

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

ISO New England Inc.

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Docket No. ER21-787-000

**PROTEST OF
THE NEW ENGLAND POWER GENERATORS ASSOCIATION, INC.**

Pursuant to Rules 211 and 214 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission (“Commission”),¹ the New England Power Generators Association, Inc. (“NEPGA”)² files this Protest of ISO New England Inc.’s (“ISO-NE”) proposed Cost of New Entry value (“CONE”) and Net CONE value for effect beginning in the sixteenth Forward Capacity Auction (“FCA 16”), and the proposed tariff revisions intended to implement the calculation of Net CONE.³ NEPGA asks the Commission to reject ISO-NE’s proposed filing, or otherwise find that there are material issues in dispute that should be set for evidentiary hearing. NEPGA demonstrates herein that ISO-NE’s approach to calculating Net CONE is systemically flawed and based on several unsupported and unrealistic assumptions that collectively bias and predispose an artificially depressed Net CONE value. Most significantly, ISO-NE has selectively and arbitrarily

¹ 18 C.F.R. §§ 385.211, 385.214 (2020). This Protest is timely filed according to the Commission’s Combined Notice of Filings #1, Docket No. ER21-787-000 (Dec. 31, 2020). The Commission accepted for filing NEPGA’s doc-less Motion to Intervene on Jan. 20, 2021, *available at*: https://elibrary.ferc.gov/eLibrary/docinfo?accession_num=20210121-5020.

² The comments expressed herein represent those of NEPGA as an organization, but not necessarily those of any particular member.

³ ISO New England Inc. Filing Re Updates to CONE, Net CONE and Capacity Performance Payment Rate, Docket No. ER21-787-000 (filed Dec. 31, 2020) (“ISO-NE Filing”).

omitted critical costs from CONE that are required to ensure gas delivery to the Reference Unit.⁴ Specifically, ISO-NE fails to include both the cost of gas compression and gas pipeline capacity upgrades that are demonstrably and irrefutably required for the Reference Unit to be built, to operate, and to earn the non-capacity market revenues ISO-NE forecasts for purposes of developing a Net CONE value. A Net CONE value that does not include the costs that the Reference Unit must incur to earn the revenue ISO-NE forecasts is an infeasible resource, as it simply cannot operate as contemplated by ISO-NE's own analyses.⁵

Similarly, ISO-NE's approach to modeling system conditions for purposes of forecasting energy and ancillary service ("EAS") revenues is inherently flawed. ISO-NE used a methodology to model system conditions that violates ISO-NE's Transmission, Markets, and Services Tariff ("Tariff")⁶, is inconsistent with its prior methodologies for calculating Net CONE, and creates poor market design likely to compel inefficient retirements from the Forward Capacity Market ("FCM"). ISO-NE modeled system conditions by creating a hypothetical system at capacity balance, *i.e.*, the quantity of resources on the system is equal to the Net Installed Capacity Requirement ("Net ICR"), unlike actual capacity supply balances in recent years. ISO-NE

⁴ The Reference Unit and location are primary considerations for the Net CONE recalculation methodology. ISO-NE must propose a specific type of resource to serve as the basis for forecasted costs and revenues, and in this proceeding proposes a combustion turbine, dual-fuel resource (with oil as the backup fuel), with a GE 7HA.02 combustion turbine (the Reference Unit), located in New London County, Connecticut - more specifically in Franklin, Connecticut, a town located in New London County. ISO-NE asserts that Franklin, Connecticut includes parcels that could site the Reference Unit within 2 miles of interconnection to both the 345 kV transmission system and a "main natural gas transmission line". See 2020 Net CONE Report at 22-26.

⁵ In its Motion to Intervene and Protest in this proceeding, CPV Towantic, LLC ("CPV"), challenges other ISO-NE assumptions not addressed in NEPGA's Protest, including ISO-NE's failure to include owner's development costs and an unreasonably low owner's contingency budget. CPV also challenges ISO-NE's failure to include the costs necessary for the Reference Unit to meet Connecticut's air emission requirements and, like NEPGA, challenges ISO-NE's failure to include a reasonable cost to construct a gas lateral to the Reference Unit. NEPGA fully supports CPV's Protest and asks the Commission to grant the relief CPV requests. See *Motion to Intervene and Protest of CPV Towantic, LLC*, Docket No. ER21-787-000 (filed Jan. 21, 2021).

⁶ All capitalized terms not otherwise defined herein will have the meaning set forth in the ISO-NE's Transmission, Markets and Services Tariff ("Tariff").

compounds this error by estimating EAS revenues using a resource mix that is untethered to any resource mix that has occurred or is reasonably expected to occur. Further, ISO-NE has imbedded in this new methodology several unsupported and unrealistic assumptions that are patently biased, yielding artificially high revenue offsets that depress the Net CONE value in an unlawful manner.

NEPGA will also demonstrate that ISO-NE has failed in its obligation to provide the factual support that is needed to justify a number of the cost and revenue assumptions, as explained herein. ISO-NE is obligated to offer evidentiary support to meet its burden to justify a just and reasonable finding from the Commission, and as NEPGA will demonstrate, ISO-NE's filing falls well short of this evidentiary burden.

Finally, NEPGA has quantified the impacts of flaws in ISO-NE's approach and will demonstrate that the magnitude of those impacts materially depresses the Net CONE value. NEPGA is not asserting that the only just and reasonable outcome here would be to accept all of NEPGA's adjustments outright. Rather, NEPGA is simply asserting that ISO-NE's proposed Net CONE value is not just or reasonable. Moreover, NEPGA recognizes that ISO-NE has some discretion in how it determines the appropriate reference technology and the underlying assumptions that drive the development of Net CONE. That discretion, however, is not limitless. Here, ISO-NE has developed a Net CONE value based on a Reference Unit that is pure fiction. NEPGA has irrefutably demonstrated in this filing that the Reference Unit cannot operate as contemplated given the CONE costs assumed for the project, and thus cannot earn the revenues assumed in translating CONE to Net CONE. ISO-NE has likewise chosen assumptions to model system conditions unsupported by fact. If the Commission were to accept ISO-NE's proposed Net CONE as filed, the Commission would render the Net CONE calculation process meaningless.

NEPGA supports its Protest through two affidavits from expert consultants. Richard Levitan and Sara Wilmer (“Levitan and Wilmer”), gas pipeline experts, jointly submit the attached affidavit refuting ISO-NE’s assumed costs, and supporting contrary cost assumptions, for on-site gas compression, gas pipeline capacity upgrades, metering station, and pipeline lateral costs. Levitan and Wilmer also explain the consequences of ISO-NE failing to include these costs on forecasted non-capacity market revenues. Matthew Tanner, an expert in energy market design, submits the attached affidavit contradicting ISO-NE’s assumptions and assertions regarding modelling the EAS revenues for the Reference Unit. Tanner explains why the ISO-NE’s policy arguments are flawed and how their assumptions are systemically biased resulting in a suppressed Net CONE value.

For these reasons, NEPGA asks the Commission to find that ISO-NE has violated its Tariff and has not demonstrated that its proposed Net CONE value, and the related proposed Tariff revisions intended to implement the Net CONE calculation, are just and reasonable. Thus, the Commission should reject the proposed Net CONE value and the related tariff revisions. In the alternative, NEPGA requests that the Commission find that there are material facts in dispute in this proceeding that should be set for evidentiary hearing.⁷

I. BACKGROUND

Beginning in 2014, with the switch from a vertical to sloped demand curve in ISO-NE’s FCA, the Net CONE value serves two primary purposes in establishing certain FCA parameters. First, the Net CONE value is used to position the demand curve so that the curve prices capacity

⁷ Recognizing that this relief may cause ISO-NE to not have a recalculated Net CONE value accepted prior to the beginning of the FCA 16 calendar, NEPGA notes that the Commission could further direct ISO-NE to seek a waiver of its Tariff to allow it to apply the Tariff-defined annual adjustment factors to the FCA 15 Net CONE value to create the FCA 16 Net CONE value. *See* Tariff § III.13.2.4.

equal to Net CONE at the Net ICR quantity, *i.e.*, at the 1-in-10 reliability standard.⁸ The Net CONE value also sets the FCA Starting Price, which is equal to the greater of the Gross CONE value and 1.6 x Net CONE.⁹ At the time of this transition from a vertical to sloped demand curve, the Commission accepted, effective for FCA 9, the same definition of Net CONE that is still on file today.¹⁰

The Tariff states:

Net CONE is an estimate of the Cost of New Entry, net of the first-year non-capacity market revenues, for a reference technology resource type and is intended to equal the amount of capacity revenue the reference technology resource would require, in its first year of operation, to be economically viable given reasonable expectations of the first year energy and ancillary services revenues, and projected revenue for subsequent years.¹¹

The Tariff requires that ISO-NE recalculate and review with stakeholders a Net CONE value prior to filing that value for Commission acceptance, specifically:

CONE and Net CONE shall be recalculated for the Capacity Commitment Period beginning on June 1, 2025 and no less often than once every three years thereafter. Whenever these values are recalculated, the ISO will review the results of the recalculation with stakeholders and the new values will be filed with the Commission prior to the Forward Capacity Auction in which the new value is to apply.¹²

⁸ NEPGA Complaint and Request for Fast-Track Processing of the New England Power Generators Association, Inc., Attachment A, Affidavit of Robert B. Stoddard on Behalf of the New England Power Generators Association, Inc., at P 3, Docket No. EL21-26-000 (filed Dec. 11, 2020) (“Stoddard Affidavit”).

⁹ Tariff § III.13.2.4.

¹⁰ Stoddard Affidavit at PP 3-5; *see also* ISO New England Inc and New England Power Pool, Demand Curve Change Filing, Tariff Definitions Redlines, at 60 (page 328 of the pdf file), Docket No. ER14-1639-000 (April 1, 2014) (“2014 ISO-NE Net CONE Filing”).

¹¹ Tariff § I – General Terms and Conditions.

¹² Tariff § III.13.2.4.

ISO-NE has calculated Net CONE twice before, initially in 2014 for effect in FCAs 9-11, and recalculated again in 2017 for effect in FCAs 12-15.¹³ In recalculating Net CONE, ISO-NE applies a three-step process that (i) applies screening criteria to determine which resource types merit further screening, (ii) identify specific generation technologies within each resource type that satisfy the criteria, and (iii) develop detailed cost estimates and financial calculations to estimate the CONE and Net CONE values for the candidate reference technologies.¹⁴

ISO-NE estimates the costs necessary to develop and bring the project to commercial operation and calculates a levelized annual cost necessary to ensure recovery on and of its investments, consistent with the project's assumed return on equity – the Gross CONE value.¹⁵ To translate Gross CONE to Net CONE, the levelized revenue from the capacity markets required to cover the modeled facility's capital costs and its operating costs, ISO-NE subtracts from Gross CONE the estimate of the profit margin the Reference Unit is likely to earn from EAS and other non-capacity market revenues (or penalties) (together, "EAS Margins").

The ISO-NE constructs a three step process to calculate these EAS Margins. First it develops estimates of energy and reserve market price estimates. The second step utilizes a technology-specific dispatch model to estimate the net EAS revenues the Reference Unit would earn. The final step calculates revenues from energy/reserve scarcity pricing and Pay-for-Performance payments during Capacity Scarcity Conditions.¹⁶

¹³ See ISO New England Inc. and New England Power Pool, Docket No. ER14-1639-000, Demand Curve Changes (filed Apr. 1, 2014) ("2014 ISO-NE Net CONE Filing"); see also ISO New England Inc Filing of CONE and ORTP Updates, Docket No. ER17-795-000 (filed Jan. 13, 2017) ("2017 ISO-NE Net CONE Filing").

¹⁴ See ISO-NE Filing, ISO-NE Net CONE and ORTP Analysis, An Evaluation of the Net Cost of New Entry and Offer Review Trigger Price Parameters to be Used in the Forward Capacity Auction, at 9 ("[I]t is assumed that a two mile interconnection to both the gas and electric grids would be required.") ("2020 ISO-NE Net CONE Report").

¹⁵ *Id.* at 8.

¹⁶ *Id.* at 15.

In this recalculation ISO-NE’s dispatch model quantifies the net EAS Revenues that are offset against Gross CONE to develop the Net CONE value. The dispatch model was based on historical data from 2017-2019 adjusted to remove surplus capacity above Net ICR in each respective year of the model. ISO-NE and calculated the expected margins during that historical period by committing and dispatching “the units economically based on the adjusted historical day-ahead and real-time energy and reserve prices and each unit’s production costs.”¹⁷ This calculation also includes forecast margins from the Locational Forward Reserve Market („LFRM“) that the Reference Unit is assumed to earn. The EAS Margin forecast has an inverse and direct impact on Net CONE, meaning that for every cent decrease of forecasted EAS Margin the Net CONE value increases by one cent.

ISO-NE found it necessary “to identify a general location for this unit for the purposes of estimating property taxes, interconnection costs, labor rates, etc. ... New London County, CT was identified as an appropriate location for modeling the three gas candidate reference units.”¹⁸ ISO-NE then examined three candidate reference technologies and recommended the simple cycle frame combustion turbine (“CT”) as the Reference Unit because it is “substantially more economic under the parameter

The ISO-NE reviewed this information with the New England Power Pool („NEPOOL“) stakeholders beginning in May 2020 and concluding with the Participant Committee vote in November. ISO-NE’s proposal failed with only 18.33% of the stakeholders voting in favor. ISO-NE filed the Net CONE value and proposed revisions to its Tariff on December 31, 2020 and has asked for an Effective Date of March 2, 2021 in order to support the FCA 16 schedule.

¹⁷ See 2020 ISO-NE Net CONE Report at 65.

¹⁸ See *id.* at 22.

II. PROTEST

A. ISO-NE'S PROPOSED CONE VALUE FAILS TO REFLECT THE COSTS NECESSARY FOR THE REFERENCE UNIT TO OPERATE AND EARN THE REVENUE ISO-NE FORECASTS AND IS OTHERWISE COMPRISED OF SEVERAL UNREASONABLE AND UNSUPPORTED COST INPUTS

In recalculating Net CONE, ISO-NE is required to estimate the costs necessary to develop and operate the Reference Unit. Thus ISO-NE must predict the revenues it forecasts the Reference Unit will earn.¹⁹ Inherent in this requirement is the need to harmonize the cost and revenue assumptions to ensure that the assumed costs will enable the Reference Unit to be built and operated to earn the revenues forecasted by ISO-NE's own dispatch model. ISO-NE's approach to satisfying this obligation is demonstrably flawed. ISO-NE has chosen certain CONE cost assumptions that cannot be reconciled in a manner that would result in a feasible project that can meet the operational and revenue expectations ISO-NE assumes for purposes of developing the Net CONE value. This flaw is most materially demonstrated by ISO-NE's omissions of crucial costs necessary for the delivery of gas to the Reference Unit. After considering several potential locations for the Reference Unit, ISO-NE chose New London County, Connecticut, which in turn places the Reference Unit on the Algonquin E Lateral.²⁰ ISO-NE, however, has failed to include the cost of gas compression and gas pipeline system upgrades necessary to deliver gas to the Reference Unit from the E Lateral system at the inlet pressure and at the volumes required of the ISO-NE's own selected turbine technology necessary to earn its forecasted revenues. In their

¹⁹ *New York Independent System Operator, Inc.*, 134 FERC ¶ 61,058, at P 53 (2011) (CONE must include the "cost of investment for interconnection customers in order to participate in the New York capacity market.").

²⁰ ISO-NE Filing, *ISO-NE Net CONE and ORTP Analysis, An Evaluation of the Net Cost of New Entry and Offer Review Trigger Price Parameters to be Used in the Forward Capacity Auction*, at 26 ("[I]t is assumed that a two mile interconnection to both the gas and electric grids would be required.") ("2020 ISO-NE Net CONE Report"); NEPGA Protest, Attachment A, Affidavit of Sara Wilmer and Richard Levitan on Behalf of the New England Power Generators Association, Inc., at P 25 ("[T]he only available interconnecting pipeline is Algonquin's E System.") ("Wilmer/Levitan Affidavit").

supporting affidavit, discussed further below, Levitan and Wilmer explain that based on the Reference Unit location chosen by ISO-NE, costs for both compression and pipeline upgrades are required to operate the Reference Unit. Without these necessary compression and pipeline upgrades, the Reference Unit simply cannot earn the energy market, Pay for Performance, or FRM revenues ISO-NE forecasts for the Reference Unit. Thus, the revenue and cost assumptions chosen by ISO-NE in developing Net CONE fail to reflect a feasible unit that operates as contemplated by ISO-NE's own models.

This lack of coherence is entirely inconsistent with the purpose of calculating Net CONE – to develop a value based on a set of assumptions that collectively reflects the costs of a resource that can be built and operated as contemplated, based in part on reasonable expectations about the revenues the Reference Unit is likely to earn. Put another way, the assumptions for the Reference Unit must be capable of fitting together like puzzle pieces to develop a complete, and feasible project. ISO-NE's approach ignores this obligation by picking and choosing cost and revenue assumptions without concern regarding whether such assumptions fit together. Indeed, imagine a scenario where ISO-NE chooses certain assumptions reflecting a turbine located in western Connecticut near the fuel supply to capture lower gas delivery costs, while picking other assumptions reflecting the generator itself located near to a southeast New England load center to capture lower interconnection costs, and selecting rural southeastern Connecticut (i.e., New London County) to reduce real estate, property tax, and labor expenses. That is effectively what ISO-NE has done here.

Moreover, the Tariff also requires ISO-NE to harmonize the Net CONE assumptions and inputs. Both the Tariff on file with the Commission and ISO-NE's proposed Net CONE

definition²¹ require that the Net CONE Reference Unit be “economically viable.” This phrase “economically viable,” is used in both definitions and applies to overall net CONE and cannot reasonably be interpreted to apply to CONE or EAS revenues separately. “Economic viability” as used in these definitions requires that revenues and costs are balanced in such a way that the Reference Unit is capable of attracting investment, which ISO-NE further defines as the required Return on Equity – the profit a developer would expect in order to invest in the Reference Unit.²² ISO-NE appears to have recognized this Tariff requirement of economic viability and has offered an objective test that determines whether the project is “economically viable,” the Discounted Cash Flow (“DCF”) model.²³

Yet, ISO-NE ignores this Tariff obligation to harmonize its assumptions. ISO-NE assumes that the Reference Unit forgoes capital investment in gas pipeline upgrades which results in gas being unavailable in the majority of the hours it is dispatched according to ISO-NE’s own dispatch model. ISO-NE further asserts that the Reference Unit will operate on ULSD in hours of pipeline constraints. Yet at the same time, ISO-NE’s dispatch model forecasts energy revenues for the Reference Unit based on it offering into the wholesale energy market with the relatively lower-cost gas in all hours. This is patently absurd on its face – you cannot model a Reference Unit by ignoring the investment costs necessary to ensure delivery of its primary fuel, assume that the Reference Unit would rely on its more costly back-up fuel during hours of gas pipeline constraints, and then run a dispatch model that assumes the Reference Unit will offer into the wholesale energy

²¹ See ISO-NE Filing, Blacklined Proposed Tariff Changes, § I.2.2. Definitions (proposing change to definition of Net CONE to require, *inter alia*, “reasonable expectations of the energy and ancillary services revenues under long-term equilibrium conditions.”).

²² See 2020 ISO-NE Net CONE Report at 9.

²³ See ISO-NE Filing, Transmittal Letter at 8-9 (explaining that CEA developed a discounted cash flow model to calculate a levelized annual cost and revenue requirement for the Reference Unit) (“Transmittal Letter”).

market relying on its primary fuel in all hours. This renders the use of the DCF model meaningless and offers no basis to reasonably determine whether a project is economically viable.

Clearly, economic viability and a congruent set of assumptions are requirements of Net CONE. Without the latter, the former cannot be determined. Therefore, if we apply the only reasonable interpretation to “economically viable” to mean that the project (not its components) must be capable of being developed and being sustained then assumptions that do not work in harmony must be rejected. The ISO-NE’s position that the Tariff states otherwise is wrong, does not meet a reasonable interpretation of the Tariff, and ISO-NE’s Net CONE filing must be rejected on these grounds.

Separately, NEPGA also demonstrates below that other individual ISO-NE cost assumptions are unrealistic and lack evidentiary support, falling well outside of any reasonable range. ISO-NE has failed to offer even a minimum amount of evidence to support its unreasonable assumptions.²⁴ Moreover, NEPGA rebuts ISO-NE’s claims with robust evidence to demonstrate that such assumptions are materially deficient.

1. ISO-NE’S OMISSION OF CERTAIN REQUIRED INVESTMENTS FOR THE DELIVERY OF GAS MAKES THE PROJECT DEMONSTRABLY INFEASIBLE

ISO-NE’s use of certain cost assumptions for enabling gas delivery to the Reference Unit are fundamentally and irrefutably flawed, and on this basis alone, ISO-NE’s proposed Net CONE calculation must be rejected. ISO-NE’s development of cost assumptions for the delivery of gas is premised on identifying a specific location for the Reference Unit, and then deriving

²⁴ ISO-NE likewise failed to present evidence rebutting the NEPGA experts’ evidence presented to ISO-NE and stakeholders during the NEPOOL stakeholder process. While ISO-NE can complete the NEPOOL stakeholder process without doing so, Section 205 of the FPA requires that the filing party support their case. ISO-NE has failed to do so.

representative cost assumptions based on the identified location. NEPGA has demonstrated herein that there is no basis in fact to support the cost assumptions associated with the delivery of gas to the Reference Unit at the specified location. More critically, without these necessary cost assumptions, NEPGA has shown that the Reference Unit is infeasible, that is, the costs ISO-NE assumed do not come close to aligning with the operational expectations contemplated by ISO-NE's own dispatch model for the Reference Unit.

Finally, ISO-NE's evidentiary support to justify these critical assumptions is non-existent. Thus, the Commission has no basis to accept them. ISO-NE's conclusions regarding costs needed for the delivery of gas consist of nothing more than a couple sentences of conclusory statements, without any grounding in analysis or consideration of the facts on the ground.

2. LOCATION IS THE CRITICAL ASSUMPTION THAT DRIVES THE GAS DELIVERY COST ASSUMPTIONS

After considering three potential locations for the Reference Unit, including sites in Massachusetts, New Hampshire, and Connecticut, ISO-NE chose New London County, Connecticut as the Reference Unit location.²⁵ According to ISO-NE, the location is relevant for the "purposes of estimating property taxes, interconnection costs, labor costs, etc."²⁶ ISO-NE found that the New London County location best satisfied two primary criteria: (1) a location where energy infrastructure already exists to allow ready access to the high voltage electric transmission system and the natural gas pipeline and distribution network; and (2) a location in which retirements are likely to occur.²⁷ With no evidentiary support, ISO-NE simply assumes that

²⁵ 2020 ISO-NE Net CONE Report at 22.

²⁶ *Id.*

²⁷ *Id.*

the Reference Unit is located within 2 miles of both the 345 kV bulk transmission system and interconnection to the interstate gas pipeline system.²⁸

ISO-NE also assumes, again with no evidentiary support, that the Reference Unit located in New London County does not require compression to meet the minimum inlet pressure for its chosen turbine technology, the GE 7HA.02 CT, and likewise does not require pipeline capacity upgrades. Without that investment in compression and pipeline upgrades, ISO-NE nonetheless assumes that the Reference Unit can both meet its energy dispatch schedule and its FRM obligation.²⁹ As NEPGA will explain below, however, Levitan and Wilmer demonstrate in their supporting affidavit that both on-site compression and significant pipeline capacity upgrades are required for the Reference Unit to be located in New London County and operate according to ISO-NE's forecast of non-capacity market revenues.

3. ISO-NE'S GAS DELIVERY COST ASSUMPTION DOES NOT REFLECT THE REALITY OF SITING A RESOURCE IN NEW LONDON COUNTY, CONNECTICUT

Without an investment in gas compression and pipeline capacity upgrades, the ability of the Reference Unit to respond to ISO-NE dispatch instructions is pure fiction. ISO-NE chose a Reference Unit location in New London County, Connecticut, and concluded that there is a suitable location within that county where the Reference Unit could be sited within 2 miles of both a 345-kV electric transmission line and within 2 miles of a "main gas transmission line."³⁰ Given these assumptions, the Reference Unit must be assumed to be interconnected to the Algonquin E Lateral.³¹ No other interstate pipeline is physically located within 2 miles of any location in New

²⁸ *Id.* at 26 ("[I]t is assumed that a two mile interconnection to both the gas and electric grids would be required.").

²⁹ *Id.* ("[I]t is assumed that gas compression is not required for a generating plant that is connection to the main gas transmission line, as is assumed in this study.").

³⁰ *Id.*

³¹ Wilmer/Levitan Affidavit at P 25

London County. Indeed, ISO-NE does not argue otherwise. Given the Reference Unit location chosen by ISO-NE, Levitan and Wilmer definitively show in the attached affidavit that ISO-NE's assumptions that neither gas compression nor pipeline upgrades are needed for interconnection of the Reference Unit to the Algonquin E System are sheer fantasy. They discuss in their attached affidavit that without both on-site compression and pipeline upgrades, the Reference Unit is infeasible and most certainly cannot operate as contemplated by the very dispatch model utilized by ISO-NE to develop its Net CONE value. ISO-NE's cost assumptions for the delivery of gas from the Algonquin E Lateral to the Reference Unit are incorrect and must therefore be rejected.³²

4. THE REFERENCE UNIT LOCATED IN NEW LONDON COUNTY, CONNECTICUT REQUIRES COMPRESSION TO MEET THE MINIMUM INLET PRESSURE AND TO MANAGE VARIABILITY IN GAS PIPELINE PRESSURE

ISO-NE's finding that gas compression is not required for the Reference Unit is "based on an assumption that the generating plants are sited on or in very near proximity to a main natural gas transmission line, with gas available at 750 psi."³³ That is the entirety of ISO-NE's analysis on whether on-site compression is necessary.³⁴ In contrast to ISO-NE's lack of analysis, Levitan and Wilmer have submitted thorough analyses and definitive evidence demonstrating that the Reference Unit must incur the cost of on-site compression in order to operate and earn revenues as ISO-NE forecasts. Levitan and Wilmer's presentations at the NEPOOL Markets Committee in September, October, and November 2020, provided ISO-NE with ample opportunity to respond to

³² It is critical to note the consequential nature of ISO-NE's assumption that the Reference Unit is located within 2 miles of a natural gas transmission line. With ISO-NE assuming a lateral cost of \$4.5 million per mile, any necessary adjustment to the lateral length assumption would cause a commensurate increase to the assumed project costs on a per mile basis. It is not just and reasonable for ISO-NE to ignore the cost implications of this assumption.

³³ 2020 ISO-NE Net CONE Report at 26.

³⁴ Upon NEPGA's urging, ISO-NE spoke directly with Enbridge, the owner and operator of the Algonquin pipeline, about whether compression is necessary at the Reference Unit location. ISO-NE did not provide any details about the content of that conversation and failed to reveal any further analytical support for its position following the conversation. *See* Wilmer/Levitan Affidavit at P 28. The 2020 ISO-NE Net CONE Report likewise provides no support for ISO-NE's assumption that on-site compression is not needed compression. *See* 2020 ISO-NE Net CONE Report at 25-26, § x "Interconnection Assumptions."

the evidence about the need for compression, system improvements and cost assumptions. Tellingly, ISO-NE has not rebutted the evidence offered by Levitan and Wilmer either during the NEPOOL process when presented with evidence, or in its filing addressed herein.

On-site compression is critical infrastructure when needed in order to supplement the pressure of gas as delivered to ensure adequate and consistent pressure at the turbine inlet. For the turbine technology chosen by ISO-NE, the GE 7HA.02, gas is required to be delivered at the turbine enclosure at 530 psig. Insufficient gas delivery pressure renders the turbine inoperable. Moreover, variances or “swings” in gas pipeline pressure can cause a turbine that is online to trip offline.³⁵ Therefore, developers often install on-site gas compression to increase insufficient, or buffer against fluctuating, pipeline delivery pressure.³⁶ ISO-NE assumes that the interconnecting pipeline can provide 750 psig pressure to the Reference Unit’s offtake point, and thus concludes that no compression is needed.³⁷ ISO-NE has provided no support for this assumption regarding available gas delivery pressure within New England in general, let alone in New London County, the specific location of the Reference Unit.³⁸ Rather, in assuming that the Reference Unit is sited “on or in very near proximity to a main natural gas transmission line,”³⁹ ISO-NE failed to evaluate whether compression is necessary.

ISO-NE’s inconsistent approach to determining such cost assumptions is fundamentally flawed. ISO-NE has chosen a specific location for the Reference Unit dictating the minimization of certain costs, including the assumed 2 mile lateral to interconnect to a natural gas transmission line. Such assumption requires interconnection at the Algonquin E Lateral. Yet, when faced with

³⁵ Wilmer/Levitan Affidavit at P 23.

³⁶ *Id.*

³⁷ *Id.* at P 24.

³⁸ *Id.*

³⁹ 2020 ISO-NE Net CONE Report at 26.

evidence that gas compression is necessary when interconnected to the E Lateral, ISO-NE declines to adopt on-site compression costs, instead vaguely finding that the Reference Unit could be interconnected “on or in very near proximity to a main natural gas transmission line” without compression.⁴⁰ ISO-NE is charged with identifying the Reference Unit and a location and cannot rely on multiple proxy units and locations to determine assumptions for *the* Reference Unit. ISO-NE’s inconsistent and selective approach is simply not just and reasonable. ISO-NE chose a specific location and derived costs based on that location, including “interconnection costs” such as the cost for the 2-mile lateral. ISO-NE was required to rely on that specific location to develop other cost assumptions in order produce an internally consistent Net CONE value for a Reference Unit that can be built and operated as assumed by ISO-NE’s own modeling. ISO-NE has failed to satisfy this requirement.

ISO-NE assumes that the Maximum Allowable Operating Pressure (“MAOP”) of the Algonquin E System, 750 psig, is available to support the Reference Unit.⁴¹ Levitan and Wilmer explain, however, that the MAOP is a design parameter not an operational reality. The MAOP does not represent a reasonable assumption for the delivery pressure at the Reference Unit’s turbine inlet.⁴² Instead, it represents an operating limitation that the Commission recognizes when it issues a certificate governing the safe use of a pipeline. It has little or nothing to do with sustainable operating conditions.⁴³ ISO-NE has offered no explanation for why it is reasonable to assume that the Reference Unit can receive gas at necessary pressure at the turbine inlet based on the Algonquin E Lateral MAOP. Supplementing their extensive professional experience working on gas pipelines

⁴⁰ *Id.*

⁴¹ Wilmer/Levitan Affidavit at P 26.

⁴² Wilmer/Levitan Affidavit at P 26.

⁴³ *Id.*

in New England, and in particular Algonquin,⁴⁴ Levitan and Wilmer cite to two sources of information to conclude that the Reference Unit, located on the E Lateral system, would require compression.

First, Levitan and Wilmer reviewed confidential delivery pressure data for the Algonquin E Lateral system provided by Enbridge, Algonquin's operator. LAI's represents that the E Lateral system data provided by Enbridge is consistent with LAI's prior technical experience with Algonquin pipeline operations in New England.⁴⁵ Levitan and Wilmer find that the actual operating pressure on the E Lateral System provided by Algonquin supports their conclusion that on-site compression is needed for a Reference Unit to be feasible. Absent on-site compression to support the requirements of the Reference Unit, the delivered gas pressure is insufficient to support the minimum inlet pressure required of the 7HA.02 CT. This finding is consistent with Levitan's and Wilmer's experience on technical matters related to Algonquin's operations.⁴⁶ They observed that the three facilities where GE's 7HA CTs are operating in New England all have on-site compression.⁴⁷ Their conclusion, driven by facts is that the "failure to include on-site compression in the Reference Unit design and capital cost render its operation on gas infeasible."⁴⁸

To consider the potential costs of on-site compression at the Reference Unit, Levitan and Wilmer received an indicative quote for a gas compressor sized to deliver 100% of the Reference Unit's fuel requirement based on reasonable inlet pressure assumptions informed by their knowledge of the actual pressures on which the pipeline operates. Levitan and Wilmer reviewed proprietary information for actual installation costs provided by NEPGA members for two of the

⁴⁴ *Id.* at PP 1-2, 27.

⁴⁵ *Id.* at P 27.

⁴⁶ *Id.*

⁴⁷ *Id.* at P 29.

⁴⁸ *Id.*

three facilities in New England that utilize the GE 7HA-class CT.⁴⁹ With that information, Levitan and Wilmer conclude that \$8.5 - \$9 million is a reasonable cost assumption for the installation of on-site compression.⁵⁰ Levitan and Wilmer further conclude that on-site compression necessarily requires an incremental annual Operations and Maintenance cost, which it estimates to be approximately \$100,000 per year based on further consultation with the NEPGA members with on-site compression for the GE 7HA-class CT.⁵¹ To account for parasitic load, that is, the use of energy from the Reference Unit to run the on-site compressor, Levitan and Wilmer consulted with a manufacturer that specializes in gas compression equipment and concluded it is 5.5 MW, for the Reference Unit thus reducing the Qualified Capacity of the Reference Unit by 5.5 MW.⁵² These additional costs and the adjustment to the Qualified Capacity of the Reference Unit, together with several other necessary adjustments to unreasonable ISO-NE assumptions discussed elsewhere in this Protest, have material impacts on the Net CONE value, as explained further in Section V, *infra*.

5. THE REFERENCE UNIT REQUIRES PIPELINE CAPACITY UPGRADES IN ORDER TO OPERATE ACCORDING TO ISO-NE'S FORECAST IF LOCATED ANYWHERE IN THE STATE OF CONNECTICUT

Like its failure to include on-site compression costs, ISO-NE inexplicably includes no costs for pipeline upgrades.⁵³ Levitan and Wilmer explain that pipeline upgrades are necessary to enable the Reference Unit to operate as contemplated by ISO-NE's assumed dispatch model and assumed FRM obligation. Indeed, ISO-NE fails to provide any analysis to support its finding, a particularly

⁴⁹ *Id.*

⁵⁰ *Id.* at P 30.

⁵¹ *Id.* at P 31.

⁵² *Id.* at P 32.

⁵³ The lateral from the facility to the main pipeline simply provides connection. Upgrades to the interstate gas pipeline system are needed to support delivery at the volumes required by the Reference Unit and to necessarily avoid disrupting gas service to other shippers.

glaring evidentiary omission given that several stakeholders, including Levitan and Wilmer on behalf of NEPGA, repeatedly challenged ISO-NE's failure to include pipeline capacity upgrade costs during the NEPOOL process.⁵⁴ With ISO-NE failing to provide any support for its position, NEPGA has no basis to evaluate ISO-NE's reasoning for reaching this demonstrably flawed conclusion. As Levitan and Wilmer demonstrate, the E Lateral is currently fully contracted. Absent upgrades to bolster Algonquin's E Lateral system delivery capacity to accommodate the dispatch regime of the Reference Unit, it would be wholly dependent on interruptible transportation to meet its fuel supply needs. Levitan and Wilmer assert that the quantity of capacity available to shippers with interruptible service on the Algonquin system, in general, and the E Lateral in particular, is not adequate to render the Reference Unit feasible, especially during the heating season.

Levitan and Wilmer examined historical operating data on the E Lateral to determine whether there was sufficient available pipeline transportation capacity to meet the dispatch schedule ISO-NE models for the Reference Unit.⁵⁵ They found that of the 1,215 hours in which ISO-NE dispatches the Reference Unit in its model, the Reference Unit would be unable to schedule gas in 85% (or 1,032) of those hours.⁵⁶ Given that ISO-NE's dispatch model assumes that the Reference Unit clears its entire Qualified Capacity, if at all, the Reference Unit cannot be dispatched in any of these gas-constrained hours under ISO-NE's model and assumptions.⁵⁷ Levitan and Wilmer also evaluated the potential cost of the necessary pipeline capacity upgrades

⁵⁴ See, e.g., November 9-10, 2020, NEPOOL Markets Committee meeting materials, Agenda Item # A04(B)(i), Costs Associated with Gas Delivery to the Reference Unit Including On-site Compression and Lateral System Upgrades, Presented by Sara Wilmer and Richard Levitan, available at: https://www.iso-ne.com/static-assets/documents/2020/11/a4_b_i_gas_delivery_for_reference_unit_jericho_amendment.pdf.

⁵⁵ Wilmer/Levitan Affidavit at P 41.

⁵⁶ *Id.* at P 42.

⁵⁷ *Id.*

to deliver gas to the Reference Unit on a firm basis to meet its assumed dispatch schedule. They looked at the cost of similar projects indicative of the pipeline upgrades required of the Reference Unit and the associated tariff rates.⁵⁸ Levitan and Wilmer conclude that the cost of recent pipeline upgrades range between \$2.5 - \$5.0 million per month in fixed cost, which is more than twice the incremental EAS revenues the Reference Unit is expected to capture in ISO-NE's model due to such upgrades.⁵⁹

When ISO-NE was faced in the NEPOOL stakeholder process with this definitive evidence, it did not refute Levitan's and Wilmer's findings. Rather, ISO-NE suggested that the Reference Unit could avoid the need for pipeline capacity upgrades if it were located somewhere other than the location it chose, at some unspecified location.⁶⁰ As noted above, however, it is not just and reasonable for ISO-NE to locate the Reference Unit in New London County, within 2 miles of an interstate gas pipeline for the purpose of a lateral cost assumption, but to locate it elsewhere for assuming that pipeline capacity upgrades are not necessary. ISO-NE must harmonize the assumptions such that the Reference Unit can be built and operated as contemplated by ISO-NE's own dispatch model based on its cost and revenue assumptions.

Moreover, there is no basis for ISO-NE to assume that the Reference Unit is interconnected to a pipeline other than the Algonquin E Lateral. Nonetheless, in response to ISO-NE's "alternative location" assertion, Levitan and Wilmer conducted capacity analyses at other locations in southern New England, including on several points upstream of the E Lateral system on the Algonquin system and on the only other two interstate gas pipelines serving Connecticut, the

⁵⁸ *Id.* at PP 44-46.

⁵⁹ *Id.* at P 46.

⁶⁰ *Id.* at P 43.

Tennessee and Iroquois pipeline systems.⁶¹ Levitan and Wilmer conclude that “regardless of where in southern New England the Reference Unit is located, it would be subject to constraints that limit the deliverability of natural gas to the plant.”⁶² In so doing, Levitan and Wilmer have demonstrated that all gas pipelines serving southern New England would require capacity upgrades to alleviate constraints that would occur when adding the Reference Unit to the resource mix, particularly during the heating season.⁶³ Without such upgrades, Levitan and Wilmer have demonstrated that the Reference Unit would be unable to receive the gas needed to operate in a manner consistent with the operational expectations in ISO-NE’s dispatch model.

Levitan and Wilmer further explain that aside from the need for pipeline capacity upgrades necessary to relieve scheduling constraints, upgrades are also required to meet the ramp rate of a resource providing reserves through a FRM obligation, as ISO-NE assumes for the Reference Unit.⁶⁴ The FRM obligation ISO-NE assumes for the Reference Unit requires short-notice gas delivery at significant quantities relative to the total E Lateral system capacity.⁶⁵ The Reference Unit would require 30% of its total fuel requirement (equivalent to 20% of the total E Lateral capacity) within 10 minutes of receiving Dispatch Instructions from ISO-NE.⁶⁶ The remaining 70% fuel requirement necessary to achieve full load operation would be needed within 30 minutes of receipt of Dispatch Instructions.⁶⁷ Thus, even if one were to assume that there is sufficient pipeline capacity for the Reference Unit to operate according to its dispatch schedule (though, as Levitan and Wilmer demonstrate, it cannot), drawing such a large volume of gas on relatively short

⁶¹ *Id.* at PP 44-46.

⁶² *Id.* at P 45.

⁶³ *Id.*

⁶⁴ *Id.* at 47

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.*

notice from a relatively small source would unacceptably degrade pressure on the E Lateral and “would certainly have a deleterious effect on E System entitlement holders.”⁶⁸

The import of ISO-NE’s suggestion that the Reference Unit can be located somewhere other than New London County cannot be ignored. If the Reference Unit is not interconnected to the Algonquin E Lateral, the next closest pipeline to which the Reference Unit can theoretically interconnect is the Algonquin mainline, approximately 13 miles away.⁶⁹ Even assuming, *arguendo*, that this closest interconnection point would alleviate the pipeline constraints identified by Levitan and Wilmer, ISO-NE then would necessarily need to include the cost of a 13-mile lateral in its Net CONE recalculation, rather than the 2-mile lateral it presently assumes. Even at the \$4.5 million/mile unit cost ISO-NE assumes for pipeline lateral (which NEPGA challenges as unreasonably low, below), a 13-mile assumption would add \$49.5 million to the CONE value.

ISO-NE is playing a shell game. It is impossible to gloss over or otherwise ignore ISO-NE’s willingness to formulate disparate, disconnected, location and operating and unit cost assumptions with the goal of unreasonable, downward adjustments to CONE. ISO-NE cannot include \$9 million in costs for a 2-mile lateral yet claim that the project can be connected to a “main line” 13 miles away as justification for a lack of compression and pipeline capacity upgrade costs. As discussed further below, these unsupported ISO-NE assumptions materially bias the Net CONE value below a just and reasonable value, which in turn has adverse impacts for market efficiency.

⁶⁸ *Id.*

⁶⁹ *Id.* at P 48.

6. COMMISSION PRECEDENT REQUIRES THAT THE COMMISSION EITHER REJECT THESE ASSUMPTIONS OR SET THEM FOR EVIDENTIARY HEARING

Commission precedent supports a finding that ISO-NE has not proposed a just and reasonable Net CONE value. In prior Net CONE proceedings, the Commission has established principles with which an ISO/RTO must comply in recalculating the Net CONE value, including internally consistent assumptions reflecting the costs and revenues for an actual resource.

In 2012, the Commission set PJM's proposed recalculated Net CONE for hearing, finding that there were material facts in dispute regarding the CONE calculation.⁷⁰ The Commission identified several issues that could not be resolved based on the record, including, for example, PJM's failure "to include accurate electrical and gas interconnection costs."⁷¹ Intervenors in that proceeding made similar arguments to those raised by NEPGA here. For example, GenOn provided evidence that gas interconnection costs were understated because the methodology used by PJM to determine such costs ignored "significant limitations in that pipeline's operational flexibility."⁷² Similar to here, PJM asserted a relatively short lateral interconnection distance to interconnect to a pipeline that, GenOn's evidence showed, was subject to pipeline constraints that would "impair the pipeline's ability to handle the swing in fuel requirements of a CT or CC."⁷³ GenOn argued that PJM should instead have included lateral costs to interconnect to a less constrained pipeline at a greater distance from the reference unit.⁷⁴ The Commission also cited to Intervenor evidence challenging the "location-specific adjustments" to the Net CONE value.⁷⁵ It

⁷⁰ *PJM Interconnection, LLC*, 138 FERC ¶ 61,062 (2012).

⁷¹ *Id.* at P 41.

⁷² *Comments and Limited Protest of GenOn Energy Management, LLC, et al.*, at 15, Docket No. ER12-513-000 (filed Dec. 22, 2011).

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ *PJM Interconnection, LLC*, 138 FERC ¶ 61,062, at P 41 (2012).

was on the basis of these, and other disputed issues of material fact, the Commission set the proceeding for evidentiary hearings.⁷⁶

The Commission should reach a similar determination here. The cost assumptions that underlie CONE must be meaningful, in that they are based on the realities on the ground, and like *PJM*, they must account for location-specific facts to support those assumptions. That is not what ISO-NE has done here. ISO-NE has chosen assumptions that explicitly ignore the realities on the ground. Given ISO-NE's own assumptions, the Reference Unit must be interconnected to the Algonquin E Lateral, and NEPGA has demonstrated that both compression and pipeline upgrades are required to operate the Reference Unit at the specified location in compliance with a Commission-approved tariff that safeguards service to all entitlement holders. ISO-NE has not rebutted Levitan's and Wilmer's findings, but instead played a shell game and made unsupported assumptions. True, ISO-NE's Reference Unit is in one sense a theoretical exercise. Nevertheless, by ISO-NE's own test and the Commission's, there is a limiting principle. A theoretical exercise is surely not a license to offer unsupported findings and to move the goalposts. ISO-NE is expected to base Net CONE on a Reference Unit for which the Net CONE value can be recalculated "with confidence."⁷⁷ Here, without investment in compression and pipeline upgrades, the Reference Unit is simply an abstract concept – it cannot operate as contemplated by ISO-NE's own dispatch model. Thus, consistent with *PJM*, the Commission should either reject such assumptions and grant the waiver requested herein, or set these assumptions for further consideration in an evidentiary hearing.

⁷⁶ *Id.*

⁷⁷ 2020 ISO-NE Net CONE Report at 15.

Similarly, in a NYISO CONE reset order, the Commission concluded that costs necessary for the reference resource to be able to deliver energy in accordance with its obligations as a capacity resource must be included in the CONE value.⁷⁸ NYISO's failure to include those costs in its proposed CONE value compelled the Commission to direct NYISO to revise its proposed value to reflect the estimated cost of the necessary transmission upgrades.⁷⁹ While the costs lacking in the CONE value were for transmission rather than gas pipeline capacity upgrades, the respective infrastructure costs are analogous and conceptually without distinction. In order for the Reference Unit to be able to deliver on the energy dispatch schedule and FRM obligation ISO-NE assumes, it must ensure the delivery of fuel to the unit in order to even produce the energy. The Commission's findings in *NYISO* stand for the proposition that the Reference Unit must be feasible, meaning it is able to deliver on the energy and obligations assumed by the RTO, in that case NYISO, and to fail to account for those costs renders the CONE value not just and reasonable. This proposition is the same whether one is referring to transmission or pipeline infrastructure. A reference unit must incorporate costs needed to enable it to delivery energy to the electric grid as contemplated. *NYISO* thus supports a finding that ISO-NE's failure to include the necessary infrastructure renders its proposed CONE value unjust and unreasonable.

7. LEVITAN AND WILMER DEMONSTRATE THAT ISO-NE'S MATERIALLY UNDERSTATED COST ESTIMATE IS UNREASONABLY LOW AND UNSUPPORTED

ISO-NE fails to justify its assumed cost per mile for the Reference Unit's gas lateral to connect to the Algonquin E Lateral, and thus, it must be rejected. While ISO-NE offered no evidence whatsoever to justify this assumption, ISO-NE has assumed total gas interconnection costs of \$11 million, which include \$2 million for a dedicated fuel gas metering station, and \$9

⁷⁸ *New York Independent System Operator, Inc.*, 134 FERC ¶ 61,058, at P 53 (2011) ("*NYISO*").

⁷⁹ *Id.*

million for a 2-mile 16 inch lateral, equating to \$4.5 million per mile.⁸⁰ ISO-NE’s cost assumption, however, is unsupported by evidence, unrealistic, and unreasonably low when compared to other recent, similar gas lateral and meter station projects in New England and nearby New York. Levitan and Wilmer analyzed cost information for meter stations and lateral construction projects built in recent years in southern New England and the Lower Hudson Valley, proximate to the Connecticut border.⁸¹ The relevant cost determinations are reflected in the tables below.

Table 1. Meter Station Construction Costs

Project	Year	Meter Station Cost (2019\$)	Volume (MDth/d)
Kleen Energy	2010	\$3.9 million	131
Salem Lateral	2016	\$11.0 million	115
Providence	2017	\$16.5 million	96
West Roxbury	2017	\$14.7 million	100
Valley Lateral	2018	\$10.0 million	127

Table 2. Lateral Construction Costs

Project	Year	Lateral Per-Mile Cost (2019\$)	Volume (MDth/d)	Diameter (in)
Fitchburg Expansion	2009	\$5.5 million	12.3	12
Kleen Energy	2010	\$7.7 million	131	20
Salem Lateral	2016	\$30.9 million	115	16
West Roxbury	2017	\$20.9 million	100	16+
Valley Lateral	2018	\$8.0 million	127	16

With respect to the metering station, Levitan and Wilmer found that the Kleen Energy Project is closest in cost to the ISO-NE assumption.⁸² However, the Kleen Energy Project was built over 10 years ago, at a time when metering station permitting and construction was much less controversial and, accordingly, less costly.⁸³ Nonetheless, the Kleen Energy Project’s costs are twice as high as ISO-NE’s metering station cost assumption. Even more significant, the other

⁸⁰ Wilmer/Levitan Affidavit at PP 34, 39.

⁸¹ *Id.*

⁸² *Id.* at P 36.

⁸³ *Id.*

identified metering stations reflect costs that are all at least five times ISO-NE's cost assumption. The metering station costs ISO-NE assumes are well outside the cost range reported by Levitan and Wilmer. Again, ISO-NE's cost assumption lacks evidentiary support and is contradicted by the record evidence.

With respect to the costs for the pipeline lateral, Levitan and Wilmer found that the Fitchburg Expansion project, a 12-inch pipeline built over 10 years ago was 20% more expensive than ISO-NE's assumption for the 16-inch pipeline project.⁸⁴ Moreover, the costs of more recent projects are 4 to 6 times more expensive per mile than ISO-NE assumes. While Levitan and Wilmer noted that project costs tend to be location-specific, and thus the evaluated projects might not reflect the perfect proxy for ISO-NE's assumption,⁸⁵ their evaluation irrefutably demonstrates that pipeline construction costs have increased substantially over time. Levitan and Wilmer also sought a rough estimate from Enbridge for the construction costs for the metering station and the 2-mile lateral contemplated by ISO-NE. While "the cost estimate was provided under an [Non-Disclosure Agreement], Algonquin allowed Levitan and Wilmer to report that such costs are significantly higher than ISO-NE's assumed costs".⁸⁶ Levitan and Wilmer further concluded that the cost information Algonquin provided "is in line with our estimate derived from publicly available data."⁸⁷ All told, Levitan and Wilmer have provided evidence that overwhelming shows that ISO-NE's metering station and lateral cost per mile assumptions are far outside of the reasonable range.

⁸⁴ *Id.* at P 37.

⁸⁵ *Id.*

⁸⁶ *Id.* at P 38.

⁸⁷ *Id.*

NEPGA and its experts, Levitan and Wilmer, presented these findings to ISO-NE in the NEPOOL stakeholder process. ISO-NE provided a verbal response that “their cost estimates are based on their own internal database and professional experience through the U.S. and Canada.”⁸⁸ The ISO-NE filing offers no further justification for the cost assumptions, not even “a scintilla of quantitative or qualitative support.”⁸⁹ ISO-NE thus has failed to provide the necessary evidentiary support to justify its metering station and lateral per mile cost assumptions.

9. OPERATION ON BACK UP OIL WOULD REQUIRE CHANGES TO THE DISPATCH AND REVENUE FORECASTS TO BE INTERNALLY CONSISTENT

When Levitan and Wilmer presented their findings as described above to ISO-NE during the NEPOOL stakeholder process, ISO-NE responded that the Reference Unit could operate on the back up ultra-low sulfur diesel (“ULSD”) when gas pipeline constraints interfere with delivery of gas when needed.⁹⁰ Yet, ISO-NE’s Reference Unit dispatch model fails to account for a single hour of dispatch on the more costly ULSD. ISO-NE must not ignore factual realities in developing its Net CONE value. ISO-NE cannot simply conclude that the Reference Unit will rely on ULSD during gas constraints, without taking reasonable steps to account for its reliance on ULSD in the dispatch model. As Levitan and Wilmer explain, the “plant economics...would be adversely affected by the higher cost of ULSD relative to gas and the higher cost of [Regional Greenhouse Gas Initiative compliance] when operating on ULSD.”⁹¹ Specifically, for those hours when the Reference Unit would be compelled to run on ULSD due to gas pipeline constraints, it will not

⁸⁸ *Id.* at P 39.

⁸⁹ *Id.*

⁹⁰ *Id.* at P 49.

⁹¹ *Id.* at P 53.

earn the energy margins ISO-NE assumes it will earn while operating on gas and in some hours will not earn any margins at all.

10. ISO-NE UNJUSTIFIABLY CONCLUDES THAT NO NETWORK UPGRADES ARE NEEDED TO INTERCONNECT THE REFERENCE UNIT

ISO-NE's assumption that the Reference Unit does require Network Upgrades to interconnect as a capacity resource is likewise flawed. ISO-NE has provided no analysis or evidence in support of this finding, offering no more than its Consultant's assumption is "based on consultation with ISO New England."⁹² NEPGA and other stakeholders asked ISO-NE in the NEPOOL stakeholder process to provide more information about this "consultation," but received none. ISO-NE likewise has not provided any additional information in support of its assumption in its filing here.

Under the Tariff, there are two primary levels of interconnection service - energy-only (also referred to as "Network Resource Integration Service" or "NRIS") and capacity ("Capacity Network Resource Interconnection Service" or "CNRIS").⁹³ CNRIS service is commonly referred to as ISO-NE's capacity deliverability standard; that is, in order to sell capacity, a resource must be deliverable to load throughout the region under most reasonable conditions. OATT Schedule 11 specifies that all interconnected resources are responsible for the cost of network upgrades necessary to meet whichever level of interconnection service they elect. Since CNRIS is a more stringent criteria, achieving that level of service is additive to the Network Upgrade responsibility as an energy-only resource. Because the Reference Unit is, by definition, a capacity resource, it will be responsible for Network Upgrades to meet both the NRIS and CNRIS levels of interconnection. Thus, it is critical that ISO-NE conduct the proper analysis to determine whether

⁹² 2020 Net CONE Report at 25-26.

⁹³ See, e.g., Tariff, Open Access Transmission Tariff, § I, Sch. 22, Attachment 1, Sch. 23.

Network Upgrades are necessary in order for the Reference Unit to meet the interconnection service requirements of a capacity resource. Indeed, the Commission has concluded that when developing a CONE value, costs necessary to ensure deliverability of the resource to the grid must be included.⁹⁴

Network Upgrade costs can be considerable and thus have a significant impact on the CONE value for the Reference Unit. In its 2016/2017 Net CONE recalculation, ISO-NE estimated \$27 million in total electrical interconnection costs for a GE 7HA.02 CT at a greenfield site, to ensure it meets the deliverability standard.⁹⁵ Yet, ISO-NE has now chosen the same reference technology, and similarly located the Reference Unit on a greenfield site within 2 miles of a 345 kV network, and ISO-NE has concluded that no network upgrades are needed. ISO-NE provided no analysis to support this conclusion. As was the case in *NYISO*, ISO-NE's Tariff requires that an interconnection customer bear the costs of Network Upgrades necessary to deliver capacity. And inclusion of such costs is critical to ensure that the Reference Unit is deliverable. Thus, as was the case in *NYISO*, it is critical that ISO-NE sufficiently evaluate whether network upgrades are needed, and a measure of those costs should be included in Net CONE by default "without specific evidence that they would not be incurred."⁹⁶

Given the lack of explanation, the Commission should not accept this zero-cost assumption.

⁹⁴ *New York Independent System Operator, Inc.*, 134 FERC ¶ 61,058, at P 53 (2011).

⁹⁵ ISO New England Inc., Filing of CONE and ORTP Updates, Attachment 1, ISO-NE CONE and ORTP Analysis, Concentric Energy Advisors, at 17-18, 29, Table 11, Docket No. ER17-795-000 (filed Jan. 13, 2017) ("2017 ISO-NE Net CONE Report").

⁹⁶ *NYISO* at P 57; *see also id.* at P 62 (directed NYISO is calculate the deliverability cost at a level of system capacity to "slightly exceed the minimum requirement.").

B. THE NET CONE VALUE PROPOSED BY ISO-NE VIOLATES THE TARIFF AND IS OTHERWISE UNJUST AND UNREASONABLE

The Net CONE value proposed by ISO-NE is based on a methodology that is in violation of both the existing Tariff Net CONE definition and the change to the Tariff definition ISO-NE proposes in this proceeding.⁹⁷ Under both the existing and the proposed definition, the Tariff requires ISO-NE to apply “reasonable expectations” of future system conditions, which ISO-NE has not done here. In forecasting non-capacity market revenues, specifically wholesale energy market and Pay for Performance revenues, ISO-NE assumes a quantity of energy supply available to the system equal to the Net ICR (“at capacity balance”) for each of the 20 years of the forecast period, and those capacity suppliers are held in stasis over the entire 20-year period. These are not reasonable expectations. The Tariff requires that Net CONE represent “the amount of capacity revenue the reference technology resource would require, in its first year of operation, *to be economically viable given reasonable expectations of the first year energy and ancillary services revenues, and projected revenue for subsequent years.*”⁹⁸ The Net CONE value proposed by ISO-NE does not meet this definition.

ISO-NE offers no discussion or opinion on the actual Tariff language, instead offering the theory that it “has always” calculated Net CONE based on a system at “long-term equilibrium” and that NEPOOL stakeholders and the Commission have always understood that it is “part and parcel” of the definition of Net CONE.⁹⁹ Curiously, it admits that its proposed methodology is “a revised approach from the 2017 Net CONE Study.”¹⁰⁰ Yet, it maintains that the Tariff should be

⁹⁷ See ISO-NE Filing, Blacklined Proposed Tariff Changes, § I.2.2. Definitions (proposing change to definition of Net CONE to require, inter alia, “reasonable expectations of the energy and ancillary services revenues under long-term equilibrium conditions.”).

⁹⁸ Tariff § I - General Terms and Conditions (emphasis added).

⁹⁹ Transmittal Letter at 25.

¹⁰⁰ *Id.*

read to include its “at capacity balance” methodology, based on past practice. In other words, ISO-NE takes the position that its prior Net CONE recalculation methodologies, in 2014 and 2016, both used a “long-term equilibrium” assumption and that the Commission and stakeholders have always understood that the Tariff definition contemplates (and that it is just and reasonable) to assume the system to be at capacity balance at all 20 years of the forecast period. However, when those prior Net CONE recalculation methodologies and the Commission’s prior orders are further examined, it is obvious that ISO-NE’s prior Net CONE recalculations were based on a methodology that materially differs from that which it proposes in this proceeding.

In its related Complaint, filed on December 31, 2020, NEPGA provides a thorough summary of ISO-NE’s prior Net CONE recalculations explaining that ISO-NE took deliberate methodological steps to reflect reasonable expectations about future capacity balances and changes in the resource mix, steps completely absent from ISO-NE’s Net CONE recalculation in this proceeding. NEPGA has attached the Complaint here, as Attachment C, and draws the Commission’s attention to pages 16-22 for a discussion on the difference between ISO-NE’s prior Net CONE recalculation methodology and its proposed methodology. To the extent ISO-NE’s prior methodologies address what the Commission and stakeholders understood “long-term equilibrium” meant in the context of the Net CONE recalculation, the prior Net CONE methodologies would have meant a system that is at equilibrium on average over the long-term, but that fluctuates based on reasonable expectations of first-year and separately later years in the forecast period. ISO-NE fails to draw any meaning from those prior Net CONE recalculations that are supportive of its position.

It is evident that ISO-NE has failed to account for “reasonable expectations” in several ways. First, in forecasting energy market revenues, ISO-NE assumes that the system will be at

capacity balance (the Net Installed Capacity Requirement) in each of the 20 years of the forecast, without any regard for a system that will see exit and entry and thus different levels of capacity over time.¹⁰¹ Contrary to past practice, ISO-NE does not account for the current capacity balance when estimating EAS revenues in the near-term. Nor does ISO-NE account for changes in the resource mix over time, specifically the impacts to energy market revenues that can be expected from the entry of contracted renewable generation. Second, in assuming the Reference Unit is not in the supply stack, ISO-NE ignores how the Reference Unit's operation would impact Locational Marginal Prices ("LMPs") and FRM clearing prices. It is entirely illogical to assume the Reference Unit will earn revenues in these markets but not assume it offers and clears as supply in these markets. Third, in forecasting annual Capacity Scarcity Condition hours, a primary driver of the assumed scarcity pricing and Pay for Performance revenues, ISO-NE uses an unsupported system planning model and, as with its energy revenue forecast, assumes a system at capacity balance in each of the 20 years of the forecast period. These individual failures cumulatively bias the forecast of non-capacity market revenues above reasonable expectations and in turn thus bias the Net CONE value lower. For these reasons, the Commission should reject ISO-NE's filing or set the matter for evidentiary hearing.

1. THE MARKET DESIGN DOES NOT REQUIRE ISO-NE TO MODEL THE SYSTEM AT THE NET INSTALLED CAPACITY REQUIREMENT IN EACH OF THE 20 YEARS OF THE FORECAST PERIOD

ISO-NE argues that for purposes of forecasting non-capacity market revenues, it must model a system at capacity balance in each of the 20 years of the forecast period, believing it necessary to ensure that price signals incent new capacity to enter the market only when it is

¹⁰¹ Actual experience has been that since the FCA clearing price peaked in FCA 9, the FCA has experienced persistent and growing surplus. Hardly consistent with the "at criteria" assumption that would be required if the Commission approved the tariff change, and the basis for its proposed Net CONE update.

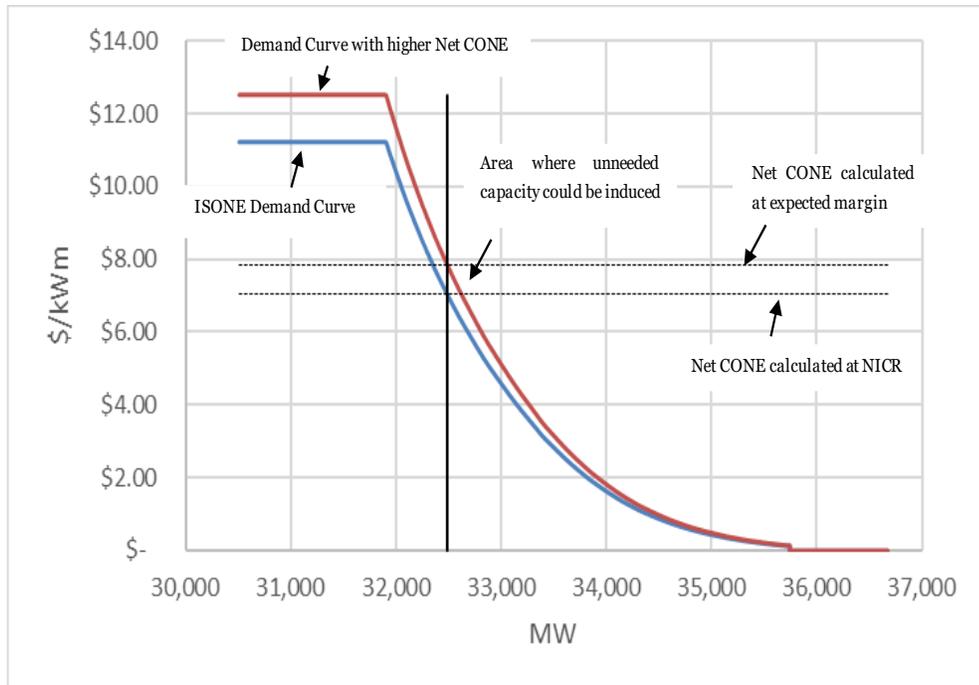
needed.¹⁰² Thus, ISO-NE concludes that its proposal is “an essential feature of the market design that avoids procuring unnecessary capacity at excessive costs to customers.”¹⁰³ ISO-NE further asserts that NEPGA’s interpretation of the Tariff – which NEPGA bases on the plain meaning of unambiguous terms – “would expressly upset” the design, “institutionalizing the procurement of excess capacity.”¹⁰⁴

ISO-NE’s concern regarding unneeded entry does not appropriately consider how its downward sloping demand curve works in practice. Every downward sloping demand curve will clear at a price below Net CONE when there is surplus capacity and will thus discourage new entry. Given this, ISO-NE is apparently arguing that the demand curve based on NEPGA’s interpretation of Net CONE will be above the demand curve based on ISO-NE’s new interpretation of Net CONE, to the point that the capacity market could clear at price greater than the ISO’s version of Net CONE and at a quantity greater than Net ICR (see Figure 1). This is an entirely theoretical concern that will almost certainly not occur in practice.

¹⁰² Transmittal Letter at 29-30

¹⁰³ *Id.* at 29.

¹⁰⁴ *Id.* at 29.



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NE fails to recognize that the NEPGA’s and ISO-NE’s interpretation of the Tariff, the demand curves are essentially the same when actual system capacity is close to Net ICR at the time Net CONE is recalculated. Mr. Tanner explains that, in this circumstance, there is no discernable difference calculating EAS revenues based on actual system conditions and the system at criterion when those actual conditions approach Net ICR..¹⁰⁵ Graphically, the red curve (representing the demand curve with Net CONE calculated based on actual system conditions) and the blue curve (representing the demand curve with Net CONE calculated based on the system at Net ICR) would converge.¹⁰⁶ Further, Mr. Tanner shows that under the present surplus of more than 2,000 MW the amount of potential entry that may occur above Net ICR is incredibly small – a conservative maximum amount of just 140 MW.¹⁰⁷ Finally, when the capacity market clears with a sizeable

¹⁰⁵ NEPGA Protest, Attachment B, Affidavit of Matthew W. Tanner on Behalf of NEPGA, at P 23 (“Tanner Affidavit”).

¹⁰⁶ *Id.* at P 22-23.

¹⁰⁷ *Id.* at P 22.

surplus, as is the case now, the downward sloping demand curves will result in capacity clearing prices well below Net CONE and will therefore avoid incenting new entry. As a result, NEPGA's interpretation of the Net CONE definition will not realistically induce entry at system conditions above Net ICR.

Having established that the policy debate between NEPGA and ISO-NE is only relevant, and only in a theoretical sense, when there is either a sizeable surplus or deficit of capacity in the first few years of the EAS forecast, we are left to consider how ISO-NE's and NEPGA's interpretations of Net CONE will perform in these circumstances. Mr. Tanner shows that, when there is a sizable deficit of capacity and entry is needed, ISO-NE's interpretation of Net CONE will **over-pay for capacity** relative to NEPGA's interpretation because expected EAS revenues in the first few years of the Reference Unit's operation are greater than assumed under ISO-NE's long-term equilibrium assumption.¹⁰⁸ In this circumstance, ISO-NE's new interpretation of Net CONE is more costly to ratepayers than NEPGA's interpretation.

There are two fundamental market performance considerations when the capacity market clears with a sizeable surplus above Net ICR. The first consideration is whether capacity market compensation for existing units efficiently supports previous entry decisions. The second consideration is whether the capacity market sends price signals that encourage efficient retirements. Mr. Tanner shows that NEPGA's interpretation of Net CONE performs better than ISO-NE's new interpretation of Net CONE based on these two considerations.

Mr. Tanner first explains that a market design that fails to reflect actual system conditions will not support efficient entry decisions. ISO-NE's new interpretation will over-estimate the

¹⁰⁸ Tanner Affidavit at P 25. This assumes there is insufficient entry to get to Net ICR. This is reasonable given the time needed to develop new generation in ISO-NE.

energy revenues an existing resource receives from the energy and ancillary services markets in a manner that undermines its previous entry decision. As a result, we should expect resources contemplating entry (when entry is needed) to take this into consideration and require a higher first year capacity price to enter. In contrast, the NEPGA interpretation of Net CONE incorporates a feedback mechanism that supports rational entry decisions.

Mr. Tanner next highlights the difference between a Net CONE calculation that induces *more* retirements and a Net CONE calculation that incentivizes *efficient* retirements. ISO-NE's new interpretation of Net CONE will certainly induce *more* retirements than NEPGA's interpretation.¹⁰⁹ However, more retirements are not necessarily efficient simply because there is a capacity surplus. A resource's retirement is efficient only if the resource's net cost of remaining in service is greater than the value to consumers of the resource remaining in service. Mr. Tanner provides a framework for considering whether a retirement is efficient.¹¹⁰ This framework includes a consideration of how additional capacity impacts consumers' energy and ancillary service costs. With this framework, Mr. Tanner shows that ISO-NE's new interpretation of Net CONE will induce inefficient retirements.¹¹¹ Most critically, and most tellingly, ISO-NE has not presented any evidence its new methodological approach will yield efficient retirements.

2. ISO-NE FAILS TO ACCOUNT FOR REASONABLE EXPECTATIONS ABOUT SYSTEM SUPPLY BALANCES AND CHANGES IN THE SYSTEM RESOURCE MIX

As discussed above, in order to forecast energy market revenues for the Reference Unit, ISO-NE applied a scaling factor to historical LMPs – the LOE Adjustment – to forecast what LMPs *might have been* had the system been exactly at the Net ICR during the historical period, 2017-

¹⁰⁹ *Id.* at P 30.

¹¹⁰ *Id.* at P 31.

¹¹¹ *Id.* at P 36.

2019. This scaling factor has the effect of forecasting higher LMPs and energy margins in the future versus historical LMPs and margins. Thus, for a Net CONE value for effect in the Capacity Commitment Periods 2025 – 2029, ISO-NE forecasts higher energy margins for gas-fired resources than those realized over a decade earlier. This is an absurd forecast that defies any reasonable expectation of future energy market margins for gas-fired, peaking units relative to historical margins, and is contrary to several consecutive years of capacity surplus in New England. Worse yet, this novel approach to forecasting future energy market margins materially biases the forecast energy margins higher and thus biases towards a lower Net CONE value. This is patently unjust and unreasonable and should be rejected by the Commission as an unreasonable methodology for forecasting future energy margins for purposes of developing a Net CONE value.

There are three distinct aspects of ISO-NE's energy forecast methodology that create this bias. First, ISO-NE assumes that the quantity of supply on the ISO-NE system will be equal to the Net ICR in each of the twenty years of the forecast period, 2025 – 2046, with no energy only resources, behind-the-meter resources, or any other resource type that does not take on a Capacity Supply Obligation included. ISO-NE never has and, it is fair to say, never will have a quantity of supply equal to Net ICR for several consecutive years, much less twenty. Though the system may be assumed to migrate to equilibrium in the long-term, ISO-NE assumes the first-year of the forecast period of the system is at capacity balance and stays there. This is an unreasonable expectation. Furthermore, ISO-NE does not take into account energy-only resources and assumes only resources that take on a Capacity Supply Obligation in a quantity equal to the Net ICR, and no more, are available to the system in affecting energy and reserve prices. These resources represent a significant portion of the overall energy supply and have a significant impact on energy market clearing prices. Thus, the consequence of ISO-NE's LOE Adjustment is to bias the

Reference Unit's energy margins up and to bias the Net CONE value down, relative to an energy margin forecast based on reasonable expectations that considers the current status of excess capacity, energy-only resources, and imports.¹¹²

The second fallacy of ISO-NE's energy price forecast is a failure to make reasonably expected adjustments to the resource mix over the years 2025 – 2046.¹¹³ ISO-NE assumes a static mix of resources, in that it bases its energy price forecast on LMPs created by the resource mix present in 2017-2019 without making any type of reasonable assumptions about the entry and exit of resources going forward.¹¹⁴ ISO-NE fails to do so in the face of certain changes in the resource mix and transmission topology due to state policies requiring contracting for off-shore wind and Canadian hydro, and providing continuing incentives for behind-the-meter and other distributed generation, among other policy drivers.¹¹⁵ Notably, ISO-NE accounted for these very changes to the resource mix in its last Net CONE recalculation in 2017.¹¹⁶ ISO-NE added renewable resources to the energy supply over the forecast period, including utility-scale photovoltaic resources with Capacity Supply Obligations, photovoltaic behind-the-meter resources, and land-based and off-shore wind (to meet Massachusetts state law for the procurement of off-shore wind and to meet load growth).¹¹⁷ ISO-NE also added gas-fired generation to maintain a 15% reserve margin for reliability.¹¹⁸ ISO-NE further modeled retirements, including those with announced retirements, certain nuclear units, and economic retirements (typical of older, non-gas units), and expected changes to the transmission topology (including those to import energy from neighboring control

¹¹² Tanner Affidavit at P 45-46.

¹¹³ *Id.* at PP 14, 47-50.

¹¹⁴ *Id.*

¹¹⁵ *Id.* at P 42.

¹¹⁶ 2017 ISO-NE Net CONE Report at 54-55.

¹¹⁷ *Id.*

¹¹⁸ *Id.* at 56.

areas).¹¹⁹ Finally ISO-NE applied forecasts of delivered gas prices, emission allowances for carbon dioxide, and load growth to its energy price forecast. In 2020, ISO-NE avoided any effort to account for these future market expectations.

Third, ISO-NE does not count the Reference Unit as supply in the 20-year model.¹²⁰ As an initial matter, it is illogical to forecast the Reference Unit as earning revenues when it is not considered to be supply. In order to earn the non-capacity market revenue ISO-NE forecasts, the Reference Unit must offer and clear in the non-capacity markets, and thus it must be considered as supply. Excluding the Reference Unit as supply fails to account for the impact the Reference Unit will have on its own forecasted revenues. The Reference Unit is a highly efficient, peaking unit, that is inframarginal in the hours ISO-NE forecasts it will be dispatched in real-time. It will displace less efficient resources and materially put downward pressure on energy and reserve prices, a consequence the Reference Unit will experience just like all other resources.¹²¹ If ISO-NE is to assume that the Reference Unit will earn non-capacity market revenues, the only reasonable expectation is that it will contribute supply to the system and will have a material effect on degrading its forecast revenues. This is a fundamental supply and demand concept ISO-NE deliberately ignores.

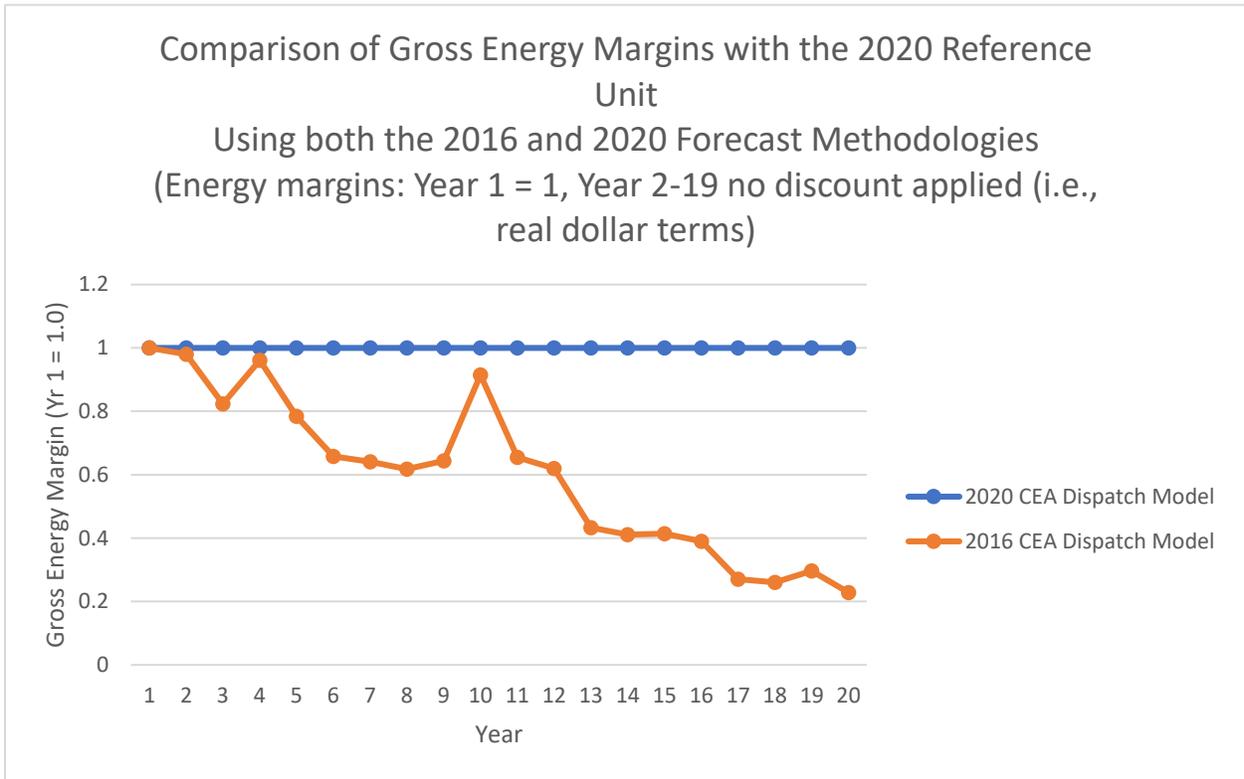
The distinction between a forecast based on reasonable expectations and one based on the rote LOE Adjustment methodology is evident by comparing ISO-NE's 2016 and 2020 energy price forecasts. As shown in this figure, the 2016 forecast shows varying and declining energy margins

¹¹⁹ *Id.*

¹²⁰ Tanner Affidavit at PP 51-53.

¹²¹ *Id.*

for the Reference Unit, whereas the 2020 forecast simply forecasts the same energy margin for each of the 20 years.¹²²



The 2016 dispatch model is tethered to reasonable expectations about likely future conditions, whereas the 2020 dispatch model is pure fiction. Though the recalculation of Net CONE is in one sense a hypothetical exercise, it is not without a specific meaning. In ISO-NE’s words, Net CONE:

“[C]an be thought of as an estimate of the minimum actual capacity payment that would be necessary for a new generating facility using a cost-effective reference technology type, to be *economically viable* given *reasonable expectations* for the facility’s development and

¹²² *Id.* at PP 47-50.

financing costs, and *reasonable expectations* for the facility’s net revenue (taking into account energy and ancillary service markets revenues) *over its projected lifetime*.”¹²³

In this filing, ISO-NE does not comply with its own characterization of Net CONE. It does not attempt to form reasonable expectations about non-capacity market revenues, consider changes in the Reference Unit’s energy margins “over its projected lifetime,” or consider a “prospective resource developers”¹²⁴ view of future revenue margin opportunities. No actual Project Sponsor looking to invest in new generation in New England would forecast future energy margins according to ISO-NE’s 2020 dispatch model, but instead would consider the likely impacts of market and system changes consistent with the 2016 Net CONE recalculation methodology.¹²⁵ If a developer investor were to present an investment thesis based on the 2020 ISO-NE dispatch model it would be unable to secure financing or receive approval from its investment committee.¹²⁶ Such an investor would, indeed, analyze its expected returns based on its own plant’s impact on revenues. The Tariff language is relevant here, in that its requirement to consider reasonable expectations of first-year and future year non-capacity market margins is consistent with a prospective resource developers’ approach to new resource investment. ISO-NE’s 2020 dispatch model would serve no purpose in that evaluation.

3. ISO-NE FAILS TO APPLY REASONABLE EXPECTATIONS TO ITS SCARCITY HOURS ASSUMPTION

Forecasting the annual hours of Capacity Scarcity Conditions is an important input to the non-capacity market revenue forecasts, specifically energy market scarcity pricing hours and Pay

¹²³ ISO New England Inc. and New England Power Pool, Prepared Testimony on Robert G. Ethier on Behalf of ISO New England Inc., at 6, Docket No. ER14-1639-000 (filed Apr. 1, 2014) (“Ethier Testimony”) (emphasis added).

¹²⁴ Ethier Testimony at 5 (emphasis added).

¹²⁵ See Tanner Affidavit at P 14.

¹²⁶ *Id.*

for Performance revenue opportunities. It is one of the three variables dictating Pay for Performance revenues and Scarcity Pricing revenues, respectively, and the only one highly variable based on future market expectations.¹²⁷ As it did with its energy margins forecast, ISO-NE assumes a system in stasis “at equilibrium,” with the quantity of energy supply equal to Net ICR in each of the twenty years of the forecast period. The scarcity hours forecast thus suffers from the same lack of reasonable expectations as the energy margins forecast. In addition, ISO-NE bases its scarcity hours forecast on a system planning study that includes assumptions appropriate for system planning, but which skew the forecast scarcity hours to values well above historical values or any reasonable expectation of future annual scarcity hours. Thus, as with ISO-NE’s energy and reserves margins forecast, the Commission should reject ISO-NE’s scarcity hours forecast as non-compliant with the Tariff and otherwise unjust and unreasonable.

ISO-NE assumes that the system will experience 11.3 hours of Capacity Scarcity Conditions annually in each of the 20 years of the forecast period.¹²⁸ ISO-NE creates its forecast using a probabilistic simulation model (GE MARS).¹²⁹ This simulation model is “a reliability tool mainly used for assessing the resource adequacy of the system” with several limits to its ability to reflect actual system operations that, if properly reflected, would tend to decrease the forecast of scarcity hours.¹³⁰ For example, the model does not allow for energy imports (above the firm energy

¹²⁷ Expected Pay for Performance revenues are equal to [assumed annual Capacity Scarcity Condition hours x Performance Payment Rate] x [resource performance rate – Balancing Ratio] / 1000 / 12. The Performance Payment Rate is fixed by the Tariff and the difference between performance rate and BR values falls within a relatively narrow range. Expected scarcity pricing revenues are equal to [Capacity Scarcity Condition Hours x Reserve Constraint Penalty Factor x resource performance rate] / 1000 / 12. The Reserve Constraint Penalty Factor value is fixed by the Tariff and their resource performance rate falls within a relatively narrow range.

¹²⁸ 2020 ISO-NE Net CONE Report at 70.

¹²⁹ See ISO-NE Memo to the NEPOOL Power Supply Planning Committee, Reliability Committee, and Markets Committee Re: Operating Reserve Deficiency Information – Capacity Commitment Period 2023 – 2024, at 1 (Feb. 14, 2020), available at: https://www.iso-ne.com/static-assets/documents/2020/02/2020_05_28_pspc_iso_memo_fca_14_operating_reserve_deficiency_info.pdf. (“Scarcity Hour Forecast Memo”).

¹³⁰ Scarcity Hours Forecast Memo at 2.

imports reflected in the model) in response to scarcity price signals until the system has already reached a Capacity Scarcity Condition, and assumes that all neighboring control area systems are also “at criteria.”¹³¹ This is in despite of there being no factual basis for this Net ICR assumption, and when it is reasonable to expect that energy imports would occur in response to tightening system condition price signals prior to the system experiencing reserve deficiencies. Indeed, even the Net ICR value itself assumes quantities of emergency energy imports.¹³² Due to GE MARs’ several limitations,¹³³ “the shortage hours reported in this study do not reflect any shortage hours that could arise relating to operational risks such as under-commitment due to load forecast error in operations, loss of critical transmission elements, [or] loss of fuel supply facilities.”¹³⁴ What the model captures instead is a forecast of Capacity Scarcity Condition hours as a function of varying load conditions. It is load forecast error and contingency events, however, that have been the cause of Capacity Scarcity Conditions historically, not peak load conditions. As shown here, since June 1, 2014 there have been 10 distinct reserve deficiency conditions, virtually all during the shoulder or winter months.¹³⁵

¹³¹ See slide 4 of the June 30, 2020 ISO-NE presentation to the Power Supply Planning Committee here https://www.iso-ne.com/static-assets/documents/2020/06/a02c_pspc_2020_06_30_tie_benefits_study_assumptions.pdf.

¹³² See Tariff § 12.7.4 (requiring that load and capacity relief expected from emergency actions during a capacity deficiency must be included in the calculation of the Installed Capacity Requirement).

¹³³ GE MARs does not “consider the operational parameters associated with the resources such as ramp rate, minimum up/down times, maximum number of starts per day, etc.” Further, “operational requirements associated with unit commitment/economic dispatch; or transmission constraints associated with transmission maintenance, system upgrades or unforeseen loss of transmission elements are also not considered.” Scarcity Hours Forecast Memo at 2.

¹³⁴ Scarcity Hour Forecast Memo at 2.

¹³⁵ See p 5-6 of the ISO-NE Markets Development memo to the NEPOOL Markets Committee dated July 8, 2020 accessed at https://www.iso-ne.com/static-assets/documents/2020/07/a5_a_iso_memo_scarcity_hours_balancing_ratio.pdf.

Date	Duration (hours)	Contributing Factors
12/4/2014	2.1	Loss of HQ Imports
5/3/2015	0.2	
5/10/2015	1.1	Load Forecast error (LFE) and transmission outage
9/29/2015	0.3	
8/11/2016	3.2	Generation outages
8/12/2016	0.1	
10/18/2017	0.3	WMASS tie-line outage coincident with generation outage
10/22/2017	0.3	Loaf forecast error and transmission outage
3/14/2010	0.2	Post blizzard transmission outage coincident with generation outage
9/3/2018	2.7	Load forecast error and generation outage

Note: No Capacity Scarcity Conditions have occurred since 9/3/2018.

Further, as shown, the contributing factors have been not peak load conditions but load forecast error and generation and transmission contingencies, the very blind spots of the GEMARS model. It is therefore not reasonable to expect that the scarcity hours forecast produced by GEMARS reflects a reasonable expectation of actual scarcity condition hours that may occur.

As the table above further shows, actual annual historic Capacity Scarcity Conditions hours have been well below ISO-NE’s 11.3 hour assumption. The values above show a total of 10.5 hours over the entire period, June 1, 2014 through present, for an average of 1.6 hours per year. This is well below the approximately 3 hours per year assumed at the \$2/kw-month demand curve quantity in FCA 15.¹³⁶ Armed with this competing information – ISO-NE’s GEMARS analysis versus historical values – a prudent developer would most certainly adopt the historical values as representing a sufficient sample size to be highly predictive, and in recognition of GEMARS’ failure to consider energy-only resources on the system, imports backed by a Capacity Supply

¹³⁶ See ISO-NE presentation entitled “Estimated Hours of System Operating Reserve Deficiency for Capacity Commitment Period 2024-2025 (FCA 15)” presented to the NEPOOL Power Supply Planning Committee on October 9, 2020 at 8-9, available at: https://www.iso-ne.com/static-assets/documents/2020/10/a03_pspc_2020_10_09_est_hrs_or_def_fca15.pptx.

Obligation, and system operator manual actions as contributing factors that would tend to depress the number of Capacity Scarcity Condition hours. Notably, as with the energy margin forecast, in 2014 and 2016, ISO-NE applied reasonable expectations of first-year and future year scarcity hours in recalculating Net CONE. In 2014, ISO-NE forecast scarcity hours for the first three years of the forecast period based in part on historically low annual scarcity hours and implied heat rates from futures prices.¹³⁷ In 2017, ISO-NE based its forecast scarcity hours in the first three years of the forecast period “based on current excess capacity levels.”¹³⁸

4. A LACK OF PIPELINE UPGRADES PRECLUDES THE REFERENCE UNIT FROM PARTICIPATING IN THE FORWARD RESERVE MARKET

In developing assumed EAS revenue offsets, ISO-NE assumes that the Reference Unit will participate in ISO-NE’s FRM, and that FRM revenues will account for 43% of the net revenues for the Reference Unit.¹³⁹ Assuming that the Reference Unit can participate in the FRM, and further assuming that FRM revenues will account for such a significant portion of the Reference Unit’s net revenues are fundamental flaws that must be rejected. Without the needed pipeline upgrades, the Reference Unit cannot meet the operational capabilities required of an FRM resource.

As Ms. Wilmer and Mr. Levitan explain, ISO-NE assumes that the Reference Unit is assumed to have fast-start capability and can offer ten-minute non-synchronized reserve and

¹³⁷ 2014 ISO-NE Net CONE Filing, Testimony of Samuel Newell and Kathleen Spees on behalf of ISO-NE Regarding a Forward Capacity Market Demand Curve, at 59-60. Specifically, in considering its forecast of 21.2 hours (at criteria) and an historical average of 3 hours, ISO-NE observed an implied declining heat rate in Intercontinental Exchange energy and gas futures, and concluded that “declining market heat rates are hardly consistent with anticipating a large increase in scarcity hours, from the 3-hour recent historical average.”

¹³⁸ 2017 ISO-NE Net CONE Report at 79. ISO-NE forecast 6 and 11.3 scarcity hours for Years 1-3 and Years 4-20, respectively, by “review[ing] the most recent ISO NE projections of scarcity hours in New England” and “extrapolat[ing] a value of 6 hours of scarcity conditions per year over the next 3 years based on current excess capacity levels, and 11.3 hours over the balance of the forecast period.”

¹³⁹ Wilmer/Levitan Affidavit at P 10.

thirty-minute operating reserves in the EAS dispatch model.¹⁴⁰ Indeed, ISO-NE has assumed the Reference Unit can offer such reserves in its Dispatch Model. Ms. Wilmer and Mr. Levitan conclude that pipeline upgrades are required in order to enable the Reference Unit to physically be capable of offering such services.

Ms. Wilmer and Mr. Levitan explain that in their expert judgement, given that the Reference Unit's gas demand represents 66% of the E System's total capacity, the Reference Unit would be unable to rely on short notice gas needed in order to respond to dispatch signals and provide operating reserves within 10 or 30 minutes, as is required. Without investment in pipeline upgrades, the Reference Unit simply would be unable to achieve the ramp rate required to provide such ancillary services. Even assuming the Reference Unit could ably procure short notice gas to offer such ancillary services, Ms. Wilmer and Mr. Levitan find the pressure effects of the ramp would harm other E System entitlement holders, and Algonquin would never enter into an arrangement with the Reference Unit that would allow such harm to occur.¹⁴¹

For all these reasons, ISO-NE's assumption that the Reference Unit will earn a substantial portion of its revenues through FRM participation is unsupported. More importantly, Ms. Wilmer and Mr. Levitan affirmatively demonstrate that without investment in pipeline upgrades, the Reference Unit's assumed participation in FRM is yet another unreasonable assumption.

¹⁴⁰ Wilmer/Levitan Affidavit at P 47.

¹⁴¹ *Id.*.

C. **MATERIAL IMPACTS OF THE UNREASONABLE AND UNSUPPORTED ASSUMPTIONS RELATIVE TO REASONABLE ASSUMPTION SUPPORTED BY RECORD EVIDENCE**

The collective impacts of ISO-NE's directionally biased assumptions are material. As is the case in each example explained by NEPGA above, each unsupported and unharmonized assumption directs the Net CONE value lower, and they thus individually and collectively bias the Net CONE value low. ISO-NE does this by omitting material costs, resulting in an understated CONE value, and grossly overestimating the revenue offsets that are subtracted from CONE to yield a Net CONE. A brief summary of these impacts is as follows:

- LOE Adjustment. This EAS offset value is overstated by \$0.21/kWm. As described in the Stoddard and Tanner affidavits, it is simply unrealistic to assume a resource mix from the 2017-2019 test period with certain resources removed and none added would match the resource mix in the first delivery year that the ISO proposes Net CONE would apply.¹⁴²
- Omission of gas compression. Levitan and Wilmer provide conclusive evidence, unchallenged by ISO-NE, that the Reference Unit requires on-site compression given the location and turbine technology chosen by ISO-NE. Without on-site compression, the Reference Unit would be unable to operate as contemplated by ISO-NE's own models, and thus would be rendered infeasible. Correcting this fundamental flaw increases CONE by \$0.165/kWm and reduces the EAS offsets by \$0.063/kWm for a total reduction to Net CONE of \$0.228/kWm.¹⁴³
- Omission of pipeline upgrade costs. Levitan and Wilmer demonstrate that without a significant investment in incremental pipeline capacity, the Reference Unit cannot operate as ISO-NE assumes, and thus is unable to capture revenues the ISO-NE assumes it will earn. Levitan and Associates concludes that the cost of the investment (through a 20-year firm capacity contract) is greater than the incremental revenues those investments would yield. Levitan and Associates thus model the Reference Unit's EAS offsets based on the assumption that an investor would make an economically rational decision of eschewing

¹⁴² Tanner Affidavit at PP 46, 74.

¹⁴³ *Id.* at P 76.

costly investments that yield insufficient revenues. The impact of ISO-NE's oversight is a reduction in the EAS offset of \$2.03/kWm.¹⁴⁴

- Scarcity Hours. Tanner critiques the implausible and unsupportable assumption that, on average, 11.3 scarcity hours would occur every year. He cites NEPGA's demonstration that the ISO-NE model is demonstrably flawed. Consistent with ISO-NE's 2014 and 2016 scarcity hour forecast methodologies, Tanner adjusts the scarcity hours in Years 1 through 4 to account for reasonable expectations in the first and near-term years, and then assumes a system at NICR for years 5 through 20 of the forecast period. This adjustment further reduces the EAS Offset by \$0.28 to \$0.48/kWm.¹⁴⁵
- System conditions unchanged for 25 years. Tanner has supplemented Robert Stoddard's affidavit, submitted in support of NEPGA's related Complaint, to demonstrate why ISO-NE's assumption that the system conditions would remain unchanged for a quarter century is fundamentally flawed. Relying on ISO-NE's consultant's analysis of prior Net CONE calculations, Tanner estimates that the impact of ISO-NE's unrealistic assumption further reduces the EAS offset \$0.19/kWm.¹⁴⁶
- Exclusion of Reference Unit from Supply Stack. Tanner explains the lack of logic of assuming the Reference Unit earns and quantifies the impact of this omission. While, he qualifies that the ISO-NE should have properly modelled the Reference Unit's impact in all hours, his sampling approach yields a reasonable approximation that the EAS offset was reduced by another \$0.082/kWm.¹⁴⁷

These systemic biases collectively serve to reduce Net CONE by \$3.02-\$3.22/kWm. To be sure, NEPGA is not asserting that FERC must determine that Net CONE should be adjusted by \$3 to account for these systemic biases. Rather, NEPGA quantifies these adjustments to demonstrate how these biases have a material impact on ISO-NE's proposed Net CONE value.

¹⁴⁴ *Id.* at PP 77-78.

¹⁴⁵ *Id.* at P 55.

¹⁴⁶ *Id.* at PP 50, 82.

¹⁴⁷ *Id.* at PP 53, 85.

III. CONCLUSION

NEPGA respectfully requests that the Commission find that ISO-NE's proposed CONE and Net CONE value violate ISO-NE's Tariff and are otherwise unjust and unreasonable. NEPGA thus further requests that the Commission either direct ISO-NE to recalculate just and reasonable CONE and Net CONE values consistent with the Tariff, or set the issues raised in this proceeding for settlement and evidentiary hearings.

Respectfully Submitted,

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CERTIFICATE OF SERVICE

I hereby certify that I have served a copy of the comments via email upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Boston, Massachusetts, January 21, 2021.

/s/ Bruce Anderson _____

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