

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

**Midwest Independent Transmission System)
System Operator, Inc.)**

Docket No. ER17-284-000

**MOTION TO INTERVENE AND PROTEST OF THE
MISO INDEPENDENT MARKET MONITOR RELATED TO
THE PROPOSED CAPACITY MARKET FOR COMPETITIVE RETAIL AREAS**

Pursuant to Rules 212 and 214 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission (“FERC” or “Commission”), 18 C.F.R. §§ 385.212 and 214 (2007), Potomac Economics respectfully moves to intervene in the above-captioned proceedings concerning the November 1, 2016 filing (“the Filing”) by the Midcontinent Independent System Operator, Inc. (“MISO”) in which they propose to amend provisions of their open-access transmission tariff (“Tariff”) to create a capacity market construct for competitive retail areas (“CRAs”).

Potomac Economics is the Independent Market Monitor (“IMM”) for MISO and, in that capacity, seeks to ensure the efficiency and integrity of the MISO markets. Potomac Economics files this protest reluctantly, and after many months of effort to try to improve MISO’s CRA proposal during the stakeholder process. Potomac Economics agrees with MISO on the underlying problem to be addressed – the lack of an adequate mechanism to ensure resource adequacy for CRAs – and commends MISO for its desire to address this issue.

However, the MISO proposal is wholly inadequate to ensure resource adequacy in CRAs at just, reasonable, and non-discriminatory rates, terms, and conditions of service. As we explain in more detail below, capacity markets will not operate properly – and will not produce just and

reasonable outcomes – unless they produce prices that accurately reflect the marginal value of the capacity acquired in those markets. For this to happen, demand in such markets must be efficiently represented, and the clearing of demand and supply must be jointly optimized. The MISO proposal, although superficially resembling the capacity market designs approved for other Regional Transmission Organizations (“RTOs”), is nothing like these other market designs in substance because it contravenes basic economic market design principles. That is, it is not structured to accurately reflect the marginal value of the capacity acquired because the demand does not reflect any of the MISO planning reserve requirements, and it does not jointly optimize the clearing of all supply and all demand.

The result of these flaws is that the proposal is highly likely to result in unstable prices that are either too low to retain existing supply that is needed or excessive high, attracting new resources that are not needed. This latter result would expose MISO’s competitive retail loads to *annual* capacity costs that are hundreds of millions higher than would prevail in a well-designed capacity market, and many times higher than the capacity cost of its regulated loads.

For these reasons, the MISO proposal will not efficiently attract and retain the necessary capacity for CRAs at prices that the Commission would deem just and reasonable. Hence, we urge the Commission to reject it. We fully recognize the need for MISO to put in place a mechanism to ensure capacity for CRAs, and we make this argument reluctantly, and only because we believe that the MISO proposal is fundamentally unsound and will produce the necessary just and reasonable outcomes. In this pleading, we present a proposed alternative to the MISO proposal that is fully achievable and that will produce efficient market outcomes and satisfy MISO’s reliability requirements. Our intent in presenting this alternative is to demonstrate to the Commission that alternatives exist for addressing the CRA issue that would produce efficient and competitive market outcomes and, in doing so, would satisfy the Commission’s just and reasonable standard.

TABLE OF CONTENTS

I. NOTICE AND COMMUNICATIONS.....4

II. MOTION TO INTERVENE.....4

**III. BACKGROUND AND ECONOMIC PRINCIPLES APPLICABLE IN
EVALUATING THE CRA PROPOSAL.....4**

A. The CRA Issue and MISO’s Proposed Solution..... 4

B. The Role of the Capacity Market..... 6

C. Economic Design Principles 12

IV. COMMENTS ON THE MISO’s PROPOSAL.....15

A. MISO Does Not Show that Its Proposal is Just and Reasonable 15

B. Demand and Supply Aspects of MISO’s Proposal are Economically
Unsound 21

C. Bifurcation of MISO’s Capacity Market Will Result in Inefficient
Outcomes 25

D. The Supply and Demand Flaws are Likely to Lead to Unreasonable
Market Outcomes..... 27

E. Additional Concerns Regarding MISO’s 3-Year Forward Procurement..... 33

V. OPTIMIZED PROMPT CAPACITY MARKET PROPOSAL.....34

A. Description of the 2-Pass Prompt Alternative Auction..... 34

B. Designation of the Supply and Demand to Clear at Pass 1 Prices..... 35

C. Competitive Retail Load Procurements 35

D. Benefits of the Prompt Alternative Relative to MISO’s Proposal..... 36

E. Response to MISO Criticisms of the Prompt Alternative..... 39

VI. COMMENTS ON THE BRATTLE SIMULATION ANALYSIS.....44

VII. CONCLUSION45

CERTIFICATE OF SERVICE47

I. NOTICE AND COMMUNICATIONS

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II. MOTION TO INTERVENE

As the IMM for MISO, Potomac Economics is responsible for monitoring and evaluating the performance of the MISO energy and ancillary services markets, recommending market design changes to improve the performance of the markets and evaluating design changes proposed by MISO or market participants. As the IMM, Potomac Economics has a unique responsibility to ensure the efficiency and integrity of MISO wholesale power markets. Potomac Economics' interests, therefore, cannot be adequately represented by any other party. Accordingly, Potomac Economics respectfully requests that it be permitted to intervene in this proceeding with full rights as a party.

III. BACKGROUND AND ECONOMIC PRINCIPLES APPLICABLE IN EVALUATING THE CRA PROPOSAL

A. The CRA Issue and MISO's Proposed Solution

MISO is proposing Tariff reforms to modify its capacity market construct to better ensure resource adequacy in CRAs within MISO. CRAs are in Local Zones 4 and 7 (Illinois and Michigan) wherein certain customers can select competitive suppliers for their retail service.

MISO currently operates a MISO-wide capacity market called the Planning Reserve Auction ("PRA"). However, it has key design flaws that undermine the incentives it provides to govern suppliers' decisions to invest in new resources or retire existing resources. The essential problem is that in most circumstances, the auction will clear at a price that is much lower than would be necessary for the MISO markets alone to maintain adequate planning reserves. This

outcome is the result of representing demand for planning reserves using a *vertical demand curve*.¹

In most areas within MISO, this design problem is mitigated because retail load is served by regulated utilities that have the responsibility to plan for and meet their load obligations, and that generally are able to pass through their capacity acquisition costs to retail customers. Hence, to the extent that the capacity revenues produced by the PRA are inadequate to produce sufficient supply to meet resource capacity needs, these utilities are able to make up any supply shortfall by relying on access to revenues from regulated retail rates.

However, this mitigation mechanism is not applicable or available to competitive suppliers or competitive retail loads. There is no regulated utility with regulated revenues that is responsible for planning to meet the future needs of such loads. Accordingly, the factor that mitigates the issues caused by the PRA's use of a vertical demand curve in areas where retail load is served by a regulated utility is not present in areas where retail load is served by competitive suppliers. In CRAs where resource adequacy must be ensured by the market, if prices do not reflect the value of marginal resources, or there is significant uncertainty as to whether they will, then it is unlikely that market participants will make efficient decisions to provide the capacity necessary to service the CRAs. MISO and the IMM agree that this is a problem.

MISO has proposed to address this problem by establishing a capacity auction – the Forward Resource Auction (“FRA”) – three years in advance of the planning year and MISO's PRA. MISO proposes that this forward auction procure the portion of the MISO-wide planning reserve requirement corresponding to the CRA load, which represents less than 8 percent of

¹ This structure also creates the potential for significant price volatility and uncertainty for market participants that can hinder long-term contracting and investment by making it extremely difficult for potential investors to forecast the capacity market revenues. We have explained this previously in various venues (see, e.g., Potomac Economics, *2015 State of the Market Report for MISO Electricity Markets*, pp. 20-22).

MISO's total load. In other words, the FRA would procure the total planning reserve requirement (slightly more than 115 percent of the forecasted peak CRA load) rather than the local capacity requirement – i.e., the minimum amount of capacity that must be procured from within the capacity zones where the CR load is located. Therefore, the capacity may be procured from other areas throughout MISO subject to transmission constraints modeled in the FRA. However, if a transmission constraint that was not modeled in the FRA binds in the PRA, or the topology changes such that replacement capacity must be procured for the CRA load, they will have to bear the costs of the original procurements and the replacement procurements.

Although capacity throughout the MISO footprint is capable of satisfying most of the planning resource needs of the CRA load (the local requirements are a declining share of the total requirements for the CRA load), only suppliers located within the capacity zones with the CRA load and those that voluntarily indicate interest in selling are potentially subject to market power mitigation for economic or physical withholding. For these suppliers, mitigation may be warranted if the supplier is pivotal and the resources withheld are in excess of 103 percent of the supplier's own capacity requirements (i.e., the safe harbor test).

B. The Role of the Capacity Market

To understand why MISO's proposal will not produce just and reasonable outcomes, it is necessary first to outline the economic theory and principles that should guide the development of capacity products and markets. In the remaining sections of this protest, we explain in detail how MISO's proposal is inconsistent with these design principles, and why it will not likely produce efficient prices on a consistent basis that can be deemed just and reasonable by the Commission. We also describe an alternative market design that is consistent with sound economic principles and compare this alternative to MISO's proposal. Our intent in presenting this alternative is to demonstrate to the Commission that alternatives exist for addressing the

CRA issue that will predictably produce efficient and competitive market outcomes and, in doing so, will satisfy the Commission's just and reasonable standard.

In wholesale electricity markets, the capacity market refers to the supply of and demand for physical generation resources (and demand response) that are committed to be in service during a planning period (usually a planning year) to meet the system's planning requirements. Planning requirements are established through the planning process in accordance with standards set by the North American Electric Reliability Council ("NERC"). MISO, like all RTOs, performs the planning process in its region and establishes a capacity market in order to augment the energy and ancillary service markets and efficiently satisfy the planning requirements.

The economic signals provided by the capacity market and an RTO's energy and ancillary services markets inform long-term capacity decisions, including investment, retirement, and maintenance associated with capacity resources. Therefore, these economic signals play a pivotal role efficiently satisfying RTO's planning requirements. However, as explained above, in MISO these signals are augmented by the state regulatory process for regulated utilities that provides additional direction and revenues for regulated entities to build and maintain generating resources. Nevertheless, the economic signals provided by MISO's markets still play an essential role governing the long-term supply decisions by competitive suppliers, loads, and external entities.

1. Demand in Capacity Markets

At the highest level, the outcomes in any market are going to be determined by two factors: the supply and the demand for the product. For most other products, the demand is determined by the aggregate set of actual buyers of the product and the supply is determined by the aggregate set of sellers of the product. In RTO electricity markets, the RTO determines the demand while the supply remains determined by many different sellers. In developing a new product, therefore, it is critically important to represent demand in an efficient and reasonable

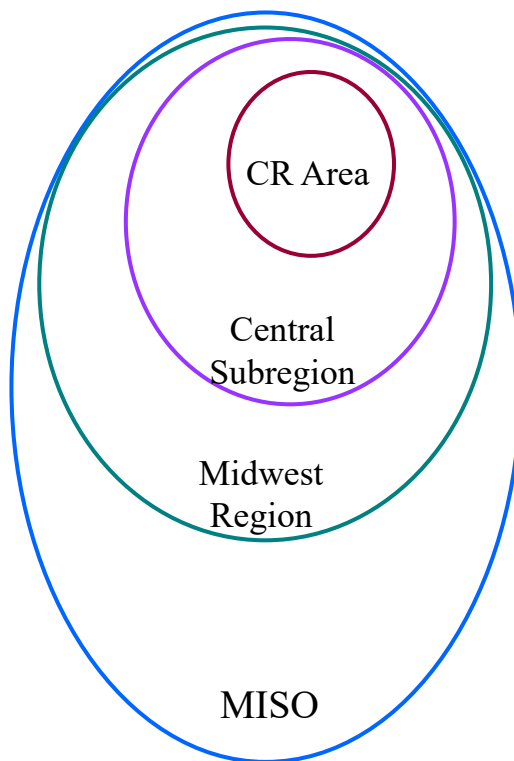
manner, otherwise the market outcomes will be predictably inefficient and unreasonable. This section describes the economic principles that should be employed to determine the demand in any capacity market.

First and foremost, the demand for any product should reflect the value it provides to the buyer, and the capacity market is no different. The demand for a capacity resource is based on its contribution to satisfying the RTO's planning reserve requirements, which is ultimately a function of the reliability it provides to electricity consumers in MISO. Since the planning reserve requirements are *minimum requirements*, RTOs generally structure the demand in capacity markets to ensure that investors will cover their cost of building a new resource when the market clears close to the minimum requirement. At this quantity, the RTO will satisfy the generally-accepted "one-day-in-ten-years standard" – i.e., there will be enough reserve capacity to ensure that electricity demand is only not fully satisfied one day in ten years on average. The value to buyers of capacity above and beyond that necessary to satisfy the minimum planning reserve level will be based on the marginal reliability value that these higher planning reserves provide. Therefore, the representation of demand in capacity markets must be an accurate representation of the reliability they provide.

The value of capacity resources in a particular location depends on all of the planning needs that it satisfies, including system-wide needs and local planning needs. Local needs arise when transmission limits into an area are expected to require that some portion of the capacity needed in that location must be located there. However, the capacity procured for the local area simultaneously satisfies the requirements in the broader areas. This reality is fundamental to the representation of demand in every other capacity market (whether prompt or forward) and is generally known as the "nesting" of reliability requirements.

Figure 1 illustrates how individual requirements nested within MISO contribute to the overall MISO requirement. As we explain below, MISO is asking that the Commission to depart from this key principle.

Figure 1: Nested Reliability Requirements



The figure indicates that the MISO-wide demand for capacity (reliability requirement) is satisfied by the capacity procured in the nested locations.

Every RTO capacity market approved by the Commission, including the existing MISO PRA, recognizes that planning requirements are interrelated or “nested”. As explained in the next section, the MISO proposal is the first and only RTO that has proposed that these interrelationships be ignored and the procurements be bifurcated.

2. Supply in Capacity Markets

Supply is the quantity a producer would be willing to sell at different prices. It will be based on the cost of providing a product. In capacity markets, the cost of selling capacity is based on: a) the residual costs not recovered through the energy and ancillary services markets to remain in service or enter the market; b) any foregone opportunity to sell capacity elsewhere, and

c) the costs of satisfying the capacity obligations. These costs vary based on the type of unit and specific unit characteristics:

- For existing resources that are not fully recovering their operating costs in the energy and ancillary services markets, the costs of selling capacity are its “going-forward costs”, which are the costs of remaining in service for the period of performance. This would include costs associated with capacity obligations, such as a must-offer obligation;
- For a new unit, the cost of selling capacity is its net cost of new entry (“CONE”) that are not sunk, which represents the level of revenue needed from the capacity market (over and above the energy and ancillary services revenues) for the investor to be willing to build the new unit.
- Resources that have the opportunity to sell their capacity in another market, which would be eliminated once the resource clears in a capacity auction, should submit offers that represent the opportunity costs for foregoing all other capacity sales. In general, the offer should be the higher of the first two categories of costs or the opportunity costs.

The costs listed above are the basis for all supply offers, but it is important to recognize that going-forward costs for existing units can be covered in part or in full by energy and ancillary services revenues. In fact, most existing units will earn enough energy and ancillary services revenues to entirely cover their going-forward costs. Hence, these units’ competitive offers will be close to zero (absent substantial opportunity costs).

With regard to opportunity costs, the most significant opportunity cost of selling in MISO’s proposed forward auction is the lost opportunity to sell in the prompt PRA auction. Hence, any factors that tend to reduce the PRA prices will tend to lower the offer prices submitted into the forward auction.

3. Capacity Market Revenues and Long-Run Equilibrium

A long-run equilibrium in wholesale electricity markets is achieved when energy, ancillary services, and capacity revenues in these markets allow a marginal resource to cover its

entry costs. “Energy-only” markets that include only energy and ancillary services markets (not a capacity market) will achieve a long-run equilibrium at a capacity level that is generally well below most RTOs’ planning requirements. The “one-day-in-ten-years” reliability standard implies a value of lost load that is generally an order of magnitude higher than the value of lost load that underlies the RTO’s energy market shortage pricing. In other words, in order for energy markets alone to provide enough revenue to sustain adequate planning reserves, shortages would have to occur much more often and produce much higher prices than the current RTO energy markets.

This additional revenue needed to sustain the levels of capacity needed to satisfy the planning reserve requirements is sometimes referred to as the “missing money”. Organized capacity markets exist principally to provide this missing money and, in doing so, to efficiently satisfy the planning reserve requirements. In other words, the capacity resources must generate additional revenues (beyond energy and ancillary services markets) to prompt the higher level of investment (and slower retirements) needed in order to satisfy planning reserve requirements. As the planning reserve requirements increase, the missing money becomes larger because shortages occur less frequently.

Hence, the primary purpose of the capacity market is to provide efficient prices and revenues to sustain capacity that satisfies all of the RTO’s planning requirements at least cost.

But there are also other benefits as well, including:

- Coordinating efficient capacity imports and preventing inefficient exports;
- Supporting a vibrant forward bilateral contract market; and
- Facilitating low-cost merchant investment.

Ideally, the MISO capacity market should be structured to achieve these benefits in all areas. However, as outlined above, the MISO capacity market has certain design characteristics (the vertical demand curve) that create uncertainty and undermine efficient incentives for

suppliers. This problem is mitigated to some degree for regulated suppliers because they have access to regulated revenues collected through retail rates. However, capacity owned by competitive suppliers that are needed to serve competitive retail load does not receive regulated revenue and, therefore, must depend exclusively on wholesale market signals. Therefore, because the MISO capacity market construct will not provide these efficient incentives, improvements are warranted at least for procurement in the competitive retail areas. MISO has expressed these same conclusions in its Filing:

Through its stakeholder process and special workshops, MISO determined that its current Planning Resource Auction (“PRA”) construct may become unable to produce efficient or timely price signals for competitive retail areas that depend on market price signals to incent resource investment (MISO CRA Filing at p. 4).

When the capacity market facilitates a long-run equilibrium level of capacity, the market will deliver revenues equal to net CONE, sufficient to motivate competitive suppliers to invest when and where needed to satisfy the RTO’s planning reserve requirements. This is consistent with the objective of the Brattle Group’s analysis to tune the demand curve in the MISO proposal (included as part of the MISO CRA Filing, Tab C).

However, it is equally important to understand how the market will perform when the market is not in equilibrium. For example, when an RTO has a moderate surplus, as is the case currently in MISO, the market should provide economic signals to retain existing resources without motivating investment in large quantities of new resources that are not needed. In order to achieve efficient capacity prices in CRAs under all supply and demand conditions, one must adopt sound economic design principles to guide the development of the market. Such principles are discussed in the following subsection.

C. Economic Design Principles

As discussed above, the performance of any market will be dictated by the market demand, the supply offered into the market, and how the supply and demand are cleared to

produce the market outcomes. In this section, we outline two relatively simple but key economic design principles that must be met in order to ensure that a market construct consistently produces just and reasonable market outcomes. Hence, we recommend the Commission evaluate MISO's proposal in light of these design principles.

Design Principle 1: Prices Should Reflect the Marginal Reliability Value of Capacity

Like all markets, the primary economic market design objective should be to produce prices that accurately reflect the marginal value of capacity to the system. By achieving this objective, economic signals will be provided that facilitate economically-efficient decisions by competitive suppliers to:

- Build new units;
- Make capital investments in and incur other fixed maintenance costs in existing resources;
- Retire existing resources;
- Import capacity resources from external areas;
- Export capacity resources to external areas; and
- Develop or maintain demand response resources.

Additionally, such a price will be equitable for consumers because it will reflect the marginal value of the capacity being procured by the RTO. In other words, consumers will enjoy reliability that is consistent with the costs they incur.

Under this design principle, capacity prices should fall as capacity levels rise because each megawatt of capacity will provide less incremental reliability benefit (i.e., will have a smaller effect on reducing the probability of losing load). As we outline in more detail below, for a market design to satisfy this principle, it is critical that the market design accurately reflect demand. This design principle simply cannot be achieved if the demand does not accurately reflect the reliability needs of the system.

Design Principle 2: The Clearing of Supply and Demand Must be Jointly Optimized

Even when the demand is accurately and efficiently represented, market outcomes will only be efficient if the manner in which supply and demand are cleared in the market is optimized. Since the marginal reliability value of every megawatt of capacity depends on the magnitude and location of every other megawatt on the system, all procurements must be considered jointly to procure an efficient amount of capacity and set an efficient price.

This principle is consistent with the fundamental operation of the electricity system. When MISO clears its energy market, it must run one coordinated and optimized dispatch to achieve efficient real-time energy prices and dispatch levels. This is necessary because of the inherent interrelationship of the resources with each other and the transmission network. These same interrelationships exist in the planning horizon, which makes the capacity market analogous to the markets that run in the operating horizon. In both cases, efficient outcomes can only be achieved if the markets are clearing all supply and all demand together in a single optimized market.

These two design principles are generally applicable to all new wholesale market design elements. Applying such principles ensures that market design changes will result in economic benefits and provide efficient incentives to the market participants and, from the Commission's perspective, will produce outcomes that are just and reasonable.

As we discuss in the following section, the MISO CRA proposal violates both of these principles by proposing a market construct where the demand does not correspond to any known reliability need and where there is a bifurcation in the market that precludes the procurements for CRA load from being jointly optimized with the procurements for all other load in MISO.

IV. COMMENTS ON THE MISO'S PROPOSAL

In this section, we evaluate the MISO's capacity market proposal in detail. We find that the proposal violates the key economic design principles discussed above and will not result in just and reasonable prices and market outcomes for the CRA loads or other loads in MISO.

A. MISO Does Not Show that Its Proposal is Just and Reasonable

Before we evaluate MISO's proposal against the economic principles that we have developed above, it is important that we first outline the key inquiry with respect to the just and reasonable standard. MISO's proposal should only be accepted or approved by the Commission if it will produce just, reasonable, and not unduly discriminatory outcomes. Thus, we define the core elements of the applicable standard.

The key question concerning the MISO Proposal is whether it will result in just, reasonable, and not unduly discriminatory rates, terms, and conditions of service. Such an analysis hinges, in the capacity market context, on whether the market structure will "attract and retain sufficient capacity" to satisfy MISO's reserve requirements.² MISO's analysis does not demonstrate that the proposal will attract and retain capacity or otherwise produce just and reasonable outcomes, and instead focuses on the fact that the Commission has approved capacity market structures that employ downward-sloping demand curves. MISO's logic is superficial -- because the Commission has approved the use of downward-sloping demand curves in other RTO forward capacity markets, its proposal must also be just and reasonable, no matter the differences between the MISO proposal and the other market constructs approved by the Commission. This argument represents a fundamental misreading of not only the Commission's decisions on

² See, e.g., *ISO New England Inc.*, 125 FERC ¶ 61,102, at P 43 (2008) ("The purpose of the New England [Forward Capacity Market] is to attract and retain sufficient capacity to maintain ISO-NE's Installed Capacity Requirement, and to do so, [Forward Capacity Market] capacity prices will need to average out over time to the cost of new entry").

forward capacity markets with downward-sloping demand curves, but of the broader Commission authority on how to evaluate market design proposals more generally.

The starting point for the assessment of a market design proposal is whether it will produce just and reasonable rates, terms, and conditions of jurisdictional service.³ It is well-settled that the Commission may rely on market forces to produce just and reasonable outcomes, but only when such reliance will produce efficient outcomes that are consistent with the existence of a competitive market. Indeed, “[w]here there is a competitive market, the Federal Energy Regulatory Commission . . . may rely on market-based rates in lieu of cost-of-service regulation to ensure that rates satisfy [the just and reasonable] requirement.”⁴ However, without reasonable assurances, based on record evidence, that market forces will produce outcomes consistent with an efficient, competitive market, the Commission is enjoined from relying on market forces to set rates, terms, and conditions of service.⁵

For these reasons, the Commission’s focus in evaluating market structures and related rules has been on whether those market structures and rules will lead to efficient outcomes that

³ See, e.g., *California Independent System Operator Corporation*, 143 FERC ¶ 61,087 at P 61 (2013) (summarizing holding, and explaining that the California Independent System Operator had demonstrated that its then-existing rule allowing convergence bidding on interties was unjust and unreasonable); *PJM Interconnection, L.L.P.*, 117 FERC ¶ 61,331 at P 5 (recounting background of PJM capacity market proceedings, and emphasizing that the ultimate goal of those proceedings was to “determine a just and reasonable replacement for the existing market structure.”).

⁴ *Louisiana Energy and Power Authority v. FERC*, 141 F.3d 364, 365 (D.C. Cir. 1998). See also *Tejas Power Corp. v. FERC*, 908 F. 2d 998, 1004 (D.C. Cir. 1990) (“In a competitive market, where neither buyer nor seller has significant market power, it is rational to assume that the terms of their voluntary exchange are reasonable, and specifically to infer that price is close to marginal cost, such that the seller makes only a normal return on its investment.”).

⁵ See *Farmers Union Cent. Exchange, Inc. v. FERC*, 734 F. 2d 1486, 1510 (D.C. Cir. 1984) (“In setting extraordinarily high price ceilings as a substitute for close regulation, FERC assumed that, with the wide exposed zone between the ceiling and the ‘true’ market rate, existing competition would ensure that the actual price is just and reasonable. Without empirical proof that it would, this regulatory scheme, however, runs counter to the basic assumption of statutory regulation, that Congress rejected the identity between the ‘true’ and the ‘actual’ market price.”).

are consistent with a competitive market.⁶ A separate but related principle in the Commission’s policies regarding reliance on competitive markets is that market structures and market conditions can be highly variable and fluid, and that it is necessary to conduct an independent examination of the details in each proposed market to determine whether they will produce efficient outcomes.⁷ It is not sufficient to simply draw a superficial comparison between the structure of a particular market proposal and the structure of a different market that the Commission already has approved, as MISO does here. Rather, it is necessary to conduct a more rigorous, detailed analysis of the proposed market design, in order to determine whether it will produce efficient market outcomes.

These principles are embodied, most conspicuously, in the Commission’s approach to market-based rate authority for sellers of electric energy and capacity in FERC-jurisdictional wholesale markets. In that circumstance, the Commission is careful to review even relatively small changes in a seller’s circumstances to ensure that its participation in the applicable markets will produce efficient outcomes.⁸ However, the need for a case-by-case assessment of the particular circumstances of a market proposal or a market change also is reflected in the many Commission orders evaluating changes to RTO and ISO market designs and related market rules.

⁶ See, e.g., *California Independent System Operator Corporation*, 116 FERC ¶ 61,274 at P 615 (2016) (reviewing CAISO’s proposed market redesign structure for settling energy charges for load, and focusing, in particular, whether the proposal will “yield efficient market outcomes, provide adequate protection to the market participants and [is] reasonable should [high prices and curtailments] arise in the future.”). Cf. *Duke Energy Corporation, et al.*, 137 FERC ¶ 61,210 at P 85 (2011) (“[W]e believe that competition is now the best tool to discipline wholesale electric markets and thereby protect the public interest. But the competition needed to protect the public interest will not be efficient and deliver lower prices in poorly structured markets.”) (citing *Inquiry Concerning the Commission’s Merger Policy Under the Federal Power Act: Policy Statement*, FERC Stats. & Regs. ¶ 31,044 at 30,117 (1996)).

⁷ See, e.g., *California Independent System Operator Corporation*, 146 FERC ¶ 61,204 at P 102 (2014) (“any proposal before the Commission is evaluated on its own merits based on the record in the proceeding” and is not conflated with the issues presented in any other proceeding).

⁸ See, Reporting Requirement for Changes in Status for Public Utilities with Market-Based Rate Authority, Order No. 652, FERC Stats. & Regs. ¶ 31,175, at P 68, order on reh’g, 111 FERC ¶ 61,413 (2005).

In the context of capacity markets, the key driver of whether a market design is just and reasonable is whether the market will “attract and retain” the needed capacity at prices that are just and reasonable.⁹ As the Commission explained in an order issued earlier this year on the ISO New England capacity market, the Commission “has sought to ensure that capacity prices are at a just and reasonable level, sufficient to incent economically-efficient existing resources to stay in the capacity market and new resources to enter, so as to enable ISO-NE to meet its reliability requirements.”¹⁰ In that proceeding, the issue was whether ISO New England’s implementation of a limited exemption from its minimum offer price rule (“MOPR”) for certain renewable generating resources would upend the market’s core goal of attracting and retaining sufficient capacity at just and reasonable prices. After examining the specific circumstances of the limited MOPR exemption, the Commission determined that it was “satisfied with the steps ISO-NE has taken to minimize any price suppression that might result from the renewables exemption, so that the FCM can still accomplish its purpose of procuring sufficient capacity for the region’s reliability needs.”¹¹

The “attract and retain” standard has long been at the center of whether a capacity market construct is just and reasonable. In *New York Independent System Operator, Inc.*, 136 FERC ¶ 61,165 (2011), the Commission addressed, and rejected, certain proposed criteria for identifying new capacity zones on the ground that they focused too much on the market as designed, rather than on the market as it actually operated. The Commission emphasized the need for such an approach in order to ensure that existing transmission constraints are appropriately accounted for

⁹ See, e.g., *New York Independent System Operator, Inc.*, 111 FERC ¶ 61,117 at P 25 (2005) (“The purpose of an ICAP requirement is to ensure a minimum amount of capacity in the market to promote reliability, and thus, to elicit additional capacity that might not otherwise enter the market.”).

¹⁰ *ISO New England Inc. and New England Power Pool Participants Committee*, 155 FERC ¶ 61,023 at P 23 (2016).

¹¹ *Id.* at P 28.

in the capacity zone design, and thus to attract sufficient capacity at just and reasonable rates. The Commission emphasized that “if a new zone is created that will allow the auction to recognize the constraint, prices in the constrained area will be allowed to rise above prices in the unconstrained area, thereby providing stronger incentives to attract and retain capacity needed to meet reliability objectives in the constrained area.”¹²

The Commission’s capacity market cases also emphasize the need for close scrutiny of the particular circumstances of each market design proposal, and the need for evaluations of such proposals on a case-by-case basis. For example, in late 2015, the Commission issued an order holding that the continued use of vertical demand curves in constrained zones in the ISO-New England Forward Capacity Market (“FCM”) was unjust, unreasonable, and unduly discriminatory.¹³ The Commission had previously encouraged ISO-New England to move away from the use of vertical demand curves in the FCM because of the propensity of such curves to produce significant price volatility, and to expose markets to additional risks of the exercise of market power. The Commission, however, initially refrained from ordering ISO-New England to move away from vertical demand curves immediately, holding that just, reasonable, and non-discriminatory rates were best achieved over the long-run by allowing ISO New England to revise its demand curve through its stakeholder process. However, that process subsequently failed to produce a proposal that would have addressed the Commission’s concerns, so the Commission held that the use of vertical demand curves in constrained areas in the FCM was no longer just, reasonable, or not unduly discriminatory. The Commission found that an immediate move away from vertical demand curves in the ISO-NE FCM was required to produce competitive market outcomes.

¹² *New York Independent System Operator, Inc.*, 136 FERC ¶ 61,165 at PP 57-58 (2011).

¹³ *ISO New England, Inc., et al.*, 153 FERC ¶ 61,338 (2015).

This type of market assessment also is evident in many other cases involving RTOs and ISOs.¹⁴ The key inquiry, in all of these contexts, is whether the RTO or ISO market design or market rule will lead to efficient outcomes that are consistent with the existence of a competitive market.

Thus, the issue in this proceeding is not, as MISO would have it, whether its proposal is superficially similar to other capacity market designs that the Commission has approved. Rather, the key inquiry is the one that the Commission used in those other forward capacity market proceedings, as well as in other RTO and ISO market design proceedings – specifically, whether the proposed market design will produce efficient market outcomes. In the specific context of MISO’s proposal, this question turns on whether MISO’s proposed market construct will attract and retain the necessary capacity at just and reasonable rates. This inquiry requires a deeper assessment of the MISO proposal, and one which accounts for the specific economic principles that we outline in detail above. This assessment demonstrates that any similarities to other previously approved markets is only superficial. The primary characteristics of the MISO proposal that will determine whether it is likely to produce competitive and efficient market outcomes diverges fundamentally from all capacity market designs previously approved by the

¹⁴ See, e.g., *ISO New England, Inc., et al.*, 155 FERC ¶ 61,121 at P 17 (2016) (finding that ISO New England tariff is unjust and unreasonable because it does not specify how new and existing capacity at the same generating station should participate in the FCM auctions); *PJM Interconnection, L.L.C.*, 154 FERC ¶ 61,180 at P 40 (2016) (finding that existing PJM tariff is unjust and unreasonable because the modeling assumptions designed to address FTR revenue inadequacy and the resulting over-allocation of Stage 1A ARR have resulted in unwarranted cost shifts between ARR holders and FTR holders); *PJM Interconnection, L.L.C.*, 154 FERC ¶ 61,151 at P 51 (2016) (finding that use by PJM of cost-based offers in PJM RPM market as the sole measure of short-run marginal cost in calculating capacity market mitigation is unjust and unreasonable given the use of market-based offers in the PJM energy market); *Southwestern Electric Cooperative, Inc. v. Midcontinent Independent System Operator, Inc.*, 153 FERC ¶ 61,385 at P 145 (2015) (finding that MISO “Tariff provisions relied upon to calculate Capacity Import Limits understate the impact that counter-flows from capacity exports have on a Zone’s Capacity Import Limit, and therefore are unjust and unreasonable.”); *ISO New England, Inc., et al.*, 147 FERC ¶ 61,172 at P 23 (2014) (finding ISO New England capacity market mechanism “to be unjust and unreasonable, because it fails to provide adequate incentives for resource performance, thereby threatening reliable operation of the system and forcing consumers to pay for capacity without receiving commensurate reliability benefits.”).

Commission, and departs from the economic principles that are needed to produce efficient (and therefore just and reasonable) outcomes. The discussion in the following subsections discusses the manner in which these characteristics diverge from the sound economic principles embedded in other capacity market designs and explains why the MISO proposal is likely to produce unjust and unreasonable market outcomes.

B. Demand and Supply Aspects of MISO's Proposal are Economically Unsound

The following subsections evaluate a number of aspects of MISO's CRA proposal, describing why each of these aspects diverge from sound economic principles and, ultimately, will likely lead to market outcomes that are not just and reasonable.

1. The Demand in MISO's CRA is not Consistent with MISO's Planning Reserve Requirements

This subsection addresses the flaws in the representation of demand in MISO's proposed FRA for the competitive retail load. The demand in MISO's CRA proposal is represented in a downward sloping demand curve that is based on a load-ratio share of MISO's total planning reserve requirement for the CRA load. Effectively, this would be the demand if the CRA load were disentangled from the balance of the MISO load, and operated as a separate system with a planning reserve requirement equal to MISO's. Clearly, this is not the case. The CRA load will continue to be served as an integrated component of MISO's overall load, which leads to one inescapable conclusion: the representation of demand in the CRA proposal, upon which MISO's entire proposal hinges, is ill-conceived and is inconsistent with its true planning reserve and operating needs. Put another way, MISO's true demand cannot be accurately represented in the CRA auction. As we emphasized above, efficient market outcomes hinge on reflecting the true reliability value of the procured capacity, and the true reliability value of each increment of procured capacity cannot be reflected if the demand is not represented accurately. The inconsistency between the representation of demand and MISO's true planning reserve and

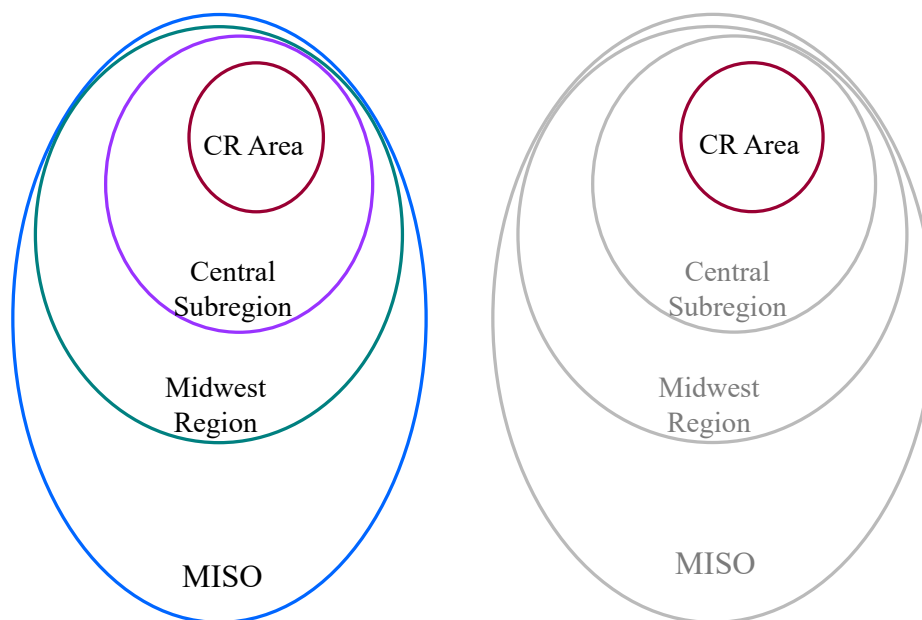
operating needs will prevent the outcomes in MISO's proposed FRA from reflecting the true reliability value of the of the capacity that it procures.

In reality, when a resource is procured in an RTO capacity market, it can contribute to satisfying a number of different planning reserve needs of the RTO (depending on its location) and MISO is no different. For example, when MISO procures a resource that is electrically located within Zone 4 or 7 where its CRA load is located, it will help satisfy many different planning reserve needs, including:

- the local capacity requirements in those zones (which is determined based on the transmission capability into the zones);
- the planning needs of any other broader multi-zone areas in the Midwest region that are affected by constraints that limit the ability to deliver capacity from the western or southern areas of the MISO footprint;
- the planning reserve needs of the Midwest region, separate from MISO's overall needs or needs in the South region because of MISO's limited ability to transfer capacity from the MISO South region (currently assumed to be less than 1000 MW); and
- MISO's overall planning reserve requirements.

In a well-designed and efficient capacity market, each of these requirements would be explicitly modeled with separate sloped demand curves. This allows supply to clear against each of these demands and for prices to vary locationally in a manner that efficiently reflects resources' contributions to satisfying some or all of these needs. The panel on the left of Figure 2 below illustrates these nested demands in MISO.

Figure 2: Demand in MISO Compared to Proposed Procurement CRAs



Therefore, the value of a resource in the CRAs (and thus the efficient price to pay the resource) will depend on the array of planning needs it satisfies, ranging from the local capacity needs in the CRA and extending to broader areas within MISO. Likewise, the optimal amount of capacity to procure in the CRAs will likely be determined by the needs in the broader areas. All RTO capacity markets that employ downward sloping demand curves structure the demand curve to satisfy all of the RTO's planning needs in an integrated manner.

In stark contrast, MISO's proposal conceives of a demand that does not represent any of MISO's actual planning reserve requirements, which is depicted in the panel on the right of Figure 2. Although the depiction of the CRA is the same in both panels, the actual proposed demand is very different. The CRA demand in a conventional capacity market is only the local capacity requirement, which represents the needs that have to be served by resources within the area because transmission constraints limit the ability of the RTO to the load in the area with resources located outside of the area. In MISO's proposal, the CRA demand is the full planning reserve requirements of the CRA load. In an early version of MISO's proposal, MISO proposed that the demand be based on the local capacity requirement in the CRAs. This earlier proposal

was closer to being reasonable because the demand would have represented a real planning and reliability need in MISO.

Ultimately, however, both this earlier proposal and MISO's current proposal are unreasonable because they ignore all other planning reserve needs in the broader areas of the MISO footprint. Importantly, these other planning needs determine the level of reliability that will be experienced by the CRA load because MISO cannot operate the system and serve the CRA load independent of all of the other load MISO serves.

The inconsistency between the demand that is represented in MISO's FRA and MISO's actual planning reserve needs is the main reason why MISO's proposal cannot establish prices that truly reflect the marginal value of the reliability the resources procured in the FRA are providing.

2. Supply Incentives and Participation is Highly Uncertain and MISO Proposed Supply Rules Are Unduly Discriminatory

In addition to demand not being represented efficiently (and failing to reflect the value of capacity to buyers), the supply will also not participate efficiently for the reasons discussed below. Although MISO recognizes the flaws in MISO's current PRA, it fails to recognize that these flaws will undermine the participation of the supply in the FRA.

As we have explained in the preceding section, capacity market offers are generally based on the higher of a supplier's net going-forward costs or its opportunity costs of selling capacity in other markets. For most existing units in MISO, going forward costs are covered by energy and ancillary service market revenues and/or by its regulated revenues, so most offers should be determined by opportunity costs. The most relevant opportunity cost for most existing MISO resources is the opportunity to sell into MISO's prompt PRA. However, the design issues in MISO's PRA, which we outlined above, will likely cause it to continue to clear at inefficiently low prices. Because the offers for existing resources into the FRA is informed by the expectations

of the PRA prices, the offer prices are likely to be inefficiently low for much of the supply offered in the FRA. In this way, the infirmities of the PRA may be imported into the FRA.

Another supply issue for the MISO proposal is related to the capacity controlled by regulated utilities. This is capacity that was paid for by the utilities' customers and there is a general consensus that most regulated utilities will refrain from offering their full excess capacity into a three-year forward market. In fact, MISO's witnesses from the Brattle Group presented analyses that assumed regulated utilities will sell no capacity into the FRA until its planning reserve margin exceeds the minimum required margin by 20 percent.¹⁵

If this capacity is not offered in the FRA, the auction can clear at unreasonably high prices. In fact, as we explain below, it is likely the market will clear well above the price that currently reflects the value of capacity in MISO.

Finally, the rules that are applicable to potential suppliers in the FRA are discriminatory. Some resources are prohibited from being sold in the FRA unless a participant can demonstrate prior to the FRA that it has adequate supply to satisfy its own capacity requirements in MISO. This prohibition is proposed despite the fact that such a supplier has three years to acquire the resources necessary to satisfy its requirements and that the requirements themselves are uncertain three years in advance. At the same time, suppliers located in a zone that contains a CRA load (local resources zones 4 and 7) are subjected to mitigation measures that could compel them to sell capacity in the FRA that are not applied to similarly situated suppliers in other zones.

C. Bifurcation of MISO's Capacity Market Will Result in Inefficient Outcomes

Even if one were to assume that the demand is represented efficiently and the supply has efficient incentives to participate in the FRA, the proposed bifurcation of the market between a forward auction to serve roughly 8 percent of the load and the prompt PRA that will serve the

¹⁵ MISO's planning reserve requirement is roughly 15 percent. In its base case, it assumes that regulated utilities will not offer to sell any capacity in the FRA until its margin exceeds 18 percent.

remaining 92 percent of the load will prevent MISO from optimizing its procurements. In reality, the outcomes in both markets can only be efficient if the procurements in the CRAs are tightly integrated and optimized with the procurements in the broader MISO footprint. This principle is important because the competitive retail areas are locations that are within the MISO footprint and any capacity that is procured in CRAs will also satisfy capacity needs in the larger MISO footprint. Likewise, MISO procurements for its regulated load will inform the quantity and location of capacity needed for the CRA loads.

The optimal quantity of capacity needed in an area is based on the array of planning needs it satisfies. If MISO procures capacity in one location, it provides reliability for a wide range of other locations within MISO as well. Hence, if MISO procures capacity to meet CRA requirements, it will provide capacity to broader areas, including MISO as a whole. Hence, the optimal amount of capacity procured in the CRAs can only be determined in light of the needs in the broader areas.

In MISO's case, a planning requirement is established for the entire MISO footprint. Because of transfer constraints between MISO South and MISO Midwest, some of the capacity must be located in the Midwest region. Hence, MISO imposes a constraint in its PRA on how much capacity can be procured in MISO South to satisfy planning needs in the Midwest region. This does not change the aggregate capacity requirements for the MISO footprint; it just changes where the resources may be procured. Similarly, constraints within the Midwest or South regions, or into and out of individual capacity zones, can shift the optimal quantity of capacity procurements in different areas. Importantly, when these procurements shift, the prevailing capacity prices in different areas will change to reflect the optimal procurements.

MISO's proposed bifurcation of its capacity market makes this optimization impossible. The Commission has never approved an RTO capacity market that does not seek to optimize its locational and market-wide capacity procurements, and with good reason – failure to optimize an

RTO's capacity procurements exposes customers to prices and costs that are not just and reasonable. However, capacity market design alternatives exist that would allow for the optimization described above, one of which is discussed in detail later in these comments. Hence, the bifurcation proposed by MISO is not necessary in order to address the CRA planning issue.

D. The Supply and Demand Flaws are Likely to Lead to Unreasonable Market Outcomes

In the prior subsections above, we describe the fundamental economic flaws in MISO's proposal. In this section, we simulate the possible outcomes of MISO's proposed FRA to demonstrate why it is likely that such a market will produce unreasonable market outcomes.

1. Illustration of How MISO's Market is Likely to Produce Unreasonable Prices.

First, it is important to recognize that in bifurcating its capacity procurements, MISO is proposing to create a forward market that is very small relative to the rest of MISO. This is important because it makes the market outcomes very sensitive to changes in the actions and decisions of MISO's regulated participants.

An example would best illustrate the problem. MISO's load-ratio share of the MISO-wide planning requirement allocated to CRA load is 10,400 MW (see Table 1 of The Brattle Study in MISO Filing). The quantity of competitive supply that would be available to serve CRA load, including resources held by competitive suppliers interconnected near the MISO border that have traditionally been offered in MISO, is approximately 9 GW.¹⁶ This quantity is less than what is needed to clear the 10,400 MW of demand in the FRA. However, we expect regulated utilities in Michigan and Illinois will have more than 1.5 GW of capacity that is subject to MISO's proposed

¹⁶ The actual offers in the 2016/2017 PRA provides the supply curve for our analysis, but restricts merchant supply from MISO South to 984 MW, reflecting the Transfer Constraint. We assume competitive supply reflect units offered by merchants offering non-regulated assets.

market power mitigation measures and will likely sell a substantial portion of this in the FRA.¹⁷ Adding the Michigan/Illinois excess to the competitive supply, the price will clear at the very highest end of the competitive supply stack if regulated utilities do not offer excess capacity into the FRA. We estimate this price to be approximately \$260/MW-day. Such a price would result in an annual cost to the CRA load of almost one billion dollars, which is multiples of the highest costs these areas would have ever paid for capacity under the MISO markets.

Alternatively, since the FRA is such a small segment of the overall MISO market and MISO's planning needs are not reflected in the FRA demand, the proposed FRA may also substantially understate the true reliability value of the capacity procured in the FRA. This concern would arise if excess regulated supply is offered aggressively in the FRA at offer prices that reflect the expected opportunity costs in the prompt PRA. The average unconstrained price in the Midwest region the PRA over the past three years is \$31/MW-day. If a large quantity of resources is offered close to this price, the FRA could clear at this level and result in a number of older resources held by competitive suppliers to retire or export inefficiently. This is precisely the problem MISO is attempting to address. In this case, the FRA would produce annual costs to the competitive retail load (and revenues to the suppliers in the FRA) of roughly \$120 million, which is more than \$900 million less than the first scenario we describe above.

2. Range of Market Outcomes in the MISO's Proposed Market

To illustrate the uncertain pricing dynamic, we simulated the range of possible market outcomes in MISO's proposed FRA based on current supply conditions and MISO's proposed demand curve. The current supply levels in MISO that underlie this analysis includes a net surplus of capacity of roughly 3 percent after accounting for the transfer constraint that cause some of MISO's surplus in the South region to not be deliverable to the Midwest region.

¹⁷ This amount accounts for the fact that the mitigation applies to excess capacity these entities will have above the 103 percent safe harbor.

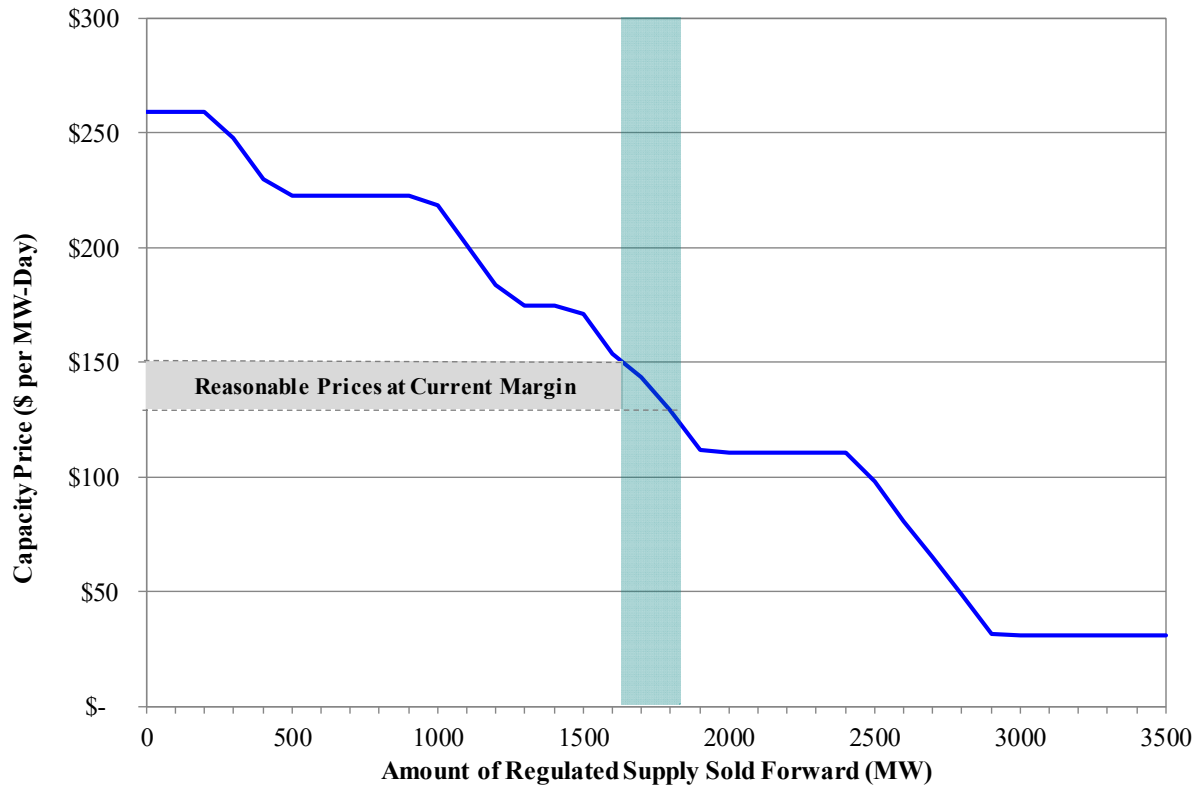
We expect competitive suppliers to offer all of the resources they had previously offered into MISO's PRA. In our simulation, therefore, we include the competitive supply at their most recent PRA offer prices.

However, we do not assume that all of the surplus capacity held by regulated suppliers will be offered in the FRA. The participation of regulated supply is much more uncertain as discussed above. Therefore, we assume a variable amount of regulated excess supply offered at prices equal to the average unconstrained price in the Midwest region over the past three PRAs (\$31 per MW-day). Because there is less competitive supply in MISO than the CR load requirements, a significant amount of regulated supply (or additional imports) will likely be needed to clear the FRA without building large quantities of new resources.

Figure 3 shows the results of this analysis. The blue line in this figure represents the clearing price in the proposed FRA for each given amount of regulated supply or imports that may clear as indicated on the horizontal axis. Note that with regulated supply at zero, only existing merchant supply and (the 1,800 MW of excess capacity in Michigan and Illinois discussed in the footnote above) clear and the price is set at near CONE (\$260 per MW-day). When the quantity of non-competitive supply offers increase along the *x-axis*, the clearing price decreases because the low-cost regulated supply displaces higher-cost competitive supply and the market slides down the proposed demand curve.¹⁸

18 No new resources are included in this simulation, which would likely be priced in the range of \$200 to \$250 per MW-day. Although the net CONE of a new peaking unit is close to \$200 per MW-day, the inherent instability of this market and the fact that the new resource will only be guaranteed one year of capacity revenue at or above its offer price will likely cause a risk-averse new supplier to offer at prices well above \$200 per MW-day. Nonetheless, the presence of new suppliers would serve to flatten the blue line to the left of 1000 MW of regulated supply (the point corresponding to roughly \$200 per MW-day). The effect of this would be to slow the rise in prices above \$200 in these "low participation" ranges.

Figure 3: Simulated Outcomes in the MISO CRA Auction



The key issue the Commission must confront in reviewing this simulation and MISO's proposal more broadly is: what would be a just and reasonable outcome under these supply and demand conditions? If the Commission would deem an outcome just and reasonable where regulated suppliers offer to sell a large share of their excess capacity in the FRA (e.g., 3000 MW) and set a clearing price of \$31 per MW-day, it simply cannot also find an outcome just and reasonable where regulated suppliers offer to sell only 500 MW of their excess capacity in the FRA and contribute to a clearing price in excess of \$225 per MW-day. The annual cost difference to the CRA loads is more than \$730 million. We believe that either of these scenarios is possible and find it nearly impossible to predict how this market will perform from year to year.

However, in order to assess the wide array of outcomes the FRA may produce, one must establish a benchmark of what an efficient price (i.e., a just and reasonable price) would be under these supply and demand conditions. Hence, we calculate an efficient range of prices that we show with green highlighting in the figure. To calculate this price, we assume an efficient

representation of demand (in the form of a downward-sloping demand curve) and clear all of the supply offered in the most recent PRA, accounting for the transfer constraint limiting the resources in the South and the zonal export constraints limiting resources in MISO's western zones. This structure, which is analogous to the FERC-approved markets in PJM, New England and New York produces a clearing price of roughly \$140 per MWh. Given uncertainty regarding the transfer constraint limits and other inputs, we believe an efficient price that reflects the marginal reliability value of capacity under current supply and demand conditions would be within the range of \$130-\$150 per MW-day. The efficiency of prices in this range can be confirmed by the two important outcomes that it should produce:

- MISO would retain most of its existing competitive supply, which generally have going forward costs at or below this level; and
- These prices would not prompt new investment that is unnecessary under current supply conditions. As discussed above, entry of newly-constructed units would require a price much higher than this benchmark range.

These results are consistent with the fact that entry is not needed in the short-term for MISO, assuming MISO is able to retain competitive suppliers, i.e., ones that are not bound by a state-regulated resource obligation.

Accepting that prices in this general range are efficient, and therefore just and reasonable, the figure illustrates an extremely important result – that efficient prices will only occur at very specific levels of participation by regulated and external suppliers. In fact, the simulated prices will only clear in these efficient range if the regulated and external suppliers sell 1,600 to 1,800 MW of supply in the FRA (in addition to the competitive supply and mitigated supply in Michigan and Illinois).

There is no reason to expect that the regulated participants will clear an amount of resources within this range. In fact, the record is devoid of any evidence that would provide the Commission confidence that the market will clear in a reasonable range. The Brattle Group

testimony acknowledges that the market will be sensitive to the participation of the regulated utilities, and makes a point of indicating that they have no empirical basis for predicting how MISO's regulated utilities will participate in the FRA.

Since the participation of MISO's regulated utilities in the FRA may be substantially higher or lower than the 1600 to 1800 MW range, an efficient price will only occur as a result of good fortune. This is in stark contrast to well-designed, economically sound markets where the interaction of supply and demand, governed by robust competitive forces, drives the market toward efficient outcomes.

Although the outcomes year-to-year are likely to be highly uncertain, we believe that prices are more likely to be unreasonably high than unreasonably low under current conditions. Based on the most recent PRA, the regulated utilities in MISO's Midwest region have a surplus level 3 percent over their planning reserve requirements. 1800 MW of this surplus is in Michigan or Illinois and would be subject to market power mitigation, so it is assumed to be sold in the figure above. If one removes the surplus behind export constraints in the South and in Zone 1, less than 500 MW of excess remains that may be offered by regulated utilities in the FRA. The external supply that was offered in the most recent PRA is already included in the analysis so if only 500 MW of regulated supply clears in the FRA, our simulated clearing price will roughly \$225 per MW-day.

At this price, MISO will be invoicing the CR loads for \$850 million per year in capacity costs. This is an enormous cost given that CR loads account for only 8 percent of total loads. This price may be mitigated slightly if new suppliers offer in the FRA and clear at a net CONE level of roughly \$200 per MW-day. As discussed above, however, the unique uncertainties that new suppliers face in this market will likely result in higher price offers. In any case, since there is a MISO-wide surplus prevailing under current conditions, clearing new resources only because a sizable amount of surplus capacity was not offered would clearly be inefficient.

E. Additional Concerns Regarding MISO’s 3-Year Forward Procurement

1. Effects of Mandatory Forward Procurement on Investment

Earlier in these comments we discuss the harm caused by bifurcating the market and attempting to satisfy some capacity needs through a forward auction and some through a prompt auction. One of the reasons MISO proposed the FRA construct is because it mistakenly believes that a forward price signal will better facilitate investment. We monitor both forward and prompt capacity markets and have found no evidence that the forward capacity constructs are more effective or efficient in facilitating investment.

Under both structures, most of the capacity revenues occur after the unit is already built. In MISO’s forward market, new resources clear for 1 year – less than 3 percent of the life of most resources. Additionally, new resources face substantial risk of completing its entry within 3 years so many developers commit to entering prior to the capacity auction.¹⁹

Hence, we find that in both markets that investment is facilitated and as driven primarily by the investors’ long-term expectations (and/or sign long-term bilateral contracts). Efficient, well-designed prompt capacity markets will produce prices that facilitate long-term contracting and allow participants to form reasonable long-term expectations. These expectations should also facilitate efficient decisions to export capacity to PJM, even though the PJM capacity market operates in the forward timeframe. Therefore, MISO’s emphasis on the timing of the price signal produced by the FRA is misplaced.

2. Effects of Mandatory Forward Procurement on Retirements

The other long-term decision that is facilitated by the capacity market is the retirement decision – a resource will retire if it does not expect to earn enough revenue in the capacity and

¹⁹ Some RTOs have attempted to improve the effectiveness of the forward markets by establishing revenue “lock-in” provisions to guarantee revenues for longer than 1 year. Unfortunately, these provisions are only partially efficient and generally raise costs by discriminating against existing resources. This discrimination causes new resources to inefficiently displace existing resources.

energy/ancillary services markets to pay for the fixed going-forward cost of staying in service. While we believe it affirmatively harms efficient retirement decisions. In a mandatory forward procurement, suppliers must determine whether old resources will continue to operate for an additional 4 years (3 years plus the planning year). This is not optimal for units facing physical or regulatory uncertainty. Not surprisingly, almost all units on the brink of retirement are very old and face substantial uncertainty.

In contrast, a well-functioning prompt auction allows existing suppliers to make rationale economic decisions regarding when to suspend or retire a unit. In prompt procurement markets, old units can operate until they suffer equipment failure, and can make efficient decisions to mothball or retire based on the auction.

V. OPTIMIZED PROMPT CAPACITY MARKET PROPOSAL

Because of the fundamental flaws in MISO's proposed approach, we had worked with MISO to develop an alternative proposal that address the main efficiency concerns discussed above. This proposal has been presented to MISO and its stakeholders. It demonstrates that there are alternatives to the MISO proposal that could correct its shortcomings and satisfy the key design principles discussed above. In these comments, we refer to it as the "Prompt Alternative" because it will run immediately prior to the planning year and be jointly optimized with the PRA.

A. Description of the 2-Pass Prompt Alternative Auction

The Prompt Alternative will be an auction conducted in two passes. The first pass will use marginal reliability value functions (sloped demand curves) for MISO's market-wide and locational planning reserve requirements. Using this efficient representation of demand, all supply offers submitted into the PRA will be cleared respecting all constraints, including import and export constraints to and from each zone, the transfer constraint between the Midwest and South regions, and any other intra-regional constraints that may raise feasibility issues. This pass will establish an efficient price for competitive load and competitive supply, which prices all of

MISO's planning reserve requirements. Hence, competitive load and supply will settle based on the Pass 1 results based on their location. The competitive supply cleared under Pass 1 will then be included in Pass 2 as a price-taker. This is analogous to MISO's proposed treatment of the resources that clear in the FRA.

Pass 2 is the legacy PRA that MISO currently operates. Like Pass 1, the Pass 2 auction would be optimized, given all of MISO planning reserve requirements and transmission constraints. The only difference is Pass 2 is the use of vertical demand curves to represent MISO's planning reserve requirements. Regulated (non-competitive) supply and demand would continue to settle at Pass 2 prices as they do today.

B. Designation of the Supply and Demand to Clear at Pass 1 Prices

The two-settlement system will not be complicated to administer. MISO has proposed reasonable criteria for designating the CRA loads that settle at Pass 1 prices. Competitive supply would be defined as resources built or owned by a merchant supplier that has not been bilaterally sold to a regulated utility in MISO. Hence, every resource (or portion thereof) can be identified based on its initial owner and final buyer, both of which are readily available. These criteria will exclude resources that have access to regulated, retail ratepayer-funded streams of revenue. Such designations are not unprecedented. For example, the Commission recently ordered NYISO to implement a competitive entry exemption to its buyer-side mitigation measures, which requires that suppliers be categorized in a manner that is analogous to this proposal.

C. Competitive Retail Load Procurements

As described above, CRA Load settles its obligations at the capacity price in its zone. However, this may result in more collections than the payments to competitive suppliers in Pass 1 for two reasons. First, the price paid to some competitive suppliers outside of the zones where the CRA Load is located may be lower. Second, a smaller quantity of competitive supply may clear than the total CRA Load. In both cases, we believe it is equitable for the CRA Load to receive a

rebate for the over-collection in proportion to its initial settlement. This allows the CRA Load to benefit to some extent by procuring some of its capacity from lower cost areas (to the extent that transmission constraint allow) and some of its capacity from regulated entities in the PRA.

Additionally, it is also possible that payments to competitive suppliers could exceed the collections from the competitive retail loads. If an objective of the proposal is for all regulated loads to settle at Pass 2 prices, a constraint could be implemented that either prevents the quantity of competitive supply procured in Pass 1 from exceeding the quantity of CRA Load. Such a constraint would lower the Pass 1 prices to ensure that competitive supply is not over-procured. This is equitable, but not fully efficient, so the Commission would need to determine whether such a constraint is required. Fortunately, given the current quantities of competitive supply in MISO, there is very little probability that such a constraint would be binding in the short to medium term (and probably over the long term if regulated utilities continue to plan and build to meet their own needs).

D. Benefits of the Prompt Alternative Relative to MISO's Proposal

We believe the Prompt Alternative is a more economically sound means to procure the capacity efficiently needed to service the CRA Load while allowing the current PRA to remain intact. It addresses all of the concerns that we have raised with the MISO proposal. The following subsections provide a comparative analysis of the Prompt Alternative to the MISO proposal.

1. Supply

MISO Proposal. The MISO proposal has a highly uncertain supply curve that will depend on decisions of regulated and external suppliers to sell forward. The forward timeframe will likely inhibit offers from some regulated entities that have excess capacity that could otherwise sell. The offer prices in the FRA will be adversely affected by the low opportunity costs of selling in the PRA.

Prompt Alternative. All supply is included in the Prompt Alternative will efficiently reflect suppliers going-forward and opportunity costs of exporting capacity to adjacent areas. All existing market power mitigation measures will remain applicable and effective for addressing potential withholding.

2. Demand

MISO Proposal. The proposed demand curve reflects a demand that is not based on any of MISO's actually planning reserve requirement, and it does not reflect any of MISO's true planning resource requirements (either market-wide or locational).

Prompt Alternative. The Prompt Alternative demand is modeled consistent with MISO's planning reserve requirements, including both market-wide requirements and locational requirements. Demand would be represented in a manner than is consistent with the Commission's approved capacity markets in PJM, NYISO and ISO New England.

3. Economic Efficiency

MISO Proposal. Because of both the supply and demand flaws described in detail above, and the manner in which MISO proposes to bifurcate its procurements, the MISO proposal cannot be expected to produce economically efficient outcomes.

Prompt Alternative. Given the efficient demand representation, the fact that all supply is utilized, and the joint optimization of the procurements, the Prompt Alternative will produce consistently efficient market outcomes.

4. Capacity Investment

MISO Proposal. Long-term investment decisions are made based on long-term expectations of prices. The unstable and inefficient pricing that is likely to result under MISO's proposed FRA will inhibit efficient investment and may, in some cases, prompt inefficient investment.

Prompt Alternative. Because the Prompt Alternative will result in stable and efficient capacity pricing for competitive suppliers, it should facilitate efficient investment. The fact that it operates in the prompt timeframe is not a hindrance to investment because investment is driven by long-term expectations and contracting. Because the prompt auction prices quickly and accurately adjust to reflect changes in market conditions, it is better suited to facilitate investment decisions for types of resources whose lead times can vary substantially. For example, those that can make decisions on relatively short lead times bear increased risk (or are less competitive) in a mandatory forward auction because they have to commit financially three years in advance.

5. Capacity Retirements

MISO Proposal. It will also create adverse conditions for retirement decision because units near retirement will be faced with committing three years in advance with highly uncertain costs of remaining in operation.

Prompt Alternative. Allowing suppliers with old resources to commit financially provide capacity in the prompt timeframe greatly reduces their risk and leads to more efficient retirement decisions. Hence, the prompt auction is well-suited to facilitate retirement decisions, which are generally made one year or less in advance, often in response to major equipment failure.

6. Administrative Issues

MISO Proposal. Requires the creation of an entirely new capacity market to service only 8 percent of MISO's load, with all of the complexity that would accompany implementing a forward capacity market throughout MISO. New systems, processes and procedures include: new auction software, forecasted transmission modeling, new settlement processes and rules, resource qualification processes, new credit requirement and tracking, etc.

Prompt Alternative. Much less complicated and administratively burdensome. The Prompt Alternative would utilize the current PRA processes and systems. It would require a modest changes to the existing auction software. It would primarily require some new settlement

rules and systems to implement these rules. Since relatively simple criteria would be used to qualify generators for the Pass 1 settlements, this will not be administratively burdensome and can be performed by the IMM if necessary.

E. Response to MISO Criticisms of the Prompt Alternative

In this section we address the various critiques made of the Prompt Alternative by MISO witness Jeffrey Bladen and the Brattle Group witnesses.

1. Changes to the PRA

Mr. Bladen (at p 8) claims our Prompt Alternative will require changes to the current PRA that is used by the rest of MISO and, thus, fails to leave this construct ‘undisturbed’. Without expanding on this criticism in his testimony, we surmise that Mr. Bladen is referring to the process of including cleared competitive supply offers from Pass 1 as price-takers in the PRA (Pass 2). This is the only potential change that would affect the PRA since there are no other changes to the timing, the vertical demand curves, or the other parameters used in the PRA. This is not a meaningful criticism as this occurs in the MISO FRA proposal as well. MISO’s proposal will result in the forward procurements entering the PRA as price-takers and, therefore, have comparable effects on the PRA prices (which will fall under both proposals).

2. Discrimination among Suppliers

Mr. Bladen (at p. 49) criticizes as discriminatory the Prompt Alternative approach of clearing the competitive suppliers in Pass 1 and the rest of MISO’s supply in the PRA. This will result in different prices being paid to competitive and regulated suppliers.

However, the Commission only prohibits *undue* discrimination. All electricity markets discriminate in the settlements based on resource characteristics and location. The reason settling at different prices for competitive and regulated suppliers is just and reasonable is that these two groups of suppliers have access to different revenue streams. Regulated suppliers receive revenue through retail rates to maintain adequate resources that are not available to competitive suppliers.

This is the primary reason why the broader MISO capacity market has not been reformed although it is widely acknowledged to set inefficiently low capacity prices. Therefore, settling with competitive suppliers at a higher, more efficient, price is duly discriminatory.

Likewise, it is not unduly discriminatory for MISO to charge CRA Loads a higher price than regulated loads. MISO is procuring the competitive capacity to serve the planning needs of only the CRA Loads. Further, the regulated loads incur higher costs through their retail regulatory rates, costs that are not currently incurred by CRA Loads. Hence, it is not undue discrimination to settle with the CRA Loads at a higher wholesale price than the regulated loads. Additionally, the MISO proposal will result in the same outcome. CRA Loads are required to buy in the FRA (which is likely to clear at levels much higher than the PRA), while regulated loads may only settle in the PRA.

3. Defining Competitive Suppliers

Mr. Bladen (at p. 49) raises the concern about clearing only competitive suppliers in the Prompt Alternative's first pass and the need to identify a competitive versus non-competitive supplier. Mr. Bladen claims there is no current administrative mechanism for making such distinctions and market participants would have the incentive to take on the identity that best serves an individual participant at any given time. This issue is substantially overstated and will not likely be difficult. We describe relatively simple and accurate criteria that could be used to classify the suppliers, which could be supplemented by a corporate certification. Such a certification is used in NYISO as part of its competitive exemption provision described above. Under this provision, the supplier must certify that its offered resources are not subsidized by state agencies, through direct or indirect contracts. If MISO believes that a supplier could manipulate the proposed criteria, such a certification would improve MISO and its IMM's ability to enforce accurate designations.

4. Efficiency Concerns Raised by MISO

Mr. Bladen (at p. 47) and the Brattle Group (at 52-53) assert that the two-pass system that settles capacity for competitive suppliers separately from the rest of MISO is inefficient. These criticisms suggest that such a system can result in a higher-cost offer supplanting a lower-cost one, resulting in a welfare loss. This criticism is misplaced and fails to recognize the true source of the inefficiency.

The witnesses' criticism focuses on the possibility that competitive suppliers that are cleared and settled in Pass 1 will be selected to supply the CRA Load, while lower-cost (infra-marginal) non-competitive suppliers may not clear the PRA. To the extent that they are worried about this outcome, they should recognize that it is directly attributable to the PRA itself. For years, we have indicated that the vertical demand curves in the PRA sets inefficiently low prices for regulated suppliers and the Prompt Alternative does not address that problem. What it does address is providing an efficient wholesale capacity price to the competitive suppliers that rely on this price to govern the long-term decisions.

Ironically, this very criticism is applicable with greater force to the MISO proposal. The Brattle Group has recognized that large portions of the regulated suppliers' surplus in MISO is likely not to be offered in the FRA. Hence, when the FRA clears high-cost existing resources or procures new resources, it will likely be doing so in the face of large quantities of excess regulated supply that will ultimately not be needed to serve MISO's capacity needs.

For this reason, the Brattle Group's focus on the welfare calculation is similarly misplaced. Both proposals, by attempting to maintain the current PRA, will produce some welfare loss unless the state regulatory process supplements revenues for the regulated supply in an efficient manner. The obvious solution to ensure the elimination of these inefficiencies and associated welfare effects is to reform the PRA, which is beyond the scope of these two proposals.

5. Incidence of Excess Supply

The Brattle Group claims (at p. 52) that the competitive retail loads would have to absorb any excess capacity cleared in the Prompt Alternative auction. It asserts “for example, a 3% excess on the system-wide demand curve would amount to a 30% excess procured by competitive retail loads.”

However, this is not true and reveals a misunderstanding of the Prompt Alternative. As discussed above, the Prompt Alternative includes a constraint that would prevent more competitive supply from clearing than the CRA Load requirements. Hence, it is impossible for the CRA load to procure more capacity than they need. Nonetheless, it is highly unlikely that this constraint will bind because the CRA load is much greater than the quantity of competitive supply in MISO.

6. Volatility of the Prompt Alternative

The Brattle Group (at 52) claims the Prompt Alternative will result in volatile outcomes due to the need to constraint the competitive supply that is cleared (as explained above) and because a forward auction will enjoy a more elastic supply curve. Again, this criticism is not valid. First, the competitive supply constraint is not likely to bind, which both the Brattle Group and MISO recognized in our discussions. Even if it does bind, the price would only generally need to drop slightly to cause the marginal excess competitive supplier not to clear (based on the competitive supply offers in the PRA).

Second, the elasticity is not substantially greater in the forward auction. The premise of the Brattle Group’s argument is that the forward auction will include proposed new units while the prompt auction will not. This is not actually true. The same new suppliers will respond to the expected prompt capacity prices to enter when prices are rising to compensatory levels. Although they will not submit an offer, this new supply increases when prices rise and decreases when

prices fall, which reduces volatility in the prompt market in the same manner as the new supply offers do in the forward auction.

7. Other Criticisms

Mr. Bladen states (at 48) that the IMM proposal would ban “capacity imports” and restrict clearing of demand response. However, our proposal would not ban capacity imports or demand response. All of these offers would be used to clear Pass 1 along with all other supply offered in the PRA. However, these sources of supply would settle at Pass 2 prices. Again, if one is concerned about the PRA’s effectiveness in motivating efficient imports and demand response, as Mr. Bladen apparently is, the only effective way to address that issue is to reform the PRA itself.

Mr. Bladen (at *Id.*) also suggests the need for a “administrative manipulation of the demand curve” when competitive supply cleared in the first pass exceeds the CRA Load requirements. However, there is no administrative manipulation in this case. Mr. Bladen is simply referring to the procurement constraint described earlier in these comments, which would be included in the auction optimization along with the many other modeled constraints.

Another claim by Mr. Bladen (at *Id.*) is that the Prompt Alternative would “create the potential for competitive retail areas to subsidize non-competitive retail areas in the event the latter are unable to meet their resource adequacy requirements.” This is simply impossible under the Prompt Alternative that we support. Mr. Bladen may be contemplating a case where capacity is short MISO-wide. In such a case, Pass 1 and Pass 2 would both clear at the cost of new entry and would clear the same amount of supply. Therefore, Mr. Bladen’s concern is misplaced.

Finally, Mr. Bladen (at *Id.*) states “the [IMM] proposal formulates prices indicative of reserve margins that are not actually procured. Therefore, the proposal charges Competitive Retail Demand for a reliability standard not delivered.” This concern is overstated. It is true that the PRA may clear less supply than is cleared in Pass 1 (and is the basis for the Pass 1 price). If anything, this would suggest that the Pass 1 price may be lower than it should be. This point

could be argued if some of the un-procured regulated capacity proceeds to retire quickly. This would cause the marginal reliability value of the resources procured in Pass 1 to rise and for the Pass 1 price, in retrospect, to be lower than optimal. This is a minor concern at best for two reasons. Un-cleared regulated supply rarely retires. When a regulated utility plans to retire an asset, it will generally not offer it into the PRA. To the extent that these un-cleared resources remain in operation, the Pass 1 price remains consistent with the level of reliability provided by the competitive supply procurements. Second, even if some of these un-cleared resources do retire, the auction prices will re-adjust to reflect the supply changes the following year.

VI. COMMENTS ON THE BRATTLE SIMULATION ANALYSIS

MISO supports its Filing with expert testimony of witness from the Brattle Group (the Brattle Testimony) (Filing Tab C). The Brattle Testimony introduces a probabilistic simulation analysis to evaluate the performance of alternative demand curves. The analysis evaluates the average prices and capacity levels that would prevail when the market is near its long-run equilibrium with different demand curve parameters.

The analysis is a series of simulations of market clearing prices and quantities under a range of assumptions about supply and demand. The supply and demand are established at base case levels and “shocked” higher or lower in a random fashion. In each simulation, demand can be higher or lower as a result of a positive or negative random shocks and a corresponding demand curve is set based on this random demand. The base case supply is modeled using supply stack of resources that assumes the market has already attracted sufficient supply and is in long-run equilibrium. Brattle also makes assumptions about how non-competitive (utility) supply will participate in the FRA.

The Brattle analysis begins from an assumed long-run equilibrium because the analysis is basically intended to “tune” the demand curve to achieve average prices that will should motivate investment in theory (i.e., net CONE), result in an acceptable level of volatility, and maintain a

supply base that will satisfy the 1-day-in-10-year reliability standard. While we do not find all of the Brattle Group's assumptions reasonable, we do find this general approach useful for "tuning" the demand curve.

However, the Brattle analysis provides no insights that pertain to the economic design flaws described in these comments. The largest concerns arise when the market is not near its long-run equilibrium and operating with a significant surplus. Under these conditions, which have prevailed for the past decade in MISO, the uncertain behavior of regulated suppliers to participate in the FRA becomes paramount. In the long-run equilibrium, regulated suppliers do not have substantial surplus so the flaws described above will not be as pronounced.

Therefore, the Brattle analysis provides no evidence that the MISO proposal will produce just and reasonable outcomes. Although it does provide useful information regarding the shape and location of the demand curve if FERC approves the proposal, but this is a secondary issue at best.

VII. CONCLUSION

WHEREFORE, for the foregoing reasons, Potomac Economics, Ltd. respectfully requests the Commission to grant its motion to intervene in this proceeding and accept this protest.

As described in this protest, MISO has not provided evidence that would allow the Commission to expect that its proposed FRA market will produce efficient market outcomes that can be deemed just and reasonable. We have described in detail fundamental economic flaws in MISO's proposal and demonstrated how these flaws will likely produce market outcomes that are unjust and unreasonable. Therefore, we respectfully request that the Commission reject the MISO proposal.

We also present a proposed alternative to the MISO proposal that is fully achievable and that will produce efficient market outcomes and satisfy MISO's reliability requirements. Our intent in presenting this alternative is to demonstrate to the Commission that alternatives exist for

addressing the CRA issue that would produce efficient and competitive market outcomes and, in doing so, would satisfy the Commission's just and reasonable standard. Based on this demonstration, we respectfully request that the Commission order MISO to develop a prompt market design that will satisfy the economic design principles articulated in these comments. The Commission can be assured that such a proposal would produce just and reasonable outcomes while, at the same time, satisfying the planning reserve needs associated with the CRA load.

Respectfully submitted,

/s/ David B. Patton

David Patton
President
Potomac Economics, Ltd.

December 14, 2016

CERTIFICATE OF SERVICE

I hereby certify that I have this day e-served a copy of this document upon all parties listed on the official service list compiled by the Secretary in the above-captioned proceeding, in accordance with the requirements of Rule 2010 of the Commission's Rules of Practice and Procedure (18 C.F.R. § 385.2010).

Dated this 14th day of December, 2016 in Fairfax, VA.

/s/ David B. Patton
