NESCOE
New England States Committee on Electricity

To: **Dr. David Patton, Potomac Economics**
From: **NESCOE**
Date: **October 23, 2019**
Subject: **ISO-NE Energy Security Improvements: NESCOE's Mitigation Concerns**

In the near term, ISO New England ("ISO-NE") will look to you, in your capacity as External Market Monitor, for a conceptual framework for market power mitigation compatible with the proposed Energy Security Improvements ("ESI") design.[1] As you know, one of NESCOE's chief concerns about ESI has been the mitigation of market power.

The purpose of this memo is to explain NESCOE's concerns about the potential for the exercise of market power under ESI, and to suggest some possible measures for your consideration and reaction. This memo largely follows and expands on our comments and proposed ESI ideas discussed at the NEPOOL Markets Committee.[2] We are interested in your reactions to our concerns - including where you may disagree or agree with our concerns – as we all work on developing a position on mitigation and the ESI proposal. We ask that you consider and react to the possible measures in this memo as you proceed.

This memo is organized as follows: Section I discusses NESCOE's view of the potential for market power under ESI and why NESCOE is concerned. Section II explains why NESCOE is concerned that the usual approach to *ex ante* mitigation is unlikely to be effective in this instance. Section III identifies possible measures NESCOE asks you to consider as you develop the framework for mitigation. To be clear, these are not measures that NESCOE has concluded are appropriate. Your reactions will help us think through our views in the coming months.

We are always available for additional discussion and clarification.

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1 *Proposed Energy Security Improvements Work Plan,* Memo from Vamsi Chadalavada, ISO New England Executive Vice President and Chief Operating Officer, to NEPOOL Participants and Markets Committees, September 30, 2019 ("ESI Work Plan Memo").

2 New England States Committee on Electricity, *ESI Possible Amendments*, NEPOOL Markets Committee Item 2, September 4, 2019 ("NESCOE September Presentation"), and *ESI: Preliminary Thoughts & Questions*, NEPOOL Markets Committee Item 2, August 13-15, 2019 ("NESCOE August Presentation").

I. The Potential for Exercise of Market Power under ESI

The key element of ISO-NE's ESI proposal is the day-ahead financial energy call option ("FECO") that exposes sellers to actual real-time energy prices. We understand that this novel approach has not been attempted in any other wholesale electricity market. Accordingly, we are concerned about the potential for unintended and unanticipated outcomes, including but not limited to the exercise of market power and uncompetitive outcomes.

The ESI proposal will lead to an increase in the total amount of supply ISO-NE will acquire day-ahead ("DA") to provide energy or ancillary services (including FECO). Because many resources can provide energy or the ancillary services, and the DA market will be co-optimized, physically or economically withholding any one product (e.g., FECO) could raise the clearing prices of all day-ahead products. In essence, for purposes of evaluating the presence of market power with respect to FECO, it would seem that the "relevant market" is the total supply (energy and FECO) ISO-NE would seek to acquire in the DA market. In most hours there should be substantial excess supply eligible to provide the DA products, fuel should be readily available, and the perceived risk of a real-time ("RT") price spike should be very low. This should result in very low FECO prices at such times. However, at other times, the system will need a higher fraction of the total available supply to satisfy DA energy and FECO requirements. This should result in higher FECO prices. In the future, the system might have a different resource mix, and the times of tight supply and higher FECO prices could become more frequent. At these times there will be pivotal suppliers to satisfy the total energy and ancillary services requirement. Some resources may seek to raise their FECO offer prices above the competitive level to attempt to raise the clearing prices for FECO and the other DA products. **In particular, owners with portfolios of resources may find it profitable to offer FECO at higher prices (economic withholding), or to not offer (physical withholding) FECO if permitted to do so, for some portion of the portfolio, in order to apply upward pressure on the DA co-optimized energy and ancillary services prices earned by other resources in the portfolio.**

ISO-NE recognizes that at times "key fuel delivery infrastructure operates at its limits" and incremental energy supply must come from a small group of resources such as LNG and oil.[3] ISO-NE's internal market monitor ("IMM") also acknowledges that market power is likely when secure energy is most needed:

"Regarding market power, the fact that the ESI is being developed to address an expected shortage of secure energy during certain periods of the year, and that it needs to be explicitly procured and valued, indicates there may be relative shortage of supply and potentially some degree of market power in the periods when secure energy is most needed. This can be compounded if only certain physical assets in the control area can provide ESI products. Further, the ESI proposal represents a significant increase in the volume of capacity reservation that will result from clearing the Day-Ahead Market (DAM)… The increase in capacity reservation from the DAM clearing reduces the extent of residual supply, and increases the

[3] ISO-NE, *Energy Security Improvements: Market Solutions for New England*, Federal Energy Regulatory Commission Staff-Led Public Meeting, July 15, 2019, at Slide 10, available at https://www.ferc.gov/CalendarFiles/20190717100059-07_12_2019_FERC_White_Final_Corrected.pdf.

likelihood that one or more participants will have market power – especially in the ESI / reserve products where a vertical demand curve is anticipated…."[4]

The IMM also acknowledges the potential for a "significant and unjust" overall increase in market cost due to market power:

". . . the volume transacted in the DAM represents all capacity required to meet the load forecast, along with the other ESI reserve products. Price increases in the DAM resulting from the exercise of market power have the potential to result in a significant and unjust increase in overall market costs."[5]

NESCOE has summarized its concern about potential market power under ESI in two broad categories:

1. *"Fast Leak:"* Concern about a substantial increase in consumer cost, perhaps largely due to exercise of market power, during times when the system is relatively tight and there are pivotal suppliers able to raise prices above competitive levels. While there may be relatively few such hours, the potential cost impact in such hours could be large.

2. *"Slow Leak:"* Concern about an increase in consumer cost during times of year (e.g., the non-winter period, and mild periods during the winter) when energy security is not a concern. While perhaps FECO should be expected to clear at very low prices at such times, resources cannot be expected to offer to provide it for free when they would still face a chance of a potentially large settlement, however unlikely it might be during such times. The cost impact of ESI may be small during such times, but there are many such days and hours, and it is hard to make a case that ESI is needed or providing much energy security value during such times.

At the October 16, 2019 Markets Committee meeting, ISO-NE's Chief Economist, Matt White, suggested that ISO-NE will analyze the potential for market power under ESI, and that ISO-NE considers analysis showing the presence of a serious issue a prerequisite to proposing mitigation to FERC. We believe this analysis, if done right, will show there is enough cause for concern that mitigation is necessary. However, the analysis might not show a problem if it fails to evaluate the conditions that could create vulnerability to exercise of market power (such as a tighter supply/demand balance), or if it fails to model "real world" conditions. All suppliers may not behave perfectly rationally. In other words, there may be a difference between theoretical FECO offers and actual FECO offers. We believe it is important that the ISO realistically model how market participants might take advantage of such conditions if permitted (such as by raising FECO offer prices, or failing to offer FECO, when that action is profitable for the owner of a portfolio of resources).

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[4] *Market Power Mitigation and ISO-NE's Proposed Energy Security Improvements*, memorandum from Internal Market Monitoring, ISO New England, to NEPOOL Markets Committee, July 3, 2019 ("IMM Memo"), p. 1.

[5] IMM Memo, pp. 1-2.

We are interested in your views on the potential for market power under ESI including ISO-NE's work to evaluate the potential for market power under ESI.

II. Concerns About the Effectiveness of *Ex Ante* Market Power Mitigation

Market power may be exercised through either physical or economic withholding, so effective *ex ante* mitigation of market power would have to mitigate both physical and economic withholding. However, ISO-NE proposes that FECO offers will be voluntary, so physical withholding would be difficult to determine and apparently not be mitigated. And even if the ESI proposal is changed to include a must-offer requirement to mitigate physical withholding, mitigation of economic withholding (presumably through reference price offer caps) would appear to be challenging , as the IMM has acknowledged:

"The ESI products, as options, pose a different valuation problem as compared to energy and would require a different and potentially more complicated formulation and information set in order to calculate a reasonable asset-level proxy for a competitive offer." [6]

A resource offering to provide FECO is exposed to a financial settlement based on the actual real-time energy price, however high it might rise (*e.g.*, under shortage pricing, several thousands of dollars per MWh). While resources that are able to run are largely hedged against this risk, there is always some chance that something will happen (a forced outage, unexpected last-minute problem acquiring fuel, etc.), and this justifies a risk premium in the FECO offers, or declining to offer FECO under some circumstances. Thus, the two primary components of a competitive offer for FECO would be the expected settlement and a risk premium. Certain resources under some circumstances may also include some fuel-related costs in their competitive offer prices.

We are concerned that it may not be feasible to formulate a reference price formula for FECO that is appropriate and effective for mitigating market power under all or nearly all market conditions and resource circumstances. Especially when the system faces a tightening fuel security situation, there may be substantial uncertainty about the likelihood and magnitude of real-time price spikes, leading to a wide range of market participant valuations for FECO settlement and risk premiums. Under such circumstances, some market participants may legitimately wish to offer FECO at very high prices based on their expectations (or not offer at all), while other market participants might be motivated to use the opportunity to raise FECO offers above competitive levels, to exercise market power and raise DA clearing prices. We are concerned that it will be very difficult for the IMM to distinguish between a legitimate risk premium, based on a participant's realistic expectations that the system is in a very tight situation, and an illegitimate risk premium that is motivated by a participant's attempt to exercise market power.

Thus, we consider it unlikely that the exercise of market power with respect to FECO offers will be mitigated effectively using the standard *ex ante* approach of limiting physical and economic withholding. While provisions to mitigate physical and economic withholding may be put in

[6] IMM Memo, p. 1.

place, they likely will fall far short of effectively mitigating market power, putting consumers at risk of unjustified cost. And/or, at times the measures might over-mitigate, which could treat market participants unfairly and jeopardize the success of ISO-NE's program.

III. Possible Measures to Mitigate Consumers' Exposure to the Exercise of Market Power

A. Willingness to Pay for FECO and DA Ancillary Services: Sloped or Stepped Demand Curves

Because effective *ex ante* mitigation of FECO offers may be infeasible, we consider it extremely important to develop the other available *ex ante* consumer protection measure: ISO-NE's expressed maximum willingness to pay for different quantities of FECO and/or specific DA ancillary services in its DA procurement. This maximum willingness to pay is expressed through the penalty factors and demand curves used for the procurement.

Sound economic theory suggests that the DA ancillary services demand curves should offer prices at each quantity reflecting the marginal reliability value of incremental commitment at that quantity level. This is the same conceptual approach applied to create the demand curves for ISO-NE's Forward Capacity Market. These concepts have also been applied to discussions of operating reserve demand curves for shortage pricing. Such sloped demand curves could achieve a proper trade-off between energy security and its cost, and would also help limit the potential impact of exercise of market power. While ISO-NE's design objectives and principles for ESI do not call for balancing incremental reliability with its incremental cost,[7] we believe the design should seek to achieve such balance in the interest of providing consumers with electricity at the lowest possible prices over the long-term, consistent with maintaining reliable service and environmental interests.

It would appear that the marginal reliability value of the last increment of ISO-NE's desired DA ancillary services/FECO procurement quantity is very low. The value of the last MW of FECO requirement would reflect a simultaneous need for the entire FECO quantity, based on GCR, RER, and EIR quantities; this simultaneous need is likely to be extremely infrequent, if it ever occurs. Furthermore, RER is used to displace GCR that has been called, to restore operating reserve; so RER and GCR would typically not operate simultaneously at the full quantity. In addition, to the extent there are contingencies involving gas-fired resources, it is likely that the failure of one gas-fired power plant frees up fuel deliverability usable at another gas-fired plant, so the full FECO quantity, considered a MWh reserve, reflects some unnecessary redundancy. There are likely other considerations that further discount the marginal reliability value of the last FECO MW. Thus, if the demand curves are based on marginal reliability value, it would seem that they should slope to near-zero values at the full proposed FECO quantity.

We ask that you consider, in your conceptual framework for mitigation, the principles and conceptual approach for identifying demand curves for DA ancillary services based on marginal reliability value.

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[7] ISO New England, *Energy Security Improvements: Market-Based Approaches,* Presentation to Markets Committee July 30, 2019, slides 7-8.

We also suggest that you consider proposing a schedule for phasing in DA ancillary services' demand curve price parameters (penalty factors), beginning with low levels and increasing the parameters over time as experience and confidence is gained with the ESI market design.

B. Moderating the Cost and Risk of FECO: Higher Strike Prices

The FECO strike prices ("K") will be a key determinant of the cost and risk faced by resources that offer to provide FECO. The greater the expected cost and risk of FECO, the greater the scope for and risk of offers well above competitive levels, however "competitive level" may be understood. Consequently, we believe that somewhat higher FECO strike prices, and measures to keep the strike prices more consistent with market conditions, can mitigate the cost, risk, and potential for the exercise of market power associated with ESI.

We have advanced the idea of setting the FECO strike price somewhat higher than the expected RT price,[8] and believe this could have the following potentially beneficial impacts:

1. A higher strike price would shrink the settlement value (RT price – K) to which FECO providers are exposed. Because FECO offers reflect this settlement, a higher strike price would reduce FECO offers and clearing prices.
2. A higher strike price could also contribute to greater participation in FECO and lower offer prices, applying downward pressure on FECO prices, in the following ways:
    a. It would reduce the frequency of option settlements (RT price > K), which may make FECO more attractive to some market participants.
    b. It would reduce the number of market participants for whom their marginal cost is greater than K, and who make a net payment when RT prices rise above K even if they run in RT. This may make FECO somewhat more attractive to these market participants.
    c. To the extent some market participants with marginal cost greater than K add a risk premium to their FECO offers, a higher strike price would reduce such risk premiums, by shrinking the exposure.
3. Generally lower FECO prices resulting from higher K should be somewhat less susceptible to exercises of market power to raise FECO prices and DA LMPs.

We also advanced the notion that supplier risk and FECO cost could be moderated by measures to ensure a better match between strike prices and DA prices. In particular, we advanced the idea that while the strike prices would initially be set based on forward prices, that the ultimate strike prices for settlement be based upon the corresponding DA energy prices, if higher.[9] Stakeholders have also questioned ISO-NE's proposal to have strike prices that do not vary by hour, and this proposed approach may have implications for market power and mitigation.

We ask that you consider, for your conceptual framework, these and other possible measures to moderate the cost and risk of ESI.

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[8] NESCOE September Presentation, slides 15-21.

[9] NESCOE September Presentation, slide 22.

C. FECO Offers "In Good Faith": Clarifying *Ex Post* Market Monitoring Review

ISO-NE is clear in its design that offering FECO is voluntary, and that FECO is a financial instrument and entails no physical performance requirement or obligation to acquire fuel. ISO-NE's assumption is economic incentives alone will be sufficient to motivate suppliers to physically preform and acquire fuel. An ISO-NE example illustrates a circumstance under which a resource sells FECO but subsequently does not invest in fuel because it is too expensive.[10] However, in response to a stakeholder question, ISO-NE seemed to make a contradictory statement that "any offers submitted must be made in good faith (*i.e.*, with the intention of honoring the 'good' sold)."[11] Even if ultimately there is a must-offer requirement, there could be times a resource finds itself called to run in real time but without fuel.

We are concerned that for ESI to operate efficiently, it will be important to clarify what ISO-NE and the IMM consider the "good sold" in the case of FECO, and how they might evaluate *ex post* whether an offer was made in "good faith" or not, and otherwise evaluate market participant conduct after-the-fact.

Presumably a market participant's failure to offer to provide FECO, or the selected FECO offer price, or the choice to not invest in fuel after clearing for FECO could all be challenged in an *ex post* review. We believe it is important to clarify the principles, methodology and assumptions that would be employed for such an *ex post* evaluation. If this issue remains unclear, market participants may be unwilling to offer FECO fearing the risk of the IMM "second guessing" their decisions or, if they do offer FECO, they will raise FECO prices to cover the risk of *ex post* review, which will result in higher costs for consumers. This clarification would also shed light on how effective *ex ante* mitigation is likely to be.

Thank you for addressing these questions in your conceptual framework.

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[10] Energy Security Improvements, ISO Discussion Paper, April 2019 – Version 1 at p. 68. Available at https://www.iso-ne.com/static-assets/documents/2019/04/a00_iso_discussion_paper_energy_security_improvements.pdf

[11] ISO New England, *Energy Security Improvements: Market-Based Approaches*, Presentation to Markets Committee July 8-10, 2019, slide 87.