UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

ISO New England Inc.	**)**	**Docket Nos. EL18-182-000**
	)	**ER18-2364-000**

COMMENTS OF ISO NEW ENGLAND'S EXTERNAL MARKET MONITORING UNIT

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 compliance filing by ISO New England ("ISO-NE") in which it proposes a fuel security reliability standard and a mechanism for retaining generators out-of-market for fuel security reliability needs.

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 comments both support and oppose individual elements of ISO's compliance filing.

I. NOTICE AND COMMUNICATIONS

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II. BACKGROUND AND SUMMARY

In its July 2 Order in this proceeding, the Commission found that the ISO's "Tariff may be unjust and unreasonable because it contains no mechanism to address [pressing fuel security] concerns."[1] The Order also:

- Highlighted that out-of-market payments can undermine competitive markets and stated that the ISO's "proposal should include a mechanism that addresses how resources retained for fuel security (e.g., under cost-of-service agreements) would be treated in the FCM."[2]
- Invited the ISO to file Tariff revisions defining the criteria it would use to determine whether a short-term cost of service would be necessary to retain a resource for reliability driven by fuel security concerns.[3]

In its August 31 filing, the ISO responded to the first of the two issues above by proposing to treat the Mystic units as "price takers" in the FCA. We support the ISO's proposal to treat the Mystic units as price takers because this will result in efficient capacity prices. If the Mystic retention is an efficient means to satisfy ISO New England's fuel security needs, then it is efficient for the resource to remain in operation. This would occur naturally if the markets in New England were complete and included products that reflected the ISO's fuel security needs. Were Mystic to remain in operation as a result of the markets recognizing its value in satisfying the fuel security needs, it would also sell capacity in the FCA contributing to capacity prices that are identical to those that will result under the ISO's approach to treat Mystic as a price-taker.

The market design problem is that ISO New England's markets do not recognize its fuel security needs, which is not an installed capacity issue. Hence, the efficient solution is not to manipulate the prices of the FCM as suggested by the Commission and others, but to remedy the

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1 July 2 Order at P. 49.
2 *Id.* at P. 57.
3 *Id.* at P. 55.

market design gap by creating a market product for firm fuel generation in the operating timeframe that would coordinate the use of scarce fuel. These issues are discussed in more detail in Sections III and IV. Section III analyzes and discusses the market gap, while Section IV evaluates the alternative market approaches for filling the gap. Section V explains why the Pay-For-Performance mechanism does not adequately address the market design gap that has been exposed by the retention of the Mystic units.

In response to the second of the two issues above, the ISO proposed tariff provisions that would govern the assumptions it would use to determine when a resource might need to be retained out of market for fuel security reliability needs.[4] The ISO's proposed assumptions are generally reasonable, but we identify several overly conservative assumptions that could lead to unnecessary out-of-market retention even when there would otherwise be adequate dual fuel capacity to satisfy requirements. This is because the ISO proposes to assume that generators with Capacity Supply Obligations will have little motivation to replenish their fuel tanks.[5]

The operational market product that we propose would address the lack of incentive that dual fuel generators have to maintain the necessary inventory levels. Accordingly, we recommend that the ISO modify its overly conservative assumptions regarding the fuel inventories of dual fuel generators. These issues are discussed in more detail in Section VI.

III. RETENTION OF MYSTIC HIGHLIGHTS A SIGNIFICANT GAP IN THE ISO MARKET DESIGN

A. Identifying the Gap in the ISO New Markets

The New England wholesale market was created to facilitate competitive procurement of resources that are necessary for maintaining reliability. However, if a reliability requirement exists for which no corresponding market product or requirement has been defined, the markets cannot provide efficient incentives to satisfy the requirement.

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4 See ISO New England's August 31 Filing Letter, pp. 5-13.

5 *Id*,, "Dual-Fuel Tank Fill Rate" at pp. 11-12.

The out-of-market retention of the Mystic units for winter fuel security needs highlights a critical gap in the ISO market design. New England is heavily dependent on natural gas-fired units that can become unavailable in periods of limited gas supply. In order to meet its reliability requirements, ISO New England must have energy available to be produced that is backed by firm fuel supplies during these periods of limited natural gas supply. However, it currently has no market product that reflects this requirement, so the markets cannot provide the incentives necessary for the system to satisfy the requirement.

Hence, creating such a product is essential, the design of which is discussed further in Section IV. Creating a product to satisfy fuel security reliability needs would provide additional compensation to all fuel-secure generators, not just the Mystic units.[6] If energy-secure generators receive additional market-based revenue from providing fuel security, it will reduce the going-forward costs of existing generators and the net cost of new entry for new generators.[7],[8] In other words, market-based revenue for this product would reduce the "missing money" that would have to be recouped in the installed capacity market.[9]

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[6] Note, throughout this filing we refer to fuel-secure or energy-secure generators and discuss the importance of maintaining adequate inventories. However, we recognize that an efficient technology-neutral market design should compensate non-oil-fired generators that enhance fuel security because their "fuel source" is unaffected by pipeline gas limitations. This would include coal-fired, LNG-fired, nuclear, hydro, wind, solar, and even certain pipeline gas-fired generators that could establish they would not be affected by a pipeline gas limitation or contingency.

[7] The Going-Forward Cost ("GFC") of an existing generator is (a) its total fixed costs that could be avoided by not taking on a capacity obligation for some period of time minus (b) the net revenues earned from selling energy and ancillary services. Net revenues are revenues from selling energy and ancillary services minus the associated variable operating costs.

[8] The Net Cost of New Entry ("Net CONE") of a new generator is (a) the total cost of new investment plus anticipated fixed operating costs minus (b) the estimated net revenues earned from selling energy and ancillary services.

[9] RTOs generally have reliability planning standards that require higher capacity margins than would exist in an energy-only market. The "missing money" refers to the additional revenues needed to sustain this higher required capacity margin. Capacity markets are generally designed for the purpose of providing the "missing money" needed to satisfy high reliability standards.

B. The Gap is not in the Capacity Market

As we illustrate later in these comments, the gap in the market design is not in the capacity market, which is designed to reflect reliability requirements in the planning horizon. Fuel security requirements emerge in the operating timeframe and the most essential decisions made by suppliers to satisfy these requirements are made in the same timeframe. A properly defined product will provide expected market revenues that, together with the revenues from the ISO's other products will cause resources that are needed to satisfy the ISO's fuel security needs to remain in operation.

To the extent that Mystic is an efficient supplier of the ISO's fuel security needs, the additional cost for the Mystic units to supply installed capacity is likely to be very low. Hence, if the markets were complete (i.e., no gaps), units needed for fuel security would receive sufficient revenue to remain in operation and would clear the FCA. Accordingly, the efficient price in this case is the price that will prevail with Mystic included as a price taker in FCA 13, as proposed by the ISO. In other words, the retention of the Mystic units does not depress capacity prices if these units are truly needed for fuel security. Rather, including them as price takers prevents and artificial and inefficient spike in capacity prices that would be attributable to the gap in the ISO's markets described above. Hence, we agree with the ISO's proposal to treat the Mystic units as price takers in the forward capacity auctions for as long as they are under a reliability contract that requires them to remain in service.

However, the fact that the problem does not exist in the capacity market does not mean that there is not a substantial efficiency and equity concern. These concerns are attributable to the fact that no other generators that are contributing to satisfying the ISO's fuel security needs are receiving revenues that reflect their value to the system.

Therefore, we recommend the ISO take steps to implement a market mechanism for pricing fuel-secure generators by the winter of 2022/23, which is the first winter in which the Mystic units would operate under an out-of-merit contract. This would address the disparity in compensation between the Mystic units and other fuel-secure generators.

IV. DEVELOPING A MARKET PRODUCT TO FILL THE GAP

A. Determining the Type of Product that is Needed

In considering how to design a market product to satisfy the fuel security reliability needs of New England, it is essential to: (a) identify the potentially costly decisions that would be facilitated by the market product; and (b) evaluate the extent to which different product designs would facilitate efficient participant decisions to satisfy the fuel security needs.

There are a number of individual decisions that a participant could make to bolster fuel security to New England that vary from shorter-term to longer-term.

- Day-ahead and real-time timeframes: Generators with fuel inventories can reduce fuel consumption in order to conserve fuel, which increases spot electricity prices and encourages electricity imports to New England.
- One to two week outlook: Generators and fuel suppliers can schedule deliveries of fuel oil and LNG to the region.
- Seasonal timeframe: Generators can secure adequate supply on fuel before the winter season begins.
- Multi-year timeframe: Investors can maintain and/or build firm fuel infrastructure, including storage tanks, fuel-switching equipment, and LNG import equipment.

Having identified the types of decisions and the timeframes in which they occur, it is important to evaluate how the activities listed above would be facilitated by various market designs. We have considered three general approaches for designing a market product to encourage firm energy supply:

- Operational product – This would procure resources to satisfy a look-ahead firm energy requirement based on a 7-day forecast of supply and demand factors that determine the required amount of firm energy inventories.
- Seasonal Product – This would procure an expected quantity of firm energy availability before the winter season. Supplemental procurements could be made during the winter if inventories were depleted.
- FCM Product – This would modify the forward capacity market to include procurement of some amount of capacity with firm energy characteristics.

B. Evaluating the Alternative Potential Market Products

In evaluating the appropriateness and value of each of these approaches, it is critical to understand that short-term products can facilitate efficient short *and* long-term decisions. This is true because the revenue expectations associated with the short-term product will affect suppliers decisions to invest and retire resources that can provide this product. However, the same is not true in reverse – long-term products *cannot* facilitate efficient short-term decisions.

The following table summarizes how effectively each of the market approaches can facilitate each of the decisions described above for satisfying the ISO's fuel security needs.

Participant Decision	Operational Product	Seasonal Product	Capacity Solution
Resource dispatch to ration available fuel	✓✓	✗	✗
Decisions to replenish fuel supplies	✓✓	✗	✗
Seasonal fuel procurements	✓	✓✓	✗
Capital investment/retirement decisions	✓	✓	✓

As indicated in the table, we find that the operational timeframe product would potentially facilitate efficient generator decisions in all the timeframes described above. In particular, the operational product would provide efficient incentives for suppliers to:

- Conserve their available fuel in the short term since the market could be designed to coordinate the use of fuel over a rolling 7-day look-ahead period. In contrast, the seasonal and three-year ahead product markets would not occur in a timeframe that would allow for coordination through the market.
- Replenish fuel stocks during the winter season. For example, if winter weather is colder than anticipated and generators begin to deplete their initial fuel stocks an operational product will price an firm fuel scarcity and provide incentives to replenish fuel stocks. While a seasonal product could be adapted to include supplemental procurements, it would be difficult to define the obligations in either a seasonal or multiyear capacity market in a manner that will lead to efficient replenishment decisions.
- Invest in new resources or equipment and retaining existing resources. The operational product, as well as the seasonal and long-term products can all be designed to facilitate efficient long-term decisions.

If the ISO desires to ensure that generators go into the winter with high fuel inventory levels for seasonal planning purposes, the most effective means would likely be a seasonal product. However, an operational product would provide considerable assurance that generators would have sufficient lead times for obtaining fuel when inventories are beginning to tighten. A multiyear product would be a poor mechanism for satisfying a seasonal planning requirement because it would be difficult to define efficient performance obligations more than three years ahead of the winter.

Lastly, the multiyear product would provide time for a wide range of potential solutions alternatives to facilitate long-term investment and retirement decisions, but many such decisions require less than three years or even one year. Additionally, the ISO's fuel-security needs are highly uncertain three years ahead. Hence, a three-year ahead product is not an optimal approach for addressing the fuel security needs of the system. Additionally, the operational and

seasonal products would provide net revenues for fuel-secure generators that can motivate efficient capital investment and resource retirement decisions.

Based on the discussion above, we believe attempting to address the fuel security needs through a capacity market product is misguided. Regrettably, nearly all of the discussion to date has centered around potential changes to or solutions grafted onto the FCM. As ISO New England begins to move toward potential long-term solutions, developments and analysis of FCM design changes will likely interfere with the development of a far superior operational product. Such a product is necessary to achieve all of the ISO's fuel security objectives.

C. The Value and Benefits of an Operational Product

Rather than considering many different potential changes in different timeframes, we believe it is important for the ISO to focus on the development of an operational product because it will be the most effective and beneficial approach for addressing New England's fuel security needs.

The operational product would be better than the seasonal or multiyear products because it will simultaneously meet the following objectives. The operational product will:

- Provide efficient economic incentives and revenues to the suppliers that contribute to satisfying the region's fuel security needs and, in doing so, facilitate efficient investment, retirement, and fuel procurement decisions by these suppliers.
- Coordinate the use and conservation of limited fuel supplies during tight fuel supply conditions, which would lead to more efficient utilization of the fuel.
- Provide a more timely solution for addressing the equity and efficiency concerns that would result from compensating Mystic for a service that many other generators are providing without compensation. Since this product is procured in the operational timeframe, rather than three years ahead, it would allow fuel-secure resources other than Mystic units to receive compensation for providing comparable fuel-security by the FCA 13 planning year. If such a product can be implemented by the winter of

2022/23, it would become effective at the same time that the Mystic RMR agreement would become effective.

- Reduce the likelihood of having to sign additional RMR contracts in two ways. First, it would reduce the potential that other resources needed for fuel security will request retirement. Second, it would provide a strong basis for the ISO to modify overly conservative assumptions related to fuel inventory replenishment in the fuel security reliability assessment model.

Given these benefits, and the limited effectiveness of attempting to addressing these concerns through changes to the FCM, we recommend that the Commission provide guidance to the ISO and its stakeholders to focus the market development efforts on an operational product.

V. PAY FOR PERFORMANCE DOES NOT FULLY SATISFY FUEL SECURITY NEEDS

Some have suggested that no market product is needed to satisfy fuel security needs because PFP should provide generators with adequate incentives to be available during periods of tight natural gas conditions. While we expect an increase in revenues under the PFP regime for fuel-secure resources that have high levels of availability, we do not expect PFP to be a comprehensive solution for encouraging generators to take efficient actions to satisfy the ISO's fuel security requirements. This is because the attributes that are necessary for a generator to perform well under the PFP construct are somewhat different from the attributes that make a generator fuel secure.

During periods of tight natural gas market conditions, much of the gas-only generation fleet is unavailable. Hence, if tight gas conditions last for a week or more, the ISO needs significant quantities of output from non-gas resources to offset the unavailability of pipeline gas generators. The degree to which an individual generator supports reliability depends on the amount of energy the generator would be able to provide if scheduled.

This distinction is illustrated by the following example. Assume the following two units are available to the ISO: Unit 1 is an oil-fired combustion turbine able to start in 30 minutes with

100 hours of fuel on hand, and Unit 2 is a similar unit with just 10 hours of fuel on hand. These units would be valued very differently under PFP than under an operational fuel-security product:

- *Value Under PFP*: Both units would likely perform very well since they would both be able to sell 30-minute reserves from an offline state.
- *During a 2-Week Cold Snap:* Unit 1 would be far more valuable than Unit 2. Unit 1 would likely have an incentive to operate frequently, while Unit 2 would almost always be scheduled to provide 30-minute reserves. During cold winter conditions in recent years, we have found that the operating reserve requirements are typically satisfied by units with limited fuel inventories. Even though there may have been an excess of capacity able to provide operating reserves, the operators were aware that these reserve units could not have operated for very long if a large supply contingency had occurred.

In sum, the attributes that make a generator a perform well under PFP are related but different from attributes that bolster fuel security. Hence, although PFP is helpful, we should not expect PFP to solve New England's fuel security challenges.

VI. COMMENTS ON THE ISO'S PROPOSED FUEL SECURITY RELIABILITY ASSESSMENT

The ISO's fuel security reliability assessment model uses novel techniques to account for the effects of natural gas and other fuel limitations on electric system reliability. Although we generally support the ISO's proposed approach, we are concerned that some elements of the procedure are overly conservative and may lead to unnecessary out-of-market procurement of capacity in upcoming FCAs. It is important to minimize such procurements because they tend to distort the market clearing prices and increase uncertainty for suppliers considering investments in new and existing resources.

The one assumption that raises the most concern is the assumption that oil-fired and dual-fuel generators will not fill their oil tanks to capacity before each winter or fully utilize refueling

capacity during the winter.[10] For light oil units (i.e., combined cycle units), this may not understate the units' availability given other limitations that are not explicitly modeled in the review (e.g., 30-day air permit restrictions). However, for heavy oil units (i.e., older steam turbines), this assumption would greatly understate their potential fuel-secure output levels.

The ISO has expressed concern that assuming generators will buy sufficient fuel is contrary to its experience. While this is generally true, past outcomes are not necessarily relevant when determining whether an RMR contract is necessary three years in advance. If this assumption is not modified, it may lead the ISO to enter into additional RMR contracts to satisfy reliability needs that could have instead been satisfied at a much lower cost by increasing the fuel purchases of existing generators. Since the ISO plans to develop and implement a market mechanism to provide efficient incentives for suppliers to arrange for fuel when necessary for reliability, the ISO should not assume that suppliers will not arrange for adequate fuel.[11]

VII. CONCLUSIONS AND RECOMMENDATIONS

The proposed retention of the Mystic units highlights that significant market enhancements are needed for the ISO New England markets to maintain reliable service for the region during periods of scarce gas supply.

In the short term, including Mystic as a price-taker in the upcoming FCA will ensure that capacity prices are efficient. It will allow prices to reflect all capacity that is economic to remain in operation, including resources need for fuel security. Therefore, we respectfully recommend that the Commission approve the ISO's proposed treatment of the Mystic units in FCA 13.

ISO New England is also embarking on a process to develop long-term solutions to this market issue. We find that the fundamental gap in the ISO's markets in this regard is in the

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[10] See ISO New England's August 31 Filing Letter, "Dual-Fuel Tank Fill Rate" at pp. 11-12.

[11] *Id.*, at p. 18.

operational timeframe. This is evident by the nature of the fuel-security concerns that have arisen in recent years, and by the out-of-market actions the ISO has frequently taken to "posture" units in the operating timeframe in order to conserve their fuel. Hence, we recommend that the ISO develop an operational product to facilitate the procurement of generation to satisfy fuel security needs looking out for a near-term (e.g., 7-day) period. Ideally, such a product would be implemented by the winter of 2022/23 to ensure that all suppliers that contribute to the region's fuel security are compensated for this value, not just Mystic. We also recommend that the ISO modify overly conservative assumptions in its fuel security reliability assessment model by assuming oil-fired generators generally replenish their inventories as necessary.

With regard to the first recommendation, we are concerned that the vast majority of the discussion and resources to date have focused on potential changes to the FCM or compensation schemes in the same timeframe. The Commission has requested that the ISO file its proposed long-term solution in July 2019. We believe it is highly unlikely that the ISO and its stakeholders will be able to successfully develop a proposed operational product by July 2019 given the dominant focus on the FCM timeframe. Since an operational product is necessary to achieve all of the ISO's fuel security objectives, we respectfully request that the Commission provide clear guidance to the ISO and its stakeholders to focus on an operational product, potentially coupled with a seasonal procurement, to be filed by July 2019.

Respectfully submitted,

/s/ David B. Patton

David B. Patton
President
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September 21, 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 21st day of September 2018 in Fairfax, VA.

/s/ David B. Patton