

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

**Revisions to ISO New England Transmission,)
Markets and Services Tariff Related to)
Competitive Auctions with Sponsored)
Policy Resources)
)**

Docket No. ER18-619-000

**MOTION TO INTERVENE AND PROTEST OF THE ISO-NEW
ENGLAND EXTERNAL MARKET MONITOR**

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 filing by ISO-New England (“ISO-NE”) in which it proposes to revise its Transmission, Markets and Services Tariff (“Tariff”) relating to the Forward Capacity Market (“FCM”).

Potomac Economics is the External Market Monitor (“EMM”) for ISO-NE. In that capacity, we seek to ensure the efficiency and integrity of the ISO-NE markets. Our protest involves a critical design flaw associated with ISO-NE’s proposed FCM reforms. These reforms are known formally as the Competitive Auctions for Sponsored Resources (“CASPR”) and are directed at accommodating the entry of “sponsored resources.” Sponsored resources are resources that are subsidized directly or indirectly in support of state policies, primarily policies to promote clean energy resources.

TABLE OF CONTENTS

I.	NOTICE AND COMMUNICATIONS	3
II.	MOTION TO INTERVENE	3
III.	Background and Summary of Concern	3
	A. The Role and Objective of ISO-NE’s Forward Capacity Market.....	4
	B. Summary of Protest.....	4
IV.	Discussion and evaluation of the ISO-NE Proposal	7
	A. The Proposed Reforms.....	7
	B. Economic Evaluation of the CASPR Proposal	9
	C. Rational for Modifying the Proposal to Exclude New Conventional Resources from the Substitution Auction.	13
V.	Effects of the Design Flaw on Market Participants	19
	A. Energy Prices will be Distorted over the Long-Term.....	19
	B. Effects on States Funding Sponsored Resources	19
	C. New England Customers will pay More than is Necessary for Capacity	22
VI.	Recommendation for Resolving the Design Flaw	23
VII.	Conclusion	24
	Certificate of Service	25

I. NOTICE AND COMMUNICATIONS

All correspondence and communications in this matter should be addressed to:

Dr. David B. Patton	Dr. Robert Sinclair
Potomac Economics, Ltd.	Potomac Economics, Ltd.
9990 Fairfax, Boulevard, Suite 560	9990 Fairfax, Boulevard, Suite 560
Fairfax, VA 22030	Fairfax, VA 22030
(703) 383-0720	(703) 383-0720

II. MOTION TO INTERVENE

As the EMM for ISO-NE, Potomac Economics is responsible for monitoring and evaluating the performance of the ISO-NE energy and ancillary services markets, recommending market design changes to improve the performance of the markets, and evaluating design changes proposed by ISO-NE or other stakeholders. As the EMM, Potomac Economics has a unique responsibility to ensure the efficiency and integrity of the ISO-NE 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.¹

III. BACKGROUND AND SUMMARY OF CONCERN

At the outset, we want to be clear that we support the objective and approach underlying the CASPR proposal. In fact, we recommended that the ISO develop this type of approach and worked with the ISO to formulate the initial CASPR proposal. Therefore, we support ISO-NE's effort to reform the FCM because these types of reforms would provide a means for sponsored resources to participate in the capacity market while at the same time protecting the FCM outcomes. However, one key aspect of the proposal is deeply flawed and will undermine the ability of the FCM to efficiently facilitate new investment in New England.

¹ We are making this filing one day out of time. Good cause also exists to permit Potomac Economics' motion to intervene out of time as it has a significant interest in this proceeding. Permitting Potomac Economics to intervene at this time will not prejudice any party in the proceeding as the Commission has not yet acted on the Filings.

A. The Role and Objective of ISO-NE's Forward Capacity Market

Regional Transmission Organizations (“RTOs”) have requirements to maintain a minimum level of capacity resources to ensure that they can maintain reliability under nearly all operating conditions, as determined by their planning models. Energy and operating reserve markets will typically not provide resource owners enough revenue to keep this quantity of resources in service. Capacity markets were developed to provide revenues that would supplement the RTOs’ energy and ancillary services markets to inform long-term capacity decisions, including investment, retirement, and maintenance of resources. The revenue produced by the capacity markets provide the “missing money” necessary to satisfy the RTOs’ capacity requirements. ISO-NE’s Forward Capacity Auction (“FCA”) clears three years in advance of the planning year to allow new resources to submit offers. Like all RTO capacity markets, the core economic objective of ISO-NE’s capacity market should be to:

Facilitate efficient long-term investment and retirement decisions to satisfy ISO-NE’s capacity needs at the lowest cost.

If the FCM with the reforms proposed by the ISO does not satisfy this economic objective, it cannot be deemed just and reasonable. As we describe in this protest, a serious flaw in the proposed CASPR reforms will cause the FCM to fail this fundamental economic objective.

B. Summary of Protest

While we believe the fundamental approach proposed by the ISO is valid, a serious design flaw that will cause the FCM to produce inefficient investment and retirement decisions and, over the long-term, to raise costs substantially to New England’s customers.

From a practical perspective, the economic objective described above means that: a) new resources will enter only when they are needed and economic, and b) resources will retire when they are no longer economic to remain in operation. As we describe in detail in this protest, the CASPR reforms proposed by the ISO will predictably cause:

- New resources to clear and enter when they are not economic or needed; and

- Existing resources to retire that are economic to continue operating and whose costs of remaining in operation (i.e., going forward costs) are much lower than the entry costs of new resources that are entering.

This will occur because of a serious design flaw in the proposed two-pass auction process for the FCA. The first pass of the FCA will remain the same as the current design, including retaining the Minimum Offer Price Rule (“MOPR”). The MOPR establishes offer floors for subsidized resources based on the estimate of unsubsidized entry costs. Since the costs of the sponsored resources are generally much higher than the costs of conventional resources, the MOPR effectively prevents these subsidized resources from clearing in Pass 1 of the FCA.

Pass 2 of the FCA is a “substitution auction” that would allow the sponsored resources to enter by paying existing resources that cleared in Pass 1 to retire. Hence, it is intended to prevent the sponsored resources from creating artificial shortages and depressing the FCA clearing prices. The ISO has proposed that only existing resources willing to retire be included in the substitution auction, but has proposed to exclude new conventional resources that cleared in Pass 1. We believe that excluding the new resources is a serious flaw in the ISO’s proposal. Because the MOPR will effectively prevent the sponsored resources from entering in Pass 1, conventional new resources may clear when there is no need for new resources. For example, consider in the future:

- New England has a substantial surplus because of sponsored resources that are already in operation or under construction; and that
- The market would otherwise be tight without the sponsored resources.

In this case, Pass 1 will likely clear one or more new conventional resources that are unnecessary and uneconomic given the sponsored resources that exist. The way to prevent this uneconomic outcome is to allow any new conventional resources to clear through the substitution auction along with the existing units offering to retire so they may be efficiently displaced by the sponsored resources. This was a component of the ISO’s original proposal, but it decided to alter its proposal by excluding the new conventional resources from the substitution auction. By doing

this, the supply and demand (and prices) that will determine when a new conventional resource enters will ignore supply from the sponsored resources.

Ultimately, this will likely result in higher-cost new resources displacing lower-cost retiring resources in the following manner. Assume that a new combined-cycle resource can enter at a cost of \$8 per kW-month, while an older existing resource could remain in operation at a going-forward cost of \$4 per kW-month. In this case, an efficient capacity market will not cause the \$8 new resource to enter and displace the \$4 existing resource. Under the ISO's CASPR reforms, this uneconomic outcome can occur because:

- In Pass 1, the sponsored resources are subject to a minimum offer price well above \$8, causing the \$8 new resource and \$4 existing resource to both clear.
- In this case, only the \$4 existing resources is subject to substitution and will sell its capacity obligation in Pass 2 and retire while the \$8 new resource will enter.

This concern is heightened by the fact that ISO-NE offers a seven-year price lock for new resources, which increases the incentive for new conventional resources to clear and enter in any year that supply in Pass 1 of the FCA is tight. Because it will cause new conventional resources to enter the market uneconomically while less expensive, existing resources are paid to retire, the ISO's proposal raises substantial economic concerns that do not exist currently under the FCM. This is inefficient and will undermine the performance of the FCM. This will ultimately harm existing generators, the states sponsoring resources, and consumers.

Therefore, we respectfully recommend that the Commission find the CASPR proposal to be unjust and unreasonable, and to reject it without prejudice. We further request that the Commission endorse the changes that we recommend in this protest – namely that any new conventional resource be subject to potential substitution in Pass 2 of the FCA and that the MOPR be modified to avoid mitigating sponsored resources at levels higher than the net Cost of New Entry (“net CONE”). These changes are discussed in detail in this protest.

IV. DISCUSSION AND EVALUATION OF THE ISO-NE PROPOSAL

A. The Proposed Reforms

ISO-NE is proposing reforms to its Forward Capacity Market in anticipation of sponsored resources entering the wholesale markets at subsidized costs. The proposed reforms would coordinate entry of sponsored resources² with the retirement of existing resources in an attempt to protect the integrity of the capacity market and its prices. By balancing the influx of these subsidized resources with the exit of existing resources, the provisions are intended to prevent artificial supply surpluses that would distort capacity prices.

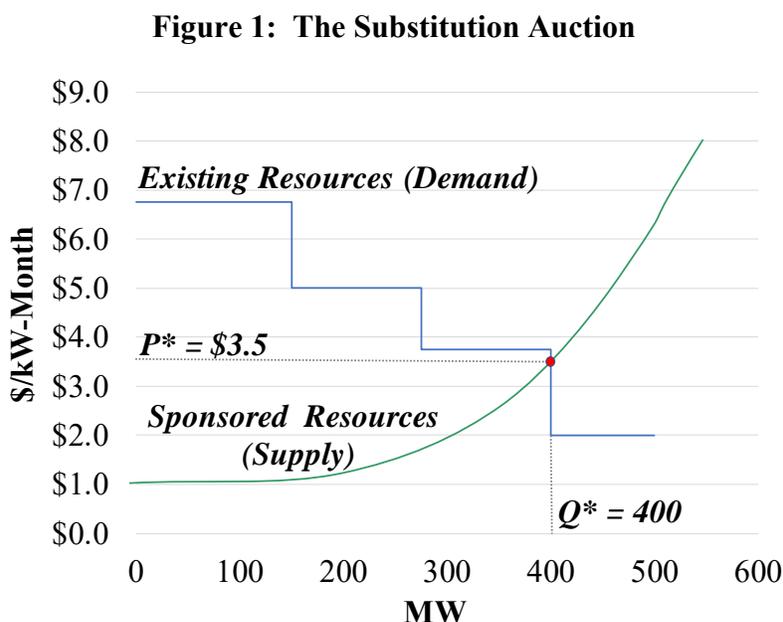
Capacity market provisions to protect price signals due to state policies that subsidize certain resources is not new to ISO-NE. As discussed above, there is currently a MOPR that seeks to ensure that the offers of sponsored resources reflect their full entry costs. The MOPR creates an offer floor for each resource corresponding to the underlying cost of entry without the subsidy. This ensures that these offers are based on the true expected cost of entry.

The proposed CASPR reforms will retain the MOPR in Pass 1 of the FCA, but then introduce a second pass of the auction, called the substitution auction, that will allow sponsored resources that did not clear the first pass of the FCA to enter the market in coordination with the exit of existing resources. This approach is intended to ensure that the initial auction sets an efficient price that is not distorted by the entry of sponsored resources, while at the same time allowing entry of sponsored resources. This is accomplished by allowing sponsored resources that did not clear in pass 1 of the FCA to acquire the capacity obligation from an existing resource that cleared pass 1 and is willing to retire.

² A Sponsored Policy Resource, (hereinafter, “sponsored resource”) is a New Capacity Resource that is either: (i) developed pursuant to a requirement of New England state law, or at the direction of a New England state utility regulatory authority or energy department, or, alternatively; (ii) designated as a Self-Supply FCA Resource by a municipal utility (acting individually or jointly with other municipal utilities) or by a cooperatively owned electric utility (capitalized terms are defined in Tariff terms).

The substitution auction is cleared by the intersection of a supply and demand curve. The supply curve represents a stack of uncleared sponsored resources in ascending order of their unmitigated offer prices. There is no MOPR offer floor in the substitution auction so the uncleared sponsored resources are assessed based on their actual offers, which can be below the clearing price. The demand curve represents a stack of cleared existing resources in descending order of offers reflecting the minimum severance payment acceptable to that resource for permanent retirement.

Figure 1 provides an illustration of the substitution auction. In the Figure 1 hypothetical, the FCA cleared at \$8/kW-month. The blue line represents the demand curve, the descending merit-order stack of offers from existing resources that cleared the FCA and are willing to relinquish their capacity obligation and retire. The green curve represents the ascending merit-order stack of sponsored resources that did not clear the FCA.



The substitution auction in this example clears at \$3.5 per kW-month. Both the sponsored resources and the existing resources that resettle in the substitution auction are at least as well off with this re-settlement as with the FCA settlement. For resettled sponsored resources, each are

paid \$3.5/kW-month, which is at least as high as their as-offered costs and, because they did not clear in the FCA, they all now earn positive margins, rather than zero.

The existing units that re-settle in the substitution auction are also better off. They retain the FCA payment of \$8/kW-month and with the payment to the re-settled sponsored resources of \$3.5/kW-month, each has a net margin of \$4.5/kW-month. The existing unit with the lowest offer in this example is \$3.5/kW-month, so it earns \$4.5/kW-month in the resettlement ($\$8 - \3.5), which is the same as its FCA margin over its as-offered cost. Hence, this lowest-offered unit is at worst indifferent to the outcome. The other existing units have higher as-offered costs and earn higher margins in the re-settlement than in the FCA. For example, the highest-offered unit (\$6.5/kW-month) forgoes a \$1.5/kW-month FCA margin for \$4.5/kW-month margin in the re-settlement. As a result, all parties in the second settlement, both sponsored resources and existing resources, are at least as well off in the second settlement as in the FCA.

We are supportive of the general idea that a two-settlement auction can simultaneously protect market fundamentals while at the same time meet public policy goals by facilitating entry of non-cleared sponsored resources. However, because the substitution auction allows only existing resources to be replaced, a range of inefficient outcomes will be made possible. This is because the proposed design will predictably allow higher-cost new conventional resources to enter inefficiently and cause lower-cost existing units to retire. This will undermine the performance of the capacity market mechanism and harm both existing generators, the states sponsoring new resources, and consumers.

B. Economic Evaluation of the CASPR Proposal

ISO-NE's proposed reform of the capacity market design, like all market design changes, should be guided by sound economic principles and objectives. In the case of the capacity market, the primary economic objective is to facilitate efficient long-term investment and

retirement decisions. Therefore, any capacity market design changes should be evaluated with respect to how this primary objective is achieved. Hence, the key question is:

Will the FCM with the proposed CASPR process facilitate efficient long-term investment and retirement decisions to meet the ISO's requirements at least cost?

Unfortunately, the answer to this key question is clearly *no*. Although no provisions intended to accommodate subsidized new investment can perfectly protect the outcomes of the capacity market, the approach of the CASPR reforms can protect the integrity of the market by achieving two key objectives:

- Preventing artificial supply surpluses that would substantially distort the market outcomes; and
- Avoiding investment in new conventional resources that are not needed or retirement of existing resources that remain economic.

The proposed CASPR reforms will likely achieve the first objective, but will not achieve the second, as we explain below. Fortunately, limited changes to the proposed reforms will allow the CASPR reforms to achieve both objectives.

The ISO-NE proposal has one clear economic design flaw: *new conventional resources are not included as demand in the substitution auction along with existing resources willing to retire*. This is a critical flaw because new conventional resources that are not needed may clear in Pass 1 of the FCA solely because the supply from sponsored resources is effectively excluded because of the MOPR. Having cleared pass 1, they retain their capacity obligation regardless of the quantity of sponsored resources that exist. Hence, new resources may appear to be needed and economic when, in fact, they are not given the existence of the sponsored resources. Ultimately, this will cause higher-cost new resources to enter while retiring less expensive existing resources.

This conclusion is based on an objective evaluation of the proposed CASPR reforms. Under these reforms, the offers of the sponsored resources would be subject to the MOPR in Pass

1. This ensures that their offers will be priced much higher than the entry cost of conventional new resources since the costs of the sponsored resources are generally much higher than the costs of conventional resources.

In Pass 2 of the FCA, the substitution auction allows the sponsored resources to enter by paying existing resources that cleared in Pass 1 to retire. However, new conventional resources are not subject to substitution in Pass 2, so once they clear in Pass 1, they cannot lose their capacity obligation even if their offer price is much higher than the offer of the retiring unit. To better understand this problem, consider the following example:

- Assume:
 - Existing resources in total are 400 MW less than the capacity requirement in the FCM;
 - 1200 MW of sponsored resources are available and offered into the FCA subject to a minimum offer price of \$13 per kW-mo.
 - One 400 MW new conventional capacity resource is offered at \$8 per kW-mo.
 - Three 400 MW existing resources are willing to retire at \$3, \$5, and \$7 per kW-mo. (i.e., their going-forward costs of remaining in operation), respectively.
- With these assumption, the ISO's proposal will result in:
 - Pass 1: the \$400 MW new resource clears, as well as all of the existing units;
 - Pass 2: the sponsored resources enter and each of the existing units willing to retire relinquish their capacity obligation and retire;
 - In total, 1200 MW of sponsored resources enter, the 400 MW new conventional resource enters, and all three existing units retire, totaling 1200 MW.
- However, the efficient, cost-minimizing result under these conditions is:
 - 1200 MW of sponsored resources enter and two of the existing units retire totaling 800 MW.
- The net difference under the ISO proposal: a new conventional resource enters at a cost \$8 per kW-mo. and one additional 400 MW resource retires at a cost of \$3 per kW-mo.

This example shows how the reforms proposed by ISO-NE will prompt inefficient entry and retirement. There is no economic rationale that would justify an \$8 new resource displacing a \$3 existing resource. Over time, a market that is designed to motivate inefficient investment and

retirement decisions will result in substantial cost increases for the consumers in the region.

Although this example is relatively simple, it is not just contrived to demonstrate this concern.

This concern will arise anytime a new conventional resource clears when sponsored resources are available to satisfy the same demand. In other words, this is not simply a concern when the market would otherwise be short of the minimum requirement in Pass 1 (as in the example), it would arise if a new conventional resource clears in Pass 1 for a variety of reasons, including:

- Supply is tight in a particular zone;
- The new resource has a cost advantage that would allow it to be economic in Pass 1 under the capacity demand curve even when there is a small surplus;
- The offer of the new resource is less than the offer of a retiring resource in Pass 1;
or
- Many other conditions when the new conventional resource would only clear in an auction where the sponsored resources are excluded (or mitigated to a very high offer price).

In all of these cases, the efficient outcome can only be determined by allowing the sponsored resources to displace the most expensive conventional resource, whether it be the new resource(s) or the existing retiring resource(s). This can only occur under the CASPR framework in the substitution auction.

The concern that new conventional resources may enter uneconomically is heightened by the fact that ISO-NE offers a seven-year price lock for new resources. This increases the incentive for new conventional resources to clear and enter in any year that Pass 1 of the FCA is tight enough to cause its offer to clear. Ideally, investors would incorporate any expected reduction in revenues that may occur in the years after it enters due to forecasted supply increases, transmission investment, or other factors, but the seven-year price lock allows new suppliers to ignore these market factors and aggressively seek to enter.

As described above, the concerns we describe in this protest are attributable to one significant economic flaw in the CASPR reforms – that new conventional resources that clear in

Pass 1 of the FCA are excluded from Pass 2, the substitution auction. Including the new resources in the substitution auction would remedy this flaw. We discuss this specific recommendation in more detail in Section V.

The inefficient entry and exit that will occur because of the economic design flaw in the CASPR proposal will harm the market participants in New England. Hence, Section V also discusses the adverse impacts of this flaw on:

- New England's existing generators;
- The states that fund sponsored resources; and
- New England electricity buyers.

In Section VI, we discuss how the proposed substitution auction can be changed to mitigate these adverse effects. The main element of the proposal is to include new conventional resources that clear in Pass 1 of the FCA in the substitution auction along with the existing retiring resources. As discussed in Section VI, no settlement would be warranted with a new conventional resource that does not receive a capacity obligation through the two passes of the FCA. This recommended change was consistent with ISO-NE's initial proposal presented to its stakeholders. We will explain in Section VI that along with this change, a corresponding change in the MOPR would be advisable. These changes together would:

- Address all concerns raised about the ISO's initial proposal;
- Allow FCM to facilitate efficient investment and retirement decisions; and
- Ensure that the market will provide efficient price signals while accommodating the entry of sponsored resources.

C. Rational for Modifying the Proposal to Exclude New Conventional Resources from the Substitution Auction.

Given the inefficient outcomes that will result from the proposed CASPR reforms, it is important to discuss the reasons why the ISO modified its proposal to exclude new conventional resources from the substitution auction. We have evaluated each of these concerns, as discussed

in the following subsections, and find that they are not valid and do not support introducing the design flaw described in this protest.

1. “Fictitious Entry” Issue

As explained in the ISO-NE’s filing (p. 19), the ISO was initially concerned about the potential problem of “fictitious entry”, whereby a participant may clear a new resource in Pass 1 that it has no intention of building in order to receive a payment through the substitution auction to relinquish the capacity obligation. This incentive was easily addressed by eliminating any payments to the new conventional resources that do not emerge from the both passes of the FCA with a capacity obligation.

We supported this approach because it is efficient and is comparable to the settlement a new supplier would receive today. Under the current FCM, if a new resource is offered and does not receive a capacity obligation (presumably because it is not needed), it receives no settlement. Similarly, under CASPR, a new conventional resource that does not receive a capacity obligation because it clears in the substitution auction and is displaced by a sponsored resource would receive no settlement. Although the ISO initially supported this approach, this led to the second concern that caused the ISO to modify its proposal.

2. Concern that Conventional New Resources Will Not Enter

The most widely cited reason for removing new conventional resources from the substitution auction is the concern that the threat of substitution may discourage participation in the FCA by new conventional suppliers. The ISO agreed with this concern, arguing that the substitution auction would create additional risk for new conventional resources (See testimony of ISO-NE witness Dr. Christopher Geissler at p. 85).

However, this concern is misplaced and not a valid basis for this design change. The risk described by the ISO is a risk that is common to all investment decisions and is efficient for the investor to consider in making its investment decision. Any time new resources are entering the

market, whether they are sponsored resources or competing conventional resources, this will reduce the expected profitability and increase the risk to subsequent investment. For example, if a competing merchant is building a new large combined-cycle generator that will more than meet any incremental capacity need in New England such that the probability of subsequent new resources clearing in the FCA is virtually eliminated, then investment by all other merchant investors that would enter later would be discouraged. In the same way, if sponsored resources enter that more than satisfy any incremental capacity need, investment in new conventional resources should be discouraged because it would not be economic for them to enter.

Hence, the concern raised by the ISO is actually one of the key virtues of competitive markets and the reasons the wholesale market was deregulated: competitive markets compel suppliers to weigh all potential revenues and risks in making the decision to invest or retire resources. Investors are well-positioned to evaluate these risks because information is widely available on state initiatives that drive the development of sponsored resources.³

By weighing these factors and making decisions that maximize each supplier's expected profits, the markets will minimize the costs of satisfying the system's needs over the long-term. Seeking to shield new suppliers from the risk that their new resources will not clear because of the sponsored resources is fundamentally unsound and will lead to inefficient investment.

Finally, entry risks in New England are already artificially mitigated by the existence of the seven-year price guarantee developers can secure when they clear in the FCA. Typical investment in competitive markets would require investors to consider the risk of reduced revenues that may occur in the years after entry, while investors in New England are shielded

³ In his testimony, Dr. Geissler raises a concern that developers may not be able to accurately forecast the entry of sponsored resources prior to incurring entry costs (Geissler, pp 93-4). However, there is no evidence that developers would have any more difficulty forecasting entry by sponsored resources than entry of other conventional resources or imports. We believe that competitive developers maintain qualified staff that can anticipate future market conditions because this is key to their success.

from this risk because the ISO will guarantee its revenues for the first seven years of the project. Hence, there is no reason to further shield new investors from risks that would be efficient for them to bear.

In sum, when investors expect that new resources will not be needed and will not clear the FCA, it is rational and efficient to not attempt to qualify. Not only is this not a problem, this is the right economic outcome. To intentionally structure CASPR to preclude the outcome is a fundamental flaw in the ISO's proposal.

3. Concern that Prices Could be Inefficiently High

The second concern that drove the ISO's decision to propose that new resources be excluded from the substitution auction was initially raised by some of the stakeholders and is related to the previous concern. These stakeholders were concerned that if new conventional resources were discouraged from participating in the FCA, that the FCA could clear much higher than net CONE. This was referred to this as the "price blow out" concern.

To explain the nature of this potential concern, ISO-NE witness Geissler constructed a useful hypothetical (Geissler p. 89-91). Dr. Geissler assumes new conventional resources are offered at a price close to \$8 per kW-month, approximately net CONE. His hypothetical compares two cases: a) one in which the entrant offers and the FCA includes the new resource; and b) an alternative case, where the entrant is discouraged from offering as a result of the risk of being substituted out. These assumptions lead to the following outcomes:

- Case 1: the new resource clears and sets a price of roughly \$8 per kW-month.
- Case 2: the new resource does not enter and the price increases by almost \$3 per kW-month, increasing consumer costs by \$1 billion.

This hypothetical is valuable because it reveals the flaw in the ISO's thinking that led it to modify the initial CASPR design. The key question is: *Is the entry of the new resource in the hypothetical efficient?* The answer is no because sponsored resources are entering that will more

than satisfy the ISO's capacity needs. The virtue of the new resource in this hypothetical is not that it is satisfying a capacity need economically, it is that it is causing prices to clear near net CONE.

We agree with the ISO that clearing the market well above net CONE when the total supply is more than sufficient is a problem, but the ISO's proposal is not an efficient solution to this problem. This problem is caused by the fact that the sponsored resources that will ultimately satisfy any marginal capacity need cannot enter at a price of net CONE. This is a flaw in New England's MOPR provisions. If there is a need for new resources and sponsored resources are entering, they should be setting the price at close to net CONE. To remedy this problem, therefore, the ISO would simply need to cap its minimum offer prices at net CONE of a conventional resource. There is ample precedence for this solution. The first RTO to implement a MOPR, the New York ISO, applies a minimum offer price that is the lower of:

- 75 percent of the net CONE of a conventional resource, or
- 100 percent of the new resource's actual net CONE.

This ensures that the sponsored resources have the opportunity to satisfy incremental needs and that conventional new resources that are not needed will not enter solely because the sponsored resources are compelled to offer at a much higher price. However, we do find that the 75 percent parameter that is applied by NYISO can produce a minimum offer price that is lower than optimal. If ISO-NE were to simply establish its MOPR offer floor at 100 percent of the net CONE of a conventional new resource, the "price blow-out" issue would no longer be a concern. This solution is much more efficient than the ISO's proposal because it addresses this concern in a manner that does not rely on inefficient entry by new conventional resources.

Additionally, applying this fix to the MOPR rules does not weaken the MOPR or make it less effective. It would continue to protect the wholesale markets by preventing uneconomic entry from artificially depressing clearing prices in the first pass. Hence, this change would not

facilitate lower FCA clearing prices or otherwise harm the existing generators. In fact, all else equal, this change should result in slightly higher prices because it eliminates wasteful investment in conventional new resources (as we discuss in the next section) that would tend to lower prices in subsequent FCAs.

Dr. Geissler testifies that our proposed revisions to the MOPR to address the inflated price concerns will create a risk because the market may frequently clear at a price of net CONE. The ISO-NE filing also discusses this concern (filing at p. 20-1). ISO-NE is concerned that under conditions when capacity is relatively tight and significant amounts of sponsored resources are entering, the market would be clearing at the sponsored resources' offer floor of net CONE. Under such circumstances, the ISO-NE contends that there would be "political" pressure on the net CONE calculation because it would be a key determinant of capacity prices in the short-term.

While it is true the net CONE value would take on increased significance under some conditions, the calculation of a net CONE value is relatively straightforward and is based on data from public sources (e.g., U.S. Energy Information Agency). Potomac Economics itself has expertise in calculating the net CONE values used by the Midcontinent ISO and advising the New York ISO when it updates its net CONE values periodically. As noted above, the net CONE value in New York is used in its MOPR in a comparable manner as we recommend in New England. While there is always pressure on NYISO to calculate an accurate net CONE, this process is transparent and the major determinants of net CONE are well-vetted. Hence, the update process has been manageable and accurate in New York, despite the economic interests that the participants have in the ultimate net CONE value.

In summary, neither of these concerns justify the modification ISO-NE made to exclude new resources from the substitution auction. The first concern (investment will be discouraged) is not a valid concern and the second concern ("price blow out") can be addressed by a relatively simple change to the MOPR provisions, which is justified independent of the CASPR reforms.

V. EFFECTS OF THE DESIGN FLAW ON MARKET PARTICIPANTS

In this section, we discuss the adverse impact of the ISO's proposal to exclude new resources from the substitution auction. Our analysis is divided into three subsections. In subsection A, we discuss the long-term effects of the design flaw on future energy prices and future capacity prices. In subsection B, we address the adverse impacts of the design flaw on the states funding the sponsored resources. In subsection C, we discuss the effects of the design flaw on the long-term costs that will be borne by the ISO's customers.

A. Energy Prices will be Distorted over the Long-Term

As discussed in detail above, the primary concern of the design flaw in the CASPR reforms is that new conventional resources will displace existing units that would otherwise be economic to remain in operation. While the costs of this inefficient tradeoff will ultimately be borne customers in New England in the long-term, it will likely distort energy prices in the short-term in a manner that will harm New England's existing generators.

In general, the marginal costs of new conventional resources tend to be much lower than New England's older resources approaching retirement. Hence, the inefficient entry described above will tend to depress New England's energy prices and reduce the energy net revenues of its existing fleet of resources. This is particularly harmful for resources that rely heavily on energy market net revenues to cover their going-forward costs.

B. Effects on States Funding Sponsored Resources

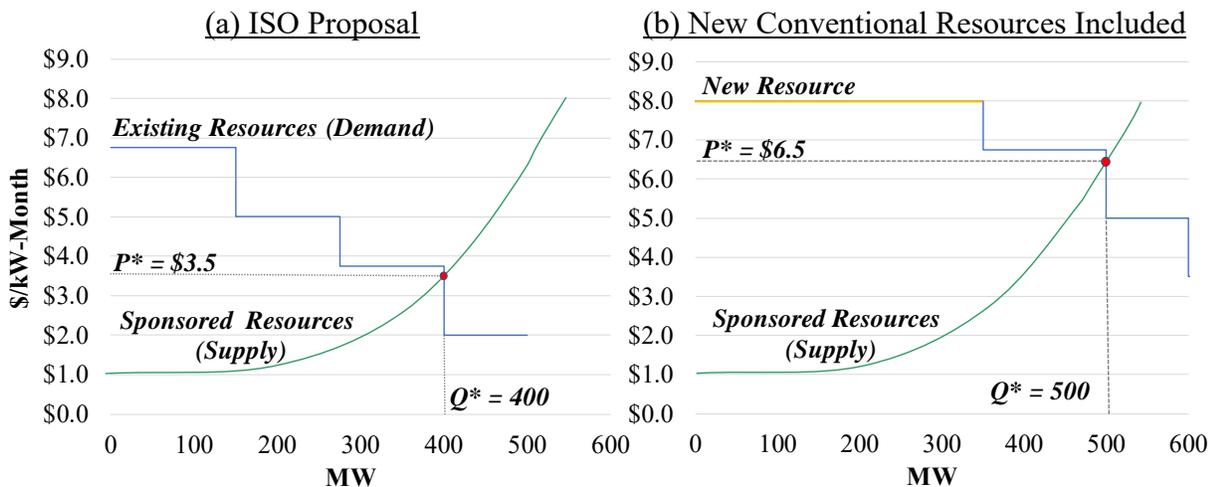
The design flaw in the CASPR reforms will harm the states that sponsor resources because it will reduce revenues available to the sponsored resources. In any FCA that clears conventional new resources, the states will be required to pay substantially more in the substitution auction if the new resources are excluded. Allowing new capacity to participate, the substitution auction would clear a larger quantity of resources and at a higher price, reducing the states' cost.

To illustrate these effects, we have developed the following example that compares the results when new resources are excluded to one where they are included:

- There are 500 MW of sponsored resources with subsidized entry costs and associated offer prices ranging from \$1 to \$8 per kW-month. This capacity is mitigated in the FCA under MOPR rules with a price floor greater than \$8/kW-month.
- The primary FCA clears at \$8 per kW-month, and is the same in both cases below.
- The FCA clears a 350 MW new resource.
- There are 500 MW of retiring units whose offer prices range between \$2 to \$6.50 per kW-month.

Given these assumptions, Figure 2 shows the cleared quantities and prices in the substitution auction without and with new conventional resources included. The demand is not rationable, which means that an entire unit must be cleared or not, so the demand appears in blocks. The supply (the sponsored resources) are rationable, so they could be cleared in part. Suppliers have the incentive to submit multiple price segments, so we depict the supply as a curve.

Figure 2: Substitution Auction Clearing Comparison



This example results in two very different outcomes for the sponsored resources and ultimately for the states sponsoring them. The ISO-NE proposal that excludes new conventional resources from the substitution auction results in a much lower clearing price and allows the entry of a smaller quantity of the sponsored resources. As the following calculation shows, this results

in much higher costs (more than 10 times higher in this example) to the states and sponsored resources in the form of foregone capacity revenues as compared to the case where new conventional resources are included. Under the ISO-NE construct that excludes new conventional resources:

- The substitution auction clears 400 MW of sponsored resources by retiring three existing resources;
- The substitution auction pays sponsored resources \$3.5 per kW-month for the 400 MW of capacity supplied and \$0 for the remaining 100 MW.
- Based on this outcome, we calculate foregone capacity payments for sponsored resources. Foregone capacity payments are payments that are not earned by the sponsored resources either because they had to pay an existing resource to retire in the substitution auction or because they do not clear the FCA. In this example, the foregone capacity payments will be **\$31.2 Million**:
 - Allocation of capacity revenues to retiring units from the substitution auction:
 $400 \text{ MW} * (\$8 - \$3.50) * 1000 \text{ kW/MW} * 12 \text{ mo.} = \21.6 Million
 - No payments to uncleared resources = $100 \text{ MW} * \$8 * 1000 * 12 = \9.6 Million

In a market structure where new competitive entrants participate in the substitution auction, the costs incurred by the states to support sponsored resources is lower because fewer retiring units must be procured, the severance payment rate is lower, and all of the sponsored resources are able to enter:

- Substitution auction clears 500 MW of sponsored resources by retiring only one existing resource.
- Substitution auction pays sponsored resources \$6.5 per kW-month for the portion of the capacity that is offset by the retiring resource (150 MW) and \$8 per kW-month for the capacity offset by the new resource since this resource receives no compensation;
- Because 350 MW of sponsored resources earn the full FCA price, the foregone capacity payments for sponsored resources will be only those relating to the substitution auction payment for the 150 MW of retiring resources, which is **\$2.7 million**:

$$150 \text{ MW} * (\$8 - \$6.50) * 1000 \text{ kW/MW} * 12 \text{ months} = \$2.7 \text{ million.}$$

Therefore, excluding the new conventional resources from the substitution auction results in higher costs for the sponsored resources (and ultimately by the states sponsoring them), almost

\$30 million in this example, because they must entice a larger number of existing resources to retire.

Finally, the ISO-NE proposal relies crucially on receiving a sufficient quantity of retiring existing resources over time to offset the sponsored resources. To the extent that network operating requirements may prevent certain units from retiring, the supply of retiring units may be constrained. Because the ISO proposal will rely exclusively on retiring units in the substitution auction (by excluding the conventional new resources), there is a greater risk that a sufficient quantity of retiring units may not be available in future substitution auctions or only available at a very high cost. In this case, the sponsored resources would fail to secure capacity obligations as new conventional resources enter the market in their place to satisfy incremental capacity needs.

C. New England Customers will pay More than is Necessary for Capacity

Retiring an existing resource and replacing it with a more expensive new resource will substantially harm New England consumers over the longer run because they ultimately bear the costs of these resources.

As we discussed, an additional problem in the FCM is that new resources will have the option of locking-in the clearing price in the FCA for up to seven years. This will result in subsidy payments to the new resources in any year where the clearing price is less than the price at which the new supplier locked-in. Hence, not only must consumers incur the economic loss of displacing low-cost existing resources with high-cost new resources, but they must also guarantee the revenues under New England's lock-in provisions for seven years.

Ultimately, these costs are attributable to a capacity market design that fails to satisfy the primary economic objective of the capacity market: to facilitate efficient investment and retirement decisions that minimize the long-term costs of satisfying the system's needs. As we explained above, the situation is aggravated for New England customers that live in states that are funding the sponsored resources. These customers will bear even higher costs.

VI. RECOMMENDATION FOR RESOLVING THE DESIGN FLAW

In the previous section, we explained the adverse consequences of excluding new conventional resources from the substitution auction. In this section, we discuss the changes we believe would be necessary to make the CASPR reforms just and reasonable. These changes are as follows:

- Include any new conventional resources that cleared in Pass 1 of the FCA in Pass 2, the substitution auction;
- Settle with the new capacity resources based on the final capacity obligation they receive after both passes of the FCA are conducted (which means there will be no payment if they are substituted out); and
- Cap the minimum offer floor applicable to sponsored resources at the net CONE of the marginal conventional resources.

It is important to note that the first two changes were proposed in ISO-NE's initial CASPR proposal. As ISO-NE stated in an early presentation on these design changes, allowing new conventional resources to clear through the substitution auction "...minimizes inefficient over-build when new entry is *not* needed" and satisfies one of its key design objectives.⁴

The first two elements of this proposal are reasonable because together they produce outcomes that are consistent with the outcomes one would expect when a new resource does not clear that is not economic. Wholly apart from CASPR, if new resources qualify and offer under excess supply conditions, they will not clear and will receive no compensation. This outcome is achieved under CASPR by allowing the excess supply of sponsored resources to displace the new conventional resources in the substitution auction with no compensation. This will prompt new investors to forecast the likely need and market outlook for new resources when making the decision to offer in the FCA. This is efficient and expected in any competitive market and, therefore, does not erect any uneconomic barriers to investment in new resources.

⁴ "CASPR: The ISO's Proposed Approach to Balancing Wholesale Markets and States' Policies," ISO-NE presentation by Geissler, June 2017.

The third provision (the MOPR reform) is reasonable because it simply prevents over-mitigation of sponsored resources as discussed in the prior section. Together, these changes remove any potential concern that CASPR could cause the FCA to clear at inefficiently high price levels.

We strongly support the need to introduce reforms that will protect the markets in New England while accommodating the inevitable influx of sponsored resources. At the highest level, the CASPR reforms are perhaps the best means to accomplish these objectives. In fact, we worked closely with ISO-NE to develop the CASPR framework.

Unfortunately, the CASPR proposal filed by ISO-NE has one major design flaw that will undermine the performance of the FCM over time. Without the changes to the proposal we recommended herein, we believe the CASPR reforms are fundamentally unsound and urge the Commission to find the proposal unjust and unreasonable. Such a finding, however, should be without prejudice against a modified CASPR proposal that would address this design flaw.

VII. CONCLUSION

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

Respectfully submitted,

/s/ David B. Patton

David Patton
President
Potomac Economics, Ltd.

January 30, 2018

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 30th day of January, 2018 in Fairfax, VA.

/s/ David B. Patton
