

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

ISO-New England Inc. and )  
New England Power Pool Participants Committee )

Docket No. ER24-275-000

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**MOTION TO INTERVENE AND COMMENTS  
OF THE  
ISO NEW ENGLAND’S EXTERNAL MARKET MONITOR**

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Pursuant to Rules 212 and 214 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission, 18 C.F.R. §§ 385.212 and 214 (2019), Potomac Economics respectfully moves to intervene in the above-captioned proceedings. ISO New England (“ISO-NE”) and the New England Power Pool (“NEPOOL”), together the “Filing Parties”, filed proposed tariff revisions to establish a jointly optimized Day-Ahead Market for energy and operating reserves. Potomac Economics is the External Market Monitor (“EMM”) for ISO-NE and is responsible for monitoring the electricity markets and evaluating potential rule changes that impact these markets. These comments explain our reasons for generally supporting the proposed changes.

**I. NOTICE AND COMMUNICATIONS**

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## II. COMMENTS

The Filing Parties propose to enhance the Day-Ahead Market by incorporating operating reserves into a co-optimized market for energy and reserves. The proposed enhancements will allow ISO-NE to satisfy its forecasted load and operating reserve needs for the following day through the competitive wholesale market rather than out-of-market actions, which tend to depress prices and undermine incentives for generators to be available and operate reliably. The proposed enhancements will improve incentives for resources to be scheduled efficiently and conserve limited fuel supplies when needed to maintain availability during critical periods. This will, in turn, provide better incentives for investment in resources that are more flexible and available when it is most valuable for maintaining reliability. These incentives will become increasingly important as the penetration of intermittent renewable generation increases in the coming years.

The ISO is required to have a reliable day-ahead operating plan each day that includes sufficient resources to satisfy forecasted demand and respond to certain contingencies and unexpected events. Most of these requirements are satisfied by generators and importers scheduled in the day-ahead energy market, fast-start generators not economic to provide energy, and by suppliers complying with their forward reserve market obligations for 10-minute and 30-minute operating reserves. However, in recent years, we have observed frequent (~3,000 hours per year) supplemental commitments in the day-ahead market commitment software to satisfy 10-minute spinning reserve requirements, which are not procured through the day-ahead market.<sup>1</sup> These non-market commitments depress prices and undermine incentives for investment in flexible generation.

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<sup>1</sup> See 2022 Assessment of the ISO New England Electricity Markets by Potomac Economics, Section III.A.

We have long recommended ISO New England implement day-ahead ancillary services markets to provide a competitive mechanism for the ISO to procure sufficient resources to maintain reserve adequacy rather than through out-of-market supplemental commitments. These comments discuss our support for the overall proposal and our evaluation of key aspects of the proposal, including: the elimination of the Forward Reserve Market, the adoption of a \$10 strike price adder, and revisions to the market power mitigation rules and omission of a must-offer requirement. Each of these issues is addressed below.

#### **A. Elimination of the Forward Reserve Market**

We strongly support the proposal to eliminate the Forward Reserve Market because it has several major deficiencies that undermine market efficiency. First, a forward reserve provider is obligated to offer energy at the cost of a relatively inefficient peaking generator even if its actual costs are much lower. This leads most forward reserve providers to offer energy at inflated price levels, resulting in inefficient scheduling decisions and distorted clearing prices for both energy and real-time operating reserves. This offer requirement for forward reserve providers is designed to lead the generator to not be scheduled for energy and thereby be held in reserve, but this is unnecessary in a market where energy and operating reserves are co-optimized.

Second, forward reserve providers must satisfy their obligations up to 16 hours per day without coordinated scheduling through the centralized day-ahead market. This results in many hours when excessive quantities of capacity are not scheduled for energy and, thus, effectively set aside for reserves. This needlessly raises the cost of participation by non-peaking generators, thereby placing an unnecessary barrier to participation in the reserve market. The proposed co-optimization of energy and reserves in the Day-Ahead Market will ensure that reserves are only scheduled in the quantities necessary for the ISO to develop a reliable day-ahead operating plan.

Third, the Forward Reserve Market only satisfies a subset of the ISO's 10-minute and 30-minute reserve requirements, and it does not ensure sufficient reserves are available to satisfy forecasted load. Hence, the Forward Reserve Market does little to ensure sufficient reserves are available to maintain reliability, so it does not reduce the need for the ISO to commit resources out-of-market to satisfy its reliability requirements.

In addition to these issues, the implementation of Day-Ahead operating reserve markets will eliminate any potential value the Forward Reserve Market may offer. Accordingly, we support the Filing Parties' proposal to eliminate the Forward Reserve Market when it implements Day-Ahead operating reserves markets.

**B. Adoption of the \$10 Adder for the Call Option Strike Price**

Other RTO regions with day-ahead ancillary services markets (NYISO, MISO, CAISO, and SPP) have generally defined each product as a day-ahead forward contract that settles at the real-time clearing price for the same reserve product. The Filing Parties have proposed a new type of day-ahead contract that would settle as a call option for energy with a strike price equal to the forecasted value of the real-time LMP plus \$10 per MWh. The option style contract has some desirable features, including that it would provide stronger incentives for generators to be available when needed for reliability, and it would allocate reserves to resources that would be most economic to provide energy if needed in real-time.

On the other hand, the option style contract may increase the costs of procuring reserves. If some reserves are sold by units with costs that exceed the strike price, the supplier will not be able to hedge the costs of the auction by starting its resource. For example, assume a units with costs of \$40 per MWh sells an option with a strike price of \$30 per MWh. If the real-time energy price is above \$40 per MWh, the costs of settling the option can be met by starting the resource. If real-time energy prices are less than \$40 per MWh, it is not economic to start the

resource so the supplier would simply pay the costs to settle the option. The expected value of this cost as well as the risk that its resource may fail to start when real-time prices exceed \$40 per MWh will be included in the supplier's offer prices. Since most suppliers will tend to be risk-averse, their offer prices will likely be higher than the expected value of these costs. Ultimately, it is difficult to predict the extent to which the option style contract will allow the ISO to maintain reliability more efficiently than it would using the conventional forward contract for ancillary services.

We support the proposed \$10 strike price adder because it will greatly reduce the frequency with which generators sell options with a strike price lower than their production costs, exposing them to costs that they cannot cover by running their generators. By reducing these costs, the ISO's proposal will reduce suppliers' offer prices, the clearing prices for the options, and ultimately the costs to consumers of achieving the reliability benefits of the DASI proposal. However, the \$10 adder will not substantially undermine reserve providers' very strong incentives to be available in real-time during tight system conditions when reliability is threatened and LMPs tend to rise substantially above day-ahead expectations.<sup>2</sup>

### **C. Proposed Market Power Mitigation and Omission of a Must-Offer Requirement**

The Filing Parties propose to apply conduct-and-impact style market power mitigation rules in an automated manner within the day-ahead market clearing process. In addition, the Filing Parties propose *not* to impose a blanket requirement on resources to offer operating reserves in the day-ahead market (a.k.a., a must-offer requirement). We support these aspects of the proposal because they reasonably balance the imperative of limiting the potential exercise of market power against the need to avoid impeding legitimate competitive conduct.

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<sup>2</sup> The ISO's analysis found that the \$10 adder would still retain 91 percent of the incentives during the top quintile of real-time clearing price levels.

### *1. Proposed Approach to Market Power Mitigation*

The “conduct-impact” approach has proven to be successful in multiple wholesale markets in the day-ahead and real-time markets, having been applied to energy and ancillary services products.<sup>3</sup> ISO New England uses the conduct-impact mitigation framework in its day-ahead energy-only market and in its real-time energy and ancillary services markets. This framework is employed by MISO and NYISO to address market power in their day-ahead markets. In our market monitoring for MISO, NYISO, and ISO-NE, we have found it to be effective for limiting the exercise of market power while generally avoiding unnecessary market intervention.

The conduct-impact framework prevents excessive intervention because participants are only mitigated if their conduct substantially deviates from competitive expectations and has a significant market impact. Hence, the impact test takes the place of a structural market power test, which is ordinarily used to determine when market power is sufficient to justify some sort of regulatory intervention. The interaction of different energy and reserve products tends to reduce the market impacts of withholding. This is particularly true in day-ahead markets where more potential supply offers are available and provide competitive discipline. Therefore, if the real-time market is well-mitigated, participants’ expectations of competitive real-time prices tend to discipline the day-ahead markets. This explains why the imposition of market power mitigation is infrequent in the New York ISO and MISO day-ahead markets.

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<sup>3</sup> The conduct-impact test mitigation is a two-step process that uses competitive benchmark levels to test both a participant’s conduct as it relates to a competitive norm and its impact on the market. The first part of the conduct-impact test considers whether a unit’s offer exceeds its competitive benchmark level (which is intended to reflect the estimated competitive offer level for each offer parameter.) by some pre-established threshold. If the threshold is exceeded, then a second part of the test determines whether the conduct (i.e., the offer) has caused an impact on the market clearing price for energy or ancillary services or an impact on an uplift payment.

It is important to consider that in co-optimized energy and ancillary services markets, the individual ancillary services are not procured independently of the other products. They interact with energy and other ancillary service products in a manner that tends to reduce market power concerns related to withholding the ancillary service product. For example, if a resource raises the price of its operating reserves offer, the co-optimized dispatch can schedule the resource to provide more energy and schedule operating reserves on a different resource, which can reduce the price effects of the withholding. This interaction is recognized in the mitigation framework as all resources that fail the conduct test described above are tested for impact together, and price impacts are examined for energy and all ancillary services together. If the price for any product rises by a threshold amount, the conduct will be mitigated.

## *2. Proposed Approach to Competitive Benchmark Levels*

The key components of the conduct and impact mitigation framework are the competitive Benchmark Levels for each offer parameter and the conduct and impact thresholds used to determine when an offer warrants mitigation. We support these aspects of the proposal.

For economic parameters, the Benchmark Levels should reflect a generator's short-run marginal costs. Marginal costs include all of the costs of selling a product, including the expected costs of satisfying the products' obligations. If the Benchmark Level is inflated, it can allow the supplier to exercise market power. If it is too low relative to the generator's marginal cost, it can lead competitive suppliers to be mitigated below cost. Hence, the IMM will need to administer a process where it estimates the short-run marginal costs of selling the proposed reserves products in the day-ahead market for each generator. The principal factors that account for the marginal cost of selling day-ahead reserves are discussed below.

*Cost of settling the call option-style reserve product.* A generator that sells a call option in the day-ahead market must pay the difference between the real-time LMP and the Strike Price

of the option whenever the real-time LMP is larger. Ignoring risk preferences, the cost of settling the call option is generally very similar for each reserve supplier in each hour because it primarily depends on the common strike price and the volatility of real-time LMPs at a common location. However, this cost can fluctuate substantially from one day to the next, because market conditions can vary greatly by season and time of day.

*Net cost of any additional fuel procurement.* A generator may have to procure fuel if it is scheduled for reserves. If the generator does not anticipate that real-time LMPs will be high enough to support the cost of procuring the additional fuel, the generator will reflect the expected net cost (fuel and other costs minus real-time LMP revenue) in its offer price. The net cost of any additional fuel procurement will vary considerably based on pipeline conditions where the generator is located, fuel supply logistics for specific fuel in certain areas, etc.

*Opportunity costs.* Generators with low fuel inventories may not be able to sell reserves in all hours when it would be profitable based on the previous two criteria. In such cases, the generator will likely raise its offer prices to avoid being scheduled for a quantity of reserves exceeding its capability to generate. This cost depends on the quantity of fuel available to the generator and its opportunities to sell in other hours.

A large component of the Benchmark Level will be based on the cost of settling the call option, which will be very similar for most generators in a particular hour. Accordingly, the ISO plans to maintain a robust model to estimate this component of the competitive cost. The second and third components may also be significant for some generators under tight fuel supply conditions, but the data inputs for these categories will vary from generator to generator. Accordingly, the Benchmark Level methodology will allow the IMM to make adjustments that accommodate resource specific differences in these components.

In addition to these components of short-run marginal costs, suppliers' varied expectations of LMPs, price volatility, and risk preferences can affect their offer prices even if they have no market power. These differences in expectations and risk preferences can cause competitive suppliers to submit offers that vary substantially from supplier to supplier. To the extent that these costs are not reflected in the Benchmark Levels, they can be accommodated through the conduct thresholds discussed in the next subsection.

Ultimately, if the Benchmark Levels are reasonably accurate and the conduct and impact thresholds are not overly restrictive, suppliers should have adequate opportunities to adjust their offers competitively in the face of volatile market conditions.

### *3. Proposed Conduct and Impact Thresholds*

The mitigation thresholds should be set at levels that allow market participants with competitive incentives the flexibility to express different expectations and risk preferences, while limiting the adverse effects of market power when some suppliers would have anticompetitive incentives to withhold. It is challenging to set conduct and impact thresholds that will perform as intended under a wide range of competitive conditions. The ISO developed a detailed model for performing day-ahead market simulations to support the proposed threshold levels. These simulations allowed the ISO to evaluate the adequacy of the proposed thresholds, providing a strong empirical basis for approving the proposed thresholds.

Key components of the mitigation framework include:

- Conduct test threshold<sup>4</sup> for economic withholding – The sum of: (a) the greater of \$2/MWh and 200 percent of the Expected Close-Out Component; and (b) 150 percent of the Avoidable Input Cost.

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<sup>4</sup> In most conduct-impact mitigation frameworks, including ISO-NE's existing rules for energy mitigation, the "conduct threshold" refers the amount by which an offer price may exceed the competitive benchmark without violating the conduct test. However, the convention used in the DASI provisions is that the "conduct test threshold" refers to the level at which an offer price would violate the conduct test (without adding the competitive benchmark).

- Conduct threshold for physical withholding – The higher of 20 percent of a portfolio’s DAAS capability or 100 MW.
- Impact test threshold – 150 percent if the median difference between: (a) The conduct test threshold prices for all DAAS Offers submitted; and (b) the Benchmark Levels for all DAAS Offers submitted.

While the proposed conduct and impact thresholds appear to be adequate, future changes in system conditions could affect competition in the day-ahead market, including: the evolution of the resource mix towards a higher intermittent renewable penetration, changes in the concentration of asset ownership and control, and the emergence of transmission bottlenecks in areas with limited competition. Moreover, the DASI proposal relies on the same inadequate mitigation measure for physical withholding as the existing rules covering the energy market, which is to simply refer instances of physical withholding to the Federal Energy Regulatory Commission’s Office of Enforcement. Accordingly, we will monitor day-ahead and real-time market conditions to identify the need for revisions to the market power mitigation measures.

#### *4. Lack of Need for a Must-Offer Requirement*

There are many reasons why a competitive supplier might prefer not to offer reserves in the day-ahead market—even if it is technically capable of doing so. The formulation of profitable reserve offers is a complex task, requiring an on-going assessment of natural gas market and power market conditions. Ultimately, this may require additional staff and/or back-office software. A competitive supplier will not rationally incur these upfront costs unless it anticipates sufficient reserves sales to recoup the costs. Hence, it may not be cost-effective under all conditions for some suppliers to offer the proposed day-ahead products.

Likewise, the sale of reserves may increase plant staffing costs if it requires additional employees to be available on short notice to accommodate changes in the commitment schedule after the day-ahead market. Although a portion of the additional plant staffing costs would be variable and, thus, could be incorporated into the day-ahead reserve offer, some fixed costs

would be incurred to hire staff with additional flexibility. Such costs may not be rational for suppliers to incur that do not anticipate frequently being economic to provide reserves.

In the NYISO and MISO markets, where the supply of resources capable of providing each reserve product far exceeds the requirements, many high-cost resources choose not to offer in many hours. The decision not to offer is evaluated as potential physical withholding, when warranted. However, we generally find that these generators lack market power and are rationally choosing not to offer. If competitive suppliers are required to offer when it would not be economic to do so, it will lead to several undesirable consequences.

- It will unnecessarily drive-up costs for suppliers that own resources that are not economic to provide the day-ahead reserve products.
- Some generators may offer capacity at arbitrarily high price levels to comply with the must-offer rule, but still avoid being scheduled. Such units are unlikely to be mitigated since they won't have a significant market impact. However, it increases the risk that the ISO may schedule reserves on resources that are not actually available, thereby undermining the purpose of implementing a day-ahead reserve market.
- For some units, the ability to provide reserves may change based on gas system conditions. If such units are required to document the reasons for not offering in advance of the day-ahead market for every hour, it will be administratively burdensome (or infeasible) for suppliers and the IMM.

For these reasons, we support the Filing Parties' proposal to rely on a conduct-impact market power mitigation framework without a specific must-offer requirement.

### III. CONCLUSION

As the EMM for ISO-NE, we support the implementation of day-ahead ancillary services products proposed by the Filing Parties. We believe these products will:

- Improve the ISO's day-ahead commitment and scheduling;
- Allow prices to more fully reflect the ISO's reliability needs; and
- Improve suppliers' short-term incentives to be available when needed and their long-term investment and retirement decisions.

Therefore, we respectfully recommend that the Commission approve the proposed changes filed by the Filing Parties.

Respectfully submitted,

*/s/ David B. Patton*

David Patton  
President  
Potomac Economics, Ltd.

November 22, 2023

**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 22<sup>st</sup> day of November 2023 in Fairfax, VA.

*/s/ David B. Patton*

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