

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

**RTO/ISO Performance
Metrics**

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Docket No. AD10-5-000

**COMMENTS OF INTERNAL MARKET MONITOR OF
ISO NEW ENGLAND INC.**

Pursuant to the Notice of Proposed Rulemaking (“NOPR”) issued by the Federal Energy Regulatory Commission (the “Commission”) in the above-captioned proceedings, the Internal Market Monitor (“Internal Market Monitor”) of ISO New England Inc. (“ISO-NE”) respectfully submits these comments.

I. BACKGROUND AND EXECUTIVE SUMMARY

A. ISO New England and the Internal Market Monitor

ISO-NE is the private, non-profit entity that serves as the Regional Transmission Organization (“RTO”) for New England. ISO-NE administers the New England energy markets and operates the regional bulk power system (*i.e.*, those facilities located in the New England region) pursuant to the ISO New England Inc. Transmission, Markets and Services Tariff, FERC Electric Tariff No. 3 (the “ISO-NE Tariff”)¹ and Operating Agreements with the New England transmission owners. In its capacity as the RTO for New England, ISO-NE has the responsibility to protect the short-term reliability and plan for the long-term reliability of the control area.

¹ Capitalized terms used but not defined in this filing are intended to have the meaning given to such terms in the ISO-NE Tariff or in the Participants Agreement among ISO-NE and the New England Power Pool and any individual Participants (the “Participants Agreement”). The Participants Agreement was accepted by the Commission in *ISO New England, et al.*, 109 FERC ¶ 61,147 (2004).

ISO-NE maintains a hybrid market monitoring structure that includes the Internal Market Monitor and an external market monitor.² The Internal Market Monitor performs mitigation, market performance analysis and investigatory functions. To maintain its independence from management, the Internal Market Monitor reports directly to the Markets Committee of ISO-NE's Board of Directors. The Internal Market Monitor submits these comments on its own behalf.

B. Government Accountability Office Report and Development of Metrics

In a report dated September 2008, the Government Accountability Office ("GAO") recommended that the Commission work with RTOs, independent system operators ("ISOs"), stakeholders and other experts to develop standardized measures that track the performance of RTO/ISO operations and markets.³ The GAO recommended that performance results against these measures should be reported annually to Congress and the public, along with the Commission's interpretation regarding ISO/RTO benefits and suggestions for any necessary changes to address performance concerns.⁴ These measures were intended to provide a foundation for the Commission to evaluate the effectiveness of its decision to encourage the creation of RTOs and help Congress, industry stakeholders, and the public understand RTO

² See the Commission's order on ISO-NE's Order No. 719 compliance filing, 130 FERC ¶ 61,054 at P 134: "ISO-NE has chosen to retain its hybrid structure of an Internal MMU ... and an External MMU Because ISO-NE's tariff assigns the Internal MMU responsibility for carrying out the core MMU functions, consistent with Order No. 719, ISO-NE's Internal MMU will report to the ISO-NE Board to ensure independence from management. We find that ISO-NE's hybrid structure is consistent with Order No. 719's requirements." See also Section 9.4.2 and 9.4.4 of the Participants Agreement for a description of the Internal Market Monitor's functions.

³ GAO-08-987, "Electricity Restructuring: FERC Could Take Additional Steps to Analyze Regional Transmission Organizations' Benefits and Performance" at page 59.

⁴ *Id.*

performance and net benefits.⁵ In response to the GAO report, the Commission has developed a set of performance metrics in conjunction with the jurisdictional ISOs/RTOs.

C. Summary of Internal Market Monitor’s Comments

In its “Notice Requesting Comments on RTO/ISO Performance Metrics,” the Commission requested comments on whether its proposed performance metrics will effectively track the performance of ISO/RTO operations and markets. ISO-NE’s Internal Market Monitor offers its comments on this topic, with a focus on the market metrics.

The Internal Market Monitor believes that the market metrics put forth in this notice describe market outcomes rather than measure market performance. While some of the metrics are useful to track over time as part of a more rigorous evaluation of market performance, there are other metrics that more directly meet the objective of measuring market performance. In fact, these metrics have been adopted by the Internal Market Monitor and the market monitors of the other ISOs and RTOs, all of which perform the type of market analysis proposed by the GAO.

II. COMMENTS

In these comments, the Internal Market Monitor reviews the Commission’s market metrics and then proposes an alternative methodology for the measurement of market performance. This methodology is based on the established metrics used by ISO and RTO market monitors to assess market competitiveness.

A. Analysis of Commission-Proposed Market Metrics

For the most part, the Commission’s proposed market performance metrics measure market outcomes. This information is important in reviewing how wholesale markets and ISOs

⁵ *Id.*

and RTOs perform, but is not nearly sufficient on its own to measure market or ISO/RTO performance.

This section discusses each of the Commission's proposed metrics.

1. Market Pricing/Load Weighted Locational Marginal Prices

Locational Marginal Prices ("LMPs") are an important market outcome and useful for the Commission to track over time in conjunction with factors that affect the price of electricity, such as fuel costs, load growth and environmental regulations. However, price alone is not a measure of market performance and, if it were used for that purpose, could easily lead to misleading or incorrect conclusions about market performance.

The most obvious misinterpretation of this metric is the conclusion that a region with lower LMPs has a market that performs better than a region with higher LMPs. In fact, the difference in prices from one market to the next is not primarily driven by market performance, but rather by the inputs noted above. For example, a region with coal as the predominant marginal fuel will have lower prices than a region with gas as the predominant marginal fuel. This does not mean that the coal market is better-performing. Indeed, it is possible that the coal market is not as efficient and that there is a larger difference between prices and costs in the coal market than in the gas market. The difference between prices and costs is a better measure of market performance and forms the basis for measures economists use to assess market performance, such as the Lerner Index or the Price-Cost mark-up. These metrics are discussed in more detail below.

2. Market Pricing/Components of Total Power Costs based on Load-Weighted LMPs

This metric includes all of the components that make up wholesale power costs to give a complete accounting of wholesale power cost. It is also a descriptive, rather than a diagnostic,

measure of performance. To assess performance, the factors driving each of the components should be examined. For example, high capacity costs could reflect a need for capacity and are an appropriate price signal to attract new resources and maintain reliability, or they could be caused by a poor market design susceptible to market power. Similarly, high transmission costs may indicate that a relatively high percentage of the transmission rate-base is new transmission added to address reliability or to improve market efficiency -- or could result from cost overruns on large projects. Without an examination of each of these components of the wholesale price, it is not possible to determine from this metric whether the market or the ISO/RTO is performing well.

3. Market Pricing/Load-Weighted, Fuel-Adjusted LMPs

This metric is intended to estimate electricity prices in the current year assuming fuel prices were held constant, relative to a base year. This metric is designed to see if changes in current-year prices are caused by fuel prices or other factors. This metric provides some insight into market performance. If fuel-adjusted prices remain about the same over time, the market is responding to changes in input fuel prices, which indicates good performance.

However, there are some caveats that must be kept in mind. First, there is no standard methodology used to calculate fuel-adjusted price. If relative fuel prices have changed, e.g., oil is now more expensive than gas, the fuel-adjusted price will not capture that. Other factors, such as an abundance of hydro-electric production, significant load growth, changes in supply mix, or the impact of demand response are also not captured in the fuel-adjusted price. These limitations mean that small year-to-year changes in the metric are likely caused by the methodology and are not reflective of changes in market performance. Large changes would be worth examining in more detail. This examination could yield insights about market performance or design.

A similar metric that is used in the industry is the implied heat rate. This also controls for fuel price levels and can be used to assess market outcomes over time. It is simpler to calculate than the fuel-adjusted price (LMP is divided by the appropriate price of natural gas) but it does have the same methodological limitations as the fuel-adjusted price.

4. Generator Availability/RTO Forced Outage Rate

The forced outage rate is another descriptive metric; simply looking at the average forced outage rate for an RTO over time is unlikely to yield many insights into market performance. For example, studies have shown that the change in ownership of nuclear stations prompted by deregulation has resulted in lower forced outage rates at nuclear stations, which has lowered LMPs because nuclear units have low short-run marginal costs. This insight would not have been evident from a review of the overall RTO forced outage rate.

The methodology used to calculate forced outage rates also makes meaningful interpretation of this data difficult. For example, the less a resource runs, the lower its forced outage rate. Presumably, lower forced outage rates would be assumed better than higher forced outage rates. However, the lower forced outage rates might be caused by a combination of low loads and surplus capacity and not reflect market performance at all. That said, forced outages may have some diagnostic or explanatory value. For example, they may help explain the level of LMPs over a given period of time, since high forced outage rates may contribute to high LMPs under certain conditions. However, on its own this metric is limited.

5. Congestion Management

The two proposed metrics (congestion charges per megawatt hour of load served and percentage of congestion dollars hedged through RTO-administered congestion management markets) are descriptive statistics. Congestion charges may be driven by short-term events or by

transmission constraints that bind frequently. Moreover, higher congestion costs may be efficient if the transmission to alleviate them is expensive and difficult to build. The simple interpretation that lower congestion costs mean better market performance is incomplete and potentially misleading. The percentage of congestion dollars hedged is also an incomplete metric since it does not include any measure of the cost of the hedge or of the load-serving entity's aversion to congestion risk. If the cost of the congestion hedge exceeds the value of that hedge given the load-serving entity's sensitivity to congestion costs, limited use of congestion hedging tools may be appropriate.

6. Demand Response/Megawatts as a Percentage of Total Capacity

The need for increased participation by demand in wholesale electricity markets has been well documented.⁶ To increase demand participation, the Commission, the states and the ISOs and RTOs have adopted a wide range of policies and tariff changes. A thorough review of demand participation in the markets is an important indicator of overall performance, since having an active demand side is essential to realizing the full benefits of wholesale markets.

Measuring the amount of demand response as a percentage of capacity is a glimpse into the participation by demand in the wholesale market, but an incomplete one. Additional metrics are necessary to shed light on whether demand resources are being incorporated into the wholesale market efficiently. These metrics should also include how much demand resources are paid in the capacity market, as compared to supply-side resources, and how they are integrated into the energy market, including the frequency with which demand resources are

⁶ See, e.g., Federal Energy Regulatory Commission Staff Report, "Assessment of Demand Response and Advanced Metering," Docket AD06-2-000 (August, 2006); Federal Energy Regulatory Commission Staff Report, "A National Assessment of Demand Response Potential" (June, 2009).

dispatched in the energy market and their compensation in the energy market. While it is important to increase demand participation in the markets, payments for demand resources should not exceed the resources' value to the market. Tracking both megawatts of participation and revenues thus provides useful information to determine how close demand is to the ideal of simply responding to price, and indicates whether markets are sending price signals for an efficient energy mix and investment in capacity.

7. Demand Response/Megawatt Hours as a Percentage of Total Ancillary Services

Ancillary services are an essential, but small, part of the wholesale electricity markets. There are a number of such services, including spinning reserve, non-spinning reserve, regulation and black start. It is difficult to use a single metric to measure participation in all of these markets. Ancillary service participation is better measured in megawatts of capacity, as reserve products are not converted into energy unless something happens on the system and they are needed.

Moreover, this is a descriptive statistic, as increased participation may simply reflect a set of demand resources that have the technical ability and load characteristics to provide ancillary services, rather than good market or RTO performance. To better understand the performance of markets and RTOs in encouraging demand response, it is necessary to evaluate a breakdown of megawatt participation by ancillary service, the amount of payments made to the demand resources and whether those payments were made through markets or outside of markets.

8. Renewables/Megawatts as a Percentage of Total Energy⁷

This measure is unlikely to reflect market performance, in part because the amount of energy from renewable resources is affected by, among other things, federal and state policies and the resource mix in a particular region. The definition of renewable resources also varies from state to state and region to region. At a minimum, to put this information in perspective, the metrics should also include how much renewable resources are paid. While it may be easy to assume that high levels of renewable energy are better than low levels of renewable energy, markets with low levels of renewables may be performing well. The low amount of renewable resources may be caused by low levels of renewable energy subsidies or a lack of natural resources.

B. A More Comprehensive Approach to Assessing Market Performance

The GAO report calls for the development of standardized measures of market performance and preparation of a report that interprets those measures. In fact, the GAO is suggesting that the Commission perform an analysis of the markets similar to that performed by the ISO/RTO market monitors each year. Accordingly, the approach and metrics used by the market monitors may be useful to the Commission.

One of the most important questions that the market monitors seek to answer in their annual reports is whether the markets are competitive, since competitive markets will produce efficient prices. There are two broad types of measures that the market monitors use to assess market competitiveness: structural measures, which analyze the ownership of generation

⁷ As a technical matter, this metric should be megawatt-hours of renewable energy as a percentage of energy.

resources; and price-based measures, which compare wholesale market prices to the estimated cost of providing electric energy.

There are several structural measures and many priced-based measures in use by the ISO/RTO market monitors. Each market monitor analyzes all of these metrics to come to a determination on whether the market is competitive. The market monitors take this approach because there is no single index or analysis that can demonstrate on its own that markets are competitive. Since market performance cannot be easily measured by a single metric, to accurately assess market performance, the Commission should collect several measures of market performance, and analyze them to develop conclusions about market performance. To achieve some standardization, the Commission should require the ISOs and RTOs to submit both structural and price-based measures.

In addition to structural and price-based measures, market monitors measure whether markets are supporting new investment and the efficient turnover of assets. The Internal Market Monitor proposes that the Commission adopt each of these established measures of market performance. The Internal Market Monitor also cautions against acceding to suggestions that the Commission measure individual market participants' financial performance.

1. Structural Measures of Market Competiveness

Structural measures of market competitiveness measure market concentration. The more concentrated a market, the fewer and/or larger the number of competitors. A more concentrated market may be more susceptible to the exercise of market power than a less concentrated market. Two of the most commonly-used measures of market concentration are the Herfindahl-Hirschman Index (“HHI”) and the Residual Supply Index (“RSI”). The HHI is a measure of market concentration based on market share (i.e., the percentage of total system capacity owned

or controlled by each market participant). The system-wide RSI measures how much of the load in a given hour in megawatt-hours can be met without any capacity from the largest supplier. Suppliers that are necessary to meet demand are termed “pivotal” and can affect market prices.

The Commission could require reporting of the HHI for the market as a whole and for each the market’s energy zones. The Commission could also require reporting of the RSI for the 100 hours with the lowest RSI for the system overall. (The exact number of hours is not important, as long as a subset of hours with high concentration is reported.)

2. Priced-Based Measures of Market Competiveness

There are several approaches to comparing marginal prices and costs to measure market performance. One of the most widely known and used is the Lerner index.⁸ It is a relatively simple measure of price-cost difference. Normally, the Lerner Index ranges from 0 to 1. The lower the value of the Lerner Index, the more competitive the market it describes. The Lerner index provides a reasonable metric that can help consistently track the performance of organized markets by comparing market prices and marginal costs. This metric measures the difference between the market prices based on actual offers and what the market price would have been had the resources offered at true costs. Another comparison of prices and costs is the Price/Cost Mark-up. This is used by the PJM Market Monitor and measures how much above true cost the marginal, price-setting unit offered. The Output Gap is also used to assess market performance. It measures a market participant’s actual output and compares it to what its output would have been had the resource offered at marginal cost.

⁸ The Lerner Index is a standard measure of market power formalized by the economist Abba Lerner in 1934. The index is defined by $LI = (\text{Market Price} - \text{Marginal cost})/\text{Market Price}$.

Each of the ISO/RTO market monitors develops and reports on at least one of these price measures. The Commission should require reporting of these metrics as part of its evaluation of ISO/RTO performance. While each of these metrics differs slightly and has its own plusses and minuses, they all focus on the important difference between prices and costs.

3. Investment Metrics

An assessment of market performance would not be complete without a review of whether the market is supporting new investment and efficient turnover of assets. The Commission should require the reporting of capacity market results (prices, quantity offered, quantity cleared) for each of the ISO/RTOs with capacity markets. For all of the ISOs and RTOs, the Commission should require reporting of the capacity required by the ISO/RTO, the amount of existing capacity and the amount of capacity added and retired each year since markets began operating in that area.

These metrics would provide the Commission with a significant amount of information that could be used in its assessment of market performance and identification of areas of possible improvement.

4. Financial Performance of Individual Market Participants

There have been requests that the Commission measure and publish the financial performance of individual market participants. The Internal Market Monitor believes this is inappropriate and is not a good measure of market performance.

One of the important benefits of markets is that investment risk is borne by private investors rather than all ratepayers. The uniform market clearing prices in organized electric energy markets are meant to reflect the cost of the marginal or next increment of supply. Resources with costs less than the marginal resource earn inframarginal rents, which, along with

capacity market and ancillary service market revenues, are used to pay the fixed costs of resources. At any point in time, some resources may be earning significant amounts of inframarginal rents and some may not be earning enough inframarginal rents to pay fixed costs. Calls to limit payments to resources earning significant inframarginal rents on grounds unrelated to the exercise of market power are misguided and, if allowed, would distort market expectations and deter investment. If payments to some resources that “earn too much” should be limited, then resources that suffered losses should also expect compensation for their losses. Such an approach is clearly inconsistent with market-based rates.

Rather, a sound approach to assess overall market performance under market-based rates should look at market concentration, the relationship between market prices and the costs of producing electricity and whether the investment needed to provide a reliable supply of electricity is occurring. It is not the financial positions of individual participants that determine whether market results are just and reasonable, it is whether the market is competitive. The analysis described above that looks at several measures of market competitiveness and market outcomes can be used by the Commission to determine whether the market is competitive.

III. CONCLUSION

ISO-NE's Internal Market Monitor requests the Commission to consider its comments as submitted herein.

Respectfully submitted,

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