

**UNITED STATES OF AMERICA  
BEFORE THE  
FEDERAL ENERGY REGULATORY COMMISSION**

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RTO/ISO Performance Metrics )

Docket No. AD10-5-000

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**COMMENTS OF THE ORGANIZATION OF MISO STATES  
AND MOTION TO ACCEPT COMMENTS OUT-OF-TIME**

Pursuant to Rule 211 of the Federal Energy Regulatory Commission’s (“Commission”) Rules of Practice and Procedure, 18 C.F.R. §§ 385.211, the Organization of MISO States (“OMS”) respectfully submits the following comments in response to the Notice Requesting Comments on RTO/ISO Performance Metrics (“RFC”) issued by the Commission on February 3, 2010.

**I. BACKGROUND**

In September of 2008, the General Accountability Office (“GAO”) provided a Report to the United States Senate Committee on Homeland Security and Governmental Affairs titled *Electricity Restructuring: FERC Could Take Steps to Analyze Regional Transmission Organization’s Benefits and Performance* (“GAO Report”).<sup>1</sup> Among other things, the GAO Report identifies concerns regarding how RTO expenses and decisions influence electricity prices and whether RTO costs outweigh their benefits. The GAO Report makes several recommendations to the Commission to address the performance of RTOs. In particular, the GAO Report asserts that the Commission should develop a “comprehensive set of publicly

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<sup>1</sup> *Electricity Restructuring: FERC Could Take Steps to Analyze Regional Transmission Organization’s Benefits and Performance* GAO-08-987, September 22, 2008

available, standardized measures” of RTO performance.<sup>2</sup> While the GAO Report does not make any specific recommendation concerning RTO performance metrics, it does state that “without such measures, the Commission will remain unable to demonstrate the extent to which RTOs provide consumers and others with benefits.”<sup>3</sup> In response, the Commission’s Notice states that it met with RTOs to develop a set of metrics.

On February 3, 2010, the Commission issued a Request for Comments on RTO/ISO Metrics (“RFC”) and a proposed set of performance metrics that the ISOs/RTOs would use to report annually to the Commission. The Commission specifically requests comments on whether the proposed metrics will effectively track the performance of RTO operations and markets. The RFC established March 5, 2010 as the deadline for comments.

The OMS requests that the Commission receive the late-filed comments. The delay was caused by the OMS meeting schedule which did not allow approval of the comments until March 11. The comments are being submitted as soon as practical following that approval.

## **II. COMMENTS**

The OMS offers comments concerning the performance metrics listed in the Commission’s RFC. Specifically, Performance Metrics of the RFC provided three general categories of performance metrics: reliability; market; and organizational effectiveness. Each category includes a number of metric headings generally composed of several specific quantifiable elements. The RFC’s organization of performance metrics will dictate the structure of the OMS’s comments.

Also, attention will be given to the effective interpretation of performance metrics needed to translate the metrics into assessments of benefits. The Commission’s Notice states that the

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<sup>2</sup> GAO Report, at 7-8

<sup>3</sup> GAO Report, at 8

GAO Report recommends not only that each RTO annually provide a report on the metrics, but that the Commission will annually provide an interpretation of “(1) what the measures and reported performance communicate about the benefits of RTOs and, where appropriate, (2) changes that need to be made to address any performance concerns.”<sup>4</sup> The Commission’s annual interpretation report will therefore be the key to effectively assessing the benefits of RTOs.

## **A. Reliability Metrics**

### **1. Reliability Standard Violations**

Reliability metric A.4 asks RTOs to report the total number of reliability violations the RTO commits each year. The difference in sizes of RTOs suggests that the total number of violations should be scaled by the number of megawatt hours delivered or transmission facility miles operated by the RTO. The OMS believes there is value in reporting the simple total, but also making an explicit recognition of the difference in RTO size would be beneficial for the interpretation of relative RTO performance.

### **2. Transmission Expansion**

Reliability performance metric D.1 proposes to report the number of transmission facilities approved to be constructed for reliability purposes. The number of approved facilities coming in service in the year should also be included as a performance metric. It would also be beneficial to categorize the transmission facilities by voltage. Possibly, a distinction should be made between lines of different voltages, substations, and other transmission equipment. The number of transmission facilities or facility miles approved and built would be a more comparable metric across RTOs if it were also expressed as a percentage of the total number of

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<sup>4</sup> RFC at 1.

facilities and total number of facility miles. This again recognizes the difference in the size of RTOs.

The number of facilities approved or built should be complemented by metrics quantifying the nature of those investments. The OMS recommends two separate metrics to quantify the nature of the transmission line: transmission line miles built and the total amount of transmission congestion those facilities will have alleviated. The number of line miles provides less information about the benefits of the transmission facility construction than does the congestion alleviation, but still provides information about the level of investment. The number of miles per line constructed is likely to be larger in RTOs with less dense populations relative to more dense populations. The amount of congestion relieved may be a superior metric because it directly translates into economic benefit for consumers.

Also, the implication of this metric is that more approved transmission constructed for reliability purposes is better. However, that is an open question. The goal of the RTO should be to efficiently plan for the optimal amount of transmission – not just the most. The efficiency of transmission expansion would be better evaluated if the total cost of constructing those facilities was presented at the same time as the numbers of facilities. The OMS recognizes that system topology affects the total cost of constructing a transmission facility or a mile of transmission facility and therefore differences in total cost may not be directly comparable across RTOs. Furthermore, the relationship between congestion reduction and total cost will suffer from the same shortcomings across RTOs, but the OMS believes this measure of congestion reduction is the most indicative measure of transmission expansion efficiency.

Given the business cycles inherent in the electric power industry, a transmission facilities metric is only meaningful over a multi-year period, as any particular year would likely show

excess or insufficient transmission due to various other factors such as market demand. Also, lack of transmission building can be an indicator of an RTO's more efficient use of existing transmission, such as what occurred when RTOs changed to using market redispatch instead of TLRs to manage transmission congestion. An RTO that achieves more efficient use of existing transmission should be rewarded for such, while this metric may imply the opposite.

### **3. Generation Capacity**

Reliability performance metric E.2 is another metric that may be misleading without the accompaniment of an appropriate interpretation. Specifically, this metric proposes to compare the actual reserve margin with the planned reserve margin. RTO forecasting and administrative performance may be assessed through the ability to maintain actual reserve margins equal to those that were planned. However, this ability is affected by a number of significant variables outside of RTO control; currently, the drop in economic activity has increased the reserve margins beyond their expected levels. This is a simple example of the type of interpretation that is necessary for the metrics to be intelligible. The legitimacy of carrying each additional MW of capacity above what is needed to meet the industry practice of one outage in ten years should be judged based on the incremental cost of carrying that MW.

Understanding long-term reliability through generation resources dictates the need to ask how generation resources are compensated for their capacity. It would be appropriate for the method by which capacity is compensated to be recognized in conjunction with the reserve margins. If there is a centralized market for the capacity, then the total cost of that capacity should also be reported. Total megawatts of capacity maintained, total megawatts compensated through market mechanisms, total dollars spent to compensate those megawatts and per megawatt values would be appropriate. Because some RTOs rely more on bilateral markets

instead of RTO centralized markets, a metric based on this may provide information about each RTO over time, but may not be comparable between RTOs at a given point in time.

#### **4. Generator Interconnection**

Whether a generation interconnection request has been processed in a shorter amount of time or a longer time frame should not be a primary indicator of RTO performance related to long term reliability planning. RTO processing times for approving generator interconnection requests can vary based on internal and external factors and do not tend to suggest poor generation reliability planning, or insufficient RTO planning performance. OMS suggests that the Commission could provide further clarification about the intent of this metric as a sufficient measurement for assessing an RTO's performance based on processing times of generation interconnections and long term reliability planning.

#### **B. Market Metrics**

The OMS has several suggestions for improving market metrics. They follow from the idea that the market value of generation is determined by the right type of generation being available at the right place at the right time. As explained below, all three are equally important and therefore should be considered when determining RTO effectiveness.

##### **1. Locational Marginal Prices**

The LMPs are the most visible element of the RTO market and therefore one of the most controversial. The LMP market is designed to increase the operating efficiency of generating units and to provide market signals about the location, type, and perhaps profitability of generation or transmission investment.<sup>5</sup> Not surprisingly, the concept has been the center of some criticism of the RTO construct. Some critics believe that paying all suppliers the LMP

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<sup>5</sup> The OMS understands that The Midwest ISO is currently studying a replacement for LMP, Convex Hull Pricing, because it believes that the LMP does not provide the correct market signal for profitability of generation.

results in a net wealth transfer from consumers to suppliers. This belief implies that the effect of efficiency gains on LMP provides less financial benefit to consumers than is lost through the payment of the LMP to all suppliers.<sup>6</sup>

There are two metrics the OMS believes would better assist the Commission in developing an informed interpretation of this criticism of the RTO market design. The first metric would be equal to the total cost of energy in each RTO market. This metric would be calculated by multiplying the LMP at each load node by the quantity purchased at that node for each hour and summing across nodes and hours. The OMS believes this data is an output from the market models and is retained in RTO databases.

The second metric would be an estimation of hourly production costs across all generation nodes. If the production costs do not presently exist in a database, then the RTO should be able to utilize its existing market model to simulate an 8,760-hour dispatch under the actual conditions the system experienced when the LMPs from the first metric were derived. The sum of these costs across hours and nodes would then be compared to the calculation of total cost of energy in the RTO market.

Similar analysis could be performed for each of the commercial pricing nodes within the RTO market. The most information would actually be gathered from an inspection of production costs and LMPs for each node at each hour. A large spread between the two would provide evidence of market power. However, should this exist, it does not necessarily indicate that the pricing mechanism itself is inefficient. It could indicate the need for new capacity or the

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<sup>6</sup> The Montana PSC is skeptical of market clearing pricing but supports FERC's efforts to create performance metrics. However, The MTPSC believes FERC has not gone far enough and should rigorously develop additional metrics to evaluate if market clearing pricing does in fact transfer wealth from the consumer to the supplier. The construct of market clearing pricing is supposed to provide price signals to generators that will seek to take advantage of profits by entering the market. The MTPSC does not believe this is has been the case and these profits are being held by generators and not creating new entry into the market.

existence of barriers to market entry for new generation. The OMS is not suggesting the analysis be reported by commercial pricing node by hour, but instead is using this illustration to express its view about the efficiency of the LMP methodology and what an analysis of the divergence between LMP and production costs could reveal.

Reporting a single average across all hours may be a suboptimal performance metric. The OMS would recommend reporting average LMPs by hour of the day and by season. It would also be beneficial to report the average LMP by day of the week, or at least as weekday average versus weekend average. This recognition of the time dependency of LMPs is an essential piece of information that is not commonly known. Communicating the RTO's ability to recognize the time dependency of the price of electric energy should facilitate a meaningful interpretation of benefits or potential benefits that are or could be delivered to consumers. Furthermore, the exposure to time-varying prices through the RTO provides consumers with the incentive to reduce consumption and generators with the incentive to provide resources at the peak. Reducing consumption at the peak reduces the energy prices that are several orders of magnitude higher than base load generation, and would also lower the levels of capacity needed to maintain reliability. The failure to recognize the linkage between time of day, week and year and electricity price is a leading contributor to the inefficiency that leads to higher average wholesale and retail prices in the system. Recognition and management of these realities should be an objective and benefit of the RTO. Therefore, providing information about price variation across time would be instrumental in increasing the understanding of the inefficiencies in the provision of electricity.

The extent to which load-weighted average LMPs reflect system topology may confuse the interpretation of this metric when comparing results across RTOs. LMPs are also a reflection

of the historical generation technologies which are available to the RTO for dispatch. Therefore, LMPs should be reported along with some measure of load and the mix of available generation technologies. LMPs should then be interpreted with some recognition of system topology.

In addition to providing average LMPs with some time differentiated dimension, average load should be reported with the same periodicity. Reporting these two metrics side by side will illustrate the high degree of correlation between the two further illuminating the source of the inefficiency. Understanding the origin of an inefficiency is a step towards removing the inefficiency and ultimately reducing overall costs to consumers.

The OMS also believes that reporting the ancillary services prices and volumes across hours, days and seasons would be informative and stimulate a meaningful Commission analysis.

## **2. Forced Outage Rates**

Market Performance metric B.1 asks for the RTO forced outage rate. The OMS assumes this metric intends for the RTO to report some average forced outage rate across all generating units in the RTO. It would be beneficial if the metric were modified to require the RTOs to report the average forced outage rates by different generating technologies.

The OMS recommends also reporting generator availability, accounting for both planned and unplanned outages, by generating technology. Increased operational efficiency of generating units is a potential advantage of the RTO construct. The ability to track the change in generator availability would be helpful in determining the benefits of RTO creation. An interpretation of the effect of RTOs on generator availability would be better facilitated by the provision of data about generator availability both before and after the creation of each RTO and before and after the beginning of Day 2 markets.

### **3. Renewables**

Reporting RTO forced outage rates and generator availability on a technology-specific basis would initiate the need for a comparable metric for the availability of variable energy resources. Both Section 1 and Section 2 of the RFC suggest some metric aimed at characterizing renewable generation resource integration.

Section 1 asks RTOs to report the percentage of total RTO energy supplied by renewable generation resources. This statistic alone will not communicate the circumstances surrounding the integration of renewable generation resources into the RTO dispatch. In order to foster greater understanding of the state of renewable resource integration, the RTO should report simple average and locational average capacity factors of different renewable generation resources. The Commission should also recommend the RTO report the correlation between renewable energy generation and load in the RTO on an average and location specific basis. These metrics would allow a better interpretation of the proposed metric (level of renewable energy produced) by providing some objective measure of the contexts across RTOs in which renewable resources are being integrated.

The Commission might consider adjusting or adding to the E.1 metric for regional renewable energy integration. This can be accomplished by dividing the quantity of renewable energy sales by the product of the RTO sales and an RTO average renewable energy capacity factor. This metric could be used to measure growth of renewable energy integration in one RTO over time or across RTOs. Placing the average capacity in the denominator of this ratio would account for the different renewable endowments of different regions. For example, a region with lower capacity factors would need more installed capacity than a region with higher capacity factors to reach the same percentage of total output by renewable resources.

Additionally, the operational complexities corresponding to RTO integration of intermittent renewable energy resources dictate some additional information concerning the performance of RTOs. The renewable energy resources that are dispatchable as a percentage of total renewable energy resources would illustrate the RTOs ability to efficiently integrate renewable resources into their operations. It may also be instructive to differentiate between those renewable energy resources whose output can be controlled in both upward and downward directions, if such a renewable resources exists, from those which can only controlled in the downward direction.

#### **4. Congestion**

The quantification of the cost of congestion is another metric that will provide the Commission with an opportunity for meaningful analysis. Reporting congestion charges in absolute magnitude or even on a MWh basis does not necessarily represent the performance of the RTO at any one point in time, in that at any given time the level of congestion charges is a function of the system topology of the RTO service territory. As such, it would be beneficial to report the amount of congestion charges for each RTO at different times of day, week and year.

A different solution may be appropriate for relieving congestion that is persistent across all hours than the solution for relieving congestion occurring more sporadically. For instance, persistent congestion may be better addressed through transmission investment while intermittent congestion might be best solved through a generation or demand side investment.

An evaluation of the percentage of congestion dollars hedged through RTO markets could also help the Commission foster a greater understanding of the costs and benefits of RTOs. The OMS comments here are less concerned with the metric itself, but rather with what information the Commission needs for a meaningful analysis. Evaluation of information such as

the auction prices paid by FTR holders to secure the right to congestion revenues could be helpful. Reporting and evaluating such information will provide the basis for a more meaningful interpretation of the congestion metrics and the value and use of FTRs in competitive markets.

### **C. Organizational Effectiveness Metrics**

The organizational effectiveness performance metrics address the expenses directly incurred by the RTO. To be clear, these expenses are not the full measure of costs resulting from the creation of RTOs and should not be the total “cost” for comparison in any RTO cost-benefit analysis. The OMS believes that the annual actual and budgeted RTO administrative charges to members should be supplemented with additional information. As the Commission proposes, the RTOs should report budgeted and, more importantly, actual expenses in a categorical form. A general categorization would report expenses as salaries and related benefits, interest expense, consulting or professional, facility and maintenance, depreciation and amortization, regulatory dues, and other. Specifically, expenses could be reported on a functional basis as they are administrative and general, transmission expense, regional market expense, or other expenses. The gross property and equipment expenses for each RTO should be categorized as well. Examples of categories are software and hardware, construction work in progress, buildings and leasehold improvements, land, and furniture and fixtures.

Given the increased emphasis on regional transmission expansion planning, it would be useful for the RTOs to report the level of expense incurred for planning efforts, including some breakdown of the expenditure. That breakdown could include salaries for planners, consulting fees, and software and hardware expenses. The Commission’s interpretation of these expenses could include some recognition of the scale of different operations, and specific undertakings

within an RTO that may have caused a specific categorical increase outside the normal course of business.

The GAO report also paid significant attention to the need for the Commission to establish a standard budget review process that would occur at regular intervals and assess the accuracy, completeness and reasonableness of the financial information reported by RTOs in the FERC Form No. 1.<sup>7</sup> The GAO Report summarizes an August 28, 2008 letter from the Chairman of the Commission (“Chairman’s Letter”) which communicated the Commission’s intention to perform periodic audits of compliance with the Uniform System of Accounts and to assess if expenses are reported correctly in the FERC Form No.1.<sup>8</sup> The OMS notes that the Chairman’s Letter did not make any explicit mention of the Commission’s intention to judge the reasonableness of the RTO expenses in this review process. The Commission instead referenced the extensive opportunities for stakeholder input on RTO costs.<sup>9</sup>

The Chairman’s Letter also recognized that the stakeholder process allows consumer input into the RTO expenditure considerations in ways unmatched by other public utilities.<sup>10</sup> However, the number and depth of stakeholder meetings requires considerable resources to attend and participate in a meaningful way, and in this sense can be as much a detriment as they are a facilitator of fair representation and budget scrutiny.<sup>11</sup> Some important stakeholders simply do not have the resources necessary to allow participation in RTO stakeholder meetings on the same level as other RTO stakeholders. Accordingly, it would be imprudent for the Commission to assume that a transparent stakeholder process is all that is necessary for a RTO to

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<sup>7</sup> GAO Report at 59

<sup>8</sup> GAO Report, at 59-61

<sup>9</sup> GAO Report, Appendix IX, at 1

<sup>10</sup> GAO Report, Appendix IX, at 1

<sup>11</sup> GAO Report, at 33-35

achieve fair outcomes and reasonable expenses. This comment applies to other (e.g. market and tariff) issues as well as the RTO's budget.

#### **D. Other**

There are a number of other specific questions that the OMS believes would not be addressed with the present set of metrics and proposes some metrics to help address those questions.

#### **1. Merit Order Dispatch**

How efficiently does an RTO utilize generation resources? There are a number of metrics already listed which address the optimal system use. However, there are a number of metrics which could further illuminate the ability of an RTO to dispatch the optimal generation resources. When generation resources are dispatched out-of-merit order they are not authorized to set price. Therefore, these resources may experience a revenue shortfall in that period. These revenue shortfalls are aggregated and collected from market participants using non-market charges in what is commonly referred to as uplift charges to finance make-whole payments.

It is generally less efficient to use administrative charges instead of market-based solutions. To measure this inefficiency, one metric could be the number of megawatt hours dispatched out of merit order. The number of megawatt hours should be reported in absolute magnitude, as a percentage of total megawatt hours dispatched, and the financial impact of out of merit dispatch.

#### **2. Market Power**

Do RTOs minimize the level of market power? RTOs can report the level of concentration in the generating segment of the market, the competitive segment of the industry.

Concentration can be reported strictly on a capacity basis, or on the basis of some cost competitiveness. For example, the PJM three-pivotal-supplier test first designates a subset of the entire capacity based on any unit's offered price's proximity to the marginal unit's offered price. Given the heterogeneity of the generating resources, the competitive capacity is truly some subset of the entire set of all generating capacity. A generating resource with a cost or offer price twice as high as the marginal unit is not competing at the given time and is not realistically going to compete in the future under those load conditions.

Given this analysis, it would be necessary for the competitive market to be defined on an hourly basis before concentration could be calculated on an hourly basis. Concentration ratios should be reported as averages for each of the twenty-four hours of the day with specific differentiation on a seasonal basis.

### **3. Market Entry**

Another difficult but related question is: has the RTO construct improved access to the grid by reducing opportunities for discriminatory transmission practices? The absolute magnitude and percentage of independent power producers interconnected to the grid relative to the magnitude of generating resources vertically integrated with distribution utilities interconnecting in the market could be measured to provide insight into this question. Furthermore, measuring of demand response and, for future years, any price responsive demand integrated into the market could help in addressing this question.

The OMS notes that the Commission recognized the level of demand response as an RTO metric, but OMS wishes to encourage the interpretation of this metric as it pertains to the reduction of discriminatory transmission practices. The ability for non-traditional resources such as demand side resources to participate in the market has been one of the central efforts of the

Commission and RTOs. The key to facilitating this participation is to lower the level of market power abuse that is facilitated by the historical barriers to competitive entry to the system.

### **III. CONCLUSION**

The OMS submits these comments concerning the Commission's Notice Requesting Comments on RTO/ISO Performance Metrics, and asks the Commission to receive them out-of-time, because a majority of the members have agreed to generally support them. Individual OMS members reserve the right to file separate comments regarding the RTO performance metric notice discussed in these comments. The following members generally support these comments.

Illinois Commerce Commission  
Indiana Utility Regulatory Commission  
Iowa Utilities Board  
Kentucky Public Service Commission  
Michigan Public Service Commission  
Minnesota Public Utilities Commission  
Missouri Public Service Commission  
Montana Public Service Commission  
North Dakota Public Service Commission  
Public Utilities Commission of Ohio  
Pennsylvania Public Utility Commission  
South Dakota Public Utilities Commission  
Wisconsin Public Service Commission

The Manitoba Public Utilities Board did not participate in this pleading.

Respectfully Submitted,

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