energy from the competitive spot market when less expensive than operating their own generation with assurance that they are protected from uncertain congestion cost. Absent such protection, the full benefits of coordinated dispatch may not be realized due to risk aversion practices causing a less efficient utilization of regional supply.

Ohio customers realize the benefits of the FTR market through reduced overall supply cost. Absent the ability to hedge against congestion costs, the savings associated with more efficient regional dispatch would not be fully realized.

FTRs are made available through an annual and monthly allocation available to all firm transmission customers assuring that LSEs in Ohio have the opportunity to adequately hedge congestion risk and realize the benefits described above. Moreover, the Midwest ISO makes available these hedges on long-term basis, protecting LSEs from changes in transmission system or its usage to provide assurance that the hedging opportunities are preserved over the long term. The annual allocation is based on voluntary nominations so that customers can develop an optimal portfolio of congestion cost hedges to meet their individual needs. Lastly, in states with retail competition, such as Ohio, FTRs are reallocated on a monthly basis to reflect load shifts between LSEs to ensure congestion cost hedges to all LSEs as their needs change due to customer switching.

The Midwest ISO FTR market also includes annual and monthly auctions that allow customers with allocated FTRs to buy or sell FTRs to meet changing needs between allocations and to allow residual transmission capacity not previously allocated to be sold to capture the value of that transmission capacity. The revenue collected in the annual allocation is distributed directly to firm transmission customers producing additional savings by lowering overall supply cost.

Unlike the value of regional commitment and dispatch, the value of the FTR market is difficult to quantify. The value is based, in part, on the increased incentives to participate in the day-ahead energy market and the liquidity derived from increased participation. As such, the value of the FTR market is captured in the more easily quantified value created through efficient utilization of generation and demand response resources. Moreover, the FTR markets provide value to customers in Ohio and across the Midwest ISO market region by providing the ability to hedge congestion costs thereby reducing the price risk associated with uncertain transmission congestion. All market elements that reduce price risk provide savings to customers by reducing overall supply cost by reducing price volatility and reducing costs to manage that volatility through other, less cost effective means.

Please also see Response to Question 15, below.

- 11. Are the RTOs demand response programs, policies toward behind-the-meter generation, and other Load Modifying Resources effective and providing value to Ohio's consumers over and above state sponsored programs?**

Critical to the differentiation of the Midwest ISO from other ISO/RTO and other state sponsored programs is that the Midwest ISO does not have Demand Response (DR) programs. Instead, the focus of all of the Midwest ISO's efforts relating to DR is to enable demand resources to participate on a comparable basis to generation resources in all the products and services offered. The Midwest ISO has no DR programs and has no intention of creating any, as the Midwest ISO believes DR "programs" are in large part the purview of the state or local regulatory bodies.

The Midwest ISO, however, is committed to providing market mechanisms that allow DR to participate on a level playing field with other resources in the various products and services it offers. The Midwest ISO administers markets for the procurement of energy, regulation reserve, spinning and supplemental reserve. In addition, the Midwest ISO has emergency procedures and requires Load Serving Entities (LSE) to meet capacity requirements. All of the aforementioned markets accommodate DR participation.

The Midwest ISO feels strongly that the measurements and verification protocol, wholesale market access, price transparency, ability for DR and Behind-the-Meter Generation (BTMG) to qualify as planning resources to meet Resource Adequacy obligations and monetization of Emergency Demand Response (EDR) in emergency energy events are a number of reasons why the Midwest ISO's focus on DR and BTMG has the capability to provide additional benefits than those that could be provide in state-sponsored programs.

Measurement and verification protocols, procedures, requirements and timeframes for DR and BTMG are actively in development in the Midwest ISO working groups with consideration given to the North American Energy Standards Board's (NAESB) development of business practices for measurement and verification of wholesale DR.

Midwest ISO efforts regarding DR were formalized in 2004, when the Midwest ISO formed a Demand Response Task Force and Working Group within the Market Subcommittee, comprised of Midwest ISO Staff and stakeholders. The purpose of the Demand Response Task Force and Working Group is to develop recommendations on how DR should be incorporated into markets administered by the Midwest ISO.

Currently incorporated into the Midwest ISO's Transmission and Energy Markets Tariff is a Demand Response Resource Offer into the day-ahead and real-time energy markets, applicable to interruptible demand, controllable load, and behind-the-meter generation. The Midwest ISO Tariff differentiates between "Type I" and "Type II" demand response resources. Type I resources are capable of supplying a specific quantity of energy or contingency reserves through physical load interruption. Type II resources are capable of supplying energy and/or operating reserves over a dispatchable range, such as through controllable load or behind-the-meter generation. Demand response resources may submit offers in both the day-ahead and real-time markets using either an "economic" or an "emergency-only" designation. Resources designated as "economic"

are considered during the market clearing process in each applicable market based on their submitted offers. Economic demand response resources may offer energy, regulating reserves, spinning reserves, and/or supplemental reserves in both the day-ahead and real-time market, to the extent the resource meets the qualification standards established by the NERC subsidiaries. Resources designated as emergency-only are considered during the emergency operation procedures on the same basis as other emergency resources.

The Midwest ISO recently added an Emergency Demand Response (“EDR”), Initiative to its Tariff, in an effort to encourage market participants with demand response capabilities to submit offers to reduce load or increase behind-the-meter generation during emergency events. The Midwest ISO's EDR Initiative currently has approximately 600 MW of enrolled emergency-only demand response. In addition, the Midwest ISO filed with the FERC proposed tariff changes to enable EDR offers to be updated daily, which would be an improvement over the current requirement for EDR offers to be valid for a calendar month.

Additionally, the Midwest ISO's LSEs offer their own demand response programs to ultimate customers. Altogether, the Midwest ISO estimates that over 9,000 MW of DR and Behind-the-Meter Generation (BTMG) are registered as Load Modifying Resources (LMR”), with the Midwest ISO. With more than 9,000 MWs of existing load modifying resource capability – even with the general absence of smart metering and dynamic pricing at the retail level – the Midwest ISO clearly has substantial potential for increasing the utilization of load management resources in the footprint. Midwest ISO is committed to working with its many stakeholders toward such increased utilization. The commitment was apparent when the Midwest ISO requested Rehearing with the FERC when FERC ordered that DR must carry Planning Reserve Margin (PRM). FERC in its consideration of the request for rehearing did in fact reverse their previous Order and allowed DR to be netted from an LSE demand forecast (thus not requiring this portion of load to carry PRM).

**12. Are the RTO policies and practices relating to the treatment of Price Responsive Demand (PRD) consistent with facilitating the development of PRD through dynamic and time-differentiated retail pricing? (PRD is consumer demand that predictability responds to changes in wholesale prices as a result of dynamic or time-differentiated retail rates.)**

At the current time, the Midwest ISO Markets allows for LSEs to utilize PRD as part of its Day-Ahead demand bids and also to reduce demand in Real-Time in anticipation and in response to expected real-time LMPs. The predictable response to changes in wholesale prices by consumers on dynamic or time-differentiated retail pricing does require additional ISO/RTO coordination. Despite the requirements in the near-term of significant Advanced Metering Infrastructure (AMI) and more innovative retail rate structures, the Midwest ISO does recognize the beneficial feedback and role that PRD could play in enhancing reliability, improving predictability and facilitating the integration of intermittent resources.

The Midwest ISO's policies and practices in order to facilitate the incorporation of PRD must enable PRD in two primary areas - (1) PRD incorporation into overall demand forecast methods and (2) reduction of capacity requirements and thus the avoidance of some portion of the capacity costs to cover load.

With regard to the incorporation of PRD into overall demand forecast methods, the Midwest ISO, via the stakeholder process, is focusing now on creating the opportunity for demand response (which is the likely place to include PRD), to set market prices as part of its efforts to allow fixed block resources, as well as Generation Resources at "EconMin", to set LMP in Midwest ISO markets. While the Midwest ISO's current systems are not yet sufficient to allow this, the Midwest ISO has pursued and begun to research this to determine a viable mechanism that will allow these types of resources to set prices. A mathematical formulation has already been developed and Midwest ISO has been working to determine whether the pricing problem can be solved in practice.

To determine whether the pricing problem can be practically solved, the Midwest ISO is working with its contractors, Nexant and the University of Connecticut ("UCONN"), to investigate potential algorithms for solving the pricing issues. Nexant and UCONN have concluded that "cutting plane methods" and variants of the Analytic Center Cutting Plane Method ("ACCPM") in particular are promising approaches to solve the pricing problem. The contractors have implemented test beds that Midwest ISO can use to investigate the performance of the algorithms and the characteristics of the pricing approach on realistic problems.

Nexant has implemented a test bed that can be used to solve for prices over 24 coupled hours using the ACCPM. To date, constraints modeled in test bed code include: energy balance constraints; unit operating characteristics; and transmission constraints for medium to large size cases. Both a mid-size test case (23 generator, 414 buses, 11 transmission constraints and 24 hours) with transmission constraints and a large system (1013 generators, 24 hours) without transmission constraints currently can be solved within 5 minutes. UCONN has also delivered software with transmission constraints modeled. The performance of both software packages are similar and can be used to check each other.

In the next steps, the Midwest ISO plans to investigate the application of the approach to Day Ahead and Real Time Energy Markets. The Midwest ISO will be using the software to test various options for applying the approach. Along with this effort, both Nexant and UCONN will add Ancillary Service Market features to their analysis. The Midwest ISO will also be working with Nexant to further refine the analysis and address more complicated issues and concerns, with the ultimate goal to be a test of the real Midwest ISO market-wide situation. UCONN will continue focusing on the algorithm/performance improvement, and making their engine ready for Midwest ISO market-wide large systems. The Midwest ISO expects to engage its stakeholders in the process by year end, and depending on the outcome of those stakeholder efforts, an

implementation process will be initiated sometime in 2010. Accordingly, this process is scheduled to continue through 2010.

These demand response and PRD issues are generally being addressed in the Midwest ISO's Supply Adequacy Working Group (SAWG). While the Midwest ISO's most recent near-term focus has been ensuring the implementation of the permanent Resource Adequacy construct, this process is now in place. With resource adequacy somewhat stabilized, the SAWG is now turning attention to PRD issues and the groundwork laid by certain stakeholder representatives. These intensive proposals surrounding PRD will enable the Midwest ISO to re-focus their efforts on the prefatory mechanical problems the PRD issue raises. One such issue surrounds understanding and concerns about impacts on the expected reduction in energy withdrawals at certain LMP levels. In addition, the Midwest ISO has to reconcile conflicting stakeholder viewpoints on whether there should be an option to exclude PRD from forecasted demand levels.

The Midwest ISO strongly believes that the efficacy of the Midwest ISO stakeholder process, combined with the work already underway to enable Demand Response (including PRD) to set prices, are critical to and consistent with facilitating the development of PRD throughout the Midwest ISO footprint (including Ohio).

**13. Are the RTOs' queue and interconnection policies providing value to Ohio's consumers?**

The Midwest ISO queue and interconnection policies are providing value to Ohio members. One of the principle functions of the RTO, as established in Order No. 2000, is the requirement that the RTO be the sole provider of transmission service and sole administrator of its own open access tariff. As a result, Midwest ISO has the sole authority for the evaluation and approval of all requests for transmission service, including requests for new interconnections within the Midwest ISO footprint. Since start of operations in 2001, the Midwest ISO has addressed this requirement by providing nondiscriminatory and uniform access to regional transmission facilities. This type of access cannot be assured if customers are required to deal with several transmission owners with differing tariff terms and conditions. Midwest ISO interconnection policies assure fair and even-handed transmission access to all within the Midwest ISO footprint. In addition, the Midwest ISO Business Practices governing the evaluation of requests for Long Term Transmission Service and for Interconnection Service provide for participation in studies by all impacted parties. In this manner, Transmission Customers receive results of system impacts via a single evaluation process rather than having to approach multiple providers in order to receive the necessary evaluations and approvals for service.

A significant revision to Midwest ISO's queuing procedures was undertaken by the stakeholders in 2007 and culminated in FERC-approved revised procedures in 2008 (Sec 24 FERC ¶ 61,183 (August 25, 2008)). The most significant change was changing

queue management from "first come, first served" to "first ready, first served." This revised procedure insured that projects that were not proposed to go forward would not delay other projects that were ready to project. The result has been a significant reduction in the lag time for shovel-ready projects thereby increasing the efficiency of the queuing process.

Since 2001, the Midwest ISO has independently evaluated 26 requests for Generator Interconnection Service in Ohio involving nearly 5500 MW, and over 150 Long Term Transmission Service Requests involving Ohio customers. All of these evaluations directly benefited Ohio consumers. In addition to ensuring non-discriminatory access to the transmission system, these independent analyses reduce the burden on our member utilities of administering these transmission evaluation processes.

**14. Is the resolution of seams issues being thoroughly addressed and resolved by the RTOs operating in Ohio?**

Seam issues have been thoroughly addressed by the RTOs serving Ohio. In accordance with the FERC's orders,<sup>26</sup> a Joint Operating Agreement ("JOA") was executed by Midwest ISO and PJM, and filed with that Commission. The provisions of the JOA and the Congestion Management Process ("CMP") incorporated into the JOA, have been implemented, greatly reducing the cost of managing transmission congestion cost at the seams through dispatch of generation in both RTOs, based on least cost dispatch, to manage congestion. By reducing redispatch, congestion cost is reduced providing direct saving to customers in Ohio through lower overall supply cost.

The JOA obligates the two RTOs to exchange real-time and day ahead operating information, and planning information, to increase reliability coordination. The JOA spells out how outage coordination, voltage control, and emergency operations will be handled between the two entities, and adopted the highly detailed CMP to govern congestion management during the period when PJM operated energy markets, but Midwest ISO did not. After Midwest ISO started its own energy markets, Midwest ISO and PJM implemented a "market-to-market" congestion management process called the "Interregional Coordination Process" (ICP). The ICP builds on the CMP and moves to a financial system allowing one RTO to compensate the other when the second RTO redispatches internal generation to solve a congestion problem occurring in the first RTO's system. This occurs when the economics of the congestion are more reasonably addressed by redispatch than by having the first RTO attempt to reduce its own flows to relieve congestion.

The JOA between Midwest ISO and PJM contains the following elements:

- 1) Exchange Operating Data, SCADA, Models, Planning Data

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<sup>26</sup> See Docket No. ER04-375, 106 FERC ¶61,251 (March 18, 2004) and 108 FERC ¶ 61,143 at PP 58, 59 (August 5, 2004), and Docket No. EL02-65-000, et al., 100 FERC ¶61,137 (July 31, 2002 Order).

- 2) Exchange ATC/AFC methodologies, and data inputs
- 3) Define and agree to manage Reciprocal Coordinated Flowgates
- 4) Outage Coordination
- 5) Joint Operations in Emergencies
- 6) Coordination of Transmission Planning
- 7) Joint Scheduling Checkout Procedures
- 8) Voltage control and reactive Power Coordination
- 9) Dispute Resolution
- 10) Boilerplate Terms: Indemnity, Accounting for Costs, Confidentiality of Data, Intellectual Property, Termination, Choice of Law, etc.
- 11) The Congestion Management Process (CMP): Detailed attachment containing technical requirements for managing market-to-non market congestion using RCFs.
- 12) The Interregional Coordination Process (ICP): Detailed attachment containing technical requirements for managing market-to-market congestion using RCFs but allowing one RTO go "Buy through" its congestion relief obligation by paying the other RTO to redispatch when that is the cost effective solution.

In response to the order of the FERC, PJM and the Midwest ISO eliminated pancaked rates for transmission service between the RTOs. The RTOs also engaged in a protracted "Joint and Common Market" stakeholder process between 2005 and 2009 that identified additional commercial and operating issues that were later improved, when economically feasible, to reduce as much as possible remaining impacts on transactions across the seam.

Although the Commission has asked about the seam in Ohio, the Midwest ISO – PJM agreement uses the above noted process that contains a more consistent methodology to more easily and quickly address any point of interconnection between the two RTOs, including the seam surrounding the Commonwealth Edison system in Chicago. The CMP is the most common form of congestion management between market and non-market regions in the Eastern Interconnection, and has been utilized in each of the agreements signed by Midwest ISO, PJM, TVA, SPP, the MAPP region, and Manitoba Hydro.

Each entity that signs a standard form of seams agreement to manage congestion using the CMP and Reciprocal Coordinated Flowgates ("RCF"), becomes a "Reciprocal Entity" as defined in those agreements. This means that each Reciprocal Entity must manage its flows on the RCF that are common to one or more other Reciprocal Entities, thereby benefiting all.

The Reciprocal Entities signing seams agreements with the Midwest ISO formed a steering committee to address common technical issues that may arise during implementation of the agreements, as the parties gain experience with the modeling of the systems and the operational requirements of the contracts, and to discuss possible improvements in the CMP process itself. Before procedures can be changed or new ones adopted, (including any contract amendments that require FERC approval) the Council must unanimously approve the changed or new procedure.

In conclusion, the economic and coordination seams issues that existed during the early phase of RTOs have been largely resolved. Moreover, to the extent that there are seam issues remaining to be resolved, a framework is in place to address such issues.

**15. Does the RTOs' treatment of financial-only market participants (or virtual traders) provide value to Ohio's consumers?**

A virtual bid or offer allows a participant to "virtually" bid to buy or offer to sell energy in the day-ahead market. Cleared virtual bids or offers are bought or sold at the locational marginal price ("LMP") of the commercial pricing node at which the bid or offer was submitted. Any energy cleared in the day-ahead market creates a position that is automatically reversed in the real-time market as the virtual transaction is "resold" in the real-time market, as virtual supply and demand cleared day-ahead neither delivers or consumes energy in real-time. So if a participant buys virtual energy in the day-ahead market, those virtual units of energy are sold back to the market in the real-time at the applicable real-time LMP. Similarly, if a participant sells (offers) virtual energy in the day-ahead market, those virtual units of energy are bought back from the market in the real-time at the applicable real-time LMP.

Virtual transactions serve three main purposes in the market. First, virtual transactions add liquidity to the markets. Second, virtual transactions enhance grid reliability. Third, virtual transactions mitigate market power. These benefits are explained in more detail below.

1. Liquidity. Virtual transactions increase market efficiency by providing enhanced market liquidity and improved day-ahead/real-time price convergence. Forward prices in a well-functioning product converge to the price at delivery; to the extent this can occur, day-ahead prices become a less-biased and more accurate predictor of real-time prices. Hence, these price signals are clear and transparent and provide the appropriate signal for long- and short-term behavior. With convergent prices, market participants experience a decrease in market risk, as they can effectively manage real-time price volatility through participation in the day-ahead market. Absent such price convergence, participation in the day-ahead market may not provide an effective hedge thus reducing the incentive and value of participating in the forward market.

The benefits of virtual transactions described above accrue to all customers, including those who serve load in Ohio (and therefore ultimate Ohio consumers). The benefits of efficient market operations, the ability of physical load and generation to hedge price differences between the day-ahead and real time markets, market liquidity and greater price convergence between the day-ahead and real-time market prices all allow LSEs in Ohio to manage price risk thereby lowering the cost to serve load in Ohio.

2. Grid Reliability. Virtual transactions help ensure reliable grid operation as well. Explicit virtual transactions are clearly flagged and differentiated from physical transactions. Hence, grid operators know which cleared schedules are real and which are

virtual, and can thus ensure enough resources are online to meet the forecasted load. Without explicit virtual transactions, participants will engage in implicit virtual transactions through use of physical transactions for which there is no intention to match with physical flows in real-time. This commingling of virtual with physical bids/offers can compromise grid reliability because the grid operator will be uncertain how much generation is real, and as a result, the operator may over-commit resources to ensure reliability, driving up costs. To the extent net virtual bids are cleared in the day-ahead market, the RTO commits fewer units in the RAC process, pulling unit commitment into the day-ahead market and reducing uplift and ultimately reducing supply costs for customers in Ohio and elsewhere in the Midwest ISO region.

3. Mitigation of Market Power. Virtual transactions in the day-ahead market serve to help mitigate market power. In market areas, generators may try and offer high prices, even within the IMM's conduct and impact framework, by putting offers near their reference levels or influencing these levels. Such transactions would generally lead to poor price convergence between the day-ahead and real-time markets. Virtual market participants can compete to supply energy with lower prices at the same generator or load zone commercial pricing node. To the extent Load has buying power, it can under schedule in the day-ahead market to reduce the price. Virtual market participants can mitigate this power by simply bidding in load that may be under-scheduled and virtual participants have an incentive to do so as they will profit by their transactions. Without virtual traders playing these roles, market administrators have resorted to administrative rules forcing certain market behavior regarding offers and bids. Forcing market behavior usually has unintended consequences; for example, after starting without virtual transactions, the New York ISO market determined that a lack of virtual trading undermined efficient market operations and added virtual trading to obtain the benefits delineated above. Virtual traders could conceivably attempt to manipulate the market, but the Midwest ISO Independent Market Monitor continually monitors virtual transactions for attempts to manipulate day-ahead market prices. The Market Monitor has reported in his annual State of the Market Report to the Midwest ISO Board that the need to investigate individual virtual transactions "have been rare, and none have warranted a referral to the [Federal Energy Regulatory] Commission."

**16. Are the RTOs' administrative expenses and corresponding assessments to member companies reasonable and resulting in value to Ohio's consumers?**

The Midwest ISO's administrative costs and corresponding member assessments are reasonable and continually provide value to the members. As demonstrated earlier in this response, the Midwest ISO is adding value to consumers including those in Ohio. Based on the Midwest ISO's Value Proposition, gross annual value of between \$955 million and \$1,220 million is obtained through the provision of Midwest ISO services at an annual cost of approximately \$240 million. This results in an estimated annual benefit of between \$755 million and \$981 million. The Midwest ISO provides a complete suite of RTO services as envisioned by the FERC Orders 2000 and 890.

Although broader RTO costs information is available,<sup>27</sup> the Midwest ISO and PJM are the two lowest costs per MWh and they are only two RTOs operating in Ohio. The following graph was presented as part of the December 4, 2008 Board of Directors Audit and Finance Committee review processes that included stakeholder participation:

### **Midwest ISO Budgeting Process – Cost Consciousness**

The Midwest ISO employs and supports an open and transparent budgeting process that also preserves the RTO's independence.<sup>28</sup> Such a process will assist stakeholders in appreciating that most of the cost of RTO operations is driven by the mission that RTOs are required to undertake. It should be noted, however, that once a mission is identified, there are a limited number of vendors available to provide the required tools and a limited number of software developers that can produce the required operating protocols that are the fundamental components of the services that an RTO must provide. Staffing then follows from the operating characteristics of the tools and applications and the sum of the parts drives the budgeting process. While customer input concerning major budgeting items sometimes proves useful, most stakeholders recognize early on that more often than not the tasks undertaken to accomplish the RTO goals and missions are required by regulatory mandate or reliability standards.

The Midwest ISO regularly provides stakeholders with considerable information on budget and actual expenditures. Developing an upcoming year's budget always involves a review of the budget by the Finance Subcommittee of the Midwest ISO Advisory Committee. Management provides details on the proposed capital and operating budget to the Finance Subcommittee and responds to questions and requests for more information over the course of several weeks each year. Management also provides a five-year forecast of revenues, expenses, and administrative costs per MWh as part of the budget process.

Beginning in 2005, the Midwest ISO began presenting its proposed capital budget in an open stakeholder meeting. Each sector of the Advisory Committee is then asked to force-rank the proposed capital projects. The final result for all sectors is then presented to the Advisory Committee as a whole. This feedback has been used by the Midwest ISO to prioritize capital spending based on the needs of sectors and availability of resources to perform the work.

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<sup>27</sup> See United States Government Accountability Office, Report to the Committee on Homeland Security and Governmental Affairs, U.S. Senate, "*ELECTRICITY RESTRUCTURING – FERC Could Take Additional Steps to Analyze Regional Transmission Organizations' Benefits and Performance*" (Sept. 22, 2008)

<sup>28</sup> In its order authorizing the establishment of the ISO New England, the Commission noted at several points that the ISO's budgeting process must be independent of stakeholder influence. See *New England Power Pool*, 79 FERC ¶ 61,374 (1997). For example, in response to intervenors' arguments that the budget provisions of the Interim ISO Agreement would result in an ISO that is "dominated by, and subservient to, NEPOOL," *id.* at p. 62,582, the Commission approved the ISO's Interim Agreement acknowledgment that "for the ISO to achieve sufficient independence to operate effectively, the ISO must have authority ... over its budget," *id.* at p. 62,578; that the NEPOOL Executive Committee would retain all the powers and duties of the management committee "except for the power to establish the NEPOOL budget," *id.* at p. 62,581; and that the budget would be approved by the ISO Board, *id.* at p. 62,586.

The Finance Subcommittee's charter obligates the committee to prepare and present to the Advisory Committee a written report on the results of their review of the proposed budget. The presentation of this report occurs in November of each year, prior to the budget being submitted to the board of directors for approval in December. This process allows stakeholders the opportunity to provide meaningful and informed input to the Midwest ISO Board of Directors prior to their deliberations and action on the budget each December. The effectiveness of this process was reviewed last year in the form of a Finance Subcommittee request for feedback from the Advisory Committee on requested modifications or changes to the budget review process. The Advisory Committee offered no suggestions for improvements or requests for changes to the process.

Stakeholders have been provided with information on actual expenditures relative to budget routinely over the years. The current reporting process involves making available to stakeholders the same financial information provided to the Board of Directors for their review at board meetings.<sup>29</sup> The financial information includes a review of actual expenditure relative to budget, and variance explanations for major categories.

The Midwest ISO recovers its costs of providing tariff services under a formula rate accepted by the FERC. At the start of each year the Midwest ISO provides a month-by-month forecast of its operating expenses by category of cost. The forecast for each month is the numerator of the formula rate. In addition, the Midwest ISO publishes its forecast of the billing units by month for each cost recovery adder. The forecast for each month is the denominator of the formula rate. During the year the Midwest ISO updates this information each month to reflect the actual expenses and billing units realized in the prior month. This process provides full transparency as to the rate per billing unit in effect for the month as well as the expense components that make up the numerator of the formula rate.

The open and transparent process provides invaluable qualitative benefits by subjecting the Midwest ISO budgeting and cost recovery process to many layers of scrutiny. The open stakeholder process also provides for overall budget review and scrutiny as well as specific project review and feedback. In many instances it is stakeholder input and feedback that expands, scales back, or even initiates certain efforts by the Midwest ISO that ultimately flow through to the budget. The collective efforts of the Midwest ISO Board and management along with the invaluable stakeholder input have helped the Midwest ISO to effectively pursue efforts beneficial to its core mission and have allowed it to achieve a downward trend in its costs.

A review of the historical figures as well as its five-year forecast shows that the Midwest ISO rate per billing unit continue to trend downward, with the current rate at \$0.35 per MWh, which is expected to further decline to just slightly above \$0.31 per MWh over the next five years. This calculation does not take into account the recent

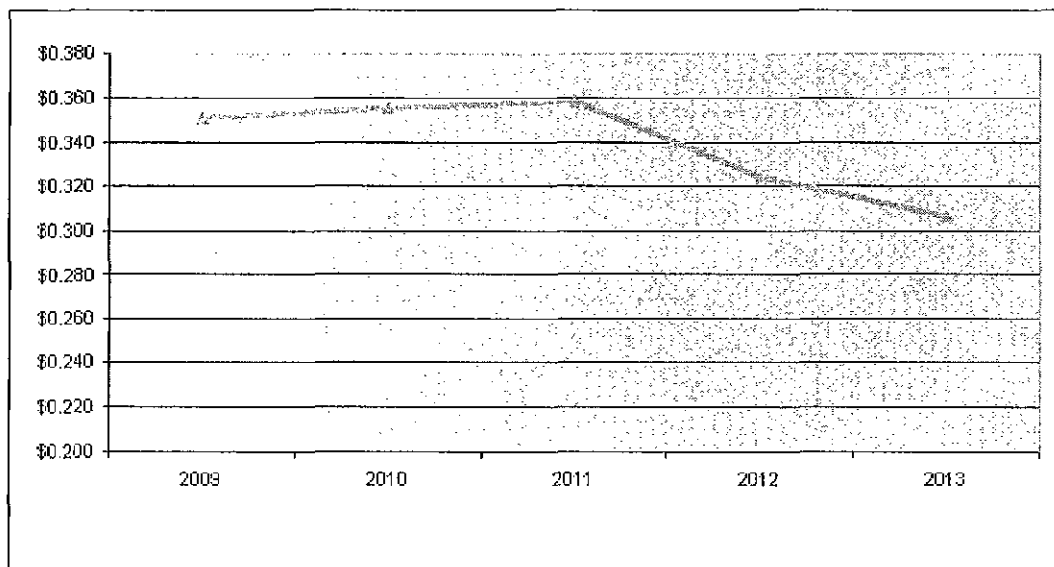
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<sup>29</sup> Certain confidential information is redacted from the information provided publicly to stakeholders.

addition of MidAmerican Energy<sup>30</sup> and Muscatine Power and Water<sup>31</sup> who have recently agree to join the Midwest ISO as a transmission owning members. These additions will further reduce the average MWh by allowing a larger group over which to spread the Midwest ISO costs.

Although broader RTO cost information is available,<sup>32</sup> the Midwest ISO presented the information that supports the following graphic representation during the most recent December 4, 2008 Board of Directors Audit and Finance Committee budget<sup>33</sup> review processes that was open to and included stakeholder participation:

**Costs per MWh of Midwest ISO through 2013**



### **RTO Alternatives**

1. **Are there viable, cost-effective alternatives to the existing RTO memberships of Ohio utilities or to Ohio utility participation in RTO managed functions (e.g. renewable tracking, reserve sharing groups, etc.)?**

Given the significant start-up costs associated with RTO-managed functions, it is extremely unlikely that there are cost-effective alternatives to the existing RTOs in the region (PJM and MIDWEST ISO). Subject to the provisions of any agreements with the

<sup>30</sup> MidAmerican incorporates approximately 7,300 megawatts of generating capability and 722,000 customers into Midwest ISO's footprint.

<sup>31</sup> MP&W is Iowa's largest municipal electric utility provider with a combined capacity of nearly 300 megawatts and approximately 11,175 customers.

<sup>32</sup> See United States Government Accountability Office, Report to the Committee on Homeland Security and Governmental Affairs, U.S. Senate, "*ELECTRICITY RESTRUCTURING – FERC Could Take Additional Steps to Analyze Regional Transmission Organizations' Benefits and Performance*" (Sept. 22, 2008)

<sup>33</sup> See the full Midwest ISO Budget presentation at:

[http://www.midwestmarket.org/publish/Document/77a68f\\_119522dab5e\\_-7c050a48324a/Five Year Forecast 2009-2011 Budget.pdf?action=download&\\_property=Attachment](http://www.midwestmarket.org/publish/Document/77a68f_119522dab5e_-7c050a48324a/Five Year Forecast 2009-2011 Budget.pdf?action=download&_property=Attachment)

RTOs, and approval from the FERC (and possibly from this Commission), Ohio utilities have the ability to terminate their relationship with one RTO and join another.

**2. Would it be reasonable, cost effective, and viable for the Ohio Commission to pursue the construct of an Ohio-only RTO?**

In our view, no. Again, the existing RTOs have incurred significant start-up costs, and have gained valuable experience in these areas. It is difficult to imagine that a new, Ohio-only RTO start-up could be cost-effective, or could function as well as the existing RTOs. Moreover, due to the regional nature of transmission and energy market operations and efficiencies, an Ohio-only RTO would be sub-optimal. Much of the RTOs' value derives from the ability to implement region-wide unit commitment and dispatch, region-wide transmission planning and operations, etc.

**3. What recommendations could be made to FERC or required of Ohio's RTO member companies that would result in increased value to Ohio's consumers?**

Ohio has been a very active participant in the development, implementation, operation and on-going improvement of the Midwest ISO. That is true both for The Public Utilities Commission of Ohio and for Ohio's RTO member companies, Duke Energy and FirstEnergy. The first recommendation is that both of these groups continue to actively participate in the vitally important stakeholder processes. The Midwest ISO's stakeholder process provides an important and excellent forum to raise and discuss problem areas and enhances opportunities to craft solutions that many times are better because of the interplay and collective thinking and discussion the stakeholder process encourages.

The next recommendation would be to continue to work with and through the Organization of MISO States (OMS) and with state legislators to enable state commissions to broaden the considerations and existing definitions of the public interest to include a regional perspective in addition to the state perspective. The issues that face the industry today are becoming less and less able to be addressed and bounded by state geographic boundaries. Resource portfolio diversity (including renewable portfolio standards, possible carbon restrictions and to a degree price responsive demand), transmission planning, transmission cost recovery and other issues are necessarily regional and should likewise be addressed from a regional perspective. Common issues tie the states in the region together. Working to solve those issues within localized utility plans could potentially be counterproductive to desired economic development locally and throughout the region. One of the primary goals should be to create solutions that work for the region. The OMS working collectively with the various commissions has made great progress on many issues, but there are still challenges that must be met to clear certain historic and habitual process that are now becoming obstructions to progress that needs to be made.

A very similar issue exists within the current transmission expansion planning process. The current role of the Midwest ISO in transmission expansion planning is an independent / coordinator role. Individual transmission owners submit their proposed expansion plans – based on the needs of their individual systems. The Midwest ISO takes the submitted proposals and evaluates them based on their reliability and economic benefits to the region. Then the best package of those proposals is consolidated into a regional plan. The problem with this process is that the individual companies develop project proposals based on their local benefits, not having the abilities or facilities to consider or assess potentially larger benefits that may accrue because of a larger regional review and assessment. The Midwest ISO has recognized this issue and is working diligently to address and arrive at a better way, but this requires cooperation and assistance from the member companies and encouragement and support from the state and local regulatory bodies as well. It is extremely likely that a planning process that concentrated from the start on the development of a plan focused on maximizing (regional) benefits can and will result in far greater overall benefit to all. The Midwest ISO would like to work jointly with stakeholders to address this issue so that appropriate and the most cost effective infrastructure can be constructed to meet the changing demands of the system and the industry generally.

With regard to price responsive demand (“PRD”), the Midwest ISO continues to work on policies, procedures and systems to better facilitate PRD’s participation in the markets. However, this work cannot and will not be fully realized until retail rate design can accommodate PRD by allowing prices signals to reach consumers and allowing for consumers to react to those signals. The Midwest ISO is already engaging in what is needed to address and assist with this PRD development, but the Midwest ISO recognizes and points out there are limitations created because of wholesale/retail jurisdictional matters. Therefore, the general recommendation is for the Commission and the Ohio utilities to take the lead, with aid and assistance from the Midwest ISO and PJM where and when appropriate, and craft the necessary policies that will facilitate the customer related infrastructure that will be required to enable retail participation.

## **Conclusion**

In conclusion, the Midwest ISO creates significant value for load-serving entities and the ultimate consumers they serve in Ohio and elsewhere. As noted above, the Midwest ISO’s activities are currently estimated to create between \$755 million and \$981 million in annual benefits across its footprint, net of costs. The Midwest ISO’s regional approach to transmission service administration, energy and ancillary services markets, and transmission planning have led to higher reliability, optimized and cost-effective commitment of generating reserves, and optimized and cost-effective transmission investment planning. The Midwest ISO is committed to continue to evolve and improve through: (i) its open and transparent stakeholder processes; and (ii) drive value creation through efficient, reliable market operations, coordinated and effective planning, and creative innovation.