UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

ISO New England Inc.	)	Docket Nos. EL18-182-000
	)	ER20-1567-000

MOTION FOR LEAVE TO ANSWER, MOTION FOR LEAVE TO ANSWER OUT OF TIME, AND ANSWER OF ISO NEW ENGLAND INC.

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Pursuant to Rules 212 and 213 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("FERC" or "Commission"),[1] ISO New England Inc. ("ISO-NE" or the "ISO") moves for leave to answer, and submits its answer, to the protests and comments[2] filed in response to the ISO's April 15, 2020 compliance filing in the captioned proceedings.[3] The Compliance Filing revises the ISO's Transmission, Markets and Services Tariff ("Tariff")[4] to incorporate comprehensive, long-term market based enhancements, known as "Energy Security Improvements" or "ESI," to address New England's fuel security concerns, as directed by the

1 18 C.F.R. §§ 385.212, 385.213.

2 This Answer responds to the pleadings identified in the attached Appendix A.

3 Compliance Filing of Energy Security Improvements Addressing New England's Energy Security Problems of ISO New England Inc., Docket Nos. EL18-182-000 & ER20-1567-000 (Apr. 15, 2020) ("Compliance Filing"). The Compliance Filing included the following supporting materials: Attachment A, Testimony of Peter T. Brandien on Behalf of ISO New England Inc. ("Brandien Testimony"); Attachment B, "Energy Security Improvements: Creating Energy Options for New England," a white paper principally authored by Dr. Matthew White (the "ESI White Paper"); and Attachment C, "Energy Security Improvements Impact Assessment," a report prepared by the Analysis Group, Inc. (the "Impact Assessment").

4 Capitalized terms used but not otherwise defined in this filing have the meanings ascribed thereto in Section I.2.2 of the Tariff. Section III of the Tariff contains Market Rule 1, the Standard Market Design ("Market Rule 1").

Commission in its July 2 Order.[5] For the reasons explained below, the ISO asks the Commission to permit this Answer, to deny the protests and comments addressed in this pleading, and to accept the ISO's Compliance Filing to be effective, as requested, on November 1, 2020.

I. MOTION FOR LEAVE TO ANSWER AND MOTION FOR LEAVE TO ANSWER OUT OF TIME

A number of parties have submitted protests and comments critical of the Compliance Filing. The Commission's Rules of Practice and Procedure permit answers to comments, but not to protests. Accordingly, insofar as the ISO seeks in this Answer to respond to protests, pursuant to the Commission's Rules 212 and 213(a)(2),[6] the ISO moves for leave to file this Answer and asks the Commission to consider the Answer presented below. In addition, because the ISO seeks to submit this Answer more than fifteen days following the filing of adverse comments, it further respectfully requests leave to answer those comments out of time.

The Commission may waive its rules upon a showing of good cause.[7] The Commission has exercised this discretion to permit answers where they are otherwise prohibited in various circumstances, including where a commenting party or protester has provided an inaccurate interpretation of the contents of a filing,[8] or where the answer would assure a complete record in

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5 *ISO New England Inc.*, 164 FERC ¶ 61,003, at P 55 (2018) ("July 2 Order") (directing the ISO, pursuant to section 206 of the Federal Power Act ("FPA"), 16 USC § 824e, to submit "permanent Tariff revisions reflecting improvements to its market design to better address regional fuel security concerns" upon finding that the "Tariff does not sufficiently address the fuel security issues currently facing the region, which could result in a violation of mandatory reliability standards"). *See ISO New England, Inc.*, Notice of Extension of Time, Docket No. EL18-182-000 (Aug. 30, 2019) (granting ISO-NE until April 15, 2020, to file Tariff revisions).

6 18 C.F.R. §§ 385.212, 385.213(a)(2).

7 *See* 18 C.F.R. § 385.101(e).

8 *See, e.g.*, *Alliance Cos.*, 91 FERC ¶ 61,152, at 61,577-78 (2000).

the proceeding,[9] provide information helpful to the disposition of an issue,[10] narrow or clarify the issues to be decided,[11] or aid the Commission in understanding and resolving the case.[12]

The ISO's Answer fulfills these purposes. It addresses inaccuracies in the protests and comments, provides the Commission with a more complete record, narrows, clarifies, and better defines the issues in this proceeding, and will aid the Commission in reaching its decision in this proceeding. Preparing a meaningful and complete response regarding all material issues presented in the protests and comments required considerable time and effort, and the ISO completed that task as quickly as possible following service of the protests and comments. Accordingly, the ISO respectfully requests that the Commission permit and consider the following Answer to the protests and comments filed in this docket.

II. INTRODUCTION

A. The Compliance Filing

The Energy Security Improvements will incorporate into the Tariff the ISO's comprehensive, long-term, market-based solution to New England's energy security problems in fulfillment of the Commission's directive in the July 2 Order. In that Order, the Commission reaffirmed its "support for market solutions as the most efficient means to provide reliable electric service to New England consumers at just and reasonable rates,"[13] and directed the ISO to submit a long-term market solution "reflecting improvements to its market design to better address

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9 *See, e.g.*, *Pac. Interstate Transmission Co*., 85 FERC ¶ 61,378, at 62,443 (1998), *reh'g denied*, 89 FERC ¶ 61,246 (1999).

10 *See, e.g.*, *CNG Transmission Corp*., 89 FERC ¶ 61,100, at 61,287 n.11 (1999).

11 *See, e.g.*, *PJM Interconnection, L.L.C.*, 84 FERC ¶ 61,224, at 62,078 (1998); *New Energy Ventures, Inc. v. S. Cal. Edison Co.*, 82 FERC ¶ 61,335, at 62,323 n.1 (1998).

12 *See, e.g.*, *Tenn. Gas Pipeline Co*., 92 FERC ¶ 61,009, at 61,016 (2000).

13 July 2 Order at PP 53-54.

regional fuel security concerns."[14] The Compliance Filing also proposes to remove from the Tariff the interim, stop-gap mechanisms implemented to address the near-term needs while the ISO developed the long-term market-based solution.[15]

To comply with the July 2 Order, as the Compliance Filing explains, the ISO undertook an in-depth assessment of the problem it has long characterized as the "fuel security" challenge. That analysis unveiled the fundamental problem underlying the challenge: misaligned incentives for the region's energy resources.[16] Simply put, the current market design fails to provide adequate financial incentives for suppliers to make forward investments in fuel supply or other arrangements necessary to ensure that they will be available to supply energy when needed in real-time, even when such investments are cost-effective from society's standpoint as a means to reduce reliability risk.[17] The resources subject to these misaligned incentives must be available to enable the ISO to establish daily Operating Plans for maintaining reliable service each day.[18]

This important flaw in the existing market design has not yet created irreversible risks or resulted in loss of load. Fortunately, despite numerous retirements of generators, there has remained sufficient operational capability in the system to permit the ISO to consistently rely on resources to provide energy, without day-ahead compensation, in quantities over and above their day-ahead schedules sufficient to cover the various energy supply gaps that can arise during an Operating Day.[19] But circumstances are changing rapidly. The evolving resource mix continually

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14 July 2 Order at P 55.

15 *See ISO New England Inc.*, 165 FERC ¶ 61,202, at PP 96-97 (2018) ("December 3 Order").

16 *See* ESI White Paper at 13-20, 24-25, 47-49.

17 *See* July 2 Order at P 53 (recognizing that the existing market rules may not provide a full solution to the fuel security challenges facing the region).

18 *See* ESI White Paper at 26-33.

19 *See* Brandien Testimony at 17-21.

becomes more and more reliant on just-in-time (*i.e.*, non-firm natural gas supplies) and intermittent (*i.e.*, wind and solar) sources of energy.

The evolving resource mix thus presents a rising risk that the ISO will be unable to obtain the reserves of energy that it requires to ensure that the system is operated within prescribed levels of reliability.[20] Therefore, to improve the region's energy security, the ISO's energy market must be expanded to compensate resources for the essential reliability services they provide, and thus to incent them to make the forward investments necessary to ensure that they are available when and as needed.[21]

The ISO's Energy Security Improvements will rectify the misaligned incentives of the present market design. The Compliance Filing demonstrates that the Energy Security Improvements will create a viable, long-term market mechanism for the ISO's procurement of the essential reliability services that are required for it to create reliable Operating Plans each day. The ISO currently secures those services, in part, using inefficient, out-of-market, unpriced methods.

Specifically, the Energy Security Improvements formalize those essential reliability services into new ancillary services, and provide Market Participants the opportunity to compete to provide those services in the Day-Ahead Energy Market. The new ancillary services, designed as energy options, are: Day-Ahead Energy Imbalance Reserve ("EIR") to compensate resources that help meet the next-day forecasted load when that forecast exceeds total physical energy supply cleared in the day-ahead market; Day-Ahead Generation Contingency Reserve ("GCR") to parallel the existing real-time operating reserves;[22] and Day-Ahead Replacement Energy Reserve ("RER")

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20 *See* Brandien Testimony at 5.

21 *See* ESI White Paper at 13-20, 24-25, 47-49.

22 GCR comprises three new products that match the existing real-time operating reserves: Day-Ahead Ten-Minute Spinning Reserve, Day-Ahead Ten-Minute Non-Spinning Reserve, and Day-Ahead Thirty-Minute Operating Reserve.

to help restore depleting operating reserves within the timeframes prescribed in applicable reliability standards, as well as to address unexpected changes in supply or increases in energy demand during the Operating Day.[23]

The proposed market design provides for the procurement and settlement of these new services as energy options. The strong incentive properties of this design, based on simple, economically-sound real-time replacement cost logic, will help to ensure that resources which sell the new ancillary services in the day-ahead market will, in fact, make the arrangements necessary to ensure their availability to supply energy to the ISO as and when needed.[24] The analysis of the efficacy and costs of the Energy Security Improvements presented with the Compliance Filing demonstrates that the new market design will create financial incentives for resources to maintain more secure energy supplies, and provides concrete examples of the manner in which the Energy Security Improvements will improve the region's energy security, relative to the current market rules.[25]

The Energy Security Improvements thus provide the long-term, market-based solution that the region needs to maintain energy security on a going-forward basis. This proposal fulfills the Commission's directive to the ISO and thereby makes unnecessary, upon the Commission's acceptance of the Compliance Filing, the Tariff's transitional provisions for interim, out-of-market solutions.

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23 RER comprises two new products based on the reserve restoration timeframes prescribed in reliability standards: Day-Ahead Ninety-Minute Reserve ("RER90") and Day-Ahead Four-Hour Reserve ("RER240").

24 *See* ESI White Paper, Sections 4, 5.

25 *See* Impact Assessment, Sections I, IV.

B. Overview of the Comments and Protests, and the ISO's Answer

Several parties critical of the Compliance Filing have filed protests and comments that advocate, based on their respective interests and agendas, outcomes at opposite (and extreme) ends of the proverbial spectrum. At one end of the spectrum, various parties, primarily representing states' interests, ask the Commission to reject the Energy Security Improvements on the ground that the ISO's proposal purportedly exceeds the scope of the Commission's compliance directive.[26] As reflected in the NESCOE Comments, these parties' advocacy pivots on their assertion that the ISO's proposed enhancements are an excessive and costly solution to address what they contend was the Commission's narrow directive to the ISO address a winter-only fuel security problem.[27]

At the other end of the spectrum, several parties claim that the Energy Security Improvements are insufficient to improve the region's fuel security problem or are incomplete without the ISO's forthcoming market power mitigation rules. Some of these parties argue that the Commission should reject the design as incomplete,[28] or should bolster the improvements by requiring the addition of entirely new markets, namely, a forward seasonal market.[29] Teetering alone on the edge of this spectrum, Exelon Corporation ("Exelon") advocates for continuation of the interim, out-of-market programs the Commission required solely as a bridge to the long-term market solution the ISO has now submitted; this advocacy is part of Exelon's concerted, but

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[26] These include: the New England States Committee on Electricity ("NESCOE"); the Maine Public Utilities Commission ("MPUC"); the Vermont Public Utility Commission ("VT PUC"); the Connecticut Department of Energy and Environmental Protection ("CT DEEP") and Public Interest Organizations ("PIO").

[27] *See* NESCOE Protest at 4 ("ISO-NE is using 'a tank to block a mouse hole,' proposing an oversized response to the 'misaligned incentives' problem it identifies." (quoting *Dominion Res., Inc. v. FERC*, 286 F.3d 586, 593 (D.C. Cir. 2002)).

[28] *See* NESCOE Protest at 27-32; Public Systems Protest at 3-4.

[29] *See* Public Systems Protest at 11-18; NRG Comments at 5-10; Avangrid Comments at 3-4; Excelerate Comments at 7.

unjustified, effort to extend the cost-of-service payments it presently receives pursuant to those programs.[30] Between these extremes, several parties support the Energy Security Improvements but with discrete, and substantively significant, revisions supported by New England Power Pool ("NEPOOL") (but proposed by NESCOE)[31] that would remove certain elements of the ISO's new market design that NEPOOL deems "objectionable and expensive."[32]

In this Answer, the ISO responds to all of these arguments, and demonstrates why the Commission should reject them. For the reason summarized in the following paragraphs, the Commission should, as the ISO contends, accept the Compliance Filing on the terms the ISO has submitted.

Section III.A of this pleading addresses contentions that the Commission should reject the Compliance Filing on the basis that the ISO's proposal exceeds the scope of the compliance directive of the July 2 Order, noting that, despite protesters' arguments, the Commission never limited the scope of the solution to winter-only months. The ISO explains how it has complied with the Commission's directive by assessing gaps in the markets that exacerbate energy security concerns, and then directly addressing those gaps. In contrast to protesters' claims, the ISO's motives have always been foremost to remedy energy security issues—and the price formation

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30 *See* Exelon Protest at 7, 13.

31 *See* Compliance Filing at 74; *see ESI Design*, New England States Committee on Electricity, (Mar. 24, 2020), http://nepool.com/uploads/NPC_20200402_Composite4.pdf ("NESCOE Presentation") (the NESCOE Presentation to the NEPOOL Markets Committee starts on page 398 of 477 of the document).

32 *See* NEPOOL Comments at 2. Parties supporting NEPOOL's proposed changes include: the Environmental Defense Fund ("EDF"); Avangrid Service Company ("Avangrid"); the Industrial Energy Consumer Group ("IECG"); the New England Consumer-Owned Systems and Energy New England, LLC (together, "NECOs/ENE"); and the Massachusetts Attorney General, The Connecticut Office of Consumer Counsel, The New Hampshire Office of the Consumer Advocate and the Maine Office of the Public Advocate (collectively, "Consumer Advocates of New England"). NESCOE and VT PUC support NEPOOL's proposed changes if the Commission does not reject the Energy Security Improvements as they request.

benefits of doing so through a market-based mechanism are an important benefit, as an inherent property of a market solution.

In Section III.B, the ISO emphasizes the sound economic theory underlying the energy option construct, explaining that this approach is critical to providing suppliers with efficient incentives to ensure they have the physical ability to supply energy when and as needed. As the ISO states, the structure is based on a simple, undisputed, and economically-sound logic that obligates the seller to cover the real-time replacement cost of energy not delivered, and successfully aligns resources' incentives regarding energy supply arrangements with society's interests. The ISO further explains that the more "conventional" day-ahead settlement of the new ancillary services (an alternative favored by some protesters) would produce insufficient incentives, and dismantles arguments that the option construct would be ineffective in addressing misaligned incentives.

In Section III.B, the ISO also responds to assertions that the Energy Security Improvements are unnecessary given other market enhancements implemented over the last several years—assertions that are speculative and not supported by sound reasoning—and addresses inaccurate statements about the role of risk and the inclusion of risk premiums in suppliers' option offers. Contrary to NESCOE's assertions, compensation for risk is not a mark of inefficiency in a market, and is in fact a valuable component of the ISO's (and other) existing wholesale markets. Risk premiums properly reflect potential losses, and result from the strong performance incentives for ancillary service providers to ensure they can deliver energy, if needed, in real-time. From a broader market perspective, the incorporation of risk premiums into competitive suppliers' offers serves to improve efficiency by further enabling the markets to select the lowest-cost set of suppliers able to arrange energy supplies to cover the day-ahead ancillary service obligations.

In Section III.C, the ISO refutes protesters' assertions about the Impact Assessment. While no protester challenges the Assessment's fundamental conclusion that the Energy Security Improvements will create strong incentives to improve energy delivery, they misuse its findings in a variety of (often contradictory) ways. For example, NESCOE uses the Impact Assessment to support its argument that the Energy Security Improvements will provide excessive revenues to certain resources—which ignores the fundamental market concept of inframarginal revenues and the likelihood that increased revenues in the ancillary services market will decrease capacity market revenues.

Similarly, NEPOOL misconstrues the Impact Assessment to conclude that the RER product creates no efficiency or reliability improvements in non-winter months. These arguments ignore the clear scope and nature of the study. First, for the non-winter months, the Impact Assessment did not model changes in production costs and this is not equivalent to a negative finding. Moreover, the Impact Assessment is explicitly an analysis of market outcomes, and therefore not the type of analysis employed for assessing reliability outcomes, a point the Analysis Group emphasized in explaining that the assumptions employed in the analysis would limit the assessment's utility for measuring reliability effects. In fact, the Analysis Group warned against drawing broad conclusions about reliability from the Impact Assessment, stating that the analysis likely underestimates the Energy Security Improvements' reliability benefits.

Section III.C also explains that the use of historical reserve deficiency data to argue that the Energy Security Improvements are unnecessary is flawed from both historical and forward-looking perspectives. In the past, out-of-market, unpriced actions were employed to avoid reserve deficiencies, rendering those totals of dubious value. Going forward, those metrics do not reflect the changing resource mix. Moreover, these statistics ignore the need for the Energy Security

Improvements to account for uncertainties in supply and demand. In sum, as Section III.C points out, the fundamental conclusion of the Impact Assessment stands—the Energy Security Improvements create strong incentives for suppliers to take actions that will improve system reliability.

Next, in Section IV.A, the ISO addresses comments regarding market power mitigation. In the Compliance Filing, the ISO asked the Commission to accept the Energy Security Improvements conditioned on the ISO's completion of a market power analysis, to be followed by the filing of a market monitoring protocol, and the Commission's acceptance of that protocol. In response to protesters' claims that the Commission must reject the Compliance Filing because it lacks a mitigation component, the ISO cites cases supporting a contingent order. The ISO also distinguishes Commission precedent cited by protesters as inapposite, as it arose in a different legal framework (*i.e.*, FPA section 205) and diverges factually.

Section IV.A also responds to predictions that the development of a market power mitigation process is doomed to failure given allegedly insurmountable market power issues and infeasibility. These premature conjectures offer no basis for reasoned decision-making, and thus deserve no weight in the Commission's consideration of the ISO's proposal. These concerns also are controverted by the ISO New England External Market Monitor's ("External Market Monitor" or "Potomac Economics") conclusions that a plan is achievable and could, in fact, be similar to those successfully employed at other independent system operators ("ISOs") and regional transmission organizations ("RTOs")—including ISO-NE, which already has mitigation rules for day-ahead Energy Supply Offers.

In sum, the ISO urges the Commission to allow the ISO to conduct a market power assessment and then develop mitigation rules tailored to any concerns identified therein, with input

from the External Market Monitor and the Internal Market Monitor of ISO New England Inc. ("Internal Market Monitor") and with adequate time for stakeholder review, and to bring the results of that process to the Commission for a fulsome review. As indicated in the Compliance Filing, with the benefit of a Commission Order on or before November 1, 2020, the ISO plans to complete the requisite analyses and file the results of that assessment, along with appropriate mitigation rules, by the fourth quarter of 2021. This will ensure that any mitigation measures appropriate to the co-optimized energy and ancillary services market are in place for its implementation on June 1, 2024.

In Section IV.B, the ISO explains why the Compliance Filing establishes that the Energy Security Improvements are just and reasonable, and urges the Commission to ignore alternatives other than NEPOOL's, which the ISO has agreed to present on equal legal footing. The ISO counters protesters' claims that the ISO failed to prove that the benefits of its proposal exceed its costs. In fact, no cost-benefit analysis is legally necessary, and the Commission is entitled to consider non-cost factors like reliability. The ISO also defends its choice to ensure compliance with reserve requirements through a market-based model, with quantities and designs that are based on reliability standards and are consistent with certain features employed by other ISOs and RTOs, the flexibility afforded by North American Electric Reliability Corporation ("NERC") and Northeast Power Coordinating Council, Inc. ("NPCC"), and the Commission's directive.

The ISO also explains that, contrary to NESCOE's assertion, the External Market Monitor does not agree with NESCOE that the ISO intends to procure "excessive" amounts of reserves. Rather, the External Market Monitor's comments support the amounts of reserves to be procured under the Energy Security Improvements as appropriately representing the relevant reliability criteria.

Last, in Section IV.B, the ISO refutes protesters' arguments that its proposed design is unduly discriminatory. As even the protesters admit, the ISO's market design is technology-neutral. That said, the design recognizes that different types of resources have different physical capabilities, and accordingly differently situated resources may not be compensated equally.

In Section IV.C, the ISO addresses NEPOOL's proposed modifications to the Energy Security Improvements. The ISO demonstrates that NEPOOL's alternatives contravene the Commission's directive, disregard principles of sound market design, and would undermine the efficacy of the ISO's proposal. First, the ISO refutes NEPOOL's proposed RER limitations, which rest on the flawed premise that *replacement energy* is not needed for energy security. As the Compliance Filing explained in detail, replacement energy, and therefore the ISO's RER market product, serves a broader purpose of enabling the system, as part of its next-day Operating Plan, to manage uncertainties in both supply and demand that arise during the operating day, in addition to the restoration of contingency reserves. A review of data from 2018-2019 shows that NEPOOL's contentions that replacement energy is needed only infrequently, or is needed only to restore contingency reserves following their use, are incorrect. The data, as well as recent system conditions experienced in May, further show that replacement energy is needed throughout the year, for both unexpected reductions in supply from day-ahead scheduled generation (*e.g.*, outages and derates) and for unexpected demand increases relative to day-ahead forecasts (*i.e.*, load forecast error ("LFE")). NEPOOL's contention that the ISO should instead continue to employ existing out-of-market, unpriced methods, to secure replacement energy services contravenes the Commission's compliance directive as well as sound market design. In contrast, the ISO's proposal, fully supported by its Internal and External Market Monitors, would procure and compensate suppliers that can provide replacement energy in a transparent manner through the

RER Day-Ahead Ancillary Service component of its long-term market solution. This approach satisfies the Commission's directive, and will provide New England market participants with accurate price signals regarding the cost of reliable wholesale electric services. Notably, those price signals may be quite low in periods when there is ample supply of these services available.

Next, Section IV.C responds to NEPOOL's equally untenable proposal to preclude the use of RER to address load forecast error on its pretense that the term "LFE is vague," and there is no "fuel security need" for the ISO's proposal. None of the reasons NEPOOL provides justifies altering the ISO's proposal.[33] First, there is an amply demonstrated need for the market to incent resources to invest in energy supply arrangements, so that they are able to provide the replacement energy service the system needs to address demand uncertainties (*i.e.*, load forecast errors). Second, NEPOOL's criticism of the ISO's use of RER to cover load forecast errors on the ground that the ISO has not included a definition of "load forecast error" should be given no weight. There is no such definition in the current Tariff or ISO operating procedures, but NEPOOL nevertheless states no objection to—indeed, it supports—the ISO's continuing utilization of its current, out-of-market mechanism for procuring energy to cover such situations. Finally, NEPOOL's proposal unjustifiably disregards the key rationale for the ISO's proposal—*i.e.*, mitigating consumer costs.

Section IV.C addresses NEPOOL's proposal to increase the ISO's Energy Call Option Strike Price ("Option Strike Price") rate by a fixed $10/MWh "adder" at all times. The ISO refutes NEPOOL's assertions that the proposed higher strike price would not compromise the design's ability to improve fuel security as unfounded, inaccurate, and contrary to economic theory and pertinent data. NEPOOL provides scant evidence to substantiate its fuel security arguments. Instead, NEPOOL relies on the Impact Assessment, but the Assessment does not support its claims

[33] *See* NEPOOL Comments at 3.

that its proposed strike price adder would not undermine suppliers' fuel incentives—because the Impact Assessment did not directly evaluate that issue.

The analysis NESCOE proffers to bolster NEPOOL's proposed strike price adder also fails to support conclusions that the proposal would not undermine the incentives created by the ISO's energy option design. In contrast, the ISO's stakeholder-requested, supplemental analysis of the proposed strike price adder (which NEPOOL conveniently omits from its pleading) indicates that the higher strike price may well reduce the Energy Security Improvements' fuel incentives. That analysis further suggests the adverse consequence may impact more resources during high-priced periods, when the system may experience greater stress, and when incremental fuel arrangements are likely most critical to maintaining system reliability. The ISO's proposed Option Strike Price suffers none of these flaws, and should therefore be accepted.

In summary, accepting NEPOOL's proposed changes would run counter to the Commission's longstanding objective to promote economically efficient outcomes (a goal NEPOOL acknowledges, but disregards).

Section IV.D posits that the Energy Security Improvements constitute a self-contained and complete proposal. The ISO refutes comments and protests advocating the immediate addition of a forward seasonal market or arguing to maintain existing, interim out-of-market fuel security measures even if the Commission accepts the Compliance Filing. These claims rely on unsupported assertions that the Energy Security Improvements will be insufficient to address New England's energy security concerns. While a forward seasonal market may complement the ISO's proposed improvements, it is not a necessary element to achieve the compliance directive of the July 2 Order. The Energy Security Improvements address the misaligned incentives of the existing market design by introducing new revenue streams (*i.e.*, revenues from selling Day-Ahead

Ancillary Services through energy options, and the Forecast Energy Requirement Price for contributing to meeting the ISO's load forecast) that will incent additional fuel arrangements. Despite protesters' assertions to the contrary, this logic not only applies to fuel arrangements that can be made after the Day-Ahead Energy Market is run, but also to arrangements that must be made farther in advance.

Section IV.D also addresses Exelon's continuing efforts to extend the cost-of-service payments it presently receives for its Mystic generation resource. Exelon's assertion that the ISO's interim, out-of-market programs should continue alongside the Energy Security Improvements pivots on its claim that the Energy Security Improvements will be insufficient to improve reliability, and it would therefore be "imprudent to eliminate a potential tool to maintain reliability."[34] Exelon, however, offers no independent evidence to support its position. Put simply, the ISO is in a better position to assess whether the interim programs should remain in place, and it is confident that those programs are not needed alongside its long-term, market solution. Moreover, such programs would be detrimental; for the ISO's improvements to succeed, the markets must be freed from interference from the interim out-of-market measures.

Ultimately, the Commission is tasked with determining whether the Energy Security Improvements fulfill the directive of the July 2 Order. The ISO submits that the Compliance Filing, including its accompanying expert testimony and reports, and this Answer together demonstrate that the Energy Security Improvements fully comply with the Commission's order. The Commission, therefore, should find that the ISO's proposal is a just and reasonable replacement rate, and should make the Energy Security Improvements effective as proposed to address New England's energy security problem.

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[34] Exelon Protest at 7-13.

III. ANSWER: THE COMMISSION'S DIRECTIVE

A. The Energy Security Improvements Reflect a Sustainable Market Design that Addresses the Energy Security Problem Facing the Region in Direct Response to the Commission's Requirement for a Long-Term, Market-Based Solution

Several protesters take issue with the manner in which the Energy Security Improvements address the Commission's compliance directive. Some protesters ask the Commission to reject the ISO's Compliance Filing on the basis that the Energy Security Improvements exceed the scope of the Commission's directive, which they narrowly interpret as directing a winter-only solution. While advocating for the same relief (*i.e.*, rejection of the Compliance Filing), some protesters aver that the ISO has changed the problem and, in doing so, improperly expanded the scope of the Commission's directive, to support year-round, sweeping reforms.[35] For example, NESCOE, joined by other state parties, argues the Compliance Filing "abruptly changes the direction of ISO-NE's compliance obligation" to advance "a novel and untested year-round program for improving price formation."[36] CT DEEP agrees, claiming the ISO "appears to be addressing a long-standing price formation issue . . . as well as changes that ISO-NE believes will be needed to address the influx of renewable resources," neither of which, it argues, are appropriate for consideration in this forum.[37]

Others in contrast, claim the ISO has reframed the issue to fit a much "narrower" or "partial" solution than they believe is needed to solve a winter-only problem.[38] The Massachusetts Municipal Wholesale Electric Company, New Hampshire Electric Cooperative, Inc., and

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35 *See* NESCOE Protest at 17.

36 NESCOE Protest at 3, 19.

37 CT DEEP Protest at 3-4; *see also* PIO Protest at 6 (deducing the scope of the Commission's directive to addressing "the specific purported threat posed by the loss of Mystic units 8 and 9").

38 Public Systems Protest at 10.

Connecticut Municipal Electric Energy Cooperative ("Public Systems"), for instance, asks the Commission to reject the Compliance Filing because, "[i]nstead of solving the problem the Commission set before it, the ISO has redefined the problem to fit the (partial) solution it has developed."[39] They further argue that the ISO's proposal is incomplete due to the absence of a seasonal forward market.[40]

The wide-ranging, competing interpretations of both the Commission's directive and the underlying fuel security problem, as reflected in these protests highlight the importance of the ISO's measured approach to identify and clearly define the problem. As the protests illustrate, protesters' advocacy for particular solutions pivots on their individual interests to reduce consumer costs or benefit their respective resources. As the independent, not for profit, entity responsible for maintaining the reliability of the New England power grid at all times, the ISO's interest is in ensuring the region's organized markets adapt to cost-effectively procure the essential reliability services the system needs to meet its energy demand and reserve requirements as the resource fleet on which it depends for those services continues transitioning to more and more just-in-time resources. The Energy Security Improvements will achieve these purposes. The Commission therefore should accept the Compliance Filing as proposed.

1. The Commission's Directive in the July 2 Order Does Not Require Only a "Winter" Solution, Nor Impose Any Similar, Temporal Limitation

In rejecting the ISO's waiver petition and instituting this proceeding pursuant to FPA section 206, the Commission found that "ISO-NE's Tariff does not sufficiently address the fuel security issues currently facing the region, which could result in a violation of mandatory reliability

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39 Public Systems Protest at 10-11.

40 Public Systems Protest at 10-11; *but see* NRG Comments at 1 (supporting the ISO's Energy Security Improvements, while similarly urging the addition of "a seasonal forward market or equivalent").

standards."[41] Expressing a clear preference for the composition of the path forward, the Commission reaffirmed its "support for market solutions as the most efficient means to provide reliable electric service to New England consumers at just and reasonable rates."[42] Accordingly, the Commission directed the ISO to develop and file a long-term market solution "reflecting improvements to its market design to better address regional fuel security concerns."[43] Nothing in the Commission's directive imposes a seasonal or other temporal limitation on the required, market-based solution. In fact, contrary to the assertions of NESCOE, CT DEEP, and other protesters, nowhere does the Commission actually refer in the July 2 Order to a *winter* fuel security problem or solution. Nor does the Order identify fuel procurement decisions in advance of the markets as the root cause of the region's fuel security concerns that the ISO must solve, as Public Systems aver.[44] Therefore, the Commission should deny the protests insofar as they argue that the ISO has expanded the scope of the Commission's compliance directive.

2. The Energy Security Improvements Are Not the Result of the ISO's "Reshaping" or "Narrowing" of the Commission's Directive, But Rather the ISO's In-Depth Analysis of the Region's Energy Security Problem

Contrary to protesters' assertions, the ISO has not redefined, reframed, or expanded the Commission's directive to the ISO in this proceeding or the energy security problem facing the region. Rather, the ISO has further studied the region's energy security problem and the existing

41 July 2 Order at P 55.

42 *Id*. at PP 53-54.

43 *Id*. at P 55.

44 Public Systems Protest at 3-4.

markets and operational environments in which the problem manifests in order to determine how best to address it in the markets, consistent with the Commission's directive.

Specifically, to comply with the Commission's directive, and with the benefit of the extension of the compliance deadline, the ISO undertook an in-depth analysis of the energy security problem, particularly focusing on the power system's consistently identified energy supply risks. These risks relate to the ongoing industry trends that increasingly challenge the reliability of the New England power system.[45] As Mr. Peter T. Brandien explains in his testimony accompanying the Compliance Filing:

> [M]ore and more of the older resources with readily available fuel supplies (those upon which the ISO has historically relied for the capabilities needed for secure next-day Operating Plans) are ceasing to operate. These resources are being replaced with natural gas-fired generators that rely on as-available fuel supply arrangements, and with renewable resources whose energy production capability is intermittent. Initially, the ISO approached this decline in available, unloaded generation capacity with stored input energy as a ***fuel*** security concern. However, the issue fundamentally is the security of a reliable supply of ***electric energy***; ***i.e.***, of ensuring the system has sufficient energy and ***energy reserves*** to maintain reliable service consistent with prescribed standards. The ISO thus now faces the task of developing daily Operating Plans that are sufficient to satisfy the various operational requirements of the New England bulk power system with a generation fleet that is transitioning to fewer and fewer resources that can provide, on demand, the operational capabilities the ISO requires to satisfy those standards.[46]

The emerging energy supply risks Mr. Brandien identifies are the same risks that the ISO has identified consistently, and the basis for the extensive studies the ISO has undertaken to better understand the potential effects of those risks on the day-to-day reliable operation of the power

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45 *Operational Fuel-Security Analysis,* ISO New England Inc. (Jan. 17, 2018), https://www.iso-ne.com/static-assets/documents/2018/01/20180117_operational_fuel-security_analysis.pdf (the "OFSA").

46 Brandien Testimony at 4-5.

system. The import of that analysis is underscored by the industry and policy trends that continue to add "more and more resources with just-in-time input and intermittent energy sources," thereby changing the makeup and increasingly challenging the reliability of the New England power grid.[47]

The ISO's in-depth analysis of the region's energy security concerns and its existing market design identified that the fundamental problem is an economic one: the misalignment of incentives for energy supply arrangements under the existing market design.[48] Under the current market construct, Market Participants whose resources face production uncertainty may have inefficiently low incentives, in the absence of a day-ahead schedule, to invest in additional energy supply arrangements, even though such actions would be cost-effective from society's standpoint as a means of reducing reliability risks.[49] This problem precipitates the operational concern that there may be insufficient energy available to the power system to withstand an unexpected, extended (multi-hour to multi-day) large generation or supply loss during stressed system conditions (*i.e.*, energy security), because the resources the ISO relies on to address such energy gaps are those most likely to suffer the misaligned incentives.[50] Importantly, not a single pleading in this proceeding refutes or disputes the existence of the misalignment problem or the existing market's

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47 Brandien Testimony at 24. These trends, Mr. Brandien explains, create rising concerns about the system's ability to "continue to satisfy electricity demand and reserve requirements." Brandien Testimony at 23. These concerns regarding the availability of sufficient energy to satisfy electricity demand and reserve requirements in light of the region's evolving resource mix are the same concerns that the ISO highlighted in the OFSA. The OFSA, in turn, led the Commission to institute this proceeding under section 206 and to its directive to the ISO to develop a long-term, market-based solution to this critical reliability problem. *See* OFSA at 6-7; July 2 Order at PP 49-50.

48 *See* ESI White Paper at 13-19.

49 *See* ESI White Paper at 26-31.

50 *See* ESI White Paper at 28-30; *see also* Brandien Testimony at 25. The operational concerns precipitated by the misaligned incentives are the "fuel security concerns" that the ISO has consistently identified.

inefficiencies contributing to the energy security concerns, which form the basis of the ISO's proposed solution.[51]

What the identified problems reveal, as the ESI White Paper explains, is precisely what the Commission recognized in directing the ISO to file improvements to its market design to better address regional fuel security concerns: the existing markets are incomplete.[52] Simply put, the existing markets neither procure, nor fully compensate resources for, the entire suite of operational capabilities that the ISO depends upon to ensure reliable Operating Plans each day. The present market structure thus perpetuates the misaligned incentives problem for these resources.[53]

The goal of the Energy Security Improvements is to address the identified, fundamental problem with the existing market design. The ISO's proposal achieves that goal through a market mechanism that is specifically designed to "provide adequate financial incentives for resource

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51 *See* NESCOE Protest, Attachment A, Prepared Testimony of James F. Wilson in Support of the Protest of the New England States Committee on Electricity at 14, 25-29 ("Wilson Testimony") (acknowledging the existence of the misaligned incentives problem in the ISO's existing markets, but challenging its prevalence). The ISO addresses the flawed conclusions in the Wilson Testimony in Section III.B, below.

52 *See* July 2 Order at P 53 ("However, the existing market rules might not provide a full solution to the fuel security problems . . . .").

53 *See* December 3 Order, Commissioner Glick Concurring at 2 (footnote omitted):

> ISONE's ultimate approach to fuel security will need to be more sophisticated . . . . As Potomac Economics explains in its comments, ISO-NE's apparent need to retain units for fuel-security is the result of a market failure. Units truly needed for fuel-security would be economic if they were fully compensated for the services they provide. The solution to that failure must be to reform the markets so that the services they procure reflect the region's needs.

See also, December 3 Order at P 96 ("We agree with the dissent that the value of these resources must be accurately reflected in the market in order to address fuel security issues in the long-term. . . . [A] market-based approach . . . is the best way to achieve that objective.").

owners to make additional investments in energy supply arrangements that would be cost-effective and benefit the power system at times of heightened risk."[54]

Importantly, the misaligned incentives problem, and its inefficiently low incentives, are a shortcoming of the existing market *all year*. As discussed in Section IV.B.3 below, the reliability standards the ISO must meet are year-round, and potential system stressed conditions that could result in violations of those standard can occur in any season; in fact, the ISO recently experienced operational issues in May, which is usually a quiet period. Therefore, a solution that applies only for part of the year, as NESCOE and various other parties understandably argue in an effort to reduce costs, would not fully address the problem. Put differently, a long-term market solution is not actually a solution unless it solves the identified market inefficiency—in this case, the misaligned incentives at the root of the energy security issue. That said, although the reliability standards and, by extension, the products to meet them, are annual, the need may be less in off-peak seasons and prices then will reflect that lack of scarcity.

3. Price Formation Benefits of the Energy Security Improvements Are Inherent to the Commission's Directive for a Market-Based Solution

NESCOE criticizes the Energy Security Improvements as a solution focused on "aligning pricing for ancillary services with dispatch needs," and characterizes them as "price formation reforms that do not squarely meet the Commission's directives to ISO-NE."[55] CT DEEP makes similar assertions, claiming the ISO "appears to be addressing a long-standing price formation issue . . . as well as changes that ISO-NE believes will be needed to address the influx of renewable resources," neither of which, it argues, are appropriate for consideration in this forum.[56]

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54 ESI White Paper at 3.

55 NESCOE Protest at 24.

56 CT DEEP Protest at 3-4.

At best, these assertions are vague and unsubstantiated. Neither NESCOE nor CT DEEP points to any concrete evidence that improving price formation as part of a market design solution is somehow contrary to or inconsistent with the overall objectives of enhancing the region's energy security.[57] At worst, these claims fundamentally misunderstand or misconstrue the Commission's mandate to develop a market-based approach to resolving the regional energy security concern.

While price formation is not the central focus of the Energy Security Improvements, the Commission directed the ISO to present a market mechanism, and good price formation is, of necessity, a central characteristic of any functioning market. Indeed, the Commission has explained:

> Better formed prices help ensure just and reasonable rates by providing appropriate incentives for market participants to follow commitment and dispatch instructions, maintain reliability, provide transparency of the underlying value of the service so that operational and investment decisions are based on prices that reflect the actual marginal cost of serving load and the operational constraints of reliable system operation, and encourage efficient investments in facilities and equipment.[58]

Toward those ends, the Commission has established multiple proceedings over time with the central purpose of improving price formation in the wholesale markets—and, through improved price formation, achieving reliability objectives through markets.[59]

The Energy Security Improvements include the market enhancements necessary to improve energy security. Correspondingly, these enhancements will help improve price

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57 *See* Compliance Filing at 30-32; *see also* Impact Assessment at 53 Tables 11-13.

58 *Settlement Intervals and Shortage Pricing in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 825, 155 FERC ¶ 61,276, at P 163 (2016).

59 Order No. 825; *Offer Caps in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 831, 157 FERC ¶ 61,115 (2016); *Uplift Cost Allocation and Transparency in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 844, 163 FERC ¶ 61,041 (2018).

formation, utilizing "transparent markets – with well-defined market products, transparent market-clearing prices, and competitively-determined awards" in place of the unpriced, out-of-market actions the ISO currently relies upon to satisfy applicable reliability standards and requirements.[60] This "significant benefit . . . helps to ensure that competitive market prices appropriately convey the costs of operating a reliable power system," which is "the central goal of price formation improvements generally."[61] Highlighting the price formation benefits of the Energy Security Improvements is not (contrary to NESCOE's and CT DEEP's suggestion) a limitation of the ISO's proposed reforms, but rather is critical to ensuring the ISO employs a sound market design to achieve the goal of resolving the region's fuel security reliability problem.[62]

4. A Market-Based Solution that Ignores the Influx of Renewables—a Key Policy Trend Contributing to the Emerging Risks—Would Be Shortsighted

CT DEEP's assertions that the ISO's consideration of the "influx of renewable resources" in developing a long-term, market-based solution is not appropriate for this forum completely ignore the fundamental nature of the misaligned incentives problem, which can affect all types of suppliers, and disregard the underlying policy trends the ISO has consistently identified as contributing to the power system's emerging energy supply risk.[63] Therefore, any solution that

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60 *See* ESI White Paper at 10.

61 *Id*.

62 *PJM Interconnection, L.L.C.*, 171 FERC ¶ 61,153, at P 83 (2020) ("PJM Reserves Market Order") ("We agree with PJM that the existing market design is consistently failing to produce prices reflecting the marginal cost of procuring necessary reserves. The Commission has previously stated the importance of ensuring accurate, transparent market prices when possible. . . . We continue to believe that market clearing prices should reasonably reflect the marginal cost of providing necessary reserves. . . . PJM has adequately demonstrated that the shortcomings of its reserve market pricing are substantial and warrant revision." (footnotes omitted)); *Midcontinent Indep. Sys. Operator, Inc.*, 170 FERC ¶ 61,075, at P 33 (2020) ("MISO's proposal is consistent with the Commission's stated price formation goals by bringing 30-minute reserve commitment and dispatch into MISO's market processes.").

63 CT DEEP Protest at 4.

ignores the influx of renewable resources relying on just-in-time energy sources, like many of the region's natural gas-fired resources, would be shortsighted.[64]

As noted, the growth of renewable resources in response to states' clean energy policies is one of the key trends changing the makeup of the New England power system.[65] Indeed, the majority of the region's electricity, both currently and in the foreseeable future, is likely to come from natural gas-fired resources and intermittent energy sources. With the region's transition to more just-in-time energy sources and its constrained fuel delivery infrastructure, New England faces growing risks that there may not always be sufficient, unscheduled resource capability to meet the reliability criteria with which the ISO's Operating Plan must comply each day.[66] Nevertheless, the ISO must maintain reliable system operations, even when renewable resources experience adverse weather or gas pipeline constraints, or both. Therefore, the market must incent not just the current fleet, but also the future resource mix, to undertake additional supply arrangements, and to pursue the addition of new technologies that will ensure their operational capabilities are available to the power system each day.

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64 *See* July 2 Order, Commissioner Glick Dissent at 6 ("[T]he state-sponsored resources that CASPR was designed to accommodate can provide a fuel security profile at least comparable to a resource such as Mystic . . . . The Commission should be striving to develop a regime that facilitates the introduction of new, innovative approaches to ensuring fuel security . . . ."); *see also* Compliance Filing at 26-27 ("The Energy Security Improvements' ancillary services will help the system manage the uncertainty over these resources' next-day energy production throughout the year. Further, the improvements will recognize and compensate resources for reliable, flexible, and responsive attributes that help the ISO manage, and prepare for, energy supply uncertainties each day."); ESI White Paper at 5 (explaining that "it is important to improve today's energy market construct so that the future resource mix will invest in energy supply arrangements and technologies that ensure these essential reliability services – and the requisite resource capabilities – remain available to the power system each operating day.").

65 *See* Brandien Testimony at 24; s*ee also* Energy Security Improvements: Market Solutions for New England of ISO New England Inc., Docket No. EL18-182-000, at 6 (July 15, 2019) (speaker materials of Matthew White and Christopher Parent of ISO New England Inc. for the Commission staff-led public meeting concerning fuel security).

66 Brandien Testimony at 4-5, 23-26.

5. Even Assuming, *Arguendo*, that the Commission Intended Its Directive to be Limited as Protesters Aver, the Commission Should Find the Energy Security Improvements Just and Reasonable

The Commission should accept the Energy Security Improvements as proposed because, exactly as the July 2 Order directed, the ISO's proposal reflects an economically sound, long-term, market-based approach to addressing New England's energy security issues. As discussed above, there is no indication in the July 2 Order of a seasonal or other temporal limitation on the Commission's mandate to the ISO. In the event and to the extent that, as some protesters claim, the Commission intended its directive to lead only to a winter-season solution, the Commission should find the Energy Security Improvements just and reasonable (subject to the conditions the ISO proposes in the Compliance Filing).[67]

B. The Energy Security Improvements Incorporate a Market-Based Solution Specifically Designed to Address the Misaligned Incentives of the Existing Market Design

1. Protesters' Criticisms of the Proposed Energy Option Design Simply Ignore the Underlying Economic Arguments that Support It

NESCOE, VT PUC, MPUC, and others criticize the Energy Security Improvements' market design as an unproven, unconventional, expensive experiment, or call it a novel and untested program for improving price formation, rather than fuel security.[68] NESCOE further asserts that ISO has not demonstrated that the energy option design will result in fuel security investments, arguing the ISO has not "demonstrated" that the energy option construct will cause New England resources to change their behavior to the benefit of the region's energy security.[69]

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67 *See* Compliance Filing at 74 (requesting conditional acceptance).

68 NESCOE Protest at 3, 23-24; NEPOOL Comments at 29; VT PUC Comments at 2; MPUC Protest at 3; CT DEEP Protest at 3-4.

69 NESCOE Protest at 23; NEPOOL Comments, Attachment 3, Affidavit of Benjamin W. Griffiths at 28-29 ("Griffiths Affidavit").

As a threshold matter, these arguments misconstrue the proper basis for a Commission decision. Establishing that a market or product design is just and reasonable does not require empirical evidence that the proposal in fact will lead to specific results or particular benefits. To the contrary, it is well established that the Commission may "base its findings about the benefits of [a new market design] on basic economic theory, [so long as] it explain[s] and applie[s] the relevant economic principles in a reasonable manner."[70] Stated plainly, as the D.C. Circuit once wrote, the Commission "do[es] not need to conduct experiments in order to rely on the prediction that an unsupported stone will fall."[71]

The Commission applied this principle in prior market design decisions, noting expressly that "courts have found it acceptable for the Commission to rely on well-articulated economic theory."[72] It went on to explain that its determination that a proposal before it "is just and reasonable and not unduly discriminatory or preferential . . . is grounded in expert testimony and economic theory. This constitutes substantial evidence."[73] The Commission thus concluded that it "may appropriately rely on economic theory to justify its decisions, and may reasonably consider the impact external circumstances . . . have on the justness and reasonableness of FERC-regulated rates, together with the need to enable the [market] to procure sufficient resources to maintain reliability."[74]

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70 *Sacramento Mun. Util. Dist. v. FERC*, 616 F.3d 520, 531 (D.C. Cir. 2010); *see also Cent. Hudson Gas & Elec. Corp. v. FERC*, 783 F.3d 92, 109 (2d Cir. 2015) ("FERC may permissibly rely on economic theory alone to support its conclusions so long as it has applied the relevant economic principles in a reasonable manner and adequately explained its reasoning.").

71 *Associated Gas Distribs. v. FERC*, 824 F.2d 981, 1008-09 (D.C. Cir. 1987).

72 *ISO New England, Inc.*, 158 FERC ¶ 61,138, at P 23 (2017).

73 *Id.* at P 19.

74 *Id.* at P 43.

The Energy Security Improvements incorporate into the Tariff a sound market design that is grounded in well-articulated economic theory and principles. As discussed above, the ISO's in-depth analysis of the fuel security problem began with a thorough examination of the existing wholesale energy market construct, and concluded that the existing markets are incomplete.[75] That analysis identified the inefficiencies that prevent the existing markets from providing suppliers with adequate financial incentives to make additional investments in energy supply arrangements—investments that would be both cost-effective and benefit power system reliability at times of heightened risk.[76]

As the record in this proceeding shows, the ISO has developed a sound market-based solution and has thoroughly explained how that solution will address the region's fuel security concerns in an economically-efficient manner.[77] No intervener in this proceeding plausibly challenges the underlying economic principles, economic theory, or the ISO's methodological approach to developing this solution to the region's energy security problem. The Commission, as it did in the cited precedent, should determine that the proposal presently before it is well-grounded in expert testimony and economic theory, that this constitutes substantial evidence, and the at the ISO's proposal therefore is just and reasonable.[78]

2. No Party to this Proceeding Refutes the ISO's Diagnosis of the Underlying Market Problem that Must Be Solved

At the core of the Energy Security Improvements is the ISO's identification of the misaligned incentives problem: the difference between the value that society places on energy

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75 ESI White Paper at 3, 10.

76 More specifically, we refer to this as the "misaligned incentives problem." This problem is defined in the ESI White Paper at 13-19.

77 *See* ESI White Paper 85-86, 94-95.

78 *See supra* Section III.A.2; *infra* Section IV.B.2.

supply arrangements, which is based on the (higher) price that society *avoids* when suppliers invest in those arrangements, and the value energy suppliers place on those same arrangements, which is based on the (lower) price they *receive* in the energy market if they make those arrangements. Because of these misaligned incentives, the existing markets do not incent suppliers to invest in socially efficient energy supply arrangements that may meaningfully reduce the risk of energy shortages. Thus, "fundamentally, to provide a long-term market solution to the region's fuel security concerns, the market design must now address that misaligned incentives problem."[79]

Not a single pleading in this proceeding refutes the ISO's diagnosis of the underlying problem, which forms the basis of the ISO's proposed solution. Only NESCOE, via its witness Mr. James F. Wilson, challenges even the *scope* of the problem (and, for the reasons explained below, that challenge is unpersuasive). Furthermore, no party disputes that resolving the misaligned incentives problem helps to meet the Commission's compliance directive to the ISO.[80] Similarly, as explained above, while some assert that energy security is a winter-only issue, and thus seek to limit the market design on that basis to only part of the year,[81] no party reconciles such assertions with the fact that the misalignment of incentives for energy supply arrangements is a market design problem that exists throughout the year.

3. No Party Challenges the Replacement Cost Logic of the Energy Option Design, or the Strong Economic Incentives It Provides to Solve the Misalignment Problem

Although all innovative ideas are new when introduced, various protesters seek to cast doubt on the unfamiliar, characterizing energy options for Day-Ahead Ancillary Services as

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79 ESI White Paper at 13-19.

80 July 2 Order at P 55.

81 NEPOOL Comments at 19; Public Systems Protest at 10-11.

"complex," "novel," or "untested."[82] Yet no party to this proceeding challenges the fundamental logic of using the energy options construct to solve the misaligned incentive problem. Nor does anyone challenge the logic of using the energy option construct to solve the related, critical problems of operational uncertainty and insufficient day-ahead scheduling that also must be addressed to increase the region's energy security.[83]

The energy option construct provides the supplier with efficient incentives to improve its physical ability to supply energy when and as needed, based on a simple, undisputed, and economically-sound logic: it obligates the seller to cover the *real-time replacement cost* of energy not delivered.[84] This proposed design successfully aligns resources incentives regarding energy supply arrangements with society's interests, and will lead suppliers to make those arrangements when doing so would be cost-effective for the system as a whole.[85] As NESCOE's witness Mr. Wilson concedes, "the Energy Option can provide an added incentive to arrange for fuel. This is the key innovation of the ESI proposal that is intended to contribute to energy security."[86] Put simply, the economic theory undergirding the Energy Security Improvements is sound, and

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82 See *infra* Section III.B.4, for a refutation of other claims related to the purported novelty of the Energy Security Improvements.

83 *See* ESI White Paper at 26-33.

84 ESI White Paper at 66 (explaining why the "replacement cost logic lies at the economic core of why call options – both in the present context and more generally – help align incentives efficiently").

85 ESI White Paper, Section 4.3.1. By obligating a supplier to pay the replacement cost of any energy it does not deliver in real-time, the market design removes the divergence between the value that the supplier's investment in energy supply arrangements provides to society, and the value that the supplier places on the same investment. Whenever it is cost-effective for the system as a whole—*i.e.*, from society's standpoint—the real-option design provides the supplier with the necessary incentive to incur the up-front cost of arranging energy supplies in advance. ESI White Paper, Section 5.2.3.

86 Wilson Testimony at 10.

provides the Commission with ample evidence to find that the market design is just and reasonable.[87]

Certain protesters aver that the efficient, replacement-cost incentives of the energy option construct are undermined by confusion over whether the energy option is a "physical" or a "financial" obligation.[88] This confusion is of their own making. The ISO's Compliance Filing clearly explains that the Day-Ahead Ancillary Services design is a physical-delivery market.[89] Like physical-delivery markets, the day-ahead ancillary services market has a financial consequence for non-performance. Specifically, the consequence of non-performance by a resource with a cleared energy option is the real-time replacement cost of the energy not delivered. Under well-established legal precedent, a buyer's remedy for a seller's failure to deliver a physical obligation is the cost of "cover" – *i.e.*, the financial amount necessary for the buyer's procurement of equivalent substitute goods. The Energy Security Improvements market design is consistent with this basic legal principle. Layering extraneous obligations beyond the "no excuse" replacement-cost settlement obligation would undermine the cost effectiveness of the proposed design and unnecessarily increase consumer costs.[90]

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87 *Sacramento Mun. Util. Dist.*, 616 F.3d at 531; *Cent. Hudson Gas & Elec. Corp.*, 783 F.3d at 109.

88 *See, e.g.*, Public Systems Protest at 18-19.

89 *See* ESI White Paper at 70-73.

90 *See* ESI White Paper at 72-73.

4. NESCOE's Critique of the Misaligned Incentives Problem Misconstrues the Problem and the Conditions Under Which It Occurs

While fully recognizing the misaligned incentives inherent in the current market design,[91] NESCOE's witness Mr. Wilson avers that the problem occurs only infrequently, and that solving the problem will correspondingly improve energy security only infrequently as well.[92] He asserts that "[a] conventional approach to [day-ahead ancillary services], based on the best practices of other [RTOs], is an alternative that could potentially be more cost-effective."[93]

Mr. Wilson's conjectures that the misaligned incentives problem is unlikely to occur in practice is premised on a flawed characterization of the conditions that must be satisfied for misaligned incentives to arise in today's wholesale markets.

As a preliminary matter, Mr. Wilson's claim that "conventional" day-ahead ancillary services "could potentially be more cost-effective" is vacuous. Mr. Wilson provides no evidentiary support, or even an explanation for this assertion. Moreover, Mr. Wilson acknowledges that the procurement of energy options in the day-ahead market will provide "additional incentive[s] for energy security,"[94] and makes no effort to demonstrate, or even to explain, how his alternative day-ahead ancillary services settlement would provide incentives for energy security. Nor does Mr. Wilson's testimony attempt to counter the ISO's explanation of why, under the "conventional" day-ahead reserves construct, "resource owners have far weaker incentives to arrange energy supplies in advance – even though it would be in society's best interest if they did."[95] In short,

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91 Wilson Testimony at 25 (conceding the misaligned incentives problem will lead a market participant to not make an "energy-related investment" even if doing so would be "cost-effective from society's standpoint").

92 Wilson Testimony at 29.

93 Wilson Testimony at 21.

94 Wilson Testimony at 21.

95 ESI White Paper at 101-04.

using "conventional" day-ahead reserve products "does not solve the misaligned incentives problem,"[96] and Mr. Wilson's testimony offer nothing to suggest otherwise.

Turning next to Mr. Wilson's critique of the misaligned incentives problem, he first asserts that, for a resource to have newfound incentives to arrange energy supplies with an option award, it must believe that its decision to produce (or not) can have an impact on real-time market prices.[97] While the notion that beliefs affect decisions is reasonable enough, Mr. Wilson's next observation is not: he asserts that, while larger resources might hold this belief about their ability to impact prices, "[s]maller market participants who do not believe their output, or lack of output, appreciably affects [real-time] prices, do not see an added incentive from the Energy Option."[98] Mr. Wilson fails to explain the basis for this claim, but more importantly, as explained next, this assertion suffers from a logical flaw.

In practice, a supplier cannot know the extent to which removing its supply (*i.e.*, not providing energy) will affect the real-time energy price, as that would require the supplier to know the precise shape of the real-time supply curve, reflecting all generating units' respective ramping, output, and other constraints, at the system's real-time load.[99] But no supplier can know the shape

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96 ESI White Paper at 101-04. Indeed, Mr. Wilson concedes a conventional day-ahead ancillary services' approach alone would not solve the misaligned incentives problem. He concedes additional design features, such as a forward market, may be necessary to help the conventional approach address the misaligned incentives problem. Mr. Wilson, however, offers no supporting analysis to show how such a design would work in practice, or why it could address the problem. *See* Wilson Testimony at 21-22.

97 Wilson Testimony at 14-15.

98 Wilson Testimony at 14-15.

99 In practice, the supply curve resembles an upward sloping, stair-step function with each "step" representing an individual resource offer, and the vertical "rise" between steps representing the difference between resources' offer prices. With a stair-step supply curve, an individual supplier decision not to procure fuel (removing its supply offer from the supply curve) could: (a) possibly have no effect on the real-time price (if, for example, the removal of the supplier's offer does not change the marginal resource), or (b) dramatically increase the real-time price (if the supplier's offer is replaced by a significantly higher cost resource). This logic is not dependent on the *size* of the supplier's resource, and so applies regardless of the size of the resource. Mr. Wilson appears

of the supply curve with any degree of certainty, *regardless* of the size of its resource. Therefore, while it is true that a larger supplier's decision about whether to arrange for energy supply *might* have a larger influence on the real-time price, a smaller supplier that does not arrange for energy nevertheless risks the potential that the replacement cost of its energy—from a resource necessarily higher up on the supply curve—is significant. Generators large and small will surely understand that possibility: that the real-time replacement cost of their energy (per MWh) may exceed the energy price that prevails when they do perform.

In sum, based on these observations, the Commission should reject Mr. Wilson's unsupported assertion that the misaligned incentive problem is unlikely to occur in practice for all but the largest resources. With a stepped energy supply curve, the price that prevails when a resource supplies energy will typically be less than the real-time cost to replace it with a MWh of *another* resource's energy. —Therefore, any resources without a day-ahead obligation may face the misaligned incentives problem under the existing market design.

Mr. Wilson strives to further his assertion that the misaligned incentives problem would arise in "rather narrow" circumstances[100] with a different assertion. Specifically, he also claims that the misaligned incentives problem arises only if a supplier "faces an indivisible or 'lumpy' fuel decision; it cannot make a smaller [fuel] investment to capture the anticipated high price."[101] He asserts that most suppliers, however, do not face lumpy fuel decisions, and therefore in choosing how much fuel to procure, they can "balance [their] marginal benefit and market cost to

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to overlook this fact, as he instead presumes that for many (smaller) resources, the removal of their energy offer from the supply curve would never affect the real-time energy price. This presumption simply assumes away the misaligned incentives problem in its entirety.

100 Wilson Testimony at 14-15.

101 Wilson Testimony at 14-15.

maximize profits."[102] Mr. Wilson concludes this allows them to "invest some fraction of the maximum potential investment" and that will avoid or significantly reduce the misaligned incentives problem.[103]

This argument relies upon both a false premise and spurious economic reasoning. As a preliminary matter, "lumpiness," to the extent it matters to energy security, is a property of the supplier's *resource* as much as it is a property of fuel procurement. That is, most supply resources on the New England system are constrained by their "Economic Minimum Limit," which is the minimum output level to which the resource must be dispatched for operation. Therefore, virtually all resources on the system are operationally constrained by "lumpiness," an issue for system operators, resources' owners, and market designers concerned with the market's incentives.[104]

Moreover, the misalignment of societal and suppliers' incentives can occur under current market rules even when resources' fuel procurement volumes are not "lumpy." As Mr. Wilson notes, a supplier's incentives are to make investments up to the point that "balance[s] marginal benefit and market cost to maximize profits."[105] Conveniently to his purpose, Mr. Wilson fails to clarify that the term marginal benefit here refers to the supplier's marginal private benefits (commonly known as marginal revenue in economics), rather than the marginal *social* benefit to

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102 Wilson Testimony at 26-28.

103 Wilson Testimony at 26-28.

104 *See, e.g.*, Revisions to Fast-Start Resource Pricing and Dispatch of ISO New England Inc. and New England Power Pool Participants Committee, Docket No. ER15-2716-000 (Sept. 24, 2015) (identifying the "lumpiness" of fast-start resources, caused by high Economic Minimum Limits, as interfering with price formation when such resources are dispatched); *ISO New England Inc.*, Letter Order, Docket No. ER15-2716-000 (Oct. 19, 2015) (accepting Tariff revisions to Fast-Start Resource Pricing and Dispatch).

105 Wilson Testimony at 26-28.

the region. When the supplier's investment can affect the price for electricity,[106] there is a divergence between the marginal private and marginal social benefit. That divergence, under the current market rules, results in suppliers' investment incentives for fuel arrangements being too low. This is the crux of the misaligned incentives problem. While resource *or* fuel supply "lumpiness" may exacerbate this misaligned incentive problem, neither is an economically necessary condition for it to occur. Importantly, because the Energy Security Improvements require resources with option awards to cover the real-time replacement cost of energy not supplied, they resolve the misaligned incentives problem, whether or not lumpiness is a contributing factor, by aligning the supplier's private benefit with the marginal social benefit.

In summary, there is no colorable basis for Mr. Wilson's assertion that there are only "rather narrow circumstances under which any generator faces the Misaligned Incentives problem."[107] To the contrary, the Compliance Filing thoughtfully analyzes and identifies the root causes of this misaligned incentives problem, and establishes clearly that the circumstances in which those root causes apply are far broader than Mr. Wilson asserts in his affidavit.[108]

Further, the energy option construct that the ISO proposes resolves not only the misaligned incentives problem, but also the consequential problems and "market gaps"—viz., operational uncertainties and insufficient day-ahead scheduling—that the ISO has identified as underlying the region's energy security concerns.[109] All of these issues are properly resolved with a market design that enables resources to acquire additional day-ahead obligations for ancillary services, and by

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106 Again, with a stepped supply curve, even small changes in energy supply can have significant impacts on the energy price.

107 Wilson Testimony at 14-15.

108 ESI White Paper at 24-26.

109 ESI White Paper at 26-33.

requiring those resources—without exception—to cover their replacement costs if they do not actually provide energy the next day. This framework will align the supplier's private incentives to procure fuel with the social benefits from doing so, and thus will lead to cost-effective fuel procurement decisions from society's standpoint.[110] The Energy Security Improvements, therefore, fully satisfy the Commission's directive to develop a long-term, market-based solution that better addresses the region's energy security concerns.[111]

5. Contrary to Intervenors' Suggestions, Recent Market Design Initiatives That Have Improved Incentives for Suppliers and the Reliability of the Electrical System Do Not Render the Energy Security Improvements—and RER in Particular—Redundant

Certain intervenors argue that, despite the misaligned incentives problem, the ISO has already done enough in the way of market enhancements, and therefore the Energy Security Improvements are unnecessary. Thus, NEPOOL, NESCOE, and the Consumer Advocates of New England argue that existing market rules "already provide for substantial incentives for suppliers of energy to be available and perform when needed in the non-winter months," citing to the pay-for-performance ("PfP") capacity market design and various other market design initiatives from the last several years.[112] Intervenors largely rely on portions of the supporting testimonies of Messrs. Cavanaugh and Griffiths, accompanying NEPOOL's comments.[113]

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110 *See* ESI White Paper at 85-86, 94-95.

111 July 2 Order at P 55.

112 NEPOOL Comments at 20; *see* NESCOE Protest at 51-52; Consumer Advocates of New England Comments at 24-25.

113 Mr. Cavanaugh points to the PfP capacity market design, the opportunity cost adder mechanism that was introduced in 2018 to help suppliers to better represent the value of a resource's limited fuel in the energy market, and the fast-start pricing enhancements that were implemented in 2017. *See* NEPOOL Comments, Attachment 1, Affidavit of David A. Cavanaugh at 6, 12-13 ("Cavanaugh Affidavit"). Mr. Griffiths points to the PfP capacity market design and also references the "RCPFs in the energy market," asserting that these mechanisms "price reserve restoration into ISO-NE's

These claims are speculative and unsupported. With the exception of Mr. Griffiths' attempts at finding parallels between the justification for RER and the justification for PfP, no party provides any reasoning to support their assertions that various features of the existing markets already address the underlying replacement energy issues that the ISO evaluated in developing the Compliance Filing. No theory or data is cited to support the various assertions.

Mr. Griffiths' assertions are particularly perplexing. With respect to PfP, Mr. Griffiths acknowledges the ISO's observation that PfP "doesn't solve the mis-aligned incentives problem"—the very problem that the Energy Security Improvements are expressly designed to address—but nevertheless argues that some of the "goals" of the Energy Security Improvements are the same as the goals of PfP.[114] This contention is irrelevant for purposes of addressing the misaligned incentives problem. In fact, as the ISO clearly demonstrates in the ESI White Paper, PfP does *not* fully solve the misaligned incentives problem.[115] This undermines and contradicts Mr. Griffiths' (and Mr. Cavanaugh's) assertion that PfP (in conjunction with the RCPFs in the energy market) render RER "redundant." Messrs. Griffiths and Cavanaugh make no effort to reconcile their unsupported assertions with the examples in the ESI White Paper that plainly contradict them.

Additionally, Mr. Griffith's assertion that RCPFs do not "price reserve restoration into ISO-NE's markets"[116] is false. Indeed, *no reserve product* fully addresses replacement energy

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markets, today," and that therefore "RER is a redundant mechanism to price something into the market which is supposedly already priced." Griffiths Affidavit at 28-30.

114 Griffiths Affidavit at 28-29.

115 *See* ESI White Paper at 22-24 (illustrating, through examples, why PfP does not solve the misaligned incentives problem).

116 Griffiths Affidavit at 30.

within the context of the markets—as the ISO has explained in the Compliance Filing[117]—and Mr. Griffiths provides no explanation of what he intends in suggesting otherwise.

In effect, intervenors' arguments amount to the assertion that the ISO has already made multiple enhancements to the wholesale markets to help ensure the region has a reliably operating system, and therefore the region does not need more market features to address reliability. These are, at best, half-hearted attempts at arguing there is no fuel security concern to be addressed through market enhancements. The ISO has carefully and thoroughly explained why this assertion is false, and thus the Commission should reject intervenors' unsupported assertions to the contrary.

6. NESCOE's Claims that Risk Premiums for Energy Options Are Inefficient and Create Unwarranted Costs Is Inaccurate and Unsound

Certain protests argue that the Energy Security Improvements will create inefficiencies, undermining its benefits and imposing unwarranted costs on consumers. Notably, these assertions do not question the ESI White Paper's conclusions that by addressing the misaligned incentives problem, the Energy Security Improvements would enhance efficiency by incenting resources on which the ISO relies to satisfy its next-day Operating Plan to make greater energy supply (*i.e.*, fuel) arrangements whenever cost-effective.[118] Instead, these protesters focus on the role of risk in markets, and on various details of the proposed new market design. These critiques have no merit because they lack evidentiary support, misrepresent economic theory, or simply misunderstand the markets.

Citing to Mr. Wilson's testimony, NESCOE argues that the Energy Security Improvements "will result in inefficiencies and unwarranted consumer costs" because they are "a novel and

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117 ESI White Paper at 153-55.

118 These conclusions are discussed in more detail in Sections 5.1.2 and 5.2.3 of the ESI White Paper.

untried market design." [119] NESCOE goes on to assert that sellers of ancillary services will include risk premiums in their energy option offer prices, and that such risk premiums are "an efficiency loss due to the ESI program" that do not exist under the current market rules.[120] NESCOE further asserts that "this type of risk premium does not exist in more conventional day-ahead ancillary service approaches or in ISO-NE's current market design."[121]

Mr. Wilson's assertions and NESCOE's contentions based on his testimony reflect a basic misunderstanding of how markets create incentives and allocate risk to produce efficient outcomes. Contrary to Mr. Wilson's assertions, the risk premiums that competitive suppliers include in their offer prices properly reflect the potential losses to which they are exposed—and which drive incentives for improved performance—if they acquire a day-ahead ancillary services obligation. These risk premiums are not "an efficiency loss due to the ESI program."[122]

Under any efficient market design, it is entirely appropriate for a risk-averse competitive supplier to include a risk premium to account for uncertainty.[123] In the context of the Energy Security Improvements, a competitive supplier's risk premium will account for the risk that, if the supplier cannot deliver energy in real-time (due to mechanical failures of its resource, or for any other reason), it may incur a net charge in the market settlement, since it will have no real-time energy revenue.

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119 NESCOE Protest at 46 (quoting Wilson Testimony at 54).

120 Wilson Testimony at 37.

121 NESCOE Protest at 46.

122 Wilson Testimony at 37.

123 The Commission has often recognized that risk premiums are a common component of price offers in competitive wholesale electricity markets. *See, e.g.*, *ISO New England, Inc.,* 153 FERC ¶ 61,223, at PP 73-74 (2015); *ISO New England, Inc.,* 147 FERC ¶ 61,172, at PP 97-98, 100 (2014).

Compensation for risk is *not* a mark of inefficiency in a market. Rather, it is a hallmark of sound performance incentives in uncertain environments, where the risk of loss for non-performance creates socially beneficial incentives to invest in actions that improve a resource's performance. Thus, the energy option design presents risk to sellers to invest in additional energy supply arrangements in advance of the operating day, whenever those arrangements are cost-effective.[124] Importantly, by improving their real-time performance, these resources will reduce their risk, and thereby be able to offer energy options (*i.e.*, require lower risk premiums). In sum, risk premiums in competitive suppliers' offers *improve* efficiency by further enabling the market to select the lowest cost suppliers that are able to cover day-ahead ancillary service obligations.

Remarkably, Mr. Wilson asserts that "no such risk and risk premium exist in the current market design, nor would it exist in a conventional approach to DA ancillary services."[125] These statements are incorrect. A seller of day-ahead energy—a product transacted every day in the ISO's markets—faces the risk of being charged the real-time energy price in the event its offer clears in the day-ahead market and it does not produce energy to meet that commitment the next day. That charge (at the real-time price) necessarily exceeds, in the same circumstances, an energy call options seller's settlement charge (which is the real-time price *less* the strike price).[126] That is, selling day-ahead energy entails greater risk than selling the energy call option, here and

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124 *See* ESI White Paper, Sections 5.1.2, 5.2.3.

125 Wilson Testimony at 37.

126 Viewed mathematically, the settlement of a day-ahead forward sale of energy is equivalent to the settlement of a day-ahead call option on energy with a strike price equal to the market's energy offer price floor (-$150/MWh). Risk (that is, a resource's net loss in settlement if it does not produce in real-time) is greater as the strike price is *lower*. Here and generally, it is a standard property of call options that they present a seller with less risk than if it sells the same good (*e.g.*, energy) forward.

generally. Mr. Wilson's assertion that no such risk exists in the current market design is deeply mistaken.

Finally, Mr. Wilson again errs when he asserts that a more conventional day-ahead ancillary services design would avoid his concerns with respect to risk premiums.[127] First, Mr. Wilson provides no explanation of what such a "conventional" design would entail, so it is not possible to evaluate whether such an approach would subject suppliers to similar risks. More fundamentally, and consistent with the ISO's observations above, if suppliers providing these products do not face greater risks associated with non-performance, they will not have greater incentives to improve their energy supply arrangements relative to experience under the current market rules. Mr. Wilson appears to acknowledge this indirectly when he opaquely notes that "[t]hese ["conventional"] designs also typically entail penalties for non-performance, analogous to the PfP penalties for capacity resources."[128] Yet he incongruously avers that such penalties do not constitute risk or risk premiums, under his hypothetical, "conventional" market. In summary, there is no foundation for Mr. Wilson's characterization of risk, its role in creating incentives and more efficient, socially beneficial outcomes, and the prevalence of risk-premiums in other wholesale energy market products. Thus, NESCOE's critiques of the Energy Security Improvements based on Mr. Wilson's views have no merit.

NESCOE, again based on Mr. Wilson's testimony, also asserts a litany of design elements that it claims will create further inefficiencies in the day-ahead ancillary services markets. These include allegations that the Energy Security Improvements will procure day-ahead ancillary

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127 While he does not provide specific details of precisely how such a conventional design would work, it appears that it would procure reserves in the day-ahead market that settle against the real-time reserve price.

128 Wilson Testimony at 21.

services at the system level, rather than incorporating locational constraints and that will sellers submit a single energy option offer price, rather than different offer prices for different ancillary service products. [129] In each case, neither NESCOE, nor the testimony upon which it bases its assertions, provide any evidentiary support, example, or even a cogent explanation of the claimed inefficiencies of the design of the Energy Security Improvements.[130] The Commission, therefore, should give no weight to NESCOE's contentions.

C. The Protesters Fail to Refute the Impact Assessment's Findings

The ISO's design of, and presentations concerning, the Impact Assessment were a central focus of stakeholder discussions throughout the development of the Energy Security Improvements. The Analysis Group met with stakeholders multiple times over a ten-month period to discuss the development of the Impact Assessment.[131] The discussions focused on the purpose and objectives of the Impact Assessment, the model assumptions, the range of scenarios evaluated, the model results, and a progression of additional scenarios added in response to stakeholder requests. Those discussions also included dialogue about what the model was *not* intended to address.

Various protesters collectively rely on the Impact Assessment for support on a range of arguments both against the ISO proposal and in favor of the NEPOOL alternative. For example, NESCOE cites the Impact Assessment to support its claims that: (1) the incentives provided by

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129 This represents a key difference between the proposed energy option construct, and a "conventional" day-ahead procurement of ancillary services. Under a conventional approach, it would be necessary to allow resources to offer different prices for the different products because they will settle against different real-time prices. This is not the case for the energy option construct, where each option product settles against the real-time energy price.

130 Wilson Testimony at 56.

131 *See* Compliance Filing at 27-29.

the Energy Security Improvements are excessive;[132] and (2) the Impact Assessment might understate the costs of the Energy Security Improvements.[133] Other protesters draw seemingly inconsistent conclusions about the reliability benefits of the Energy Security Improvements, all from the same analysis of the Impact Assessment performed by NEPOOL witness Mr. Benjamin W. Griffiths—*i.e.*, that there is no energy security need (a) in any months,[134] (b) only in the winter months,[135] and/or (c) year-round, but only for some of the products.[136]

While none of these assertions has merit, much more important is that the protesters generally do *not* challenge the quantitative findings of the Impact Assessment or otherwise find fault with its methodology. Nor does any protest challenge the primary, critical point that the Impact Assessment establishes: relative to the current market rules, and under a broad range of scenarios representing reasonably likely conditions on the New England power system, the Energy Security Improvements will create strong financial incentives for resources to maintain more secure energy supplies (*e.g.*, higher levels of energy inventories) and generally will improve their ability to deliver energy in real-time when called upon. Equally important, as noted in the Compliance Filing:

> These incentives *are greatest during periods when energy security risks are most severe*, thereby creating the strongest price signals when energy needs are greatest. Further, while the strong improvements in energy security will increase costs to consumers, the Impact Assessment demonstrates that those increases come from a market design that *lowers overall production costs for the region during more stressed system conditions*, a critical indicator that the

132 *See* NESCOE Protest at 40.

133 *See* NESCOE Protest at 41-43.

134 *See* MPUC Protest at 4.

135 *See* NESCOE Protest at 34.

136 *See* NEPOOL Comments at 19.

> design enhances the region's energy security in an efficient manner.[137]

These unchallenged findings provide substantial evidence that the ISO's Energy Security Improvements can be expected to achieve the Commission's directive in its July 2 Order for "permanent Tariff revisions reflecting improvements to [the ISO's] market design to better address regional fuel security concerns."[138] The protesters' contentions either misunderstand or misconstrue the Impact Assessment's analysis, or attempt to rely on that analysis in a manner that—as the ISO has repeatedly explained—is inconsistent with the study's underlying objective and the type of modeling employed to meet that objective. Therefore, the Commission should reject the protesters' arguments.

1. Assertions that the Energy Security Improvements' Incentives Are Excessive Mischaracterize the Impact Assessment's Results, and Represent a Broader Attack on Competitive Market Outcomes

Referencing the Impact Assessment's estimates of net revenues from holding incremental fuel oil,[139] NESCOE contends that "[t]he analysis shows that resources would be rewarded with net earnings that may be dozens to hundreds of times more than their costs to hold fuel, leading to the undeniable conclusion that ESI's financial incentives are excessive."[140] NESCOE argues that,

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137 Compliance Filing at 5-6 (emphasis added); *see also* Impact Assessment at 53 Tables 11-13; Compliance Filing at 27-34 (summarizing the Impact Assessment's findings).

138 July 2 Order at P 55.

139 This analysis is provided in Tables 11-13 of the Impact Assessment.

140 NESCOE Protest at 40. Curiously, this concern plainly contradicts observations raised elsewhere in the NESCOE protest. For example, elsewhere in its protest, NESCOE argues that "the design fails to provide anything more than a 'modest' impact on supplier's incentives to make advance fuel arrangements" and is therefore not likely to address the region's energy security concerns. NESCOE Protest at 23.

because of these "excessive" net revenues purportedly associated with procuring additional fuel, the Energy Security Improvements will not produce just and reasonable rates.[141]

These arguments misunderstand the basic concept of inframarginal rents in competitive markets, and misconstrue the data provided in the Impact Assessment. Contrary to NESCOE's characterizations, competitive markets do not award a market's least-cost suppliers with zero net revenue. Rather, in a competitive market, inframarginal resources earn positive net revenue.[142] In competitive, uniform-price markets—such as those proposed in the Energy Security Improvements—the price of each product is set by the marginal resource, and that marginal resource earns zero net revenue supplying it. But all other Market Participants with lower costs, superior facilities, or greater efficiency will receive positive net revenues (also called "inframarginal rents" in economics). The net revenue accruing to these inframarginal resources is a foundational feature—rather than a flaw—of competitive markets and uniform, market-clearing prices. It enables lower-cost suppliers to earn greater net revenue than higher-cost competitors, and thereby incents competition and innovation, and promotes efficient outcomes that reduce total costs to society over the long-term.[143]

NESCOE's assertion that such inframarginal revenues are "excessive" is unsupported. NESCOE offers no definition or explanation of what it means by "excessive," or what methodology it employed in coming to the conclusion that the net revenues are, in fact,

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141 NESCOE Protest at 40.

142 *See, e.g.*, *Blumenthal v. ISO New England, Inc.*, 117 FERC ¶ 61,038, at P 81 (2006) (recognizing that "inframarginal revenues . . . are the natural result of a uniform clearing price auction where there are some low-cost supplies and other higher-cost supplies.").

143 The Commission has long recognized these desirable attributes, and as a result, has advocated market-based solutions to address emerging issues where possible. Clearly articulated this policy preference in the July 2 Order, the Commission reaffirmed its "support for market solutions as the most efficient means to provide reliable electric service to New England consumers at just and reasonable rates." July 2 Order at P 53.

"excessive." Instead, with the understanding that markets provide inframarginal revenue, the Impact Assessment results that NESCOE claims to be "excessive" are, in fact, nothing more than the logically expected, economic return to low-cost, inframarginal suppliers that provide an essential reliability service at an offered price less than the market-clearing price.

Moreover, NESCOE's characterization of the net revenues is misleading. While NESCOE argues that net revenues "may be dozens to hundreds of times more than [suppliers'] costs to hold fuel,"[144] NESCOE fails to acknowledge that these figures reflect the most profitable generation types under the most extreme conditions. It is not surprising that in such cases, incremental fuel is very profitable. NESCOE fails to note, however, that during less stressed system conditions,[145] net revenues are far more modest than those it trumpets, and, in fact, in some circumstances, are negative.[146]

NESCOE's critique, therefore, is unsupported, and ignores a basic property of a uniform clearing price market —a property the Commission has appropriately recognized and accepted in the markets it regulates.[147] It also may be fairly considered a collateral attack on the Commission's oft-stated preference for relying on competitive, uniformly-priced markets as the most appropriate mechanism to promote efficient outcomes.[148]

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144 NESCOE Protest at 40.

145 *See* Impact Assessment at 53 Table 13.

146 For example, the average oil-only steam unit incurs costs of $1315/MW, while only recovering Energy Security Improvements payments of $97/MW, indicating that they receive negative net revenues from the incremental fuel procured under the Energy Security Improvements during less stressed winter conditions. Impact Assessment at 53 Table 13.

147 *See supra* note 142.

148 *Regional Transmission Organizations*, Order No. 2000, 89 FERC ¶ 61,285, at 422-23, 1996- 2000 FERC Stats. & Regs., Regs. Preambles ¶ 31,089 (1999) ("The RTO must promote the development of competitive markets for ancillary services whenever feasible. To ensure the reliable operation of the system, an RTO must have authority to determine quantities and locations for ancillary services. . . . Apart from establishing the general requirement to use competitive markets, the Commission will allow the RTO considerable flexibility in determining many of the detailed

2. The Impact Assessment Makes Reasonable Assumptions to Provide Sensible Estimates of the Energy Security Improvement's Possible Costs Under a Range of System Conditions

NESCOE further takes issue with the assumptions used in the Impact Assessment's production cost model, and argues that this analysis tends to understate the incremental costs associated with the Energy Security Improvements.[149] In doing so, NESCOE mischaracterizes the Impact Assessment and paints an incomplete picture of how various modeling assumptions alter the Impact Assessment's estimates of consumer costs. Moreover, NESCOE fails to acknowledge an important factor that could lead the Energy Security Improvement's impact on total consumer costs to be *lower* than estimated in the Impact Assessment.

Before responding directly to NESCOE's claims, it is important to note that any forward-looking production cost model must make a number of simplifying assumptions. This observation is particularly relevant for a model that, like the Impact Assessment, seeks to approximate the power system for an entire region several years in the future. The ISO discussed in detail with stakeholders the assumptions made for the Impact Assessment, and where appropriate, incorporated stakeholder feedback to represent the region's power system as accurately as possible.[150]

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market design questions, with case-by-case review by us."), *order on reh'g*, Order No. 2000-A, 90 FERC ¶ 61,201, 1996-2000 FERC Stats. & Regs., Regs. Preambles ¶ 31,092 (2000), *petitions for review dismissed sub nom. Pub. Util. Dist. No. 1 v. FERC*, 272 F.3d 607 (D.C. Cir. 2001).

149 NESCOE Protest at 41-43.

150 *See* Todd Schatzki, *Energy Security Improvements Impact Analysis*, Analysis Group, Inc. (Nov. 13, 2019), https://www.iso-ne.com/static-assets/documents/2019/11/a4_c_presentation_impact_analysis.pdf (presentation to the NEPOOL Markets Committee); Todd Schatzki, *Energy Security Improvements Impact Analysis*, Analysis Group, Inc. (June 12, 2019), https://www.iso-ne.com/static-assets/documents/2019/06/a2c_analysis_group_presentation_energy_security_improvements_impact_analysis.pptx (same).

But even putting aside that broader caveats, NESCOE's present claims are unfounded. It offers no economic rationale or empirical analysis to support its assertions. This point is illustrated with scrutiny of three such stridently-expressed, but nonetheless speculative, assertions.

First, NESCOE notes that the Impact Assessment's analysis only includes a single, 240-minute RER product, and does not include the higher-quality RER90 product.[151] NESCOE surmises that if the Impact Assessment had separately reflected the RER90 product, then the consumer costs in the assessment would have been higher. However, NESCOE ignores the Impact Assessment's findings regarding the 240-minute product, and provides no analysis or data to support its assertion that the Impact Assessment materially understates the Energy Security Improvements' costs. In fact, it does not.

As the ISO has explained, the RER90 price has a lower bound equal to the RER240 price and an upper bound equal to the price for Day-Ahead Thirty-Minute Operating Reserve ("GCR30") price.[152] While the Impact Assessment assumes that resources selling this product are paid the RER240 price (the lower bound), it also finds that the upper bound of the RER90 price would only be slightly higher, on average. More specifically, it estimates the average price for GCR30 to be between zero and nine percent higher than the RER240 price among the Winter Central Cases,[153] and equal to the RER240 price across both Non-Winter Central Cases.[154] As a result, if the Impact Assessment model included an additional constraint for total 90-minute reserves, it would show—at most—only a very modest increase in option payments in the winter

151 NESCOE Protest at 41.

152 *See* ESI White Paper at 168-75. This is an economic consequence of the price cascading of the GCR and RER products; in particular, Table 7-4 shows (mathematically) that the RER90 clearing price is always between the RER240 clearing price and the GCR30 clearing price.

153 Impact Assessment at 49 Table 9.

154 Impact Assessment at 80 Table 31.

cases, and no change in the non-winter cases. In other words, NESCOE's critique is, in fact, inconsistent with the data presented in the Impact Assessment.

Second, NESCOE asserts that "[t]o the extent [that] the analysis has overestimated the assumed fuel inventory management response to [the Energy Security Improvements], the costs to consumers may be understated by tens to hundreds of millions of dollars per winter."[155] While NESCOE is correct that increases in fuel inventories will generally reduce costs to consumers,[156] it fails to offer any analysis or evidence to suggest that the model actually overstates the likely fuel response.

In fact, if anything, NESCOE's assertions would appear to support the contrary conclusion. In particular, as noted previously, NESCOE argues that the Energy Security Improvements produce a "disproportionate level of incentives" to procure fuel,[157] and that "ESI's financial incentives are excessive."[158] If taken as true (though they are not) these assertions would not indicate that supplier incentives to procure fuel are weaker than is assumed in the Impact Assessment. If anything, they appear more consistent with the expectation that the Impact Assessment would *understate* the quantity of incremental fuel that would be procured under the Energy Security Improvements. In that light, one would expect the additional fuel to reduce consumer costs, and the Impact Assessment would therefore *overstate* the costs of the market design changes—directly contrary to NESCOE's claim.

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155 NESCOE Protest at 42.

156 As noted in the Impact Assessment, "an increase in energy inventory under ESI would be expected to reduce [locational marginal prices ("LMPs")], all else equal, which will tend to reduce compensation for DA energy provided." Impact Assessment at 48 (emphasis omitted).

157 NESCOE Protest at 5.

158 NESCOE Protest at 40.

Third, NESCOE highlights several other features of the Impact Assessment's model—its exclusion of transmission constraints;[159] its simplified treatment of certain types of resources without inventories (such as renewables and imports);[160] the fact that the model solves for hourly, rather than five-minute, intervals;[161] and its exclusion of unit-specific environmental permit limitations—and asserts that these are likely to lead the assessment to "understate the [Energy Security Improvements'] actual costs."[162] Each of these model simplifications was necessary to complete the analysis in a timely manner within a constrained compliance schedule, to the benefit of stakeholders' review.

More importantly, NESCOE provides no support for its assertion that these simplifications result in the understatement, and not the overstatement, of consumer costs. It also seems to overlook that the Impact Assessment provides a comparison of costs under the current market rules and with the Energy Security Improvements in place. In that context, there is no reason to expect that the effect of the simplifications NESCOE identifies would be different *between* those two scenarios. And, if a particular assumption were to change estimated consumer costs by the same dollar amount under both the "with ESI" and "without ESI" results, the modeled effect of the Energy Security Improvements would be zero. NESCOE's failure to present any evidence to the contrary makes its argument untenable.

Finally, NESCOE ignores the fact that the Impact Assessment focuses on how the Energy Security Improvements affect consumer costs in the *energy and ancillary service markets*; it does not consider how the market enhancements may affect other market outcomes. However, as the

159 NESCOE Protest at 41.

160 NESCOE Protest at 41-42.

161 NESCOE Protest at 42.

162 NESCOE Protest at 41-43.

External Market Monitor points out, if the increased revenue that suppliers receive in the energy and ancillary service markets reduce the "missing money" that they must recover via the capacity market, then that increased revenue will tend to reduce capacity prices and the corresponding capacity costs to consumers.[163] This would make the Energy Security Improvements' effect on total consumer costs lower (less positive) than estimated in the Impact Assessment.

3. NEPOOL's Witness, Mr. Griffiths' Misconstrues the Impact Assessment's Analysis with Respect To the Market Efficiency Benefits of RER in Non-Winter Months and More Generally Misunderstands the Impact Assessment's Production Cost Analysis

While NEPOOL and other intervenors concentrate much of their attention on the Impact Assessment's purported failure to demonstrate a reliability need for RER in non-winter months—points the ISO refutes below in Section III.C.4—NEPOOL's witness Mr. Griffiths also makes a number of assertions regarding the Impact Assessment's findings on the market efficiency benefits of the Energy Security Improvements. He first asserts that, based on the Impact Assessment's results, RER offers no market efficiency benefits in non-winter months,[164] and then goes on to critique the Impact Assessment's methodology for assessing market efficiency.[165]

While those assertions of its witness are largely ignored in NEPOOL's protest, it is nevertheless important to remove the confusion they may cause. Mr. Griffiths' arguments are unsound because he misconstrues the Impact Assessment's modeling, ignores key parts of the Impact Assessment's analysis, and fails to account for certain principles of production cost logic.

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163 EMM Comments at 9-10 ("The actual net impact on consumer costs from the ESI proposal . . . is likely smaller than shown in the [Impact Assessment] because increases in day-ahead and real-time market revenues to generators tend to lower capacity procurement costs by reducing the revenue that generators must recoup in the capacity market to remain in service or enter the market.").

164 Griffiths Affidavit at 19.

165 Griffiths Affidavit at 19-20.

Mr. Griffiths' first points to the analyses in the Impact Assessment that show the Energy Security Improvements are expected to improve efficiency and lower production costs under stressed winter conditions. From this assessment, he draws the sweeping conclusion that "[b]ecause the identified efficiency benefits are winter only, eliminating RER in the non-winter months will do nothing to reduce possible efficiency gains."[166] He further concludes that "from the standpoint of market efficiency, the Analysis Group results imply that the entire ESI design could be eliminated in non-winter months with no ill-effect on production costs."[167]

This reasoning is unsound. At the most basic level, the fact that the Impact Assessment demonstrates efficiency gains from the Energy Security Improvements through an analysis of its impacts in the winter months implies absolutely nothing about the effects on production costs outside of winter. Further, in a pattern that Mr. Griffiths repeats throughout his affidavit, he ignores (and thus does not refute) the Impact Assessment's *actual* analysis of the expected effects of the Energy Security Improvements during non-winter months. The Impact Assessment explains that production cost impacts were not modeled for non-winter months because the Analysis Group's modeling assumes that "shifts in fuel consumption between [current market rules] and ESI cases do not occur in the non-winter month analyses."[168] It goes on to explain that, while the model does not attempt to *quantify* production cost impacts in the non-winter months, one cannot conclude that the Energy Security Improvements would have no effect:

> While we do not quantify these effects, we expect that ESI would create reliability benefits and reductions in production costs during non-winter months, as well as during winter months. Production costs would be expected to fall through the more orderly procurement of reserves in the

166 Griffiths Affidavit at 19.

167 Griffiths Affidavit at 19. Notably, NEPOOL does not note or cite Mr. Griffiths' conclusion, perhaps because it is entirely inconsistent with, and thus fails to provide support for, NEPOOL's alternative proposal.

168 Impact Assessment at 78.

> day-ahead market. Reliability benefits would be expected from increasing the supply of energy in real-time to mitigate unanticipated contingencies or deviations between forecast and realized load.[169]

Mr. Griffiths simply chooses to ignore the Impact Assessment's actual scope of analysis in asserting that "eliminating RER in the non-winter months will do nothing to reduce possible efficiency gains."[170] He provides no independent support for this assertion, and for the reasons explained here, the Impact Assessment does not fill that void.

Mr. Griffiths goes on to assert that the "Analysis Group is measuring market efficiency from the perspective of producers (*i.e.*, production costs), rather than from the perspective of society writ large (*e.g.*, maximizing social surplus or reducing dead-weight loss)."[171] Mr. Griffiths is correct that the Impact Assessment evaluates the efficiency effects of the Energy Security Improvements based on how it changes total production costs. However, contrary to Mr. Griffiths' implication, the Analysis Group did not employ this approach to prioritize producer surplus over consumer surplus. Rather, this is a standard approach to measuring efficiency in markets with vertical (price insensitive) demand, as is the case (generally) in real-time in wholesale electricity markets. In such markets, the solution that minimizes total production costs also maximizes social surplus (that is, the sum of producer surplus and consumer surplus). Hence, despite Mr. Griffiths' indications to the contrary, the Impact Assessment's use of total production cost changes to evaluate efficiency impacts is entirely consistent with evaluating "market efficiency . . . from the perspective of society writ large,"[172] as Mr. Griffiths seeks.

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169 Impact Assessment at 79 (footnote omitted).

170 Griffiths Affidavit at 19.

171 Griffiths Affidavit at 19.

172 Griffiths Affidavit at 19.

Finally, Mr. Griffiths asserts that the "Analysis Group's formulation of efficiency . . . is counter-intuitive at best, namely that 'market efficiency' never decreases as ISO-NE buys more and more ESI options."[173] This assertion is incorrect, as demonstrated in the Infrequently Stressed Conditions Winter Central Case, where the procurement of day-ahead energy call options is estimated to increase total production costs by $7.5 million.[174] This result reflects the fact that the analysis considers two distinct factors when assessing the design's impact on total production costs: (i) additional fuel will reduce energy production costs, and (ii) additional fuel will increase fuel inventory costs. In his assessment, Mr. Griffiths appears to ignore the second of these two factors. Therefore, Mr. Griffiths' suggestion that the Impact Assessment provides flawed efficiency estimates is without merit.

4. The Impact Assessment Does Not Support Protesters' Points Regarding the Purported Absence of Energy Security Improvements' Reliability Benefits

Various protesters argue that the ISO has failed to demonstrate that the Energy Security Improvements will help to improve system reliability. NEPOOL's witness Mr. Griffiths, in a point frequently recycled in others' protests, argues that the ISO has failed to demonstrate the need for RER in non-winter months. Mr. Griffiths' argument is based on both historical reserve deficiency data that he presents, as well as data from the Impact Assessment, which, he says, "suggests that . . . entirely eliminating RER, including load forecast error ("LFE"), in the non-winter months, will not affect system reliability."[175] Later—pointing to the same data from the Impact Assessment—he asserts the more sweeping conclusion that, "given the general lack of reserve deficiencies under

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173 Griffiths Affidavit at 20.

174 Recall that in the two Winter Central Cases representing more stressed system conditions, the Impact Assessment estimates that the Energy Security Improvements would reduce total production costs by between $19 and $36 million.

175 Griffiths Affidavit at 13.

[the Energy Security Improvements] or current market rules, as modeled by Analysis Group, we can infer from these results that the system can meet its reliability obligations with or without [the Energy Security Improvements] as a whole."[176]

Mr. Griffiths' assertion is the lynchpin for a number of other, seemingly inconsistent conclusions about the efficacy of the Energy Security Improvements. Citing to Mr. Griffiths' affidavit on these points, NEPOOL argues that the Impact Assessment fails to demonstrate that RER provides a reliability benefit outside of the winter months;[177] NESCOE argues that the Impact Assessment fails to demonstrate that any of the Day-Ahead Ancillary Services provide a reliability benefit outside of the winter months;[178] and MPUC argues that the same exact data fails to demonstrate a need for any of the Day-Ahead Ancillary Services in *any* months.[179]

The obvious question for the Commission is, "Which of these claims is correct?" The answer is, "None of them." The reason none are correct is that, as Mr. Griffiths himself acknowledges,[180] the Impact Assessment is not, and was never intended to be, an assessment of

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176 Griffiths Affidavit at 13.

177 Citing to Mr. Griffiths' affidavit, the NEPOOL Comments asserts that "[t]he analysis presented during the stakeholder process (and later in the [Compliance] Filing) failed to show any fuel security related need for RER in non-winter months. . . . A forward-looking analysis supports a similar conclusion. As stated in the Griffiths Affidavit, the Analysis Group's Impact Assessment contains outcome scenarios that demonstrate that eliminating RER in the non-winter months (and eliminating LFE year-round) will not affect system reliability." NEPOOL Comments at 19 (footnote omitted).

178 NESCOE Protest at 34-35 ("[Mr. Griffiths] testifies that, 'given the general lack of reserve deficiencies under ESI or current market rules, as modeled [in the Impact Assessment], we can infer from these results that the system can meet its reliability obligations with or without ESI as a whole.'" (second alteration in original)).

179 "Under the Impact Analysis provided by ISO-NE to support its ESI Proposal, the reliability problem that was the basis of the Mystic units retention, appears to have disappeared *under current market rules*, as pointed out by Mr. Griffiths in this testimony in support of the [NEPOOL Comments]." MPUC Protest at 4.

180 Griffiths Affidavit at 13 ("[I]t is important to note that the Impact Assessment is based on an *economic* model not a *reliability* model . . . .").

how the Energy Security Improvements may affect the frequency of (adverse) reliability events in the future. Representatives from the ISO and the Analysis Group were very clear on this point throughout stakeholder discussions about the Energy Security Improvements. The Impact Assessment also explains carefully the limited information it provides about operational and reliability effects:

> [O]ur production cost model is not designed to provide a thorough or complete analysis of the impact of ESI on potential reliability outcomes. Such impacts are typically performed through other modeling techniques and may reflect different assumptions about a variety of factors that would impact reliability and security outcomes. The model does not consider a complex set of contingency events, does not account for transmission topology, and does not consider plant commitment, dispatch and other intertemporal limits to plant operations (e.g., minimum run time and minimum down time). Due to the combined impact of these factors, we would expect our model to understate potential reliability risks associated with any market simulation under both the [current market rules] and ESI runs. As a result, to the extent that the incremental energy inventories that ESI may incent improve the region's reliability, these benefits are likely to be understated.[181]

Accordingly, the Impact Assessment does not provide a rigorous analysis of the reliability implications of the Energy Security Improvements. Nevertheless, the Impact Assessment offers the central conclusion—essentially unchallenged by the protesters—that its "results are consistent with improvements in reliability and improved energy security under [the Energy Security Improvements] as compared to current market rules."[182]

The Impact Assessment also explains why the protesters misplace their heavy reliance on reserve deficiency data. The Impact Assessment's authors were explicit in explaining that "our analysis is not designed to provide a thorough or complete analysis of system reliability and may

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[181] Impact Assessment at 75.

[182] Impact Assessment at 77.

make assumptions that lead it to overstate system reliability. . . . Thus, we caution against drawing inferences about the current or [future] reliability of the system from our results."[183] Moreover, the Impact Assessment does not evaluate any effects of the Energy Security Improvements on reliability in the non-winter months, though it clearly states that this modeling decision should not be construed to suggest that the proposal will not improve system reliability.[184]

In summary, NEPOOL, NESCOE, and other protesters base their claims regarding the Energy Security Improvements' purported absence of reliability benefits on inaccurate, and arguably misleading, characterizations and interpretations of the Impact Assessment.

This is not to say, of course, that the Impact Assessment provides no useful information about how the Energy Security Improvements will improve system reliability. Indeed, Section IV.A.7 of the Impact Assessment states that the Energy Security Improvements would improve system reliability as measured by a number of metrics relating to available fuel oil, one of the economic decisions the Impact Assessment was intended to evaluate. These metrics indicate improvements in fuel inventories under the Energy Security Improvements relative either to current market rules or to the NEPOOL alternative.[185] However, as explained, the study does not,

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183 Impact Assessment at 77.

184 *See, e.g.*, Impact Assessment at 79 ("While we do not quantify these effects, we expect that ESI would create reliability benefits and reductions in production costs during non-winter months, as well as during winter months. . . . Reliability benefits would be expected from increasing the supply of energy in real-time to mitigate unanticipated contingencies or deviations between forecast and realized load. . . . Further, changes in the composition of electric and natural gas infrastructure in the New England (and surrounding) region, including changes in resource mix in response to state incentives for renewable resources, could create market conditions in which energy security concerns become more pressing in non-winter months than at present. Under these circumstances, we would expect the reliability benefits that ESI would provide during non-winter months to increase beyond its ability to address unanticipated contingencies.").

185 *See* Impact Assessment, Sections IV.A.1(c), IV.A.1(d).

and has never purported to, provide a comprehensive assessment of the Energy Security Improvements' effects on reliability.

To be clear, these limitations relating to assessing reliability outcomes are not a deficiency of the Impact Assessment model. While the Impact Assessment provides information on the likely effects of the Energy Security Improvements on both market and reliability outcomes, its primary focus is evaluating the improvements' effect on markets and resource incentives. The ISO and Analysis Group clearly explained this prioritization to stakeholders and in the Compliance Filing.[186]

There is an inherent tension between empirical analysis that is conducted with the primary purpose of evaluating market revenues and costs, and that which instead focuses on reliability outcomes in real-time. Analyses of market outcomes typically focuses on scenarios and conditions that are more likely to occur, as they generally play a more significant role in determining how a design will impact consumer costs, market efficiency, and resource incentives over the course of a year. Analyses of reliability outcomes generally employ different, engineering-oriented models of power system operations. They focus less on "normal" system conditions, and instead consider stressed and extreme conditions; it is in those conditions that the region may experience adverse reliability events such as load shedding or reserve deficiencies. Therefore, it is appropriate that the Impact Assessment focuses on more typical system conditions and scenarios, and places less emphasis on the types of extreme system events that are more likely to produce adverse reliability events in real-time.

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186 *See* Impact Assessment at 10 (stating that the Impact Assessment's central aim is to provide "information on changes to customer payments and production costs; changes to incentives to market participants to take steps to improve their ability to supply energy in real-time; changes to fuel system operational outcomes that have implications for system reliability; and other expected energy market impacts").

Consistent with these observations, several assumptions in the model focus on "average" or "typical" conditions. Thus, for example, as explained in the Impact Assessment, the production cost model assumes that energy suppliers with fuel are able to deliver up to their "levelized" forced-outage adjusted maximum output (sometimes called a unit's "derated" capability, a deterministic modeling simplification that does not model the actual random occurrence of generator outages).[187] This assumption produces a constant quantity of available energy supply (up to fuel limits) that is consistent with the average capability we expect from each generator.[188] As explained above, this approach helps to achieve the objective of assessing the impact of the proposed market design on consumer costs by focusing on scenarios that are more likely to occur (or the "average" scenario). In practice, however, the system's total available energy supply could be volatile, with potentially large abrupt decreases if concurrent (forced) outages occur during stressed periods, *e.g.*, if several large generators become unexpectedly unavailable. These periods with negative supply shocks, which are not captured in the production cost model, are more likely to produce reserve deficiencies and other adverse reliability events. As explained above, a reliability-focused operational analysis—more so than a production cost-based economic analysis—would focus on these uncommon but operationally-important events, and in so doing would likely provide greater and more accurate estimates of reserve deficiencies.

For these reasons, protesters' focus on the limited number of reserve deficiencies predicted by the Impact Assessment's model is misplaced. Under the modeled scenario in which supply is

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187 Impact Assessment at 19-20, 42-43.

188 Moreover, the Impact Assessment assumes that the system has more capacity than the Installed Capacity Requirement, which is consistent with the clearing of capacity in recent Forward Capacity Auctions. However, if the model instead assumed a lower quantity of capacity, it would have likely predicted less reliable outcomes under both current market rules and the Energy Security Improvements.

decreased by 1,364 megawatts ("MW") due to a loss of imports for five days during stressed conditions, the Impact Assessment shows three hours of reserve deficiencies under the current market rules (which do not occur with the Energy Security Improvements in place).[189] A model that considered resource outages in a more granular manner—taking into consideration more extreme conditions that test the limits of the system's capabilities—would provide a more accurate and nuanced representation of reserve deficiencies under the current market rules and under the Energy Security Improvements. But that was expressly not the purpose of the Impact Assessment. Therefore, conclusions about the frequency or extent of reserve deficiencies are not well informed by the Impact Assessment's market-based (rather than power system engineering-based) modeling approach. It is therefore not reasonable to draw comprehensive conclusions about the reliability benefits of the Energy Security Improvements from the Impact Assessment's reserve deficiency results.

Protesters' narrow, misplaced focus on the Impact Assessment's reserve deficiency numbers also diverts attention from the study's actual task: evaluating the region's energy security concerns and identifying the gaps in the ISO's existing markets, then designing a market solution that will address those gaps and resolve the underlying issues. In focusing on the Impact Assessment to assess the reliability benefits of the Energy Security Improvements, protesters ignore the Commission's prior finding that there is, indeed, an energy security concern to be addressed in New England,[190] the directive of the Commission to resolve the region's energy

189 Impact Assessment at 89.

190 July 2 Order at PP 49, 55 (finding that the OFSA and related reliability studies demonstrate "specific regional fuel security concerns" and expressing its "concern[] that ISO-NE's Tariff does not sufficiently address the fuel security issues currently facing the region").

security issues using long-term market mechanisms,[191] and the manner in which the ISO has gone about evaluating the energy security concern and meeting the Commission's directive.[192] In short, focusing on the Impact Assessment's "three hours of reserve deficiencies,"[193] harps on a data point that, as explained above, is not an accurate or complete reflection of the energy security concerns, and therefore is not of value for adjudicating the reliability benefits of these Energy Security Improvements.

5. New England's Rapidly Changing Electric System Undercuts NEPOOL's Myopic Focus on Historical Reserve Deficiencies.

In addition to its misplaced reliance on the Impact Assessment to draw conclusions about the reliability benefits of the Energy Security Improvements, NEPOOL argues that "the analyses of historical reserve deficiencies showed that fuel security is *not* a demonstrated concern during non-winter months."[194] To support this assertion, NEPOOL witness Mr. Griffiths tabulates the real-time Operating Reserve deficiencies in New England over 2010-2019, and concludes that "the results imply that ISO-NE can avoid reserve deficiencies 99.96% of the time, even in winter, and that it does not have persistent problems recovering reserves."[195] He further asserts "that RER would offer a form of expensive insurance to ameliorate a risk that is immaterial in the first place."[196]

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191 July 2 Order at PP 53, 55 (reaffirming its "support for market solutions as the most efficient means to provide reliable electric service to New England consumers at just and reasonable rates," and directing the ISO to submit a long-term market solution "reflecting improvements to its market design to better address regional fuel security concerns").

192 See *supra* Section III.A.2 of this answer for a discussion of the in-depth analysis of the energy security concern the ISO has undertaken to inform the development of the Energy Security Improvements.

193 *See* Impact Assessment at 89.

194 NEPOOL Comments at 19.

195 Griffiths Affidavit at 17

196 Griffiths Affidavit at 17.

NEPOOL's reliance on historical reserve deficiency data to critique the Energy Security Improvements and to support the NEPOOL proposal is problematic for several reasons, each of which alone justifies rejecting its arguments.

First, historical reserve deficiency data is irrelevant to the issue at hand, *i.e.*, how to reform the wholesale markets to more completely and accurately price the value of the energy and reserves necessary to ensure New England's energy security. That problem will not correct itself in the future if ignored, and in the past has forced the ISO to take out-of-market actions to preserve the reliability of the system and successfully prevent such reserve deficiencies.[197]

Therefore, the fact that the ISO has, historically, been able to avoid reserve deficiencies by relying on unpriced, out-of-market actions and tools as part of its daily operating plan is not a convincing counter to the argument—or, more importantly, to the Commission's *directive*—that the ISO should address the region's energy security through a long-term *market* solution. That solution is, and must be, forward-looking:

> Generation contingency reserve and replacement energy reserve are inherently needed to address *unanticipated* system events – and, as a result, the resources the ISO relies upon in its next-day operating plan for these capabilities typically have no reason to *expect* to run (or, for those with a day-ahead energy schedule, no reason to expect to run above, or for longer than, that day-ahead schedule). . . . [F]or that reason and others, the resources that provide these essential reliability services presently face inefficiently low market incentives to arrange energy supplies in advance of the operating day – even when such arrangements would be a cost-effective means to reduce reliability risks from society's perspective. As a result, the ISO is

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197 *See* December 3 Order, Glick Concurring at 2 ("ISO-NE's ultimate approach to fuel security will need to be more sophisticated . . . As Potomac Economic explains in its comments, ISO-NE's apparent need to retain units for fuel-security is the result of a market failure. Units truly needed for fuel-security would be economic if they were fully compensated for the services they provide. The solution to that failure must be to reform the markets so that the services they procure reflect the region's needs." (footnote omitted)); *see also id.* at P 96 ("We agree with the dissent that the value of these resources must be accurately reflected in the market to address fuel security issues in the long-term . . . a market-based approach is the best way to achieve that objective."); *accord* ESI White Paper, Section 7.1.

> increasingly concerned that if the system experiences unexpectedly high demand, an unanticipated, extended supply loss, or both – particularly if it occurs when renewable resources' production capability is low (when the sun is down or the winds are calm) – the region may not have the energy needed to reliably fill the ensuing energy gap.[198]

In short, circumscribing the Energy Security Improvements on the basis of historical reserve deficiency data would ignore "the central energy security challenge facing New England's electricity markets."[199]

Second, the historical data is equally irrelevant to addressing the *prospective* issue of ensuring energy security in the face of significant, foreseeable changes to the New England resource mix that will occur over the coming years. This is a central purpose of the Energy Security Improvements. As the ISO explained repeatedly throughout the recent stakeholder process, while "the ISO has consistently been able to rely on the capabilities of resources operating above and beyond their day-ahead schedules to provide the essential reliability services that cover the various energy gaps" that the DA Ancillary Services address, "circumstances are changing quickly:"[200]

> Retirements of legacy resources, the burgeoning of renewable resources, and continued gas pipeline constraints will leave the region reliant on 'just-in-time' resources in an unprecedented manner. And this evolving resource mix, with no emphasis on advance fuel arrangements, cannot be relied on in the same way to provide these essential reliability services. The markets must be

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198 ESI White Paper at 154.

199 *See* ESI White Paper at 32 ("At the opposite end of the spectrum, the situation can be quite different for the resources that the ISO relies upon to manage uncertainty – that is, for the essential reliability services discussed in Section 2.6.1. These resources that provide these services are most likely to face inefficiently low market incentives to invest in the energy supply arrangements necessary to provide these capabilities reliably – even when such arrangements would be a cost-effective means to reduce reliability risks. That is the central energy security challenge facing New England's electricity markets.").

200 ESI White Paper at 209.

> expanded now to compensate for these services, to ensure they are available as needed.
>
> The Energy Security Improvements detailed in this paper will accomplish this. In a fully market-based and transparent manner, these essential reliability services will be procured and compensated in the day-ahead market. . . . [T]he Energy Security Improvements create a proper market mechanism for essential services that are needed and procured today, but that are currently procured inefficiently and outside of the markets.[201]

Third, Mr. Griffiths' sole focus on reserve deficiencies in his assessment of the need for RER in non-winter months entirely mischaracterizes the purpose for replacement energy. In fact, replacement energy serves a broader purpose of enabling the system, as part of its next-day Operating Plan, to manage uncertainties in both supply and demand that arise during the operating day—whether or not that operating day's unforeseen events are associated with generation contingencies.[202] Those unforeseen events occur during the summer and winter, and occur due to unanticipated supply (*e.g.*, generator contingencies) and demand events (*e.g.*, load forecast error). Therefore, even if one assumed that the ISO's historical success at maintaining sufficient replacement energy was relevant to determining the need for a market RER product, focusing exclusively on reserve deficiency outcomes would miss a significant number of circumstances where replacement energy is necessary to manage uncertainties in supply and demand.

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201 ESI White Paper at 209; *see also Winter Energy Security Improvements*, ISO New England Inc., 2-3 (Sept. 6, 2018), https://www.iso-ne.com/static-assets/documents/2018/09/a9_iso_memo_winter_energy_security_improvements.pdf (memorandum from the ISO to the NEPOOL Markets Committee); *Energy Security Improvements: How Market Improvements Address Fuel Security*, ISO New England Inc., 2-3 (Dec. 4, 2019), https://www.iso-ne.com/static-assets/documents/2019/12/a6_c_i_memo_re_how_market_improvements_address_fuel_security.pdf (memorandum from the ISO to the NEPOOL Markets Committee).

202 *See* Compliance Filing at 16-19; Brandien Testimony at 4, 17-18; *see also* PJM Reserves Market Order at P 3.

In summary, while the historical data indicate what the ISO has readily acknowledged—that there has been no loss of load due to fuel security challenges to date—for the reasons explained above, it does not logically follow that there is no reliability issue to be resolved. Fundamentally, the ISO's historical success at "keeping the lights on" throughout stressed system conditions under the current market design reflects the ISO's ability to "manage through" conditions when energy supplies are limited using out-of-market actions and the capabilities of the system's remaining energy-secure resources. But it ignores entirely the failure to price the value of these resources in the markets—in contravention of the Commission's clear guidance.[203] It also disregards the vast changes in the resource mix that necessitate the increased focus on advance fuel arrangements that the Energy Security Improvements will provide.

The Energy Security Improvements reflect a balanced, flexible market design that will improve the region's energy security not only under the current resource mix, but also in the future as the system transitions to an even higher concentration of "just-in-time" resources. The Impact Assessment demonstrates that the Energy Security Improvements create strong financial incentives for resources to maintain more secure energy supplies and improve their ability to deliver energy in real-time, relative to the current market rules, under a broad range of scenarios representing reasonably likely New England conditions. No party to this proceeding seriously challenges that central conclusion of the Impact Assessment.

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[203] *See* July 2 Order at P 59; Order No. 2000 at 422 ("The RTO must promote the development of competitive markets for ancillary services whenever feasible."); PJM Reserves Market Order at P 83 ("We agree with PJM that the existing market design is consistently failing to produce prices reflecting the marginal cost of procuring necessary reserves. The Commission has previously stated the importance of ensuring accurate, transparent market prices when possible. . . . We continue to believe that market clearing prices should reasonably reflect the marginal cost of providing necessary reserves . . ." (footnotes omitted)).

As the ISO has demonstrated, the assertions that economic incentives provided by the Energy Security Improvements are "excessive" misconstrue the Impact Assessment's results and are based on a faulty characterization of competitive market outcomes. In addition, protesters' myriad assertions that the Impact Assessment's assumptions will understate consumer costs are vague, unsubstantiated, and unfounded.

Upon close inspection, protesters' arguments regarding the purported lack of reliability benefits with the Energy Security Improvements are flawed and unpersuasive. These arguments—which all rely on the same faulty assertions about the Impact Assessment's "findings" with respect to reserve deficiencies—cavalierly disregard the Impact Assessment's economic purpose, its reliability limitations, and its authors' stated caveats that it not be relied upon for the conclusions protesters cling to. Furthermore, NEPOOL provides no economic theory or principles of sound market design the support the exclusion of RER in the non-winter months.

IV. ANSWER: THE JUST AND REASONABLE RATE

A. Commission Acceptance of the Energy Security Improvements, Subject to Further Compliance Regarding Market Power Mitigation, is Just and Reasonable

NESCOE and Public Systems contend the Commission cannot accept the ISO's Energy Security Improvements absent new rules to address the mitigation of potential market power. Citing the MISO Ancillary Services Market Order,[204] NESCOE argues that "[w]ithout a market power assessment and [a] mitigation proposal, the Commission cannot evaluate whether the ESI Proposal is just and reasonable."[205] NESCOE further alleges that the ISO's Compliance Filing

204 *Midwest Indep. Transmission Sys. Operator*, 119 FERC ¶ 61,311, *reh'g denied*, 120 FERC ¶ 61,202 (2007) ("MISO Ancillary Services Market Order").

205 NESCOE Protest at 29.

"provides no information on how it intends to restrain the exercise of market power."[206] Relying on the same precedent, Public Systems also contends that the ISO's filing is incomplete without a market power analysis and associated mitigation mechanism, and alleges that, absent those rules, the proposal "potentially exposes consumers to the exercise of unmitigated market power in the newly created markets."[207] The Commission should dismiss protesters' assertions concerning the potential exercise of market power as unsupported conjectures, and should accept the ISO's Compliance Filing subject to further compliance concerning a market power assessment and (as needed) revisions to its market mitigation rules, as the ISO requested.

1. The Compliance Filing Expressly Requests the Commission's Conditional Acceptance of the Energy Security Improvements, Inapposite of the Precedent Cited by NESCOE and Public Systems

In its Compliance Filing, the ISO recognized that a market power assessment is a prudent and necessary step in the development of a co-optimized day-ahead energy and ancillary services market, as proposed in the Energy Security Improvements.[208] Accordingly, the ISO's filing expressly requests the Commission's acceptance of the improvements subject to an ISO filing concerning day-ahead mitigation, as supported by a market power assessment, by the fourth quarter of 2021, and the Commission's acceptance of that latter filing. The ISO's Compliance Filing also summarizes for the Commission the ISO's work plan to fulfill that requirement; including time for robust stakeholder review. This work will enable appropriate market power mitigation rules, tailored to address any concerns identified by the market power assessment, to be in place for the implementation of the improvements on June 1, 2024, as proposed.

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206 NESCOE Protest at 32.

207 Public Systems Protest at 4; *see id.* at 21.

208 *See* Compliance Filing at 70.

Commission acceptance of the ISO's Energy Security Improvements, subject to a subsequent compliance filing presenting any appropriate revisions to the ISO's mitigation rules, is just and reasonable. Certain protesters' assertions that the Commission is precluded from such conditional acceptance are inapt, and their reliance on the MISO Ancillary Services Market Order is misplaced.

The Commission has previously accepted Tariff revisions subject to further compliance, and is not precluded from taking a similar approach here.[209] In fact, in at least one of the cases on which Public Systems rely, rather than rejecting the utilities' proposed tariffs, the Commission accepted them subject to conditions.[210] That is exactly what the ISO proposes here.

Furthermore, the procedural posture of the instant proceeding and the ISO's request in its Compliance Filing set this matter apart from the precedent protesters cite.[211] First, the MISO Ancillary Services Market Order addressed tariff revisions filed by the Midwest Independent Transmission System Operator, Inc. (now Midcontinent Independent System Operator, Inc.) ("MISO"), pursuant to section 205 of the FPA to implement a day-ahead and real-time ancillary services market for operating reserves. MISO did not propose revisions to its existing mitigation structure, but proposed new reference levels and thresholds, and indicated that "these modest revisions will ensure that the mitigation measures appropriately address the potential for the

209 *See, e.g.*, *ISO New England Inc.*, 149 FERC ¶ 61,009 (2014) (directing further compliance related to compliance filing submitted pursuant to section 206 of the FPA).

210 *See Nev. Power Co.*, 153 FERC ¶ 61,206 (2015), *order on reh'g & clarification*, 155 FERC ¶ 61,186 (2016).

211 As a threshold matter, the authorities on which protesters primarily rely involved proposed tariffs submitted pursuant to FPA section 205, rather than compliance filings under FPA section 206. *See ISO New England Inc.*, 171 FERC ¶ 61,003 (2020); MISO Ancillary Services Market Order at P 1. The Commission's authority to condition its acceptance of FPA section 205 proposals is substantially different from its authority regarding remedies under FPA section 206. *See, e.g.*, *NRG Power Mktg., LLC v. FERC*, 862 F.3d 108, 114-117 (D.C. Cir. 2017).

exercise of market power in the proposed [ancillary services market]."[212] MISO's filing did not "include a market power analysis in support of its proposed [ancillary services market]."[213] Indeed, in response to concerns about the need for a competitive analysis, MISO stated that "the use of simultaneous co-optimization, coupled with market monitoring and mitigation procedures specifically designed to mitigate any potential exercise of market power, should result in additional competition in the [ancillary services market]."[214]

In contrast, the ISO has filed its Energy Security Improvements in response to a Commission directive pursuant to section 206 of the FPA. Unlike the proposal at issue in the MISO Ancillary Services Market Order, the ISO's Compliance Filing does not ask the Commission to make a determination regarding market power. Nor is the ISO (contrary to NESCOE's intimation) asking the Commission to presuppose that competition precludes the potential for market power, *sans* an assessment of potential market power. Instead, the ISO's Compliance Filing requests the Commission's *conditional* acceptance of the Energy Security Improvements, subject to the ISO's further filing concerning mitigation supported by a proper market power assessment, and the Commission's acceptance of that filing. Therefore, the instant proceeding and the ISO's proposal differ materially from the circumstances of the MISO Ancillary Services Market Order.

Second, as noted, the ISO's Compliance Filing is in response to the Commission's directive under FPA section 206 for the ISO to file Tariff revisions reflecting improvements to its market design within a constrained compliance schedule, whereas the MISO Ancillary Services Market

212 MISO Ancillary Services Market Order at P 11.

213 *Id*.

214 *See* MISO Ancillary Services Market Order at P 35.

Order and other proceedings protesters cite were initiated pursuant to section 205 of the statute. The Commission therefore faced a sixty-day deadline for action, as well as more limited legal authority, in those cases than is true here.[215] Moreover, throughout this proceeding, the ISO has been transparent about its market power assessment work plan (work that is presently underway), and has apprised stakeholders of those efforts.[216] Indeed, as the ISO's comments in response to NESCOE's extension request indicated:

> Before they are implemented, the new ancillary services require accompanying mitigation rules. The ISO could use the extension period to develop a conceptual approach to mitigation, which should improve stakeholder confidence in the design, but it is unlikely that the additional time could allow for a complete mitigation design that been fully vetted and is ready for filing. Traditionally, these rules require detailed modeling work.[217]

Under the constrained compliance schedule, the ISO focused on developing and reviewing with stakeholders the long-term, market-based solution directed by the Commission, though it also began the data-intensive market power assessment studies necessary to support any revisions to mitigation rules. The ISO's request for conditional acceptance of the Compliance Filing acknowledges that more the is necessary for the ISO to complete a market power assessment, to develop any appropriate revisions to its day-ahead market

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215 The Commission's authority to condition its acceptance of FPA section 205 proposals is substantially different from its authority regarding remedies under FPA section 206. *See, e.g.*, *NRG Power Mrkg., LLC v. FERC*, 862 F.3d 108, 114-117 (D.C. Cir. 2017).

216 *See Energy Security Improvements: Market Power Assessment Analysis Update*, ISO New England Inc. (Jan. 22, 2020), https://www.iso-ne.com/static-assets/documents/2020/01/a3_c_iso_memo_esi_market_power_assessment_update.pdf (ISO-NE memorandum to the NEPOOL Markets Committee); *Energy Security Improvements: Planned Scope of Mitigation-Related Work for Day-Ahead Ancillary Services*, ISO New England Inc. (Nov. 6, 2019), https://www.iso-ne.com/static-assets/documents/2019/11/a4_d_iso_memo_re_esi_mitigation_work.pdf (ISO-NE memorandum to the NEPOOL Markets Committee).

217 Comments of ISO New England Inc. on Motion for Extension of Time of the New England States Committee on Electricity, Docket No EL18-182-000, at 3 (Aug. 6, 2019).

mitigation rules and procedures, and to provide for robust stakeholder consideration of that work. There is nothing unreasonable or procedurally inappropriate about such flexibility in the remedy phase of this FPA section 206 proceeding.

Finally, there is ample time between the requested November 1, 2020 effective date of the ISO's proposed Tariff revisions and the June 1, 2024 implementation date of the Energy Security Improvements to complete the development and to implement appropriate market power mitigation procedures. Those measures therefore can be fully deployed when the co-optimized day-ahead energy and ancillary services market commences in June 2024.

However, as the ISO's work schedule shows,[218] a Commission order accepting the Energy Security Improvements by November 1, 2020 is *critical* to achieving implementation by June 2024. In addition, completing the market power assessment depends upon the co-optimized energy and ancillary services markets' design, as embodied in the Tariff provisions included in the Compliance Filing. A timely Commission determination on those rules is therefore essential to ensure that the market design is settled before the ISO finalizes its market power assessment studies, and that those efforts are not misplaced.

2. The Commission Should Reject, as Premature, Protesters' Conjectures About the Prospects of Effective Mitigation Measures

Certain protests express concerns about the likelihood that the ISO and its stakeholders will be able to develop effective mitigation measures to address any market power concerns in the proposed day-ahead energy and ancillary services market. These purposed concerns are premature. Proposed mitigation measure can be appropriately evaluated by the Commission only

218 *See* Compliance Filing at 68-74.

after the ISO (a) has conducted the aforementioned market power assessment, and (b) has submitted to the Commission the ISO's analysis and any appropriate revisions to the Day-Ahead Energy Market's mitigation rules.

Nonetheless, the strident exclamations in certain protests concerning market power warrant bringing to the Commission's attention certain countervailing facts and observations. For example, NESCOE's witness Mr. Wilson "doubt[s] that an effective [mitigation] approach can be devised, and expect[s] that the mitigation ultimately will be very loose and ineffective."[219] This claim is pure speculation. NESCOE's protest and the Wilson Testimony are devoid of any evidentiary support whatsoever. Moreover, they proffer no explanation of why the ISO, working with the Internal and External Market Monitors, supposedly will be incapable of developing effective mitigation measures in the day-ahead market if such measures are indicated by the market power analysis.

As the ISO's Compliance Filing indicates, the ISO is presently undertaking a market power assessment of the proposed co-optimized day-ahead energy and ancillary services markets.[220] To accurately assess the potential for market power, this assessment must evaluate what system conditions could allow suppliers to profitably withhold energy or ancillary services from the day-ahead market. Such analysis requires careful consideration of many factors, including how the day-ahead market's co-optimization can substitute (sometimes called "re-dispatch") to create additional ancillary service capability among competing resources, ownership concentration and suppliers' resource portfolios. Such analyses are necessarily empirical, and conclusions regarding the potential for market power cannot be persuasively established without data-intensive analyses.

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219 Wilson Testimony at 54.

220 *See* Compliance Filing at 69-71; *see also supra* note 216.

Accordingly, until more comprehensive information is available and submitted in this proceeding, it is premature to speculate about the degree to which the Energy Security Improvements introduce market power concerns. Protesters' premature anxieties concerning market power and the effectiveness of future mitigation measures offer no basis for reasoned decision-making, and thus deserve no weight, in the Commission's consideration of the ISO's proposal.

a. Claims that Co-Optimized Day-Ahead Energy and Ancillary Services Will Increase Market Power Are Unfounded

NESCOE's witness Mr. Wilson asserts that market power concerns tend to be most prevalent when "the total demand for [day-ahead] energy and [ancillary services] is high and approaches the total amount of capacity eligible to provide them, and it may be that the capacity of one or a few suppliers is needed for the total demand to be met."[221] He further testifies that, in his view, in such circumstances, "some suppliers may be able to physically or economically withhold capacity and profitably raise [day-ahead] energy and [ancillary services] prices above competitive levels" and leaps to the conclusion that "such market power would appear to be quite likely."[222] While the presence of market power may be possible in theory, that does not overcome Mr. Wilson's failure to offers any data or analysis to suggest that such conditions are likely to occur with the Energy Security Improvements.

In fact, the summary information presently available concerning supply and demand in the day-ahead market indicate NESCOE's concerns in this regard are misplaced. Specifically, the ISO documented in the Compliance Filing the total demand for day-ahead energy and the proposed ancillary services (combined), relative to the system's capacity to provide energy and these

221 Wilson Testimony at 44.

222 *Id*. at 44-45.

ancillary services, using hourly data from 2019.[223] The ISO stated, "these data indicate that the New England fleet's nominal ramping capabilities and capacity amply exceeds the amounts needed to simultaneously satisfy energy demand (as scheduled day-ahead) and to satisfy the new day-ahead ancillary service demand quantities."[224]

To be clear, that summary data is not dispositive with respect to the potential for market power under all possible market conditions. Nonetheless, it calls into question Mr. Wilson's subjective assertions that "ESI is relatively susceptible to market power"—assertions bereft of supporting analysis.[225] These discrepancies between the available data and the assertions of NESCOE's witness further support a Commission determination to disregard NESCOE's claims, and to evaluate matters of market power and mitigation when the ISO's market power assessment and mitigation proposal are presented to the Commission.

b. Assertions that Effective Mitigation Is Infeasible Are Not Credible, Contrary to the External Market Monitor's Conclusions, and Obfuscate Matters

NESCOE's witness Mr. Wilson further questions the capability of the ISO and its Internal and External Market Monitors to effectively mitigate any potential market power that may arise in the proposed day-ahead energy and ancillary services market. Because the day-ahead ancillary services settle as an energy option, Mr. Wilson states, "I doubt that an effective approach can be devised, and expect that the mitigation ultimately will be very loose and ineffective."[226] This claim overlooks the similarities between the energy option settlement and the long-standing day-ahead

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223 This analysis is discussed at length in Section 7.3 of the ESI White Paper. *See* ESI White Paper at 163 Figure 7-3.

224 ESI White Paper at 174.

225 Wilson Testimony at 47.

226 Wilson Testimony at 54.

energy settlements, and that the latter have been subject to effective mitigation procedures, contributing to consistently competitive market outcomes in New England, for many years.[227]

Even putting aside that the details of potential mitigation rules are properly determined and evaluated at a later date, NESCOE and its witness merely confuse matters. For example, Mr. Wilson rests his conclusion regarding the efficacy of possible mitigation, in substantive part, on the observation that "a resource offering to provide the Energy Option is exposed to a financial settlement based on the actual [real-time] energy price, however high it might rise."[228] However, a sale of day-ahead energy—that is, the very product transacted daily by hundreds of supply resources in New England for nearly twenty years—is also settled "based on the actual [real-time] energy price, however high it might rise."[229] Mr. Wilson's assertion that this property renders mitigation not "feasible"[230] flies in the face of many years of experience mitigating offers that are settled based on the actual real-time energy price. The very same factors that enter in the determination of a competitive offer price for the energy option also enter into the determination of a competitive offer price for day-ahead energy by the same resource, except that the risk (and therefore the price) associated with an energy option offer is less.[231] NESCOE's disregard for these similarities obfuscates, rather than to clarifies, the potential for effective mitigation.

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227 *See, e.g.*, *2019 Annual Markets Report*, ISO New England Inc. Internal Market Monitor, 113-14 (June 9, 2020), https://www.iso-ne.com/static-assets/documents/2020/05/2019-annual-markets-report.pdf (discussing the New England market's relatively low concentration ratios among suppliers and load-serving entities).

228 Wilson Testimony at 49.

229 *Id.*; *see, e.g.*, ESI White Paper at 67-69 (Section 4.3, examples (i) and (j)).

230 *See* Wilson Testimony at 52.

231 A resource's settlement charges (*i.e.*, risk of loss) if it does not perform in real time is always greater if it sells energy day-ahead than if it sells an energy call option day-ahead; its loss is reduced by the strike price under the latter, but not under the former.

In contrast, the External Market Monitor offers the Commission a clearer perspective. In a memorandum to stakeholders earlier this year, the External Market Monitor stated: "We conclude that for the most part, the day-ahead ancillary services products are very similar to such products procured by other RTOs."[232] On the basis of its experience applying mitigation to co-optimized energy and ancillary service markets in other regions, and its review of the ISO's proposed market design, the External Market Monitor concluded that mitigation would not only be entirely feasible, but also that there is no reason to conclude it cannot be done effectively. With regard to one such approach, which the External Market Monitor explains has been used successfully elsewhere, it wrote that "RTOs have successfully utilized the conduct and impact mitigation framework to effectively mitigate the potential exercise of market power for these [day-ahead ancillary service] products"[233] and that "the conduct and impact market power mitigation framework is extremely robust and has been proven effective in a wide array of market settings. We are confident that this framework can be effectively applied to the new day-ahead ancillary service products proposed by ISO-New England as well."[234]

It is important to emphasize that there may be many ways in which to achieve effective mitigation, and the ISO's ongoing effort to conduct the market power assessment will inform its development of any day-ahead mitigation rules and procedures. At this juncture, the Commission need not sort out certain protesters' obfuscatory claims, *sans* empirical support, concerning the effectiveness of (yet-to-be-developed) mitigation measures. Rather, as emphasized here, the

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232 *See Day-Ahead Market Power Mitigation*, Potomac Economics, 12 (Jan. 21, 2020), https://iso-ne.com/static-assets/documents/2020/01/a3_b_emm_memo_day_ahead_market_power_mitigation.pdf (Potomac Economics memorandum to the ISO and the NEPOOL Markets Committee).

233 *Id.*

234 *Id.* at 7.

reasonable course of action is to enable the ISO to develop mitigation rules tailored to any concerns identified by a market power assessment, with input from the External and Internal Market Monitors and with adequate time for stakeholder review, and to bring the results of that process to the Commission for a fulsome review. As indicated in the Compliance filing, with the benefit of a Commission Order on or before November 1, 2020, the ISO plans to complete the requisite analyses and file the results of that assessment, along with mitigation rules revisions as appropriate, by the fourth quarter of 2021. This will ensure any mitigation measures appropriate to the co-optimized energy and ancillary services market are in place for its implementation on June 1, 2024.

B. The Energy Security Improvements Constitute a Just and Reasonable Rate

1. A Finding that the ISO's Proposal Is Just and Reasonable Precludes Consideration of Alternative Replacement Rate Proposals

Several protesters (*e.g.*, NESCOE, Consumer Advocates of New England, PIO) emphasize that the ISO has submitted the Energy Security Improvements proposal pursuant to FPA section 206 as a remedy for the existing Tariff, which the Commission preliminarily found to be unjust and unreasonable.[235] They correctly point out that the Commission can accept the ISO's Energy Security Improvements only if it determines that the proposal is just and reasonable. The ISO has asked the Commission to honor the ISO's commitment to NEPOOL, and consider the NEPOOL-supported alternative along with the Energy Security Improvements as a legally equivalent option.[236]

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235 July 2 Order at P 2 ("[W]e preliminarily find that ISO-NE's Tariff may be unjust and unreasonable, based on ISO-NE's demonstration in this proceeding that its Tariff fails to address specific regional fuel security concerns identified in the record that could result in reliability violations as soon as year 2022.").

236 NEPOOL Comments at 13-14

Though a number of parties have suggested alternatives other than the ISO and NEPOOL proposals, the ISO asks the Commission to ignore these alternatives. Because the ISO submitted the Energy Security Improvements as a remedy in this FPA section 206 proceeding, its proposal, if found to be just and reasonable, is preferred over any alternatives (except, in this case, NEPOOL's). This preference holds even if one or more competing proposals also is just and reasonable.[237]

2. The Energy Security Improvements are Supported by Substantial Evidence; No Cost-Benefit Analysis Is Required.

Several protesters contend that the ISO's proposal cannot be found just and reasonable because, the ISO allegedly has not demonstrated that the benefits of the Energy Security Improvements will exceed their cost to consumers. These arguments are unavailing.

The Commission need not demand or perform a cost-benefit analysis to support changes in market design or cost allocation.[238] Rather, the Commission may lawfully accept a rate when it "has an articulable and plausible reason to believe that the benefits are at least roughly commensurate with" the costs it imposes on those who will pay it.[239] Moreover, the Commission

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237 *See, e.g.*, *PJM Interconnection, L.L.C.*, 117 FERC ¶ 61,331, at P 85 (2006) ("[W]hen choosing between competing just and reasonable options, the Commission has previously stated that it will accept the proposal of a utility if it is just and reasonable, rather than other competing just and reasonable proposals . . . ."), *order on reh'g*, 119 FERC ¶ 61,318 (2007); *Kern River Gas Transmission Co.*, Opinion No. 486-E, 136 FERC ¶ 61,045, at PP 39-41 (2011) ("If a pipeline's proposed remedy in a NGA section 5 proceeding is found to be just and reasonable, it is clear . . . that the Commission will accept that just and reasonable proposal even in the presence of just and reasonable submissions by other parties to the proceeding. To this extent precedent reveals that the pipeline's proposal is granted a preference."), *order on reh'g*, Opinion No. 486-F, 142 FERC ¶ 61,132, *order on reh'g*, Opinion No. 486-G, 145 FERC ¶ 61,042 (2013); *ANR Pipeline Co*., 109 FERC ¶ 61,138, at P 28 (2004), *order on reh'g,* 110 FERC ¶ 61,069, at P 49*, order on reh'g*, 111 FERC ¶ 61,113, at P 19 (2005) ("To the extent ANR's proposed remedy is just and reasonable, the Commission will approve that remedy, even though other just and reasonable remedies might exist.").

238 *See, e.g.*, *Ill. Commerce Comm'n v. FERC*, 576 F.3d 470 (7th Cir. 2009).

239 *Id.* at 477.

unquestionably may lawfully consider and rely upon non-cost factors (including system reliability) in determining that a proposed rate or rate design is just and reasonable.[240]

The Commission's approval of PJM Interconnection, L.L.C.'s ("PJM") Capacity Performance proposal[241] clearly supports acceptance of the Energy Security Improvements. Like the Energy Security Improvements, Capacity Performance was explicitly intended to enhance reliability, and opponents argued that the costs of the proposal exceeded its benefits. The Commission, however, stated that a cost-benefit analysis was unnecessary,[242] citing its broad authority to consider non-cost factors.[243] The Commission found that the proposal would have significant reliability benefits, and would allow PJM "to meet its reliability objective at a reasonable cost over time."[244] The ISO here makes a similar showing regarding the Energy Security Improvements, justifying the same conclusion, and thus approval of its proposal.

NEPOOL offers no valid authority for its assertion that the ISO must establish that the Energy Security Improvement's benefits will exceed costs. NEPOOL particularly misplaces its reliance[245] on *TransCanada*.[246] The Commission has noted that *TransCanada* involved an out-of-market program, rather than, like the Energy Security Improvements, a market design that "relies on market forces and *ex ante* market rules to drive resource selection and set prices."[247] None of

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240 *Permian Basin Area Rate Cases*, 390 U.S. 747, 791, 815 (1968) ("*Permian Basin*").

241 *PJM Interconnection, .L.L.C.*, 155 FERC ¶ 61,157 (2016) ("Capacity Performance Rehearing").

242 *Id.* at P 30 ("[W]hile the Commission is required to consider all relevant factors and make a 'common-sense assessment' that the costs that will be incurred are consistent with the ratepayers' overall needs and interests, the Commission's finding need not be accompanied by a quantitative cost-benefit analysis.").

243 *Id.* (*citing, inter alia*, *Permian Basin*).

244 *Id.* at P 31; *see also* P 34 (same).

245 NEPOOL Comments at 16 and n.55.

246 *TransCanada Power Mktg., Ltd. v. FERC*, 811 F.3d 1 (D.C. Cir. 2015) ("*TransCanada"*).

247 Capacity Performance Rehearing at P 30 n.40 (quoting *TransCanada* at 12-13).

the faults the court of appeals identified in the Commission's order accepting the winter reliability program[248] is a factor in this case. Instead, as with PJM's Capacity Performance proposal, the ISO here has amply explained why the Energy Security Improvements proposal is just and reasonable, "including explaining the concerns that justify the need for the proposal, its reasoning for using competitive market processes to address those needs, the economic theory underpinning the market mitigation design and incentive structure, and the factual record supporting specific critical components of the proposal's design."[249]

NEPOOL gets even less traction with its attempt to correlate the case in support of the Energy Security Improvements with "other contexts" where the Commission purportedly has "referred in ratemaking to incurrence of costs beyond those considered to be reasonably necessary as 'gold plating.'"[250] In fact, only one of the decisions NEPOOL cites even uses the term "gold plating," and, at best, the passage to which NEPOOL refers simply restates the cost causation principle of commensurate benefits.[251] Moreover, three of NEPOOL's cited decisions actually hurt its position. Two illustrate that matching cost incurrence with cost responsibility is not an absolute standard,[252] while the third explicitly rejects an argument that a cost-benefit analysis should be required.[253]

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248 *See id.*

249 *Id.*

250 NEPOOL Comments at 17and n.56.

251 *See Fuel Retention Practices of Natural Gas Cos.*, 120 FERC ¶ 61,255, at P 18 (2007) (seeking comments on whether certain investments would have "a corresponding benefit for the pipeline's customers").

252 *See Transwestern Pipeline Co. v. FERC*, 988 F.2d 169, 174 (D.C. Cir. 1993); *Carnegie Nat. Gas. Co. v. FERC*, 968 F.2d 1291, 1293 (D.C. Cir. 1992) ("The policy in favor of matching [costs and benefits] . . . is far from absolute." (citations omitted)).

253 *See Northern States Power Co.*, Opinion No. 383, 64 FERC ¶ 61,324, at 63,379-80 (1993) (approving a utility's functionalization proposal based on the "fundamental theory" of cost causation and rejecting Staff's argument for a formal cost-benefit analysis).

3. Protesters Claiming that the Energy Security Improvements Cannot Be Justified Based on Reliability Standards Misconstrue the Role of the Reliability Standards in the Market Design

As the Compliance Filing explains, the Energy Security Improvements address the identified gaps in the current market and thereby improve energy security for the region in the long term. The comprehensive market enhancements achieve this by procuring new market products (in the form of ancillary services) in the Day-Ahead Energy Market that will create incentives for advance energy supply arrangements by resources the ISO relies on to ensure a reliable Operating Plan each day.[254] To ensure that outcome, the new products, and their respective requirements (*i.e.*, quantities), to be procured in the Day-Ahead Energy Market are appropriately based on NERC, NPCC, and ISO requirements for establishing the power system's next-day Operating Plans.[255] More specifically, the reliability standards are relevant insofar as they form the basis for reserve products and the quantities to be procured under the proposed market design—that is, the standards help define the specific operational capabilities to be procured, through the markets, as Day-Ahead Ancillary Services.

Certain protesters argue that the Energy Security Improvements' costs cannot be justified by reliability requirements, for neither NERC nor NPCC standards mandate the use of market products to satisfy those requirements.[256] NESCOE states, for example, that "[n]one of these standards mandate a singular path for compliance," and "ISO-NE is currently compliant with those

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254 *See* ESI White Paper at 5-8.

255 *Reliability Standards Supporting Day-Ahead Ancillary Services Requirements*, ISO New England, Inc. (July 3, 2019), https://www.iso-ne.com/static-assets/documents/2019/07/a4b_iso_memo_reliability_standards_supporting_day_ahead_ancillary_services_requirements.pdf (memorandum to the NEPOOL Markets Committee identifying the reliability standards underlying the proposed Day-Ahead Ancillary Services); ESI White Paper, Sections 6, 7; Brandien Testimony at 27-28.

256 *See* NESCOE Protest at 33-35; MPUC Protest at 3; VT PUC Comments at 2; NEPOOL Comments at 20-21.

reliability standards under its current approach."[257] Therefore, NESCOE contends, the ISO's proposal to use the Energy Security Improvements' Day-Ahead Ancillary Services market to meet its reliability needs is unjustified and unreasonable.[258]

Contrary to these protesters' contentions, however, it is entirely reasonable for the ISO to procure Day-Ahead Ancillary Services that provide the operational capabilities on which the ISO relies, but currently secures through out-of-market, unpriced processes. Moreover, procuring the reserve capabilities the ISO requires to satisfy these reliability standards as market products is consistent with the Commission's directive for a market-based, fuel security solution, as well as with prevailing practices in other RTO/ISO regions. Accordingly, the Commission should reject the protesters' baseless claims.

Protesters are correct that reliability standards do not compel a Balancing Authority to procure market products to satisfy those standards. But that fact is a red herring. It is undisputed that the standards afford Balancing Authorities the flexibility to determine how to satisfy the standards. Accordingly, the issue here is whether the ISO's choice to use market mechanisms rather than out-of-market and unpriced procedures, is just and reasonable. Certainly, nothing in the flexibility evident in the NERC and NPCC reliability criteria makes it unjust and unreasonable for a Balancing Authority or a Regional Entity to utilize market mechanisms, rather than ad hoc, out of market processes, to ensure compliance with the standards.

More importantly, however, in the July 2 Order, the Commission expressly "reaffirm[ed its] support for market solutions as the most efficient means to provide reliable electric service to

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257 NESCOE Protest at 33.

258 NESCOE Protest at 33-35.

New England consumers at just and reasonable rates."[259] Accordingly, it directed the ISO to file "Tariff revisions reflecting improvements to its market design to better address regional fuel security concerns."[260] The Energy Security Improvements are precisely the kind of "improvements to [the ISO's] market design" that the Commission required the ISO to submit.[261]

4. Procurement of Reserves to Meet Reserve Restoration Requirements and Other Operational Needs Is Not Exclusive to ISO New England

NESCOE asserts that "ISO-NE is an outlier in proposing to satisfy reliability requirements through ESI" and points to the proposed Replacement Energy Reserve market product as an illustration of the ISO's purportedly "singular approach" to meeting reliability standards.[262] NESCOE claims support for this argument in the affidavit of its witness Mr. Denis Bergeron.[263] According to NESCOE, Mr. Bergeron states that "nothing in any of the NERC or NPCC standards

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259 July 2 Order at P 53.

260 July 2 Order at P 55.

261 *See* July 2 Order at P 53 ("We reaffirm our support for market solutions as the most efficient means to provide reliable electric service to New England consumers . . . ."); *see also* December 3 Order at P 96 ("We agree with the dissent that the value of [fuel security] resources must be accurately reflected in the market in order to address fuel security issues in the region in the long term."); PJM Reserves Market Order at P 81 ("[L]lack of price transparency is inconsistent with proper market design, 'which values reserves appropriately and transparently through the market [to] not only support reliability but also incentivize investment in new resources that will provide additional flexibility and efficiency.'"); *id*. at 83 ("The Commission has previously stated the importance of ensuring accurate, transparent market prices when possible."); *Midcontinent Indep. Sys. Operator, Inc.* 170 FERC ¶ 61,075, at P 33 (2020) ("Each RTO/ISO ideally would not need to commit any additional resources beyond those resources scheduled economically through the market processes and market prices would thus reflect the value of electricity consumption without the need to involuntarily curtail load or increase resource commitments out-of-market.") (citation omitted); EMM Comments at 3-4 (supporting the ISO's Energy Security Improvements as the "proper approach to fuel security reliability concerns by focusing on the underlying product being sought, which ultimately is the capability to provide energy on demand," particularly as "the efficient set of operating reserve providers is constantly changing from day to day and hour to hour according to system needs, so it is efficient to integrate these reserve requirements into the day-ahead market which can co-optimize the procurement of energy and operating reserves").

262 NESCOE Protest at 33.

263 NESCOE Protest, Attachment B, Affidavit of Denis Bergeron in Support of the Protest of the New England States Committee on Electricity ("Bergeron Affidavit").

requires a Balancing Authority to procure reserves to replace reserves, as RER would do," and "that he has 'not seen any other [RTO] suggest that either NERC or NPCC criteria require obtaining reserves day-ahead to replace reserves in the unlikely possibility of an operating day contingency event or other reserve depletion.'"[264] NEPOOL's witness Mr. Griffiths makes similar statements in his affidavit. He asserts that "RER is effectively a reserve for reserves . . . . [It] is a totally new kind of reserve product and its scope goes above and beyond the operating reserves historically used in New England and, to my knowledge, anywhere else in the country."[265]

It is true that, while NERC and NPCC establish requirements for sufficient reserves and the restoration of those reserves, they do not dictate how the ISO must meet those requirements. Implementation, including the means of acquiring the resources necessary to comply with the standards, is left entirely to the ISO, as the Balancing Authority.[266] Consequently, different regions use different rules and reserve market designs to meet the reliability requirements, and the Commission has expressly recognized these differences.

Indeed, in its recent order accepting PJM's tariff revisions relating to the reserve products it procures in its day-ahead and real-time markets, the Commission explained:

> Reserves play an important role in maintaining the reliability of the bulk power system. The North American Electric Reliability Corporation (NERC) mandates that each regional transmission organization and independent system operator (RTO/ISO), as Balancing Authorities, maintain sufficient reserves to respond to the loss of the largest single contingency on its system within 15 minutes. RTOs/ISOs also seek to maintain sufficient reserves to address other real-time operational uncertainties, such as deviations of load, generator availability and performance, and interchange from forecast values. RTOs/ISOs use different reserve product specifications and set different minimum reserve requirement

264 NESCOE Protest at 33-34 (alteration in original) (citing Bergeron Affidavit at 4, 6).

265 Griffiths Affidavit at 5.

266 *See Mandatory Reliability Standards for the Bulk-Power System*, Order No. 693, 118 FERC ¶ 61,218, at P 30 n.35, *order on reh'g*, Order No. 693-A, 120 FERC ¶ 61,053 (2007)).

> (MRR) quantities, but the objective is the same—to adequately prepare for operational uncertainties.[267]

As the Compliance Filing supports, the ISO is proposing to procure energy reserves in the form of Day-Ahead Ancillary Services in the Day-Ahead Energy Market that align with established NERC and NPCC requirements for restoration of reserves.[268] These are based, in part, on the first and second largest contingencies in each hour of the Operating Day.[269] Contrary to NESCOE and NEPOOL's assertions, there is nothing novel about the ISO's proposal to procure in the day-ahead market sufficient reserves to meet mandatory criteria for restoration of contingency reserve.

In the PJM Reserves Market Order, for instance, the Commission accepted PJM's proposal to create a new, 30-minute Secondary Reserve product, and recognized that PJM's higher reserve procurements would "better allow PJM system operators to respond to forecast errors, backfill the 10-minute Reserve Requirement, and recover from pipeline contingencies."[270] Under the Energy Security Improvements, the ISO's proposed Replacement Energy Reserve products—*i.e.*, RER90 RER240—will serve similar purposes. These RER response capabilities will "enable the system to be prepared, as part of its next-day operating plan, to meet (among other things) requirements for contingency reserve restoration" and to "account for load forecast error[s]."[271]

New York Independent System Operator ("NYISO") also procures reserves day-ahead to ensure its system is prepared to restore contingency reserve in accordance with applicable

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267 PJM Reserves Market Order at P 3 (footnote omitted).

268 *See* Compliance Filing at 34-42; ESI White Paper at 155-62.

269 *See* Compliance Filing at 37-41; ESI White Paper at 161-62.

270 PJM Reserves Market Order at P 254.

271 ESI White Paper at 157-58.

requirements, based on its first and second largest operating contingencies.[272] Under the Energy Security Improvements, the ISO here proposes to fulfill this requirement, in part, using the proposed RER90 ancillary service, while NYISO does so with 30-minute reserves, rather than 90-minute reserves. The ISO proposes to use 90-minute reserves because the relevant standards (*i.e.*, NERC BAL-002 and NPCC Directory 5) provide for a 90-minute Contingency Reserve Restoration Period, and the ISO anticipates that using 90-minute reserves will be lower cost than if the same quantity of reserves were procured using only a 30-minute (or faster) reserve product.[273]

Protesters' assertions that no other RTO/ISO procures and compensates for reserves to meet contingency reserve restoration requirements are clearly incorrect. Though neither PJM nor NYISO procures 90-minute reserves like the ISO proposes, that difference is immaterial; both procure reserves in their day-ahead markets, among other purposes, in order to meet the timed restoration requirement for 10-minute contingency reserve. The Commission has determined that this approach is just and reasonable in the PJM and NYISO regions. It should reach the same conclusion here.

5. Protesters' Preference for a Different Approach for Setting Day-Ahead Ancillary Services Requirements and RCPFs Does Not Render the ISO's Proposal Unjust and Unreasonable

As emphasized previously, the Energy Security Improvements set the Day-Ahead Ancillary Services' requirements (*i.e.*, the demand quantities) based on the NERC and NPCC reliability standards for the corresponding operational capabilities that the system requires.[274] The

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272 *See* Proposed Tariff Revisions to Ancillary Service Demand Curves and the Transmission Shortage Cost of New York Independent System Operator, Inc., Docket No. ER15-1061-000 (Feb. 18, 2015); *New York Indep. Sys Operator, Inc.*, 151 FERC ¶ 61,057, at PP 3, 7, 19 (2015) (order conditionally accepting proposed tariff revisions).

273 *See* ESI White Paper at 158.

274 *See* Compliance Filing at 35-41; Brandien Testimony at 27-30; ESI White Paper at 158-62.

RER requirements are based expressly on the NERC BAL-002-3 and NPCC Directory 5 standards, and their associated Reserve Constraint Penalty Factor ("RCPF") values (which determine maximum reserve prices) are based on the estimated marginal costs to satisfy these reserve requirements.[275] The GCR requirements and associated RCPFs are based on the corresponding real-time reserve requirements and Commission-approved real-time RCPFs, and are based on the same reliability standards, as detailed in the ISO's Operating Procedures.[276] We refer below to this basis for determining the quantities of ancillary services required as a minimum reserve requirement ("MRR") approach, inasmuch as the extant reliability requirements guide the minimum amounts of each reserve type procured.

In their protests, NESCOE and VT PUC criticize this MRR approach for determining the Day-Ahead Ancillary Services' requirements. In sum, they conjecture—without the benefit of analysis or empirical evidence—that it overcharges consumers for reserves.[277] Specifically, NESCOE argues:

> There is a fundamental mismatch between the price ISO-NE would charge consumers for ESI and the reliability benefits it would provide. There are two ways in which this mismatch emerges. First, in determining the quantity of ancillary services to purchase under ESI, ISO-NE overvalues its products by failing to reflect a diminished marginal reliability value ("MRV"). Second, ISO-NE has not demonstrated that system needs require it to exercise the full freight of call options purchased under ESI.[278]

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275 *See* ESI White Paper at 160-61.

276 *See id*. at 160.

277 NESCOE Protest at 35; VT PUC Comments at 2.

278 NESCOE Protest at 35.

NESCOE's ensuing discussion makes clear their underlying preference: a different approach to specifying reserve demand quantities entirely (*i.e.*, a "marginal reliability value" ("MRV") approach).[279]

However, over the two decades that the ISO has operated competitive ancillary services markets, the Commission has never required the ISO to use MRV-based demand curves for ancillary services. The Commission has consistently approved the ISO's MRR approach in its co-optimized, real-time markets as just and reasonable[280]NESCOE's protest fails to provide a persuasive argument for the Commission to depart from those prior findings in this proceeding.

A Commission decision accepting Day-Ahead Ancillary Services demand quantities based on the MRR approach would also be consistent with the Commission's recent decision in the PJM Reserves Market Order, where it addressed similar arguments. In that proceeding, PJM proposed, *inter alia*, to increase the Reserve Penalty Factor[281] applicable to its MRR, so the market could reflect the actions PJM takes to satisfy the NERC reliability standards. Opponents of PJM's proposal argued that the use of the proposed Reserve Penalty Factors for each reserve product was

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279 *See* Wilson Testimony at 64-68.

280 *See e.g.*, Revisions to Market Rule 1 to Establish a Reserve Constraint Penalty Factor for a Replacement Reserve Requirement of ISO New England Inc and New England Power Pool., Docket No. ER13-1736-000 (June 20, 2013); *ISO New England Inc.*, Letter Order, Docket No. ER13-1736-000 (Aug. 15, 2013); RCPF Value Changes of ISO New England Inc. and New England Power Pool, Docket No. ER12-1314-000 (Mar. 22, 2012); *ISO New England Inc.*, Letter Order, Docket No. ER12-1314-000 (May 21, 2012). The ISO's proposal for procuring and pricing the proposed Day-Ahead Ancillary Services based on the MRR approach also is consistent with the approach used in other regions. *See* PJM Reserves Market Order at P 29; *see also Price Formation in Organized Wholesale Electricity Markets*, Staff Analysis of Shortage Pricing in RTO and ISO Markets, Docket No. AD14-14-000 (Oct. 21, 2014) (evaluating matters affecting price formation in RTO/ISO energy and ancillary services' market, with a focus on administrating pricing rules applied to ensure costs reflect failure to meet minimum reserve requirements).

281 In New England, the Reserve Penalty Factors are referred to as RCFPs.

unjust and unreasonable because they were not based on the value of loss of load.[282] The Commission disagreed with these arguments and found PJM's MRR-based Reserve Penalty Factor to be just and reasonable. Specifically, the Commission determined:

> We disagree with the assertion . . . that PJM's proposal . . . is unjust and unreasonable because PJM's ORDCs are not based on the value of lost load. PJM presents a rational alternative to value-of-lost-load based ORDCs [i.e., marginal reliability value as used the Wilson Testimony] that conforms to PJM's objective of maintaining its MRRs – which in the case of Primary Reserves is directly linked to PJM's responsibility to meet the NERC standard for recovery from the single largest contingency . . . We therefore reject [the] argument that . . . reserve products should be designed such that [they] result[] in a shortage price that reflects the marginal value of the reliability.[283]

Stated simply, the Commission found that market rules that specify reserve demand quantities using the MRR approach, as the ISO's Energy Security Improvements propose, are just and reasonable. In doing so, the Commission plainly rejected NESCOE's position that the ISO should be compelled to procure and price reserve products based on MRV calculations. Notably, in a separate determination in the same PJM Reserves Market Order, the Commission also found that MRR is the appropriate "reference point" for setting the (maximum potential) reserve prices, which is the same concept and practice the ISO proposes for the new GCR and RER products under the proposed Energy Security Improvements.[284] Logically, the Commission should reach the same conclusions here.

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282 The "value of loss load" ORDCs is analogous to NESCOE's "marginal reliability value." *See* NESCOE Protest at 36-37; *see also* Wilson Testimony at 61-62.

283 PJM Reserves Market Order at P 154.

284 *See* PJM Reserves Market Order at P 233 (agreeing "that the MRR is the appropriate reference point for setting the reserve price equal to the cost of emergency actions (*i.e.*, the Reserve Penalty Factor) and that PJM's proposal is a logical extension of their methodology"). For clarity, as the ISO's Compliance Filing explains, the proposed RCPFs for the new Day-Ahead Ancillary Services are based on estimates of the maximum pre-emergency cost of redispatch to satisfy the minimum reserve requirements (not the "cost of emergency actions"). Therefore, the proposed RCPFs may

In addition, NESCOE's protest fails to provide any evidence or other basis to support how the MRV approach it promotes would solve the identified problem with the existing market design—*i.e.* the misaligned incentives problem Absent any such evidence, NESCOE's alternative MRV-based proposal cannot satisfy the Commission's directive in the July 2 Order.

For all these reasons, the Commission should find that the MRV-based calculations for reserve requirements that NESCOE advocates are not justified in the instant proceeding. The Commission further should find that the ISO's proposal for setting the Day-Ahead Ancillary Services requirements and the associated RCPFs using the MRR approach is just and reasonable.

be reasonably expected to have lower cost than the cost of true emergency actions. In other words, for the new Day-Ahead Ancillary Services' RCPFs to reflect the cost of emergency actions, they would have to be higher, not lower, than the ISO has proposed. *But see* NESCOE Protest at 36 (claiming the proposed RCPFs are too high).

6. Protesters' Assertion that the Energy Security Improvements Will Procure Excessive Reserves Mischaracterizes the Purpose of Reserves and Misconstrues Others' Positions

In a further attempt to support their argument that the ISO's Energy Security Improvements "overcharge[] consumers," NESCOE and the VT PUC contend the improvements "overbuy[] reserves."[285] According to NESCOE's, "ISO-NE is making consumers buy more reserves in a day-ahead market than the system would typically need in real-time."[286]

This assertion is flawed. It mischaracterizes the well-recognized purpose of reserves in power system operations. Specifically, the amount of reserves maintained in a reliable system are never based on what is *typically* needed in real-time. They are based instead on amounts that are *atypically* needed in real-time. Put simply, reserves are insurance. They are sized to protect the system—to consumers' ultimate benefit—from the consequences of large, unanticipated events that may adversely affect reliability. The applicable reliability standards expressly reflect that purpose, specifying reserve needs based on the sizes of a system's *largest* potential (source-loss) recovery needs in real-time, not based on the system's *typical* needs in real-time.[287] In sum, protesters' critique that the reserves to be procured under the ISO's proposed improvements exceed the amounts "the system would typically need in real-time"[288] is nonsensical, as it misrepresents

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285 NESCOE Protest at 33, 37.

286 NESCOE Protest at 37.

287 *See BAL-002-3–Disturbance Control Standard –Contingency Reserve for Recovery from a Balancing Contingency Event*, North American Electric Reliability Corporation, 2 https://www.nerc.com/pa/Stand/Reliability%20Standards/BAL-002-3.pdf (last visited June 12, 2020) (NERC BAL-002-3, Requirement R2 requiring "Contingency Reserve equal to, or greater than the Responsible Entity's Most Severe Single Contingency available for maintaining system reliability"). Notably, the reliability standards to not specify reserve capabilities or requirements based upon a system's average, or "typical" source-loss events in real-time.

288 NESCOE Protest at 37.

the purpose of reserves and is plainly inconsistent with applicable reliability standards that govern the reserve capabilities needed in real-time.

NESCOE's protest, upon which the VT PUC and others rely to support their opposition to the ISO's proposal, fails to articulate any counter argument to that simple point. Nor does NESCOE provide a more fulsome explanation of its position's disconcerting implication: that reserves should be instead be limited so as to procure the amount "the system would *typically* need in real-time."[289] Instead, NESCOE's protest leans on statements of the ISO's External Market Monitor, which it misconstrues. In fact, the External Market Monitor's representations do not support NESCOE's argument on this issue at all.

Specifically, NESCOE seeks to defend its claim that "ESI also overbuys reserves"[290] by reciting the External Market Monitor's observation that:

> [U]se of the option style contract would require loads to take day-ahead positions in energy that substantially exceed their expected real-time energy needs, since loads would be required to purchase "at the money" call options for an amount of operating reserves that is extremely likely to exceed the amount that would be converted to energy in real-time.[291]

This same sentence is repeated in the External Market Monitor's comments filed in this proceeding, but is followed by the concluding observation that "it is difficult to predict the extent to which the option style contract will allow the ISO to maintain reliability more efficiently than

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289 *Id*. (emphasis added).

290 NESCOE Protest at 37.

291 NESCOE Protest at 37 (emphasis omitted) (quoting *NESCOE Proposal to Raise the Strike Price of Energy Call Options*, Potomac Economics, 2 (Mar. 20, 2020), https://www.iso-ne.com/static-assets/documents/2020/03/a2_b_vi_emm_memo_re_nescoe_strike_price_amendment.pdf (Memorandum from David B. Patton and Pallas LeeVanShaick of Potomac Economics to the ISO and NEPOOL Markets Committee)).

it would using the conventional forward contract for ancillary services."[292] Thus, when its observation is read in this context, it is clear that the External Market Monitor does not argue, as NESCOE contends, that the ISO should procure less reserves than are proposed in the Energy Security Improvements. Instead, the External Market Monitor simply highlights an empirical question about the option construct. In fact, rather than suggesting that the ISO will be "overbuying reserves," the External Market Monitor's comments indicate quite the opposite:

> We support the ISO Proposal to fully represent the . . . reliability criteria in its day-ahead market with the proposed replacement reserve requirement. The ISO has proposed to set the market procurement in accordance with the quantities of resources needed to satisfy NPCC criteria to have reliability day-ahead operating planning including the ability to restore 10-minute and 30-minute reserves within certain clearly established time frames. Importantly, this is a reliability mandate that applies throughout the entire year.[293]

In other words, contrary to NESCOE's assertion, the External Market Monitor's comments do not support the protesters' positon. More importantly, the proposed amounts of reserves under the Energy Security Improvements appropriately represent the relevant reliability criteria, and are not an "overbuy" of reserves.

7. The Energy Security Improvements Are Not Unduly Discriminatory

Two commenters assert that the ISO's Energy Security Improvements are unduly discriminatory. PIO claim that the Energy Security Improvements "unduly discriminate[] against clean energy resources by failing to recognize and compensate their energy security services."[294] Advanced Energy Economy ("AEE") asserts that the Energy Security Improvements are "not truly

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292 EMM Comments at 9.

293 EMM Comments at 5.

294 PIO Protest at 14.

technology-neutral"[295] and that the relative impact of potential shifts in revenue among the various ISO-administered markets that will result from the Energy Security Improvements "on resources that contribute to energy security but that cannot fully participate in ESI must be considered to avoid undue discrimination."[296] These contentions are incorrect and misleading. The Commission should reject them.

As a threshold matter, both PIO and AEE acknowledge that the Energy Security Improvements do not exclude the resource types with which they are concerned. PIO states that "*[t]echnically*, Demand Response resources would be able to sell ESI's day-ahead ancillary services."[297] And AEE says that "offshore wind resources are *technically* eligible to participate in ESI."[298] These acknowledgements are absolutely required of the commenters, given that the Energy Security Improvements have no exclusions whatsoever based on fuel or technology type. Any resource type that is dispatchable and that meets existing technical requirements can provide the new day-ahead ancillary services established by the Energy Security Improvements.[299] Indeed, two of the four core design principles that the ISO followed in designing the Energy Security Improvements are as follows:

> **Design Principle 3:** **Reward outputs; do not specify inputs.** Compensating for obligations to deliver the output that a reliable system requires creates a level playing field for competitors that deliver energy reliably. This rewards suppliers that reduce risk in the most cost-effective ways, and fosters innovation in new solution technologies.

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295 AEE Comments at 2.

296 AEE Comments at 13.

297 PIO Protest at 18 (emphasis added).

298 AEE Comments at 13 (emphasis added).

299 The various technical requirements for reserve products (see Tariff § III.1.7.19.1, primarily) have not been a contested matter in this proceeding.

> **Design Principle 4:** **Compensate all resources that provide the desired service similarly.** Paying similar rates for similar service is non-discriminatory by fuel-type or technology, and sends the broadest-possible market signal for the desired attribute.[300]

Since the types of resources that PIO and AEE champion are not *actually* excluded from the Energy Security Improvements, there must be another basis for the discrimination they allege.

PIO's and AEE's discrimination claim ultimately amounts to a subjective and unsupported assessment that the Energy Security Improvements will not compensate PIO's and AEE's preferred resource types adequately, relative to other resource types (notably, those burning fossil fuels). PIO states that "[f]or a fuel-free resource like offshore wind, there is no pathway to providing energy security services under ESI: a wind farm operator cannot procure additional wind for the day-ahead market. Yet such resources make important contributions to alleviating winter reliability challenges."[301] PIO further echoes this notion when it concludes that the Energy Security Improvements "fail[] to compensate . . . resources with demonstrated energy security value."[302] For its part, AEE emphasizes that:

> ESI ignores the role of resources such as energy efficiency, passive demand response, and certain energy storage and distributed energy resources that either do not participate in day-ahead energy and ancillary services markets or that face limitations in their ability to fully participate in day ahead markets. These resources nonetheless make a significant contribution to energy security by diversifying the energy mix, reducing peak demand, helping to ensure energy availability in real-time, and reducing pressure on the gas pipeline system.[303]

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300 ESI White Paper at 51.

301 PIO Protest at 16.

302 PIO Protest at 20.

303 AEE Comments at 11.

PIO also argues that the Energy Security Improvements were "only designed with the characteristics of fuel-based resources in mind and do not provide opportunities for fuel-free clean energy resources to provide energy security services, despite their proven abilities to do so."[304]

These arguments fundamentally misapprehend the goal and design of the Energy Security Improvements. The resource types that PIO and AEE support are undoubtedly very important to the New England system. They play a valuable role in serving load and maintaining reliability. But the goal of the Energy Security Improvements is not simply to pay out new revenues to all resources that assert they contribute to energy security. Consistent with sound market design, the Energy Security Improvements intend to address the misaligned incentives problem by procuring a specific and well-defined product. In fact, this is reflected in the very first of the four core design principles that the ISO followed in designing the Energy Security Improvements:

> **Design Principle 1:** **Product definitions should be specific, simple, and uniform.** The same well-defined product or service should be rewarded, regardless of the technology used to deliver it. Simplicity in product definitions enhances competition and participants' understanding.[305]

The ISO further has explained that the goal of the Energy Security Improvements is to "provide adequate financial incentives for resource owners *to make additional investments in energy supply arrangement*s that would be cost-effective and benefit the power system at times of heightened risk."[306] The source of any supplier's ability to provide the required reliability services is immaterial to the ISO, and the Energy Security Improvements fully reflect that:

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304 PIO Protest at 21; s*ee also* PIO Protest at 14 ("The benefits of ESI will accrue primarily to fossil fuel-based resources."), 22 ("The ESI proposal is thus unduly discriminatory toward fuel-free clean energy resources and unduly preferential toward fuel-based resources, particularly fossil fuels . . . .").

305 ESI White Paper at 51.

306 ESI White Paper at 3 (emphasis added).

> Centrally, the Energy Security Improvements are focused on promoting reliable electric energy and ancillary services output – and are, by design, fuel and technology neutral. *The design rewards resources, of any technology or fuel type, that acquire a day-ahead commitment to supply energy or ancillary services and thereby contribute to the system's daily reliability requirements – including renewable resources, traditional and emerging storage technologies, and traditional fossil-fueled generators.* In short, these improvements will strengthen the financial incentives for generation owners to undertake more robust energy supply arrangements, when cost-effective, while not proscribing what form those supply arrangements may take.[307]

In short, there is no plausibility to PIO's and AEE's assertion that the Energy Security Improvements were designed to, or will, benefit only resources that run on fossil fuels, or to exclude any particular type of fuel or resource.

It is true, of course, that not all resources will be able to provide and thus to earn compensation for these newly defined services. Resources that cannot honor a "call" on their electric energy as and when it may come during an operating day do not have the capability to enhance regional energy security in the manner fulfilled by energy call options. This does not mean that such resources are not valued in New England's markets generally, and it does not mean that their overall compensation is inadequate. It simply means that these resources do not make the same contribution to system reliability as those that are capable of providing both energy *and* the new Day-Ahead Ancillary Services. Indeed, such resources will continue to be compensated for the electric and reliability services that they *do* provide to the region.

It is clear, therefore, that PIO's and AEE's assertion that the Energy Security Improvements are discriminatory is unfounded. The Energy Security Improvements do not treat similarly situated resources differently. From a system reliability perspective, resources that cannot honor a "call"

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307 ESI White Paper at 9 (emphasis added and omitted).

on their electric energy when it is needed are not similarly situated to those that can. At bottom, PIO's and AEE's complaint is not that the Energy Security Improvements are discriminatory, but that their favored resource types may not have the requisite capabilities to earn the amount of additional compensation that PIO and AEE seek..

In fact, PIO's and AEE's own arguments make this distinction clear: "AEE does not take issue with the technology-neutrality of the design of the individual energy options, but we find that the proposal on the whole fails to provide an adequate opportunity for all resources that contribute to the region's energy security to earn compensation for doing so."[308] PIO notes that offshore wind resources "make important contributions to alleviating winter reliability challenges"[309] and that renewable resources have "undeniable energy security value."[310] The ISO does not dispute that these resources have value to the system, but PIO itself makes the clearest case for their distinction: "a wind farm operator cannot procure additional wind for the day-ahead market."[311] The fact that the Energy Security Improvements may not increase the compensation for certain types of resources as much as they might for others—where those resources provide different reliability benefits—does not make the ISO's proposed unduly discriminatory. Instead, it simply means that the ISO's approach recognizes the different types of resources have different physical capabilities. Again, the goal of the Energy Security Improvements is not to increase compensation blindly for all resources that advocates assert contribute to energy security; it is to solve the misaligned incentives problem by procuring call options from resources that are willing and able

308 AEE Comments at 11.

309 PIO Protest at 16.

310 PIO Protest at 17.

311 PIO Protest at 16.

to take on new day-ahead obligations—obligations that will ensure that the ISO will create and employ reliable, next-day operating plans.

Crucially, as the ISO explained in the ESI White Paper, "[t]he Energy Security Improvements will compensate all technologies capable of providing energy or any of the new ancillary services, creating a level playing field for market participants. And because no capable technology is excluded, this design should foster innovation, as participants explore the best technologies or other means to capitalize on the new products."[312]

Having established that the Energy Security Improvements are in no way discriminatory, it is also worth emphasizing that those improvements *do* comparably recognize and compensate for day-ahead commitments the services provided by all technology types that contribute to a reliable, next-day operating plan. Renewable resources such as solar and wind that do not have the requisite capabilities to provide the new day-ahead call options can nonetheless sell energy in the day-ahead market.[313] Their day-ahead energy obligations contribute to meeting the forecast energy requirement of a reliable-next-day operating plan, and they are accordingly compensated at the day-ahead market's rate (*i.e.*, the Forecast Energy Requirement Price) for helping to meet that requirement—in exactly the same way as any other resource, whether renewable or non-renewable. In other words, the fact that some resources may not be able to sell call options under the new market design does not in any way imply that those resources are not adequately or fairly compensated under these market improvements overall. PIO's and AEE's assertions to the contrary are unsupported. The compensation paid to different resources varies only to the extent that different resources offer different services—whether by choice (based on their commercial

312 ESI White Paper at 9.

313 No resource may sell the same MWh of capability as both energy and as a call option on that energy under the Energy Security Improvements.

assessments of market conditions) or by their ability to offer the physical operating capabilities a reliable system requires.

C. NEPOOL's Proposed Changes Are Inconsistent with the Commission's Order, and Would Undermine the Efficacy of the Energy Security Improvements

NEPOOL proposes to revise the ISO's Energy Security Improvements in three discrete, substantive, ways. First, NEPOOL proposes to revise new Sections III.1.8.5(d)-(e) of the Tariff to limit procurement in the day-ahead market of replacement energy, as RER, to only the three winter months of December through February. Second, NEPOOL proposes to revise the same provisions to prevent the use of RER to manage load forecast error at any time of the year. Finally, NEPOOL proposes to revise new Section III.1.8.3 to increase the proposed Option Strike Price by $10/MWh in all hours. The underlying basis for proffering these suggested changes to the ISO's proposal is, according to NEPOOL, to remove "objectionable and expensive elements" of the ISO's market design.[314] NEPOOL contends these components are unnecessary to address the "fuel security needs and . . . would impose significant, unjustified costs on consumers."[315]

For the reasons set forth below, the Commission should accept the ISO's Energy Security Improvements without incorporating NEPOOL's proposed changes, consistent with the ISO's requests in its Compliance Filing.

1. NEPOOL's Proposed RER Limitations Rest on a Faulty Premise—that Replacement Energy Is Not Needed for Energy Security.

A central facet of NEPOOL's argument for the RER changes it advocates is its contention that there is no reliability need for, or market benefit from, RER outside of winter months or for

314 NEPOOL Comments at 2.

315 NEPOOL Comments at 12.

load forecast error at any time. Therefore, NEPOOL claims, removing such uses of RER would have no effect on system operation or market efficiency.[316]

NEPOOL's assertions, however, conflate two conceptually distinct issues: (1) whether *replacement energy* is needed to maintain a reliable power system; and (2) how the resources the system relies upon to provide that replacement energy should be compensated for that service. As discussed below, replacement energy is needed to address supply and demand uncertainties that arise during the operating day throughout the year. Thus, the underlying contention is with respect to (2) specifically, whether compensation should (i) now be provided in the Day-Ahead Energy Market as the ISO proposes, or (ii) only in the Real-Time Energy Market in non-winter months and when used to respond to load forecast error, as provided under existing market rules, as NEPOOL proposes.

NEPOOL contends that the ISO should continue to employ existing practices, including out-of-market, unpriced methods, to secure the replacement energy services during the times and for the purposes that NEPOOL seeks to modify from the ISO's proposal. As we explain below, that approach would be both contrary to the Commission's compliance directive, as well as to sound market design. It would perpetuate, rather than resolve, the underlying problem of misaligned incentives that exist in the current market. NEPOOL's approach, therefore, would not improve New England's energy security (during the times and for the purposes that NEPOOL seeks to limit). In contrast, the ISO proposes to procure and compensate resources that can provide replacement energy in a transparent manner through the RER Day-Ahead Ancillary Service component of its long-term market solution. This approach fully satisfies the Commission's directive, and will provide New England Market Participants with accurate price signals regarding

316 *See* NEPOOL Comments at 17.

the cost of reliable wholesale electric services. Notably, those price signals may be quite low in periods when there is ample supply of these services available. However, it appears that NEPOOL is arguing that, because there may be plenty of available supply of these reliability services during the non-winter months, the ISO should forego pursuing a market-based approach and instead continue to procure these services through out-of-market, unpriced methods.

a. NEPOOL Mischaracterizes the Purpose of, and Need for, Replacement Energy

NEPOOL mischaracterizes the purpose of RER to bolster its winter-only RER proposal, and in so doing, clouds the issues before the Commission. Specifically, NEPOOL's witness, Mr. Griffiths, testifies that RER is "designed to ensure that there is enough energy to recover *reserves*, in the event of a contingency. RER is effectively a reserve for reserves."[317] Similarly, NEPOOL witness Mr. James Daly narrowly characterizes the purpose of RER to be addressing "the regional energy gap that ISO-NE projects day-ahead may occur if generation contingency reserve (GCR) units are dispatched, and the reserves need to be restored in real-time."[318]

While contingency reserve and its restoration requirements form the basis for the proposed RER product definition and quantities to be procured, as described in Section IV.B.3, they do not fully circumscribe the rationale for replacement energy and the purpose of the RER market product. Replacement energy, and therefore, the ISO's proposed RER market product, serves a broader purpose of enabling the system, as part of its next-day Operating Plan, to manage uncertainties in both supply and demand that arise during the operating day—whether or not that

317 Griffiths Affidavit at 5.

318 NEPOOL Comments, Attachment 2, Affidavit of James G. Daly at 5 ("Daly Affidavit").

operating day's unforeseen events are associated with generation contingencies.[319] Those unforeseen can events occur during the summer, winter, and shoulder months, and occur due to unanticipated supply and demand events (*e.g.*, load forecast error).

Furthermore, even assuming *arguendo*, that the Commission construed the purpose of RER to be only for restoring contingency reserve, NEPOOL's argument still fails. The NERC and NPCC reliability standards that establish those restoration requirements—requirements with which the ISO *must* comply—apply throughout the year, not in winter alone.[320] Indeed, the ISO's ability to meet them in non-winter months may grow more uncertain as the power system evolves to include more just-in-time energy sources, and as the region continues to face little or no growth in its already-limited liquid and gas fuel delivery infrastructure.[321]

i. Replacement Energy Is Needed to Address Supply and Demand Uncertainties of Many Forms During the Operating Day

Contrary to NEPOOL's contention, the ESI White Paper explains in detail that the ISO's proposed RER ancillary service serves multiple functions to ensure a complete, market-based, next-day Operating Plan. Specifically:

> Replacement energy reserve is a set of ancillary service products designed to prepare the system to handle an unanticipated loss of supply, or unanticipated increase in demand that persists for a significant (multi-hour) period of time during the operating day . . . [T]he system requires replacement energy to cover the unanticipated

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319 *See* Compliance Filing at 16-19; Brandien Testimony at 4, 17-18; *see also* PJM Reserves Market Order at P 3.

320 *See* Brandien Testimony at 6-12. For completeness, Requirement R3 of NERC-BAL-002-3 requires the Balancing Authority to "restore its Contingency Reserve to at least its Most Severe Single Contingency" within ninety minutes following the end of the Contingency Event Recovery Period. Brandien Testimony at 11. NPCC Directory 5 also prescribes a restoration time for Thirty-Minute Operating Reserve: "A Balancing Authority deficient in thirty-minute reserve for four hours . . . shall eliminate the deficiency if possible, or minimize the magnitude and duration of the deficiency." *Id*.

321 *See* Brandien Testimony at 23-26; *see also* EMM Comments at 5-9.

> gap in the operating plan's supply-and-demand balance through the remainder of the day.[322]

Broadly, the purpose of day-ahead replacement energy reserve is to provide a margin for such uncertainties:

> In practice, actual supply and demand conditions during the operating day may differ, for a number of possible reasons. These include unexpected generation derates and outages, weather changes that cause unanticipated increases in energy demand relative to forecast, and so on. . . . On the demand side, the system also requires replacement energy to serve *unexpected* increases in energy demand, relative to the day-ahead forecast.[323]

Simply put, when the system experiences unexpected changes in supply or unexpected increases in demand, resources are needed to *replace* the energy scheduled previously in the day-ahead that is no longer available in real-time or to secure energy from other resources, in excess of their day-ahead schedules. With the RER product, the Day-Ahead Energy Market will help to ensure that the ISO will be consistently able to establish a next-day Operating Plan that provides for a reliable supply of energy when operating conditions unexpectedly deviate from day-ahead schedules forecasts.

ii. Replacement Energy is Needed Routinely in a Reliable Power System

As summarized above, the Compliance Filing emphasized the multiple purposes of the RER product because the underlying service—that is, *replacement energy*—is needed routinely in a reliable power system.[324] A review of 2018-2019 operational data shows that replacement energy

322 *See* ESI White Paper at 153.

323 ESI White Paper at 153-54.

324 *See* PJM Reserves Market Order at 3, 74-76.

is indeed needed frequently in New England's system for the reasons identified in the Compliance Filing.

Specifically, the 2018-2019 data discussed below establish three important facts. First, replacement energy is needed routinely to reliably meet the system's real-time energy demand and reserve requirements. Second, replacement energy is needed for both unexpected supply reductions from resources' day-ahead energy schedules, and for unexpected demand increases from the day-ahead load forecast (*i.e.*, load forecast error). Finally, similar levels of replacement energy are necessary to reliably operate the system, in a similar fraction of all hours, during non-winter months as in winter months (December through February).[325]

Taken together, the data show that NEPOOL's contentions that replacement energy is needed only infrequently, or is needed only to restore contingency reserves following their use, are incorrect. And, again contrary to NEPOOL's claims, they further show that replacement energy is needed throughout the year, for both unexpected reductions in supply from day-ahead scheduled generation (*e.g.*, outages and derates) and for unexpected demand increases relative to day-ahead forecasts (*i.e.*, load forecast error). Accordingly, it would be inappropriate to administratively limit compensation to suppliers with resources providing this replacement energy, as NEPOOL proposes, during non-winter months and when secured to address load forecast error.

(1) Unexpected Supply Reductions from Day-Ahead Schedules

Table 1 below summarizes the ISO's need for replacement energy during 2018 and 2019 (a period spanning 17,520 hours), based on an examination of hourly day-ahead and real-time data at the resource level. These data directly inform the frequency and magnitude of three distinct

325 In an affidavit attached to this Answer as Attachment A, Dr. Matthew White, the ISO's Chief Economist, affirms the data described in the tables and text below.

effects: (i) unexpected supply reductions from resources' day-ahead energy schedules; (ii) unexpected demand increases from the ISO's day-ahead forecast (which is load under-forecast error); and (iii) the net effect of both, which determines the system's total replacement energy need. The latter (iii) is our primary focus, and is comprised of (i) and (ii).

The values in the first four rows of Table 1 are in MW (or, technically, MWh per hour), the values in row [5] are numbers of hours (of 17,520), and the values in row [6] are in percentages.

Table 1. Replacement Energy Statistics, All Hours, 2018 and 2019

	(A)	(B)	(C)	(D)
	Statistic (MW)	**Unexpected Supply Reductions (Outages and Derates)**	**Replacement Energy for Unexpected Demand Increases (LFE)**	**Total Replacement Energy Need (Netted Hourly)**
[1]	Minimum	0	0	0
[2]	Average	176	90	188
[3]	Top 5th Percentile	585	492	819
[4]	Maximum	2,064	2,697	3,821
	Frequency of Positive Values			
[5]	Positive Hours (#)	17,515	6,190	9,209
[6]	Positive Hours (%)	99.97%	35%	53%

Column (B) summarizes the system-level unexpected supply reductions from resources' day-ahead market energy schedules. They measure energy supply scheduled in the day-ahead market that was unavailable at the associated delivery hour of the operating day (due to unplanned outages and derates).[326]

[326] An outage refers to a total loss of a generator's day-ahead scheduled energy; a derate corresponds to a partial loss of a generators' day-ahead scheduled energy. For example, if a generator with 500 MW maximum power output is scheduled for 300 MWh in the day-ahead market for a particular hour, and subsequently experiences (say) a mechanical or other problem that limits its

Row [2] of column (B) shows that at the system-level, the energy supply scheduled in the day-ahead market that was unavailable during the scheduled hour of the operating day averaged 176 MW (per hour) during this two year period. Row [3] indicates that in five percent of all hours (which was 876 hours in total), the unexpected supply reduction was 585 MW or greater. Row [4] indicates the maximum during the study period was 2,064 MW.

Most of these unexpected supply reductions from day-ahead energy schedules represent the cumulative effect of multiple outages and derates that occur after the day-ahead market is conducted, and limit resources' ability to supply energy during their scheduled operating hours the next day.[327] Importantly, row [6] of column (B) in Table 1 shows that one or more) resources were unavailable to operate at the level scheduled in the day-ahead market (*i.e.,* an unexpected reduction in supply) in 99.97 percent of all hours—that is, in nearly every single hour during these two years.

(2) Unexpected Demand Increases from Day-Ahead Forecasts

Column (C) of Table 1 presents estimates of the system's replacement energy required when there is an unexpected increase in energy demand (that is, a load under-forecast error). The data in this column represent the difference between the system's actual hourly firm load[328] and

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output to a maximum of 200 MWh during the corresponding hour, we record an unexpected supply reduction (*i.e.*, a derate) of 100 MWh for the operating hour. This data in this analysis includes outages and derates for both generators and external transmission interfaces.

327 During this two-year study period, there were only three unexpected supply reductions from day-ahead energy schedules that met the NERC definition of a Reportable Balancing Contingency Event (which, on the New England system, generally corresponds to an abrupt, single-source supply loss of 900 MW or more). The unexpected reductions in supply after the day-ahead market that are summarized here can generally be covered using replacement energy from resources with longer response times than Contingency Reserves, including ninety-minute and four-hour response capabilities.

328 In this context, firm load is the 'native' load of the New England Balancing Authority Area, excluding external transactions, and is the load value that is estimated by the ISO's day-ahead load forecasts. *See* ESI White Paper at 137-38.

the greater of (1) the ISO's day-ahead forecast load for the same hour, and (2) the day-ahead cleared supply of energy from all physical resources for that same hour, whenever that difference is positive. The average value in row [2] of column (C) is 90 MWh for this two year period; row [3] shows that in five percent of all hours, the replacement energy needed for these unexpected increases in energy demand exceeded 492 MWh; and row [4] reports that the maximum amount of replacement energy required in this type of circumstance during this period was 2,697 MWh. Row [6] indicates that unexpected increases in energy demand, relative to (the greater of) day-ahead forecast energy demand and day-ahead cleared physical supply for the same hour, occurred in thirty-five percent of all hours during this period.[329]

(3) Total Replacement Energy Need

In Table 1, column (D) summarizes the system's total replacement energy need during this two-year period. Importantly, this column's data accounts for the fact that, in many hours of the year, there is a netting effect (*i.e.*, a fully or partially offsetting) of, unexpected reductions in supply and unexpected changes in demand. For example, suppose that the total of all resources' energy supplies scheduled in the day-ahead market that were unavailable at the corresponding operating hour is 500 MW (system-wide), and that for the same hour, the day-ahead load forecast was equal to the day-ahead cleared physical energy supply but there is a 300 MW *decrease* in real-time firm load relative to the day-ahead load forecast. In that situation, the net replacement energy need would be 200 MW (500 MW–300 MW) for the operating hour. The data summarized in column

329 During this two-year period, the load forecast was accurate on average. *See* ESI White Paper at 137-38. The frequency reported in row [6] of column (B) is the fraction of hours that the load forecast exceeded the *greater of* actual real-time load or the physical energy supply cleared in the day-ahead market. That frequency of thirty-five percent is much less than the frequency of load under forecast error alone (which is close to fifty percent on an annual basis).

(D) are determined by performing the replacement energy calculation hourly, accounting for this netting effect in any hour that it occurs.[330]

Note also that, in some hours, there is instead a *compounding* effect: in addition to the unexpected reduction in total available energy supply from resources' day-ahead schedules, there is an increase in firm load in real-time (relative to the greater of the day-ahead load forecast and day-ahead cleared physical supply). Both the netting and the compounding effects are accounted for in the data summarized in the last column of Table 1.

Column (D), row [2] shows that the average *hourly* net total replacement energy need is 188 MW during this two year period. This is less than the sum of the averages in columns (B) and (C) because of the netting effect explained above. Row [3] indicates that in five percent of all hours (or 876 hours in total), the net total replacement energy need was 819 MW or greater, and row [4] indicates the maximum was 3,821 MW.[331]

Taking account of both the netting and the compounding effects, row [6] in Table 1 shows that net total replacement energy is needed by the system in fifty-three percent of all hours (which, per row [5], is 9,209 hours during this two-year period). That frequency of net total replacement energy need indicates that, in order to satisfy the system's real-time energy demand, the ISO requires replacement energy in real-time (from resources operating above their day-ahead energy schedules, if any) in more than half of all operating hours.

Figure 1 plots the hourly values of the system's net total replacement energy need during 2018 and 2019. The largest value occurred on September 3, 2018. Other large values tended to

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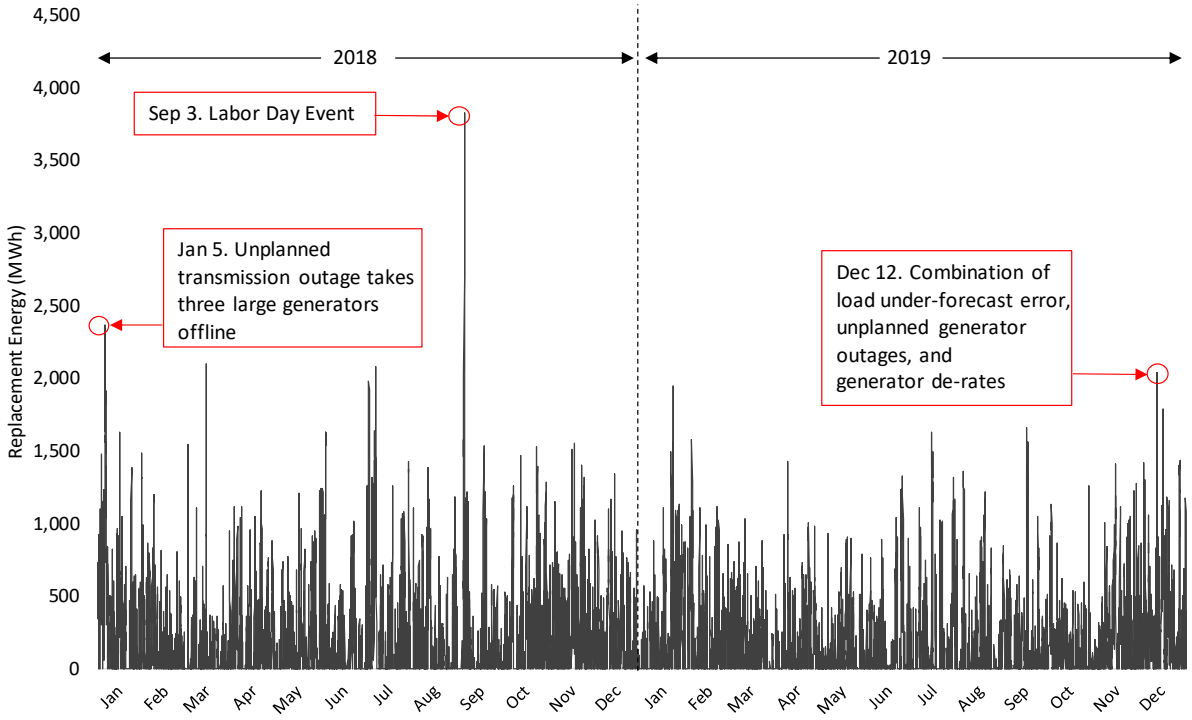
330 Note that the data summarized in column (D) do not inform the sources—that is, the types of resources—that supplied replacement energy; they only address the quantities of replacement energy needed.

331 This maximum value occurred during September 3, 2018, and resulted in a real-time Operating Reserve deficiency that day. S*ee* Brandien Testimony at 21-23.

occur on days when the system experienced both significant unexpected supply reductions and unexpected demand increases concurrently.

Figure 1. Net Replacement Energy, 2018 and 2019, Hourly Data



Taken together, the data summarized in Table 1 and Figure 1 establish the first two of the important facts stated above. First, Figure 1 confirms that replacement energy is needed routinely to ensure reliability, *i.e.*, to meet the system's real-time energy demand and reserve requirements. Specifically, the value in row [6] of column (D) establishes that replacement energy was needed in 53 percent, or approximately one-half, of all hours during this two-year study period. Thus, NEPOOL's claim that replacement energy is needed only infrequently, or that it is needed only to restore contingency reserves in real-time, is incorrect.

The second fact that these data establish is that replacement energy is needed not only for unexpected supply reductions from resources' day-ahead energy schedules, but that it is frequently also needed due to unexpected demand increases (*i.e.*, load forecast error). The fact that replacement energy is needed to address load forecast error (or, more precisely, the contribution

of load forecast error to the total need for replacement energy) is addressed further, in the context of NEPOOL's alternative proposal, in part in Section IV.C.2 of this Answer.

(4) Net Actual Replacement Energy Needs Are Similar in Winter Months and in Non-Winter Months

The third fact that the ISO's analysis of 2018-2019 establishes is that similar amounts of replacement energy are required, with similar frequency, during non-winter months and during winter months. This is demonstrated by examining the net replacement energy needed during the winter hour and non-winter hours of 2018 and 2019, as summarized in Table 2 below.

Table 2. Replacement Energy Statistics, Winter and Non-Winter Hours, 2018 and 2019

	(A)	(B)	(C)	(D)
	Statistic (MW)	**Winter Hours (Dec., Jan., Feb.)**	**Non-Winter Hours (Mar. – Nov.)**	**All Hours**
[1]	Minimum	0	0	0
[2]	Average	235	173	188
[3]	Top 5th Percentile	910	783	819
[4]	Maximum	2,362	3,821	3,821
	Frequency of Positive Values			
[5]	Positive Hours (#)	2,585	6,624	9,209
[6]	Positive Hours (%)	60%	50%	53%

Table 2 was compiled by breaking down the hourly data underlying Figure 1 above (and summarized in column (D) of Table 1) into hourly replacement energy needed (a) during the winter months of January, February, and December of 2018 and 2019; and (b) during the non-winter months of the same two years. Column (B) of Table 2 shows the hourly summary statistics for net

total replacement energy during all of the winter months. Column (C) reports the same hourly summary statistics for net total replacement energy during all non-winter months. For convenient reference, Column (D) replicates the same values in column (D) of Table 1, that is, the net total replacement energy for all hours during 2018 and 2019.

The values in columns (B) and (C) of row [2] show that the average hourly quantity of replacement energy required in non-winter months (173 MW) was comparable to the quantity required in winter months (235 MW). Row [6] further demonstrates that the frequency of hours in which replacement energy was needed did not differ dramatically between winter months and non-winter months— 50 percent of all non-winter hours (as shown in the last row of column (C)) compared with 60 percent of all winter hours (as shown in the last row of column (B)).

The data summarized in Table 2 thus clearly indicated that the need for replacement energy in non-winter months is similar to that of winter months. Accordingly, there is no factual foundation for NEPOOL's proposal to administratively preclude day-ahead market compensation for replacement energy in only the winter months of each year.

iii. A Recent, Non-Winter Example Illustrates the Need for Reliable Replacement Energy

Between May 27 and June 6, 2020, New England experienced multiple large disturbances: the loss of the New England-Hydro-Quebec TransEnergie HVDC Transmission Facility ("Phase II HVDC Facility") at 1,980 MW on May 27; the loss of the Phase II HVDC Facility and a major generating plant on May 29, totaling approximately 2600 MW; and the loss of a major generating plant of approximately 1250 MW on June 6. These recent system conditions further highlight the system's need for reliable replacement energy all year. The system conditions experienced over the weekend of May 29-30 help further illustrate that need.

On May 29, 2020, at approximately 2:04 PM, the system experienced the loss of a major generation facility, an abrupt supply reduction of approximately 1,250 MW. Later that same day, at approximately 8:23 PM, the system experienced the loss of one-half of the Phase II HVDC Facility, and about ten minutes later, the system lost the other half of the same facility, resulting in a total supply reduction from Quebec of approximately 1,340 MW. Thus, within a span of approximately six and a half hours, the system experienced the unexpected loss of nearly 2,600 MW of supply.

Immediately following each of these events, in accordance with applicable reliability standards, the ISO activated contingency reserves to respond to the energy supply reductions and, over time, took further actions to restore those reserves to reserve status. The ISO operated the system within all applicable reliability standards and no operating reserve deficiencies were realized. Notably, each of these unexpected events occurred after the close of the day-ahead market for the May 30, 2020 operating day, resulting in the need to commit, out-of-market, a large number of additional resources to provide the replacement energy necessary to ensure a reliable Operating Plan throughout the May 30 operating day.

Demonstrably, replacement energy is needed year round, and its purpose serves to address both unexpected reductions in supply and unexpected increases in demand. Without access to reliable replacement energy, the system would frequently not be able to satisfy its real-time energy demand and operating reserve requirements without reliance on emergency measures, and that risk may increase in the future given the generation fleet's continuing, rapid shift to more and more just-in-time resources.

b. The Need for Reliable Replacement Energy Is Rooted in Established Reliability Standards

Having a next-day Operating Plan that is capable of obtaining sufficient replacement energy to meet the system's unexpected reductions in supply and unexpected increases in demand is not discretionary. Instead, it is rooted in reliability standards that apply throughout the year, not merely during three winter months.[332]

Mr. Brandien explains that NERC reliability standards require the ISO, as the Reliability Coordinator, Balancing Authority, and Transmission Operator, to be prepared to address, as part of its next-day Operating Plans, the real-time needs related to the system's largest potential operating contingencies, as well as potential non-performance of committed resources and errors in day-ahead load forecasts.[333] Specifically, NERC TOP-002-4 requires the ISO to prepare an Operating Plan each day, and those plans must ensure the availability of sufficient resources to meet "demand patterns" as well as "generator outages." NEPOOL fails to reconcile its proposed three-month limitation on RER with this "reliability mandate that applies throughout the entire year."[334]

c. NEPOOL Seeks to Avoid Additional Compensation to Suppliers of this Essential Reliability Service, and Would Have the Region Continue Out-of-Market Practices Instead

NEPOOL's own presentation reveals that the real rationale for its proposed winter-only restriction on RER is to avoid transparently pricing, and incurring the corresponding cost of, this essential reliability service during non-winter months. Through the affidavit of its witness, Mr. Griffiths, NEPOOL concedes that it wants the ISO to continue to rely upon its existing, out-of-

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332 *See* Brandien Testimony at 6-12; *see also* EMM Comments at 5 ("We support the ISO Proposal to fully represent the . . . reliability criteria in its day-ahead market with the proposed replacement reserve requirement. . . . Importantly, this is a reliability mandate that applies throughout the entire year.").

333 *See* Brandien Testimony at 6.

334 EMM Comments at 5.

market processes for obtaining replacement energy when it is needed: "the NEPOOL winter-only RER amendment simply will allow ISO-NE to continue to rely on the same toolkit to maintain system reliability which it has successfully applied over the past decade."[335] Similarly, in discussing NEPOOL's proposal to eliminate the use of RER to address load forecast errors, Mr. Griffiths states that this approach "would allow ISO-NE to meet its requirements using exactly the same tools that it uses today to manage load forecast error."[336]

Simply put, NEPOOL seeks to administratively preclude the transparent pricing of the reserve capabilities that the system requires to ensure the ISO can create and sustain reliable next-day Operating Plans. That is an unsound basis for the Commission to adopt NEPOOL's winter-only restriction for RER under the ISO's proposed market design.

d. NEPOOL's Limited RER Proposal Fails to Satisfy the Commission's Directive, and Disregards Principles of Sound Market Design Error! Bookmark not defined.

The Commission should reject NEPOOL's alternative proposal because it fails to fully achieve the market-based solution the Commission directed. The data described above underscore the ISO's repeated observation that there is no reason to expect the misaligned incentives problem to simply "disappear" in non-winter months. Nor will this issue solve itself absent enhancements to the ISO's market design.[337] The problem is a consequence of the incompleteness of the current market design, and its resolution therefore dictates changes to that design.

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335 Griffiths Affidavit at 11-12; *but see* Brandien Testimony at 23-26 (explaining the concerns that the current tools, which assumes there will be sufficient energy available each day in real-time from resources that have no day-ahead commitments, no longer work given the evolving resource mix).

336 Griffiths Affidavit at 12.

337 *See* Cavanaugh Affidavit at 5 (conceding the misaligned incentives problem results in insufficient incentives for suppliers to make investments in energy supply arrangements that are necessary to ensure they can operate when needed).

As demonstrated above, it is indisputable that the system relies upon resources for replacement energy routinely to meet energy demand, and that there are inefficiently low incentives under current market design for resource investment to ensure this essential reliability service.[338] Those inefficiently low incentives do not abruptly disappear in non-winter months and then re-appear for winter months. Simply put, under the current market construct, it is not economical for resources to invest in the energy supply arrangements so that they can continue to provide this essential service when needed, nor should they be expected to do so. Therefore, in proposing to eliminate RER outside winter, and for purposes of managing demand uncertainties, NEPOOL is effectively asking the Commission *not* to correct the market inefficiencies that NEPOOL's own witness acknowledges,[339] even though the ISO has presented a market-based solution that provides cost-effective incentives, in direct response to the Commission's compliance directive. Accepting NEPOOL's RER limitation would run counter to the Commission's longstanding objective to promote economically efficient outcomes (a goal NEPOOL acknowledges, but disregards),[340] and to the compliance directive of the July 2 Order.

338 *See* ESI White Paper at 13-20, 47-49.

339 Cavanaugh Affidavit at 5.

340 *See* NEPOOL Comments at 15 (referencing the Commission's mission statement to "[a]ssist consumers in obtaining *economically efficient, safe, reliable, and secure energy services at a reasonable cost* through appropriate regulatory and market means").

e. Contrary to NEPOOL's Claims, the Compliance Filing Amply Justifies the Costs of RER Outside of Winter and to Address Load Forecast Error Year Round

Similar to NESCOE, NEPOOL argues that compensating resources for RER in non-winter months and to account for load forecast errors will create additional costs for consumers that it contends are unjustified. Contrary to NEPOOL's claims, however, the Compliance Filing amply supports and justifies these potential costs.[341] Such costs are a critical component of the real price of operating a reliable power system through economically sound, efficient markets. By creating these competitive, transparently-priced services, the Energy Security Improvements will address head-on the misaligned incentives problem, thereby providing the long-term, market-based solution to New England's energy security issues that the Commission directed the ISO to submit. NEPOOL's proposal to continue failing to remunerate resources for RER in the times and for the purposes they seek to proscribe, is not just and reasonable, and is at odds with Commission precedent and guidance.

If, as NEPOOL avers, there is always an ample supply of replacement energy in New England outside of the winter months,[342] then the day-ahead market clearing prices of these competitively procured RER services will reflect that. As the ISO's Internal Market Monitor explains in its comments, "In a proper well-functioning market, ample supply of a given product should be reflected in relatively low clearing prices when the product is in low demand."[343] That

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341 *See* ESI White Paper at 85-86 (explaining, through numerical examples, that the increased costs provide improved incentives for resource owners to make cost-effective arrangements for energy supplies, but no more, consistent with society's interest).

342 *See* Daly Affidavit at 6-7.

343 IMM Comments at 23 (explaining that "[s]imply, turning the product off during the non-Winter period when it may not be needed, or not as likely to be needed, does not reflect confidence in or application of a market-based solution."); *see also* EMM Comments at 5 (concurring that low prices are the logical, expected outcome if reliability services are in ample supply in non-winter months).

low clearing price is the proper outcome when there is more than sufficient supply of a service relative to demand, where the latter reflects the extent to which the service is needed for a reliable system.[344] From this perspective, NEPOOL's proposal is inconsistent with any market-based solution at all—it is an effort to suppress administratively prices that, by NEPOOL's own supposition, should be low (albeit not zero) when the system is not stressed.

2. NEPOOL's Proposal to Eliminate the Use of RER to Address Load Forecast Error Is Unfounded, and Fails to Account for Its Cost Mitigating Benefits

Equally untenable is NEPOOL's proposal to preclude the use of RER to address load forecast errors. NEPOOL asserts that the term "LFE is vague," there is no "fuel security need, and [the proposal] will add considerable unnecessary costs to consumers."[345] None of these reasons justify altering the ISO's proposal. As already noted, there is a demonstrated need for the market to incent resources to invest in energy supply arrangements, so that they are able to provide the replacement energy service the system needs to address demand uncertainties (*i.e.*, load forecast errors).

The Commission should give no weight to NEPOOL's criticism of the ISO's use of RER to cover load forecast errors on the ground that the ISO has not included a definition of "load forecast error." There is no such definition in the current Tariff or ISO operating procedures, but NEPOOL nevertheless states no objection to—indeed, it supports—the ISO's continuing utilization of its current, out-of-market mechanism for procuring energy to cover such situations.

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344 This sentiment is echoed in comments by the External Market Monitor, which notes that "[e]ven if NEPOOL is right that commitments have not been need outside of the winter months, it is not because there is no requirement – it is because of excess supply. Therefore, it is not reasonable to eliminate the requirement, but instead to procure the supply at a low price that reflects the prevailing excess." EMM Comments at 5.

345 NEPOOL Comments at 3.

Finally, NEPOOL fails to account for a key underlying rationale for the ISO's proposal—*i.e.*, mitigating consumer costs. For these reasons, NEPOOL's proposal to eliminate the use of RER for addressing load forecast error should be rejected.

NERC reliability standards require the ISO's daily Operating plans to account for demand patterns and the use of reserves for load forecast errors. To meet those requirements, the ISO presently relies on operating reserves to help account for load forecast errors,[346] and the use of reserves for that purpose is expressly provided for in the ISO's Operating Procedures, which were reviewed and approved by NEPOOL through the stakeholder process.[347]

Currently, neither the Tariff nor the ISO's Operating Procedures detail the dynamic calculations or provide the specific megawatt quantities used for this purpose. NEPOOL does not challenge that practice when it proposes that the ISO should continue to "meet its requirements using exactly the same tools that it uses today to manage load forecast error[s]."[348] Evidently, NEPOOL finds no ambiguity about the meaning of load forecast error in the context of the ISO's existing, out-of-market procurement of replacement energy to address such errors. NEPOOL's assertion that load forecast error is vague only when it comes to applying the proposed RER product plainly has no merit.[349]

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346 *See* Brandien Testimony at 10.

347 *See ISO New England Operating Procedure No. 8 Operating Reserve and Regulation*, ISO New England Inc., 3 (Aug. 2, 2019), https://www.iso-ne.com/static-assets/documents/rules_proceds/operating/isone/op8/op8_rto_final.pdf (providing for the use of operating reserves to address "[e]rrors in forecasting New England RCA/BAA loads").

348 Griffiths Affidavit at 12.

349 To ensure an accurate record, the ISO notes an incorrect statement of NEPOOL affiant Mr. Cavanaugh. Contrary to Mr. Cavanaugh's assertion, *see* Cavanaugh Affidavit at 11, the Compliance Filing did not propose 600 MWh of ancillary services for load forecast error, or any specific value. NEPOOL's affiant Mr. Griffiths explains that stakeholder discussions to date have indicated that load forecast error could add approximately 360 MWh to the RER requirement. *See* Griffiths Affidavit at 20-21. Therefore, Mr. Cavanaugh's estimates of the costs associated with including load forecast error are erroneous.

In addition, NEPOOL unjustifiably disregards the ISO's explanation that the proposed replacement energy reserves are a less expensive market means to prepare the system to cover load forecast error than relying upon fast-ramping generation contingency reserves.[350] Moreover, enabling the ISO to address load forecast error with replacement energy resources that have longer lead times will provide a significant additional source of competitive supply for this purpose, which should translate to lower costs for consumers.[351] As the ESI White Paper explains, the ISO:

> [E]xpect[s] that replacement energy reserve may provide a lower-cost means to do so than higher-cost day-ahead generation contingency reserves . . . . This potential lower-cost solution to addressing load forecast error is possible because in practice, errors in the day-ahead load forecast can become evident many hours in advance of real-time; thus, the longer-lead time replacement energy reserve products may effectively help address it.[352]

NEPOOL has offered no evidence to contest the ISO's explanation that its proposal will provide a more cost-effective means of addressing load forecast errors.

Finally, contrary to NEPOOL's claims, the ISO's proposed Tariff language is not unreasonable, nor is its approach to accounting for load forecast error "vague and undefined." First, the amount of reserves needed to reasonably address load forecast errors may be determined dynamically, using statistical and other modeling that can account for various factors (such as the season, time of day, or other parameters) on which load forecast error depends. The Commission

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350 *See* Impact Assessment at 49 Table 9 (reflecting generation contingency reserves have higher clearing prices than replacement energy reserve).

351 *See* ESI White Paper at 174 Figure 7-3 (showing that, in practice, total offline ninety-minute and four-hour RER capability substantially increases total potential energy supply beyond that available from only ten- and thirty-minute reserves in the New England system). The ISO also may make supplemental commitments of longer-lead time resources to provide additional capability if load forecast error is foreseen in time during the operating day—another out-of-market action.

352 ESI White Paper at 158.

has previously determined that ancillary matters like price verification procedures, calculations of reserves, and market modeling details are properly excluded from tariffs.[353]

Second, the level of Tariff detail reflected in the ISO's Energy Security Improvements is consistent with existing Tariff provisions pertaining to similar dynamic calculations, such as load forecast.[354] It is also similar to how the ISO currently treats real-time operating reserve requirements, with the details of the determinations provided in Operating Procedures, rather than the Tariff.[355] The ISO does not specify hourly operational reliability-oriented models in the Tariff, but develops them through analysis and incorporates the details, as appropriate, in its Operating Procedures after review and input from stakeholder technical committees.

The Commission has long held that "[t]o ensure the reliable operation of the system, an RTO must have authority to determine quantities and locations for ancillary services."[356] In the immediate context, therefore, it is entirely reasonable for the ISO to develop such dynamic, technical models tailored to the use of RER for load forecast error, to update them as it finds necessary as load patterns continue to evolve, and to review them with stakeholders, as the ISO has already committed to do. Developing and maintaining such technical matters outside the Tariff is consistent with longstanding ISO practice and Commission precedent.

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353 *See Midcontinent Indep. Sys. Operator, Inc.*, 170 FERC ¶ 61,075, at P 38 (2020).

354 *See* Tariff § III.1.10.1A(h) (providing, without any detailed calculations or methodology, for the ISO to develop forecasts for the total loads in New England, and to make that available on the ISO's website).

355 *See id.* §§ III.1.7.19.1, III.2.7A.

356 Order No. 2000 at 422-23.

3. NEPOOL's Proposed $10/MWh Strike Price Adder Will Only Undermine the Efficacy of the Energy Security Improvements and Must Be Rejected

NEPOOL proposes changing the calculation of the Energy Call Option Strike Price ("Option Strike Price"), a core element of the Energy Security Improvements. The value of the Option Strike Price directly affects suppliers' option award settlements,[357] and hence, their incentives to arrange energy to cover their day-ahead ancillary service obligations.[358] In accordance with sound economic theory, the ISO has set this Option Strike Price equal to the expected real-time energy price, as estimated daily prior to the Day-Ahead Energy Market.[359] NEPOOL does not appear to dispute the ISO's assessment of economic theory on this issue, but nonetheless proposes that the Option Strike Price be further increased by a fixed $10/MWh "adder" at all times.

NEPOOL tenders two central arguments in support of its proposed strike price adder. First, it argues that the $10/MWh strike price adder "would reduce the cost and risk associated with the selling of ESI options which, in turn, may reduce consumer costs."[360] Because the Option Strike Price affects option awards' settlements, in manner such that a higher strike price tends to lower suppliers' offer prices, NEPOOL's intended result, apparently, is "lower pricing."[361] Second,

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357 *See* ESI White Paper, Section 4.3

358 *See* ESI White Paper, Section 5.3

359 *See* ESI White Paper, Section 4.5

360 Griffiths Affidavit at 30. Some supporters observe that NEPOOL's proposed $10/MWh strike price adder's "overall net revenue impacts are very small," EMM Comments at 11; NESCOE Protest at 29, whereas others characterize them as "substantial." Cavanaugh Affidavit at 16. Uncertainties aside, no party contests that directionally, the strike price adder would reduce suppliers' revenue.

361 Cavanaugh Affidavit at 16.

NEPOOL asserts those lower prices would be achieved "all without adversely impacting fuel security" that the Energy Security Improvements are designed to provide.[362]

As discussed more fully below, NEPOOL's fuel-security arguments are unfounded and contrary to both theory and pertinent data. Lower consumer costs that result from the strike price adder would come at the expense of the design's effectiveness, undermining suppliers' incentives. That harm may be most pronounced during high-priced periods, when the system may experience greater stress, and when incremental fuel arrangements are likely to be most critical to maintain system reliability. For these reasons, the Commission should reject the proposed strike price adder and accept the ISO's Option Strike Price, which suffers from none of these flaws.

a. Arbitrary Administrative Adders Are Inappropriate in Market Rates

The specific value of the strike price adder proposed by NEPOOL appears to be entirely arbitrary. Nowhere in the comments in support of the adder does any proponent explain how its value—$10/MWh—was selected. No formula, derivation, or calculation is provided to set forth how this proposed rate was determined.

The Option Strike Price is a rate provided in the Tariff, and under NEPOOL's proposal, the strike price adder would become an explicit component of that rate. It therefore would govern, in significant part, a rate of payment determining suppliers' compensation for the new day-ahead ancillary services. Adding an arbitrary rate component to a market's settlements—particularly when that rate component's underlying calculation remains a mystery—is not a hallmark of transparent, economically sound market design.

362 NEPOOL Comments at 27.

b. Commenters' Assertions that the Arbitrary Strike Price Adder Would Not Adversely Affect Fuel Security Are Unfounded and Inaccurate

Proponents of the $10/MWh strike price adder make the assertion—facially too good to be true—that consumer cost savings can be had without compromising the design's ability to improve fuel security. For example, NEPOOL asserts "the Strike Price $10 Adder would reduce costs with no material impact on system reliability."[363] The External Market Monitor, expressing support for the strike price adder, observes more cautiously that reducing suppliers' revenues "does not necessarily mean that the supplier will not provide reserves reliably."[364] And most brazen, NEPOOL's witness Mr. David A. Cavanaugh states that "[t]he Analysis Group ESI Report provides that the strike price adder would reduce costs to consumers, *without undermining suppler incentives*, by up to $1 million, $13 million and $15 million in the Winter Months' Frequent, Extended and Infrequent Cases."[365] Upon inspection, however, these parties provide scant evidence to substantiate these assertions that the strike price adder would not adversely affect fuel security.

As a threshold matter, and contrary to Mr. Cavanaugh's assertion, the Impact Assessment does *not* say that reduced costs associated with the proposed strike price adder would not undermine supplier incentives. In fact, immediately after the passage cited by Mr. Cavanaugh, the Impact Assessment states:

> While our analysis does not quantify an impact to reliability benefits, we would nonetheless expect that ESI would create less reliability benefit [with the proposed $10/MWh strike price adder] because, with a reduced closeout cost risk under this Scenario relative to the ESI Central Cases [that do not include the proposed

363 NEPOOL Comments at 29.

364 EMM Comments at 11.

365 Cavanaugh Affidavit at 17 (emphasis added).

> $10/MWh strike price adder], the incentives to increase inventoried energy would be diminished.[366]

Notably, the ISO's Internal Market Monitor also concluded that "a $10 strike price adder potentially will undermine incentives and lower risk for sellers while only disproportionately (*i.e.*, slightly) lowering costs for consumers."[367]

i. Proponents Misconstrue the Impact Assessment Date Concerning the Strike Price Adder

Proponents misinterpret data from the Impact Assessment in asserting that the proposed strike price adder would not materially impact incentives for resources to procure fuel.[368] Commenters appear to rely on Tables 62 through 64 of the Impact Assessment, which estimate the net revenues associated with procuring incremental fuel oil under various scenarios, including the "central case" (the Energy Security Improvements as filed by the ISO, without any adjustment to the Option Strike Price) and the case in which the strike price is increased by NEPOOL's arbitrary $10/MWh adder.[369] But these commenters ignore a critical limitation of the portions of the Impact Assessment on which they rely.

While those tables generally illustrate how incentives to procure fuel change with and without the proposed $10/MWh strike price adder, that analysis was not intended to, and does not, inform fuel-related comparisons of the design with versus without the $10/MWh strike price adder. The Impact Assessment explicitly states:

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366 Impact Assessment at 98.

367 IMM Comments at 5.

368 *See, e.g.*, Griffiths Affidavit at 20-21, 31; Cavanaugh Affidavit at 16-17; EMM Comments at 10-11.

369 The External Market Monitor's comments reference "[r]ecent simulations" without citation. EMM Comments at 10. This appears to be a reference to Tables 62 through 64 in the Impact Assessment, as the External Market Monitor's ensuing data-related statements match various values in those tables.

> We caution the reader from drawing precise quantitative conclusions about the magnitudes of these incentives under the alternatives as they compare to the ISO's proposal. The values presented in Table 62 to Table 63 for RER Plus and Strike Price plus $10 *reflect the same incremental fuel inventory* assumptions as in the Central Case, while the No RER value assumes one-half of the incremental fuel inventory as was assumed in the Central Case. *In each case, these assumptions are not precisely calibrated to reflect the differences in incentives under each alternative design relative to the ISO's proposal.*[370]

In other words, the results in those tables do not model, nor analyze, changes in fuel inventories with versus without the $10/MWh strike price adder; the fuel inventories were simply held constant (*i.e.*, assumed not to change), and the impact of the strike price adder on fuel inventories was not studied here.

As context, the revenue assessments of the alternative proposals in those tables were requested by stakeholders, with little time to perform a full analysis. As an expedient, the tables hold the amount of fuel procured constant across each case, with and without the strike price adder. A proper analysis would more finely calibrate the fuel-related assumptions for each resource, by continually adjusting the fuel input assumptions and re-running the model, to ensure that they produce results that are fully consistent with profit-maximizing behavior facing the $10/MWh strike price adder (which, in theory, *can only reduce* resources' incentives to arrange fuel). But that exercise is not what is shown in these data. Hence, as explained in the Impact Assessment quote above, the data in those tables is useful to understand the directional revenue impact of the

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370 Impact Assessment at 121 n.87 (emphasis added). The limited analysis reflected in Tables 62 through 64 assume each of the three winter conditions posited in the Impact Assessment (Frequently Stressed Conditions, Extended Stressed Conditions, and Infrequent Stressed Conditions) for both the ISO's filed strike price and the proposed strike price plus $10/MWh that NEPOOL and others advocate.

proposed alternatives, but it was never intended to inform changes in fuel inventories, or fuel-related incentives, associated with the $10/MWh strike price adder proposal.

Notwithstanding this advance notice of their error, this is precisely how NEPOOL's supporters misuse the underlying data when they assert that any changes in incentives to procure fuel arising from the proposed strike price adder would be modest.[371] For these reasons, commenters are incorrect in relying upon the data in those tables to assert that the proposed $10/MWh strike price adder would not undermine resources' fuel incentives.

ii. NESCOE's Analysis Does Not Use the Appropriate Data, and Does Not Support Their Claim that the Strike Price Adder Would Not Harm Suppliers' Fuel Incentives

NESCOE's protest seeks to have the Energy Security Improvements rejected entirely; in the absence of that relief, it supports the NEPOOL proposal including the $10/MWh strike price adder. In support of the latter, NESCOE witness Mr. Wilson examines historical ISO price data to evaluate the potential settlement impacts of a $10/MWh strike price adder, and concludes the adder should "not appreciably affect[] the incentives created by the Energy Option."[372] But resources' incentives depend on both their revenues and their energy costs, here and generally, and Mr. Wilson's data analysis did not include any information on resources' energy costs. Because of that omission, the data he relies upon are not adequate to sustain his conclusion.

Specifically, Mr. Wilson describes the extent to which a $10/MWh strike price adder would have changed the frequency and magnitude of option suppliers' "closeout costs," based on analysis of day-ahead and real-time LMP data from 2017 to 2019.[373] Conceptually, that exercise measures

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371 *See, e.g.*, Cavanaugh Affidavit at 16-17; EMM Comments at 10-11.

372 Wilson Testimony at 76.

373 *See* Wilson Testimony at 80-84. The phrase "closeout costs" (sometimes called "closeout charges") refers to a portion of an option award's standard market settlement, specifically, the

how the strike price adder would reduce certain market settlement charges to suppliers with day-ahead option awards. Mr. Wilson's calculations show the strike price adder would reduce that component of an option supplier's costs;[374] that, in turn, can be reasonably expected to reduce suppliers' energy option offer prices and, therefore, day-ahead ancillary service clearing prices, as proponents assert.[375]

The ISO's Compliance Filing explains clearly that the impact of a higher strike price on a resource's incentive to arrange fuel depends upon the value of the strike price *relative to* its marginal cost of producing energy.[376] No party to this proceeding has disputed that underlying economic property of the energy option design.[377] Yet Mr. Wilson's data do not contain information on resources' marginal costs of producing energy, and therefore cannot quantify how the proposed strike price adder would affect energy option suppliers' incentives to arrange fuel. In sum, Mr. Wilson's analysis of the data does not support his leap to conclude that NEPOOL's proposed $10/MWh strike price adder "should . . . not appreciably affect[] the incentives created by the Energy Option."[378]

iii. "Close Enough Is Good Enough" Does Not Apply to a Large and Arbitrary Strike Price Adder

One of the guidelines articulated by the ISO for the strike price observes that "[f]ortunately, small inaccuracies in setting the strike price 'at the money' should not matter much," where the

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positive difference between the real-time energy price and the strike price. For details, see ESI White Paper, Section 4.3, examples (a)-(d), (i), and (j).

374 *See* Wilson Testimony at 80-83.

375 *See, e.g.,* Cavanaugh Affidavit at 16.

376 *See* ESI White Paper, Section 5.3, Figure 5-2 and discussion thereof at 96-98.

377 Mr. Wilson contests the hypothetical magnitude of this relationship in various possible situations, but not the existence of this relationship. *See* Wilson Testimony at 85-86.

378 Wilson Testimony at 76.

term "at the money" refers to the expected value of the real-time energy price.[379] Commenters hope to dramatically and inappropriately broaden the "wiggle room" provided in this guideline to cover the large adder to the strike price that they support. For example, NEPOOL witness Mr. Griffiths states that "ISO-NE repeatedly took the position that 'close is good enough' for the strike price—and has provided no data to suggest that expected LMP + $10 is not 'close enough.'"[380] This is disingenuous.

The guideline that "small inaccuracies should not matter much" presumes that the strike price is set correctly on average, at the expected value of the real-time energy price. It should not be misconstrued to suggest the strike price can be increased by a systematic 'bias,' or adder, and still function without any loss in efficiency. As the ISO explained in the ESI White Paper, the guideline in question recognizes a practical limitation:

> In practice, setting a strike price at the expected value of the real-time LMP for the delivery hour requires an estimate, or forecast, of the expected real-time LMP. That estimate must be provided to all participants prior to submitting bids and offers into the day-ahead market (per Guideline 1).[381]

The logic that suggests that "small inaccuracies" are immaterial does not extend to the arbitrary $10/MWh adder championed by NEPOOL. The ESI White Paper explains at length the importance of setting the Option Strike Price to the expected value of the real-time energy price, and the pitfalls of setting the Option Strike Price too high:

> To provide efficient marginal incentives, the strike price should be set at or below a day-ahead ancillary service seller's marginal cost of energy (for the corresponding delivery hour). A strike price that is set higher than that will tend to mute incentives to invest in energy supply (*i.e.*, fuel) arrangements, undermining both the incentives

379 ESI White Paper at 76.

380 Griffiths Affidavit at 31.

381 ESI White Paper at 76.

> and the cost-effectiveness of the new day-ahead ancillary services design.[382]

The ISO further explained that the magnitude of this problem increases as the strike price increases above the seller's marginal cost of energy.[383] Nothing in the ISO's guidelines condones inflating the Option Strike Price by a fixed adder under all possible market conditions, as NEPOOL proposes, and that may reasonably be expected to undermine suppliers' incentives as discussed next.

c. The ISO Has Already Demonstrated that the Arbitrary Strike Price Adder Can Only Reduce the Design's Efficacy

At stakeholders' request, the ISO performed supplemental analysis of the $10/MWh strike price adder that *did* account for resources' marginal energy costs—the information missing from NESCOE's data analysis discussed above. This more complete analysis indicates that—contrary to NEPOOL's assertions—the proposed $10/MWh strike price adder would indeed undermine the efficacy of the Energy Security Improvements. Convenient to their purpose, the NEPOOL pleading wholly omits any mention of these supplemental analyses.

Specifically, the ISO's analysis compared the marginal costs of resources selling energy options (as identified in the Impact Assessment) with strike price values that incorporate the fixed $10/MWh strike price adder proposed by NEPOOL.[384] Economic theory predicts that for resources that sell energy options and have marginal energy costs that are less than the higher

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382 ESI White Paper at 99.

383 *See* ESI White Paper at 95-101.

384 *See* Chris Geissler, *Energy Security Improvements (ESI): Assessing a Strike Price 'Bias,'* ISO New England Inc. (Feb. 11-13, 2020), https://www.iso-ne.com/static-assets/documents/2020/02/a4_a_iv_esi_assessing_a_strike_price_bias.pptx ("February Strike Price Presentation"); Chris Geissler, *Energy Security Improvements (ESI): Assessing a Strike Price 'Bias,'* ISO New England Inc. (Mar. 10-11, 2020), https://www.iso-ne.com/static-assets/documents/2020/03/a5_a_i_iso_presentation_assessing_strike_price_bias.pptx ("March Strike Price Presentation").

strike price that would result from NEPOOL's proposal, the incentive to procure fuel is potentially reduced by the $10/MWh strike price adder.[385] This is because in such circumstances, the resource would only pay a fraction of its replacement cost (in periods when there is an option closeout cost) if it did not procure fuel. As a result, the resource would not fully internalize these replacement costs when making the fuel procurement decision. For such resources, the $10/MWh strike price adder would therefore weaken the design's efficacy in addressing the misaligned incentives problem and undermine resources' incentives to arrange fuel.

In particular, the ISO's supplemental analysis found that—across all hours—between two and nine percent of the MWh of energy options examined would have marginal energy costs that are below the inflated strike price under NEPOOL's proposal, and therefore could see a reduced incentive to procure fuel.[386] This shows that concerns about the $10/MWh strike price adder reducing resources' incentives to procure fuel are not merely theoretical, but are likely to hold in practice. Additional calculations indicate that NEPOOL's proposed strike price adder could reduce these incentives for several hundred MW of options in each hour, as compared to the unadjusted Option Strike Price value filed by the ISO.[387]

In its pleading, NEPOOL contends that its proposed $10/MWh strike price adder "limits costs to consumers without materially adversely affecting the incentives to support resources' responsiveness in system stressed conditions."[388] Contrary to NEPOOL's assertion, however, the

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385 *See* ESI White Paper, Section 5.3; *see also* February Strike Price Presentationat 5-8.

386 *See* February Strike Price Presentation at 16.

387 *See* February Strike Price Presentation at 13-15. The Impact Assessment generally assumed that the Energy Security Improvements proposal procures 3,600 MW of options in each hour. Nine percent of 3,600 MW equals 324 MW. In practice, the options quantity is expected to vary by hour depending on system conditions; see ESI White Paper, Section 7.4 for supporting historical data on proposed energy option quantities for various proposed day-ahead ancillary services.

388 Cavanaugh Affidavit at 15.

ISO's supplemental analysis indicates that the adverse incentive impacts of the strike price adder potentially affect *more* suppliers during hours with high real-time energy prices—that is, when the system may be more likely to experience stressed conditions.[389]

Specifically, during hours when the energy price exceeds $150/MWh, approximately twenty percent of energy option MWh examined would have marginal energy costs that are below the increased strike price under NEPOOL's proposal, and therefore could see a reduced incentive to procure fuel (as compared to only two to nine percent in all hours, as noted above).[390] To put this in perspective, if 3,600 MW of day-ahead energy options are procured in hours when the real-time energy price exceeds $150/MWh, there would be approximately 720 MW (or 20 percent of 3,600 MW) for which the $10/MWh strike price adder may reduce suppliers' incentives to procure fuel, as compared to the ISO's Option Strike Price value (that is, without a strike price adder). These findings stand in contrast to NESCOE's assertion that the strike price adder would have "little impact on the ESI incentives when prices are higher and energy security might be more of a concern."[391]

In summary, consistent with the predictions of economic theory, the ISO's supplemental analysis confirms that it is reasonable to surmise that NEPOOL's proposed $10/MWh strike price

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389 This analysis is subject to certain limitations, which the ISO reviewed with stakeholders and are summarized in the February Strike Price Presentation; importantly, this analysis was limited to resources for which the modeling had reliable estimates of marginal costs (fossil-fueled resources, primarily). *See* February Strike Price Presentation at 11. NESCOE's witness Mr. Wilson critiques those limitations of the ISO's analysis, and in particular the use of the day-ahead LMP as a strike price in the supplemental analysis of the strike price adder; yet, that specific approach is consistent with Mr. Wilson's historical data analysis as well. *See* Wilson Testimony at 80, 89. These modeling details are peripheral to the central points reviewed here.

390 *See* February Strike Price Presentation at 18-21; *see also* March Strike Price Presentation 3-7.

391 Wilson Testimony at 84. This claim is based in part on Wilson's data analysis which, as discussed above, did not include any data on marginal costs and therefore do not substantiate that assertion in any event.

adder would reduce the Energy Security Improvements' fuel incentives. This adverse consequence appears to impact more resources during high-priced periods, when the system may experience greater stress, and when incremental fuel arrangements are likely to be most critical to maintaining system reliability. Moreover, there is no evidence to substantiate that the NEPOOL strike price adder would improve the region's fuel security, or the Energy Security Improvements' ability to achieve the compliance directive in the July 2 Order.

D. The Energy Security Improvements of Themselves Provide the Long-Term, Market-Based Solution that the Region Needs to Maintain Energy Security

A number of comments and protests advocate a forward seasonal market or to maintain existing, interim out-of-market fuel security measures even if the Commission accepts the Compliance Filing. These claims rely on unsupported assertions that the Energy Security Improvements will be insufficient to address New England's energy security concerns.

1. The Absence of a Seasonal Forward Market Does Not Render the Energy Security Improvements Unjust and Unreasonable, and a Related Compliance Directive Is Unnecessary

Certain commenters and protesters assert that the Energy Security Improvements proposal is incomplete or does not sufficiently address regional fuel security concerns without a seasonal forward market design component to incent forward fuel investments in advance of the day-ahead timeframe.[392] In its protest, for instance, Public Systems unequivocally asserts that without a seasonal forward market, the proposal does not solve the root cause of the region's fuel security problem, which they incorrectly attribute to certain generators' need to "make fuel-procurement decisions long before they know whether they will clear in the day-ahead or real-time markets."[393]

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392 *See, e.g.*, Public Systems Protest at 3-4, 11-18; NESCOE Protest at 23-24; Avangrid Comments at 3-4; Excelerate Comments at 4-5*; but see* API Comments, Section 5.

393 Public Systems Protest at 3-4.

They argue the omission of a seasonal forward market renders the Compliance Filing unjust and unreasonable and therefore urge the Commission to reject it. NRG Power Marketing LLC ("NRG"), on the other hand, fully supports the ISO's energy security enhancements to the existing market design, but asks the Commission to direct the ISO to implement a forward seasonal market to fully value the fuel security contributions of resources with substantial on-site energy storage.[394] The Commission should reject both requests.

First, while a forward seasonal market can complement the Energy Security Improvements, it is not a necessary element to achieve the compliance directive of the July 2 Order. As a general matter, markets create incentives for participants to incur significant up-front costs without a long-term contract to sell the outputs or any other form of guaranteed return. Therefore, it is reasonable to expect that generators will be willing to incur those costs if they anticipate sufficient returns. Indeed, many types of costs are incurred well in advance of delivery, before the compensation is known, both in electricity and other markets. For example, developers do not "pre-book" years of hotel reservations before building a hotel. Markets create incentives for participants to incur these costs, and bear the risks for doing so, when they expect that they will profit from such investments.

However, as discussed earlier, the misaligned incentives problem that exists under New England's current wholesale market rules provides insufficient likelihood for resources to earn returns from investments to improve their ability to provide energy in real-time (*e.g.*, through the procurement of additional fuel) commensurate with the value those investments provide to the market.[395] The Energy Security Improvements address this misalignment by introducing new revenue streams (*i.e.*, revenues from selling Day-Ahead Ancillary Services through energy

394 *See* NRG Comments at 3-4, 8-10; *see also* Avangrid Comments at 6-10.

395 *See* ESI White Paper at 2-4.

options, and the Forecast Energy Requirement Price for contributing to meeting the ISO's load forecast) that will help address the misaligned incentives problem and better incent additional fuel arrangements.

Despite commenter assertions to the contrary, this logic not only applies to fuel arrangements that can be made after the Day-Ahead Energy Market is run, but also to arrangements that must be made farther in advance. If a supplier expects that the Energy Security Improvements will lead its forward fuel procurement to earn positive returns, as the results of the Impact Assessment suggest,[396] the supplier is likely to make such an investment.[397] After considering this context, it becomes clear that Public Systems' arguments [398] are contrary to basic economic principles and observed behavior across a wide spectrum of markets, including electricity. More specifically, such arguments are implicitly premised on the notion that suppliers will only make costly investments if they are *guaranteed* to make a profit from doing so. That premise is antithetical to the basic precept of competitive markets, which provide no such guarantees, and instead produce efficient outcomes by requiring investors to bear the risks (and concomitantly to reap the potential benefits) of their investments.

Second, as the Compliance Filing states, the ISO already has committed to work with stakeholders to assess the potential benefits of a forward seasonal market and to bring a proposal

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396 *See* Impact Assessment at 53 Tables 11-13.

397 The ISO explained the economic logic behind such a decision in detail to stakeholders in a December 2019 presentation to the Markets Committee. *See* Chris Geissler, *Energy Security Improvements: Market-Based Approaches*, ISO New England Inc. (Dec. 11, 2019), https://www.iso-ne.com/static-assets/documents/2019/12/a6_c_iv_presentation_incents_fuel_arrangements.pptx.

398 Public Systems Protest at 13 (asserting that, absent a seasonal forward market, it is "unlikely that resource owners with substantial fuel storage capability . . . will substantially increase inventory levels . . . under ESI prior to the start of the winter period" (alteration in original) (quoting Public Systems Protest, Attachment A, Affidavit of Brian E. Forshaw ¶ 26)).

through the stakeholder process in 2021. For that work to proceed, however, the ISO needs a Commission order on the Compliance Filing on or before November 1, 2020. Such an order will provide needed guidance on the day-ahead market rules that will form the basis for the forward market. Given the ISO's stated commitment, it is unnecessary and indeed unwise for the Commission to impose on the ISO another compliance directive, for which both the costs and benefits are unknown.

2 With the Commission's Acceptance of the Energy Security Improvements, the Interim Out-of-Market Programs Must be Eliminated for the Market Design to Operate Effectively

As explained in the Compliance Filing, the ISO has proposed, with stakeholder support, to eliminate two interim out-of-market programs upon implementation of the Energy Security Improvements.[399] These two programs were designed to bridge the gap to the Energy Security Improvements, and their elimination is necessary to allow the design to operate most effectively. Notably, the ISO has conditioned its request to end the interim programs upon the Commission's acceptance of the Energy Security Improvements,[400] and the Commission directed that termination of the interim provisions should be an element of the ISO's long-term, market-based fuel security proposal.[401]

These types of out-of-market programs, while occasionally necessary, interfere with the ISO's ability to address the region's energy security in a sustainable manner. For example, retention of a resource pursuant to the fuel security retention rules would increase the region's

399 Compliance Filing at 64-66.

400 *Id.* at 64-65.

401 December 3 Order at PP 96-97.

energy supply and lower energy and reserve prices, thereby muting price signals that would cause other generators to take necessary steps to ensure reliable operations.[402]

Accordingly, these interim programs should be eliminated to maximize the efficacy of the Energy Security Improvements' market-based solution. Unencumbered by out-of-market programs, the ISO's market-based solution will create sufficient financial incentives for Market Participants to ensure their ability to operate reliably whenever they are needed during the course of the year, and particularly during extended cold weather conditions.

Exelon nevertheless asserts that the interim, out-of-market programs should continue alongside the Energy Security Improvements. Exelon's contention pivots on its claim that the Energy Security Improvements will be insufficient to improve reliability, and it would therefore be "imprudent to eliminate a potential tool to maintain reliability."[403] Although Exelon criticizes the Impact Assessment conducted by the ISO's expert, the Analysis Group Inc., Exelon offers no independent evidence to support its position that the Energy Security Improvements must be bolstered by retaining the Tariff's interim, out-of-market tools.

The ISO is clearly in a better position to assess whether the interim programs should remain in place, as is the Commission, on whose judgment the elimination of these programs is conditional. In contrast, Exelon's opinion is informed by its interest in extending these programs to facilitate the further retention of its Mystic generating units on a cost-of-service basis. Notably, Exelon is the only Market Participant that opposes the elimination of the out-of-market programs (and the only one whose resource has been retained pursuant to the interim rules).

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402 Compliance Filing at 66 n.276.

403 Exelon Protest at 7-13.

Indeed, Exelon not only objects to the ISO's proposed elimination of these out-of-market programs, but even seeks to extend them.[404] Exelon cites the remaining work for implementation of the Energy Security Improvements, suggesting that the out-of-market programs should remain in place until the permanent program is, in Exelon's view, "comprehensive, real, and tested."[405] As the ISO outlined in the Compliance Filing, it has a plan to timely complete the next phases of work, all of which will be conducted in a transparent fashion with stakeholders.[406] Exelon's suggestion that the out-of-market programs overlap with the Energy Security Improvements unjustifiably begs failure of the latter, for the reasons discussed above.

Exelon's rhetorical hand-wringing notwithstanding, the ISO submits that the Energy Security Improvements are the long-term, market-based solution that the region needs to maintain energy security on a going-forward basis. The success of that effort requires freeing the markets from interference from the interim out-of-market measures; the market design can function effectively only if it can competitively price the region's reliability needs without the "noise" of out-of-market measures that provide the same services under a non-market price.

404 *Id.* at 15.

405 *Id.* at 16.

406 Compliance Filing at 68-74.

V. CONCLUSION

For the reasons stated above, the ISO respectfully urges the Commission to reject the protests and arguments against the Compliance Filing, and to accept the Compliance Filing as submitted, to be effective November 1, 2020.

Respectfully submitted,

/s/ Monica Gonzalez

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Attachment A

Affidavit of Dr. White

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

ISO New England Inc.	)	Docket Nos. EL18-182-000
	)	ER20-1567-000

AFFIDAVIT OF MATTHEW WHITE
IN SUPPORT OF ANSWER OF ISO NEW ENGLAND INC.

My name is Matthew White. I am the Chief Economist for ISO New England Inc. ("ISO"). My business address is One Sullivan Road, Holyoke, Massachusetts 01040.

My primary responsibilities at the ISO include the design and development of the ISO's suite of auction-based electricity markets. Prior to joining the ISO, I held faculty appointments at the University of Pennsylvania's Wharton School of Finance and Commerce (2002-2009) and Stanford University's Graduate School of Business (1995-2001). At these institutions I conducted research on electricity demand, pricing, and market design, and taught graduate-level courses in economics and decision analysis. My public service includes appointments as a senior staff economist at the Federal Energy Regulatory Commission, Office of Energy Policy and Innovation (2009-2010) and the Federal Trade Commission, Bureau of Economics (2001-2002). My research studies have been published in peer-reviewed economics journals, and I have served as a referee and evaluator for the National Science Foundation and over twenty-five journals

spanning economics, engineering, and political science. I received a M.S. in Statistics and a Ph.D. in Economics from the University of California, Berkeley.

I previously provided an affidavit in support of the changes to the ISO New England Inc. Transmission, Markets and Services Tariff filed on April 15, 2020, in the above-captioned proceeding, to implement the "Energy Security Improvements," as fully described in the transmittal letter and white paper titled "Energy Security Improvements: Creating Energy Options for New England" accompanying that filing. I am the principal author of the white paper, participated in the drafting of the transmittal letter, and led the ISO's market design effort for this project.

I am providing this affidavit in support of the data analysis and tabulations, which I supervised, presented in Section IV.C.1.a.ii of the Motion for Leave to Answer, Motion for Leave to Answer Out of Time, and Answer of ISO New England Inc. ("Answer"). I declare that the information included in that section of the Answer is true and correct to the best of my knowledge and belief.

Matthew White, Chief Economist, ISO New England Inc.

Executed on June 15, 2020.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, D.C., this 15th day of June 2020.

/s/Michael J. Thompson

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Appendix A

List of Protests and Comments

Protest of the New England States Committee on Electricity, Docket No. ER20-1567-000 (May 15, 2020) ("NESCOE Protest"); Motion to Intervene and Protest of Massachusetts Municipal Wholesale Electric Company, New Hampshire Electric Cooperative, Inc., and Connecticut Municipal Electric Energy Cooperative, Docket Nos. EL18-182-000, et al. (May 15, 2020) ("Public Systems Protest"); Protest of Connecticut Department of Energy and Environmental Protection, Docket No. ER20-1567-000 (May 15, 2020) ("CT DEEP Protest"); Protest and Comments of Public Interest Organizations, Docket Nos. EL18-182-000, et al. (May 15, 2020) ("PIO Protest"); Comments of NRG Power Marketing LLC, Docket Nos. EL18-182-000, et al. (May 15, 2020) ("NRG Comments"); Comments in Support of the NEPOOL-Approved ESI Proposal of the New England Power Pool Participants Committee, Docket No. ER20-1567-000 (Apr. 24, 2020) ("NEPOOL Comments"); Protest of the Maine Public Utilities Commission, Docket Nos. EL18-182-000, et al. (May 15, 2020) ("MPUC Protest"); Comments of the Vermont Public Utility Commission, Docket No. ER20-1567-000 (May 15, 2020) ("VT PUC Comments"); Motion to Intervene and Comments of the ISO-New England External Market Monitor, Docket No. ER20-1567-000 (May 15, 2020) ("EMM Comments"); Initial Comments of Avangrid Service Company, Docket Nos. EL18-182-000, et al. (May 15, 2020) ("Avangrid Comments"); Motion for Leave to Intervene and Comments of Excelerate New England Lateral, LLC and Excelerate New England Onshore, LLC, Docket No. ER20-1567-000 (May 15, 2020) ("Excelerate Comments"); Comments of the American Petroleum Institute, Docket Nos. EL18-182-000, et al. (May 15, 2020) ("API Comments"); Limited Protest of Exelon Corporation, Docket Nos. EL18-182-000, et al. (May 15, 2020) ("Exelon Protest"); Comments of Advanced Energy Economy, Docket No. ER20-1567-000 (May 15, 2020) ("AEE Comments"); Comments of the Internal Market Monitor of ISO New England Inc. on Energy Security Improvements, Docket No. ER20-1567-000 (May 15, 2020) ("IMM Comments"); Comments of Massachusetts Attorney General Maura Healey, Connecticut Office of Consumer Counsel, and the New Hampshire Office of the Consumer Advocate in Support of the NEPOOL-Approved ESI Proposal, Docket No. ER20-1567-000 (May 15, 2020) ("Consumer Advocates of New England Comments").