

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

**ISO New England Inc. and
New England Power Pool**

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**Docket Nos. ER14-1050-000
ER14-1050-001**

**MOTION FOR LEAVE TO ANSWER AND ANSWER OF THE
NEW ENGLAND POWER POOL PARTICIPANTS COMMITTEE**

(March 18, 2014)

Pursuant to Rules 212 and 213 of the Commission’s Rules of Practice and Procedure,¹ the New England Power Pool (“NEPOOL”) Participants Committee² hereby submits this Motion for Leave to Answer and Answer to the Motion for Leave to Answer Out of Time and Answer of ISO New England Inc. (“NEPOOL Answer”), submitted on March 3, 2014³ in this “jump ball” proceeding.⁴ This Answer responds to ISO-NE’s new testimony and arguments in ISO-NE’s latest pleading criticizing the February 12, 2014 testimony of NEPOOL’s expert witness, Ms. Julia Frayer (the “Frayer Testimony”⁵) on two key issues in this proceeding: the adverse effect that ISO-NE’s proposed changes (the “ISO-NE Proposal” or “PI”) to the Forward Capacity Market (“FCM”) would have on existing capacity suppliers; and (ii) the adverse effects that PI would have on new investment in capacity resources in the New England FCM. Responding to broadly expressed concerns that ISO-NE’s PI would hinder investment in the New England

¹ 18 C.F.R. §§ 385.212 and 385.213 (2014).

² Capitalized terms not defined herein have the meanings as cited thereto in the Second Restated NEPOOL Agreement, Participants Agreement or ISO-NE-NE Transmission Markets and Services Tariff (ISO-NE-NE Tariff). Section III of the Tariff is referred to as Market Rule 1.

³ *Motion for Leave to Answer Out of Time and Answer of ISO New England Inc.*, FERC Docket Nos. ER14-1050-000 and -001 (Mar. 3, 2014) (“March 3 ISO-NE Pleading”).

⁴ Both the NEPOOL Proposal and ISO-NE-NE Proposal were initially submitted in a January 17, 2014 Joint Filing. *See* Filings of Performance Incentives Market Rule Changes, *ISO New England Inc. and New England Power Pool*, Docket Nos. ER14-1050-000 and -001 (Jan. 17, 2014) (the “January 17 Filing” or “Joint Filing”).

⁵ *Testimony of Julia Frayer, on Behalf of NEPOOL*, in FERC Docket No. ER14-1050-000 (Feb. 12, 2014).

FCM,⁶ ISO-NE also includes with the March 3 ISO-NE Pleading the testimony of Robert S. Mudge (the “Mudge Testimony”). In this limited Answer, NEPOOL responds to the ISO-NE criticisms and submits responsive testimony from Ms. Frayer (the “Frayer Responsive Testimony”) which addresses the issues of PI’s adverse effect on existing generation and new investment in FCM capacity resources.⁷

I. MOTION FOR LEAVE TO ANSWER

NEPOOL moves pursuant to Rules 212⁸ and 213,⁹ for leave to answer the March 3 ISO-NE Pleading and accompanying testimony and asks that the Commission consider NEPOOL’s Answer. The March 3 ISO-NE Pleading includes a motion to answer that should not be granted unless NEPOOL is also provided the opportunity to respond to new information about PI that ISO-NE did not present until March 3, 2014. Pursuant to Rule 213(a)(2) of the Commission’s Rules, the Commission may accept the filing of an answer to an answer for good cause shown when it leads to a more accurate and complete record, helps the Commission understand the issues, clarifies matters in dispute or errors, responds to new issues raised, or provides information that will assist the Commission in its decision-making process.¹⁰ NEPOOL’s

⁶ *Protest of Energy Management Inc.* (Feb. 12, 2014) (“EMI Comments”); *Joint Comments in Support of NEPOOL Filing of Eastern Massachusetts Consumer-Owned Systems* (Feb. 12, 2014) (“EMCOS Comments”); *The NRG Companies’ Protest of ISO-NE-NE Proposal and Comments in Support of the NEPOOL Proposal* (Feb. 12, 2014) (“NRG Comments”); *Comments and Protest by the Connecticut Public Utilities Regulatory Authority, the Connecticut Office of Consumer Counsel, George Jepsen, Attorney General for the State of Connecticut, the Connecticut Department of Energy and Environmental Protection, the United Illuminating Company and the Rhode Island Public Utilities Commission*, (Feb. 12, 2014) (“Connecticut and Rhode Island Parties Comments”).

⁷ The Frayer Responsive Testimony is attached hereto as Exhibit A.

⁸ 18 C.F.R. § 385.212 (2014).

⁹ 18 C.F.R. § 385.213(a)(2) (2014) (“An answer may not be made to a protest, an answer, a motion for oral argument, or a request for rehearing, *unless otherwise ordered by the decisional authority*”) (emphasis added).

¹⁰ The Commission permits replies that would otherwise be prohibited where the reply would assure a complete record in the proceeding; *See, e.g., Las Vegas Cogeneration LP*, 117 FERC ¶

Answer will assure a more complete record and will otherwise assist the Commission in reviewing the issues sought to be raised in this proceeding. Accordingly, good cause exists for the Commission to grant this motion for leave to file NEPOOL's Answer.

II. BACKGROUND

Among the key objections to the ISO-NE Proposal, raised by NEPOOL, state regulators, and buyers and sellers of capacity alike, is that PI injects excessive risk into the capacity market. The feared result of this higher risk is accelerated retirements of resources in New England at a time when new capacity is needed in the region and reliance on gas-fired generation has expanded faster than the gas transportation infrastructure to support that reliance. Those retirements would compound reliability problems already faced in New England and dramatically increase costs to consumers, as well as risk to the remaining resources as a result of expanded scarcity conditions. Included in the February 12, 2014 filings was the Frayer Testimony, as well as testimony from people who are involved in managing generation assets and investments in New England.¹¹ Testimony from Ms. Frayer on behalf of NEPOOL, Ms. Lagano on behalf of the NRG Companies ("NRG"), Mr. Bottiggi on behalf of the Eastern Massachusetts Consumer-Owned Systems ("EMCOS"), and Deputy Commissioner Dykes and

61,309 at P 20 (2006); *S. Natural Gas Co.*, 121 FERC ¶ 61,118, at P 5 (2007); or assists the Commission in its decision-making process; see *Virginia Elec. and Power Co.*, 124 FERC ¶ 61,207 at P 22 (2008); *Pepco Holdings, Inc.* 125 FERC ¶ 61,130 at P 24 (2008); *Potomac-Appalachian Transmission Highline, LLC*, 122 FERC ¶ 61,188 at P23 (2008); *S. Cal. Edison Co.*, 122 FERC ¶ 61,187 at P 19 (2008); *N.Y. Indep. Sys. Operator, Inc.*, 121 FERC ¶ 61,112 at P4 (2007); *PJM Interconnection, L.L.C.*, 116 FERC ¶ 61,179 at P 19 (2006); provide information helpful to the disposition of an issue; see *CNG Transmission Corp.*, 89 FERC ¶61,100 at 61,287, n.11 (1999); or permit the issues to be narrowed or clarified; *PJM Interconnection LLC*, 84 FERC ¶ 161,224 at 62,078 (1998); *New Energy Ventures, Inc. v. S. Cal. Edison Co.*, 82 FERC ¶ 61,335 at 61,323, n.1 (1998).

¹¹ See generally *Declaration of William G. Bottiggi in Support of Protest and Comments of EMCOS*, in FERC Docket No. ER14-1050-000 (Feb. 12, 2014) ("Bottiggi Testimony"); see also *Affidavit of Judith Lagano Vice President, Asset Management, NRG's East Region on Behalf of NRG*, in FERC Docket No. ER14-1050-000 (Feb. 12, 2014) ("Lagano Testimony"). Also included in the February 12, 2014 filings was the *Affidavit of Susan Liese Pope on Behalf of NRG*, in FERC Docket Nos. ER14-1050-000 and -001 (Feb. 12, 2014) ("Pope Testimony").

Mr. Falk on behalf of the Connecticut and Rhode Island Parties¹² supported the view that PI will adversely affect existing generation and/or new investment in existing and new generation in New England. On February 27, 2014, NEPOOL submitted an answer to ISO-NE's February 12 filing.¹³ Except for ISO-NE's response, all other answers to the February 12, 2014 filings were filed on that date as well.¹⁴ In the March 3 ISO-NE Pleading and the accompanying Mudge Testimony, ISO-NE seeks to refute the many criticisms of PI, including that PI will have a negative impact on existing capacity suppliers and will harm new investment in the FCM.¹⁵ ISO-NE focuses part of the March 3 ISO-NE Pleading and Mudge Testimony on criticizing the

¹² *Testimony of Deputy Commissioner Katie Sharf Dykes in Support of the Connecticut Parties*, in FERC Docket Nos. ER14-1050-000 and -001 (Feb. 12, 2014) (“Dykes Testimony”); *Direct Testimony of Jonathan Falk on Behalf of the Connecticut Parties*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 12, 2014) (“Falk Testimony”). The Connecticut and Rhode Island Parties consist of the following: The Connecticut Public Utilities Regulatory Authority, the Connecticut Office of Consumer Counsel, George Jepsen, Attorney General for the State of Connecticut, the Connecticut Department of Energy and Environmental Protection, the United Illuminating Company and the Rhode Island Public Utilities Commission.

¹³ *Motion for Leave to Answer and Answer of the New England Power Pool Participants Committee*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 27, 2014) (“NEPOOL’s Feb 27 Answer”).

¹⁴ *See Motion for Leave to Answer and Limited Answer of Exelon Corporation, EquiPower Resources Management, LLC, Essential Power, LLC, Dynegy Marketing and Trade, LLC, and Casco Bay Energy Company, LLC*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 27, 2014) (the “Indicated Generators Answer”); *Motion for Leave to File Answer and Answer of the Maine Public Utilities Commission and the Maine Office of the Public Advocate to Answer of ISO New England Inc. and Comments of New England’s External Market Monitor*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 27, 2014) (the “Maine Public Parties Answer”); *Motion for Leave to File Answer and Answer of Dominion Resources Services, Inc.*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 27, 2014) (the “Dominion Answer”); *Motion to Answer and Answer by the Connecticut Public Utilities Regulatory Authority, the Connecticut Office of Consumer Counsel, George Jepsen, Attorney General for the State of Connecticut, the Connecticut Department of Energy and Environmental Protection, the United Illuminating Company and the Rhode Island Public Utilities Commission*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 27, 2014) (the “Connecticut and Rhode Island Parties Answer”); *Motion for Leave to Answer and Answer of the NRG Companies*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 27, 2014) (the “NRG Answer”); *Corrected Motion for Leave to Answer and Answer of GDF Suez Energy Marketing NA, Inc.*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 28, 2014) (the “GDF Suez Answer”).

¹⁵ March 3 ISO-NE Pleading at 11-13.

Frayer Testimony's conclusions to this effect, contending that Ms. Frayer's conclusions are based on incorrect or inappropriate assumptions.¹⁶

NEPOOL's Answer and the accompanying Frayer Responsive Testimony address ISO-NE's criticism on those points in particular. While NEPOOL does not address here the many other criticisms of PI and ISO-NE's March 3, 2014 response to them, NEPOOL believes that those criticisms have been more than adequately sustained by their proponents and that ISO-NE has failed to refute them.

III. ANSWER

In the Frayer Responsive Testimony, to avoid any confusion created by the March 3 ISO-NE Pleading, Ms. Frayer summarizes some of her key conclusions contained in the initial Frayer Testimony, explaining how the ISO-NE Proposal is inefficient, discriminatory, not cost-effective and impractical/commercially unreasonable.¹⁷ Without responding to much of her analysis that shows why PI is unjust and unreasonable and not preferable to the NEPOOL Proposal, the March 3 ISO-NE Pleading focuses on two points and criticizes the conclusions of Ms. Frayer and others that PI would have an adverse effect on existing capacity resources and new investment in existing and new generation resources in New England. For the reasons set forth below, the Commission should give little or no weight to ISO-NE's criticism regarding these points.

a. ISO-NE is Wrong in its Criticism of the Frayer Testimony Regarding the Potential Adverse Effects of PI on Existing Capacity Resources.

In its rejection of the Frayer Testimony's conclusion that PI would have an adverse effect on existing capacity resources, and especially certain types of resources, ISO-NE contends that

¹⁶ *Id.* at 6.

¹⁷ Frayer Responsive Testimony at 3-5.

Ms. Frayer’s conclusions and example are based on incorrect or inappropriate assumptions.¹⁸ In the Frayer Responsive Testimony, Ms. Frayer explains again that her examples are illustrative examples intended to show the penalty-centric nature of PI.¹⁹ Ms. Frayer notes that “ISO-NE has misinterpreted and misrepresented my analysis as it relates to the potential impact that the PI Proposal would have on both existing resources and new investment in existing and new capacity resources because ISO-NE seeks to minimize the magnitude and implications of the risks that PI would introduce into the [FCM] through the penalty-centric approach of PI.”²⁰

ISO-NE criticizes Ms. Frayer’s assumptions regarding capacity prices and how those assumptions contribute to her conclusion that certain capacity resources would likely experience significant losses and revenue volatility under PI.²¹ Ms. Frayer responds that the capacity price she used in her example in Figures 12 and 13 from her original testimony (\$3.15/kW-month) was consistent with both historic capacity pricing in the FCM and within the range forecast used by the Analysis Group in its Impact Assessment.²² She points out that “[i]ndeed, the price is almost exactly the midpoint of the Analysis Group’s projections of FCA clearing prices under PI, which range from \$1.93/kW-month to \$4.49/kW-month.”²³ Use of \$3.15/kW-month capacity price for purposes of her illustrative example to show the effects of PI on different classes of units is an entirely reasonable assumption that is consistent with historic FCM pricing and the Forward Capacity Auction clearing prices under PI projected by ISO-NE’s own consultant. In the

¹⁸ See e.g., March 3 ISO-NE Pleading at 7 (“NEPOOL’s conclusions, on the other hand, are incorrect because, fundamentally, Ms. Frayer’s analysis rests on inappropriate assumptions.”).

¹⁹ Frayer Responsive Testimony at 8.

²⁰ *Id.*

²¹ March 3 ISO-NE Pleading at 6-7.

²² The Frayer Responsive Testimony also corrects a typographical error in the original Figure 12 and provides an amended Figure 12. Frayer Responsive Testimony at 10-12.

²³ *Id.* at 11.

Supplemental Frayer Testimony, Ms. Frayer shows how even a price as high as \$5.00/kW-month would result in a loss under the scarcity conditions experienced this past winter period.²⁴

Ms. Frayer supplements her original testimony by looking at some of the recent winter operational events cited by ISO-NE in its February 12, 2014 filing.²⁵ With respect to those recent events and how they support her analysis, Ms. Frayer states that recent operational events on the New England system (in the November 2013 to February 2014 timeframe) show that: (i) scarcity conditions appear to be increasing; (ii) if PI were in effect, the adverse financial consequences on existing generation would have been worse than shown in Ms. Frayer's original illustrative example; (iii) the scarcity conditions during this time period would have resulted in a significant net loss of revenue for the less flexible fossil-fired steam resources; and (iv) even with the highly unlikely assumption that there would be no further scarcity conditions and capacity revenue losses during the remainder of a twelve-month period, the net positive capacity revenues under PI would still be insufficient to support continued operation of these types of resources.²⁶

Ms. Frayer points out that ISO-NE's consultant, Analysis Group, has failed to take into account performance data during actual winter scarcity conditions: "Actual performance from recent events could also help in identifying weaknesses in the conclusions that ISO-NE drew from the Analysis Group's Report. For example, in its Report, the Analysis Group expected that combined cycle plants over-perform in the winter...However, if one reads more deeply into the study's assumptions, it becomes clear that this is not necessarily an accurate representation of

²⁴ *Id.* at 18.

²⁵ *Id.* at 13-17.

²⁶ *Id.*

these units' performance during reserve shortages."²⁷ Ms. Frayer provides additional support to NEPOOL's recent discovery request to ISO-NE²⁸ by explaining further why it would be helpful to the Commission and the parties to this proceeding for ISO-NE to provide data and analysis regarding system operations that occurred this winter.²⁹

Ms. Frayer underscores the conclusions to be drawn from the analysis in her original and responsive testimonies regarding the effect of PI on different classes of existing resources: "There are two key takeaways from the illustrative example. As shown in Figures 12...and Figure 13...in my February 12 testimony, there are clear winners and losers under the PI Proposal; and the PI Proposal creates considerable volatility in a resource's total capacity revenues. Capacity revenues are no longer stable and become sensitive to a resource's real-time market performance during uncertain and unpredictable scarcity conditions."³⁰ The illustrative examples Ms. Frayer uses are entirely appropriate to indicate the likely consequence of PI to drive certain types of units out of the FCM.

²⁷ *Id.* at 23.

²⁸ *See Motion for Discovery and Request for Expedited Treatment of the New England Power Pool Participants Committee*, in FERC Docket Nos. ER14-1050-000 and 001 (Feb. 27, 2014) ("NEPOOL Discovery Request").

²⁹ Frayer Responsive Testimony at 23. Ms. Frayer states:

ISO-NE did not provide details of the actual performance rate of various generation units during the recent scarcity conditions this winter, but this information would be valuable in analyzing the PI Proposal in a particular set of challenging market conditions. For example, details on performance rates can help determine if the average performance levels used in the Analysis Group Report (and which I relied on in my examples) fairly reflect current performance given the various changes in New England's markets. Such data would also allow for a "forensic" investigation of the underlying drivers of the scarcity conditions and would allow for a better understanding of the source of the performance problems (e.g., were the scarcity conditions caused by start-up problems? pipeline problems?). Actual performance from recent events could also help in identifying weaknesses in the conclusions that ISO-NE drew from the Analysis Group's Report.

³⁰ *Id.* at 13.

b. The Frayer Testimony is Supported by Other Testimony and Comments Regarding the Potential Adverse Effects of PI on Existing Capacity Resources.

Repeatedly in the March 3 ISO-NE Pleading, ISO-NE dismisses any testimony or comments that do not provide quantitative analysis as having no substantive value in the Commission's decision-making in this proceeding.³¹ This attempt by ISO-NE to have the Commission ignore probative testimony and insightful comments is contrary to the Commission's decision-making process and should be rejected.

In this case, the only testimony submitted from a generation owner -- one of the entities most directly impacted by PI -- was clear that PI would have an adverse effect on existing generation. This testimony was provided by Ms. Lagano on behalf of NRG. The Lagano Testimony on this point of the adverse effect of PI on existing generation contains the following statements:

Not only will PI fail to bring much-needed investment into New England, but, if adopted, will actually make the reliability situation in New England worse. This is because the PI structure has a disproportionate impact on longer-lead time fossil-fueled units, which will be strongly encouraged to retire if the PI proposal goes into effect. Since these units are infrequently dispatched and not physically capable of starting quickly, they will bear a very high risk of being penalized whenever scarcity conditions occur. Moreover, because the frequency of scarcity conditions is subject to great uncertainty, unconditional retirement will be a more prudent course than risking the huge net losses that can occur under PI.³²

These longer lead time units, which admittedly may need to be pre-dispatched at a minimum operating level in order to reach their full capacity during a rapidly emerging scarcity condition, make meaningful contributions to resource adequacy and operational reliability. When natural gas supplies are scarce, the fossil steam units have proven to be an effective last line of defense in preventing a reliability crisis, and have shielded consumers from the economic and other impacts of the region's heavy reliance on natural gas. The proposal of a market design that appears almost tailored to eliminate these critical reliability units from the market many of which have unlimited oil based operating hours in their permits, seems very reckless to me.³³

³¹ March 3 ISO-NE Pleading at 32-33.

³² Lagano Testimony at 5.

³³ *Id.* at 5-6.

Similar testimony was provided by Ms. Dykes, the Deputy Commissioner for Energy at the Connecticut Department of Energy and Environmental Protection, who is responsible for helping to ensure that Connecticut meets its goals of increased reliability and greater resource portfolio diversity, including further integration of renewable energy sources and demand response.³⁴ In her testimony, Ms. Dykes responds to a question about the likely impact of PI on existing resources with the following statement:

A small number of resources will do quite well under the PFP construct because they have the characteristics that ISO-NE seeks to reward – e.g., they can respond flexibly and quickly during system contingencies, if dispatched, or they are baseload units whose operations will be unaffected by any incentive program. Other resources that are very much needed to assure resource adequacy because they continue to provide valuable capacity services will be placed at higher risk. These resources may decide that they cannot reasonably make the investments that would be required to accept a Capacity Supply Obligation. For example, an oil-fired unit that has a 10-hour start time will be exposed to significant risks of non-performance that it cannot control, most notably that ISO-NE may not give it dispatch instructions in time to respond to a scarcity event. This resource provides a real capacity value for those peak-load days that can be anticipated and included in the day-ahead forecast, but it cannot respond to abrupt system events or an inaccurate load forecast and would risk negative Capacity Performance Payments under PFP. It would be infeasible for this unit to make investments that would transform it into the type of resource that PFP prefers. Thus, rather than continuing to provide capacity value, this resource may shut down rather than accepting the risks associated with PFP. PFP is likely to have the deleterious effect of driving out useful resources and thereby increasing capacity costs without improving reliability during expected periods of peak-load.

ISO-NE itself has extolled as a virtue of PI its expected effect of driving certain types of generation out of FCM. Early in its roll-out of the PI proposal to NEPOOL ISO-NE gave a presentation in which it stated that PI may hasten the retirement of “non-flexible, non-baseload units” and that the “[n]on-performance risk may price them out of FCM.”³⁵ That risk is what the

³⁴ Deputy Commissioner Dykes was the only New England state regulator to file testimony in this proceeding.

³⁵ ISO-NE presentation to Markets Committee, “FCM Performance Incentives - A Strategic Planning Initiative,” Jan. 29, 2013 at 10. The presentation can be accessed on ISO-NE website at: http://www.iso-ne.com/committees/comm_wkgrps/mrkts_comm/mrkts/mtrls/2013/jan292013_joint_mtng/index.html

Frayer Testimony, the Lagano Testimony and the Dykes Testimony all underscore from different perspectives but with the same conclusion: PI will have an adverse effect on capacity revenues (in terms of both losses and volatility) and will tend to drive large existing fossil-fired steam resources out of the market earlier than they would otherwise exit without PI. Such an outcome would further reduce the diversity of the portfolio of resources providing capacity to meet system reliability needs.

While ISO-NE might view its PI proposal as a survival-of-the-fittest regime that will strengthen New England's bulk power system, NEPOOL, Ms. Frayer, and other parties to this proceeding view it as a system designed to drive out certain types of resources with a doubtful prospect for their timely replacement. NEPOOL's concern is that such resources provide value to the reliability of the system and that their early departure will create a reliability gap, because new generation investment will be reluctant to step into the risk-laden world of PI.

c. ISO-NE is Wrong in its Critique of the Frayer Testimony Regarding the Potential Adverse Effects of PI on New Investment in Capacity Resources.

In an effort to respond to the many parties providing comments and testimony in this proceeding regarding the likely adverse effect of PI on new investment in the FCM, the March 3 ISO-NE Pleading introduces the Mudge Testimony. In her original testimony, Ms. Frayer explained how PI would likely have a chilling effect on new investment, because of the high risk profile of PI, and the ability of investors to go elsewhere with their capital.³⁶ The Mudge Testimony focuses on the financeability of new investments under PI and concludes that Ms. Frayer's cost impact assessment of PI on financing new investment is not supported,³⁷ and that the financial risks of PI are within the bounds of the kinds of risks that are "routinely absorbed

³⁶ Frayer Testimony at 63-64.

³⁷ Mudge Testimony at 5-10.

and priced by the financial community.”³⁸ The Frayer Responsive Testimony responds to both of these points.

On the issue of the cost of investment, Ms. Frayer points out that she focused on only one aspect of the cost of new entry into New England with PI -- the variability in interest coverage based on a lender’s perception of PI risks.³⁹ She points out that taking into account recent scarcity conditions would drive the interest coverage ratio significantly lower, thereby increasing the debt cost of new entry.⁴⁰ Ms. Frayer responds to Mr. Mudge’s contention that projects with a coverage ratio as low as 1.0 at an exceedance probability level of 99% (“P99”) are considered financeable. Ms. Frayer states:

The key point to take away from Mr. Mudge’s statement is that he refers to a 1.0x coverage ratio ***as it relates to a probability-based outlook for renewable resources***. My illustrative example cannot be compared to a probability-based outlook. My illustrative example was not intended to represent that analysis. In my February 12 testimony, I had recommended a more comprehensive analysis of the PI Proposal be performed where the energy market dynamics are simulated alongside FCA (the Analysis Group only simulated FCA dynamics). If such an analysis were to be performed (and, indeed, it should be performed), it would provide the necessary information for a probability-based outlook where resources’ performance can be evaluated dynamically in response to a range of system conditions and market uncertainties. In other words, in order to look at whether the PI Proposal can meet the financing tests that Mr. Mudge refers to, one would need to add in many other potential combinations of key uncertainties beyond those presented by Mr. Mudge, and more fully assess the joint distribution of the risks.⁴¹

Again, as with the discussion of the effect of PI on existing resources, the example related to the cost of debt provided in her original testimony in Figure 18 was intended to be an illustrative example to show the connection between PI’s penalty-centric risk allocation and the

³⁸ *Id.* at 5.

³⁹ Frayer Responsive Testimony at 28-31.

⁴⁰ *Id.* at 30-31.

⁴¹ *Id.* at 32 (emphasis in original) (internal citations omitted).

costs of new entry.⁴² Ms. Frayer states in the Frayer Responsive Testimony that other elements of the cost of new entry -- including the cost of equity -- would also likely increase under PI, but that a more definitive analysis cannot be done without more information than ISO-NE has made available.⁴³ The Supplemental Frayer Testimony also points out that financing new generation will not only be more costly, but obtaining such financing will become more difficult in the high-risk PI environment.⁴⁴ Despite the lack of publicly available information on the cost of financing, the general risk profile of PI indicates that potential new investment acting rationally with limited capital may well stay away from New England's FCM:

It is, however, questionable whether there will be sufficient commercial remuneration for those risks and uncertainties, and indeed whether the market monitor would allow such remuneration. Given that there are many other market opportunities for generators to make investments, investment capital may well flow elsewhere, especially if the risks are too high and the opportunities too limited in New England.⁴⁵

d. The Frayer Testimony is Supported by Other Testimony and Comments Regarding the Potential Adverse Effects of PI on New Investment in Capacity Resources.

In its January 17 Filing ISO-NE helps make the case against PI through the testimony of its own witness Mr. Brandien, ISO-NE Vice President of System Operations.⁴⁶ Mr. Brandien concludes his testimony with the following statement:

Ultimately, the region will need investment in new resources and we will need those resources to operate reliably. With the recent announcement of generator retirements, we are reaching that point now and the market needs to work to incent investment in the resources the region needs. These decisions are the generators' prerogative. ISO-NE's role, and that of the markets we administer, is to give these generators the appropriate

⁴² *Id.* at 30.

⁴³ *Id.* at 29.

⁴⁴ *Id.* at 33-34.

⁴⁵ *Id.* at 31 (internal citations omitted).

⁴⁶ *Testimony of Peter Brandien on Behalf of ISO-NE*, in FERC Docket No. ER14-1050 (Jan. 17, 2014) ("Brandien Testimony").

incentives to ensure that decisions are made that are both profitable and conducive to the reliable operation of the bulk power system.⁴⁷

The generators who have submitted testimony in this proceeding have made it clear that the risks of PI are not the kinds of incentives that will result in new investment in FCM. Speaking on behalf of NRG, Ms. Lagano states: “The [PI] market design is not only entirely unproven, but also imposes an unprecedented level of risk on companies interested in deploying capital in New England. In my opinion, the risks are disproportionate to the rewards, and companies like NRG are likely to invest scarce capital dollars in other markets.”⁴⁸ Also speaking for NRG, Dr. Pope states: “The uncertainty about whether clearing prices for installed capacity will compensate for the risks of participating as an installed capacity supplier has the very real potential to dampen incentives to invest in new capacity or improvements to existing capacity.”⁴⁹ Mr. Bottiggi, providing testimony on behalf of a municipal generation developer/owner, states: “If implemented, ISO-NE PFP proposal will crush development of new generating capacity resources in New England...” in several ways.⁵⁰

Speaking on behalf of some of the regulators from New England, Mr. Falk states:

Even on its own terms, it is unclear that PFP will work if the goal is to induce long term investment. Unlike the FCM, in which natural system growth (setting aside the recent atypical recession-induced decline in load) keeps the clearing price at some vestige of either the cost of a new entrant or the cost of an existing resource’s exit the PFP proposal ties the returns on performance investments to measures of system performance. It is highly unlikely that owners will make such investments based on the PFP proposal. If it works, those who made the investments will all lose those investments. The only way the investments pay for themselves is if the performance improvements never occur.⁵¹

⁴⁷ Brandien Testimony at 55.

⁴⁸ Lagano Testimony at 5.

⁴⁹ Pope Testimony at 20.

⁵⁰ Bottiggi Testimony at 2.

⁵¹ Falk Testimony at 84.

Aside from this testimony, Energy Management Inc. (“EMI”), an active developer/owner of generation in New England affirms these views in its comments that “[t]he proposed penalty regime would jeopardize the financial viability of all future generation projects and effectively exclude most renewable resources from the FCM and thereby impose severe obstacles to the development of such resources, contrary to both state and federal policies.”⁵² Based on its experience as a generator developer/owner, EMI further states in its Protest: “EMI’s past and present experience with the project finance community indicates that ISO-NE’s proposed no-fault penalty regime would impose new and radically increased risks to project lenders and investors that would severely jeopardize the likelihood that needed facilities, both traditional and renewable, would be financed or constructed.”⁵³

IV. CONCLUSION AND RELIEF REQUESTED

The threat of PI to both cause early retirement of generation and impede new investment in the FCM is a real risk that does not need to be encountered. The March 3 ISO-NE Pleading misguidedly goes after what ISO-NE views as incorrect or inappropriate assumptions of Ms. Frayer, while completely failing to address the main contention of NEPOOL in this proceeding: that *the fundamental change to the New England capacity market represented by PI is not needed and would entail unnecessary and serious adverse consequences*. Conversely, NEPOOL and other parties have shown that PI would not only impose undue risks on capacity suppliers (as well as increased costs on consumers) but would also impose undue risk on the reliability of the New England through the premature retirement of resources that help support system reliability

⁵² EMI Comments at 1.

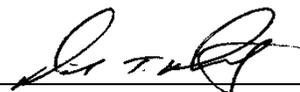
⁵³ *Id.* at 2.

coupled with the lack of new investment. The risks of PI are risks that do not need to be encountered and which the Commission should reject.

Accordingly, for the reasons stated herein, and in NEPOOL's previous filings in this proceeding, NEPOOL requests that the Commission accept this Answer, reject the ISO-NE Proposal and approve the NEPOOL Proposal as just, reasonable and preferable changes to New England's wholesale power markets.

Respectfully submitted,

NEPOOL PARTICIPANTS COMMITTEE

By: 
David T. Doot
Harold M. Blinderman
Eric K. Runge
Day Pitney LLP
242 Trumbull Street
Hartford, CT 06103
(860) 275-0102
dt_doot@daypitney.com
hmb_linderman@daypitney.com
ekr_runge@daypitney.com

Its Attorneys

Dated: March 18, 2014

EXHIBIT A

Fruyer Responsive Testimony

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

ISO New England Inc. and)	
)	Docket No. ER14-1050-000
New England Power Pool)	ER14-1050-001

RESPONSIVE TESTIMONY OF
JULIA FRAYER

Dated: March 18, 2014

TABLE OF CONTENTS

I. INTRODUCTION3

II. IMPACT OF ISO-NE’S PI ON EXISTING CAPACITY RESOURCES9

III. IMPACT OF ISO-NE’S PI ON NEW INVESTMENT IN CAPACITY RESOURCES26

TABLE OF FIGURES

Figure 1. Amended Figure 12 from Original Frayer Testimony 12

Figure 2. Figure 13 from Original Frayer Testimony 13

Figure 3. “Worst Case” Monthly Net Capacity Revenues for Fossil Steam Units (\$/kW-month)19

Figure 4. Illustrative Impact on Interest Coverage under a Hypothetical “Worst Case” Scenario31

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1 **RESPONSIVE TESTIMONY OF JULIA FRAYER**

2 **I. INTRODUCTION**

3 **Q. Please state your name and business address.**

4 **A.** My name is Julia Frayer. I am one of the partners and the Managing Director of London
5 Economics International LLC (“LEI”). My business address is 717 Atlantic Avenue, Suite
6 1A, Boston, MA 02111.

7 **Q. Have you presented material in this case before?**

8 **A.** Yes, I prepared written testimony that evaluated the ISO New England (“ISO-NE”)
9 Performance Incentive Proposal (“PI Proposal” or “PI”) and the New England Power Pool
10 (“NEPOOL”) Proposal. My testimony was included in the filing made by NEPOOL on
11 February 12, 2014 (“Frayer February 12 testimony” or “February 12 testimony”).

12 **Q. In light of ISO-NE’s response to your testimony, and to avoid any confusion that**
13 **response may have created, please summarize the main points from your February 12**
14 **testimony.**

15 **A.** I found that ISO-NE’s PI Proposal would be inefficient both in the short-term (as it cannot
16 guarantee that it will meet its own objectives of improving the real-time performance of

1 existing resources) and in the long-term (as it cannot guarantee that the primary goal of
2 capacity markets – resource adequacy – would be achieved). As I described in my February
3 12 testimony, the proposed change to the definition of capacity under PI may actually backfire
4 and undermine resource adequacy if it leads to the premature retirements of those generators
5 that expect to under-perform and also delays new investments because of the uncertainty
6 regarding expected penalties and the inability to hedge the new risks under PI.

7 I also concluded that ISO-NE’s PI Proposal would discriminate between different
8 types of resources on an *ex ante* basis and intentionally by design. PI is a case of designing
9 market rules to fit a specific outcome, rather than designing rules to promote a level playing-
10 field that would yield an efficient outcome. ISO-NE is essentially proposing to re-define the
11 capacity product so it would provide additional rewards to specific types of generators while
12 penalizing capacity suppliers with other types of technology.

13 I believe that the PI Proposal would not be cost-effective as consumer costs would
14 increase, and likely significantly (because of the “no exemptions” policy, there will be greater
15 risks for suppliers, and those risks will lead to higher capacity prices in the Forward Capacity
16 Auctions (“FCAs”) under PI). At the same time, consumers would not be able to rely on any
17 specific, quantified benefits. As I discussed in my February 12 testimony, PI would create a
18 likelihood that there would be reliability shortfalls if too many capacity suppliers exit the
19 market and new entry is not able (or willing) to step in.

20 Finally, I observed that PI is impractical. ISO-NE has not shown that it is workable
21 and indeed is relying on the speculated introduction of new bilateral market transactions and
22 financial intermediaries to make the risk allocation “work.” ISO-NE’s PI Proposal would be a
23 significant departure from currently accepted capacity market institutions around the US.

1 Additionally, PI contains a commercially unreasonable “no exemptions” policy. Despite the
2 theoretical discussions and partial analysis that ISO-NE and its consultants have prepared and
3 presented in the “Jump Ball” filing and subsequent filings in this proceeding, the PI Proposal
4 remains an untested market design (and it is not a “pilotaable” market rule change). For these
5 reasons, I believe that ISO-NE’s PI Proposal is impractical and not commercially reasonable.

6 NEPOOL’s Proposal, by comparison, would be an efficient improvement to current
7 market rules as it directly addresses real-time operational challenges by providing additional
8 compensation incentives for deliveries in the real-time energy and reserve markets. It is non-
9 discriminatory in its design and application: all suppliers would have an opportunity to earn
10 higher revenues in events of reserve scarcity through participation in the real-time energy and
11 reserve markets. As I discussed in my February 12 testimony, NEPOOL’s Proposal is also
12 cost-effective and practical. It can be implemented rapidly within current market rules and
13 therefore can more quickly help address the mounting operational challenges that ISO-NE
14 described in its February 12, 2014 filing. The NEPOOL Proposal would be an incremental
15 change that would be less likely to result in costly, unintended, adverse consequences. I
16 recognize that the NEPOOL Proposal (as regards the availability metric for the capacity
17 product) may benefit from further refinement, but it represents a rational step in the right
18 direction upon which ISO-NE and stakeholders can build, if so directed by this Commission.

19 **Q. Have your conclusions changed since the filing of your February 12 testimony?**

20 **A.** No, they have not changed in any material way. ISO-NE’s penalty-centric PI Proposal with
21 its “no exemptions” policy would undermine the primary function of capacity markets to
22 provide stable, predictable revenue streams for both new and existing capacity resources. A
23 predictable and relatively stable revenue stream from the capacity market ahead of real-time

1 operations is a necessary element of wholesale market design when energy market prices are
2 capped or constrained below equilibrium levels. Predictable capacity revenues provide the
3 signal for retirement and timely new entry. I continue to be concerned that ISO-NE's PI
4 Proposal would result in unintended, adverse consequences that would harm both New
5 England system reliability and electricity customers in the long-run. In fact, recent events
6 have only served to reaffirm these conclusions, as I will discuss in Section II of my
7 Responsive Testimony.

8 **Q. What is the purpose of this Responsive Testimony?**

9 **A.** The purpose of my Responsive Testimony is to answer the criticism of my testimony levied
10 by ISO-NE in a pleading and testimony dated March 3, 2014 ("ISO-NE March 3 Pleading")
11 by clarifying and expanding on several elements of my February 12 testimony. I would also
12 like to correct erroneous statements made by ISO-NE and its consultant in the ISO-NE March
13 3 Pleading. Specifically, my Responsive Testimony (1) responds to the ISO-NE's criticism of
14 my analysis of the adverse effect of the PI Proposal on existing resources, and (2) provides
15 additional context regarding my conclusions for new investment under the PI Proposal. In
16 relation to ISO-NE's criticism of my analysis, my Responsive Testimony also reiterates
17 shortcomings in the Impact Assessment prepared by ISO-NE's consultant, the Analysis Group
18 ("Analysis Group Report").

19 **Q. On page 6 of its ISO-NE March 3 Pleading, ISO-NE has suggested that your**
20 **characterization of the PI Proposal as a "penalty plan" for most capacity providers was**
21 **unsubstantiated. Do you agree?**

22 **A.** No, I do not agree with ISO-NE on this point. It is clear from ISO-NE's own analysis that the
23 PI Proposal would charge certain generators substantial penalties (i.e., negative revenue

1 adjustments that could lead to net negative capacity revenues depending on the timing and
2 duration of scarcity conditions and resource performance during these conditions).¹ The
3 numerical analysis I provided in my February 12 testimony was illustrative – but not flawed.
4 Furthermore, although the examples were marked as illustrative, they are reliably indicative of
5 the practical issues presented by the PI Proposal and how the PI Proposal could impact
6 existing and new capacity resources.

7 The illustrative examples I prepared in my February 12 testimony – using the data
8 provided by ISO-NE and its consultant, the Analysis Group – demonstrate the magnitude of
9 penalties relative to a certain level of base capacity payment for a sample month under the PI
10 Proposal. The calculations relied on market data and information that ISO-NE has released as
11 of February 11, 2014 on historic performance and historical operating conditions. I had noted
12 in my February 12 testimony that data was limited and my concern that those past conditions
13 may not be a good indicator of future conditions, in so much as the prior winter of 2012-2013
14 was not a good indicator of what has happened to date this winter (winter 2013-2014).² A
15 long-run average is often not a good indicator of individual year performance. In the real
16 world, if the proposed PI were implemented, generators would consider the expected penalties
17 on a comprehensive basis, taking into account multiple uncertainties arising out of the

¹ The Analysis Group notes that resources “with performance below the balancing ratio would receive negative revenue adjustments.” The average performance data provided by the Analysis Group indicates that fossil steam units and internal combustion units perform below the balancing ratio under all scenarios (historical, peak summer, and winter), and would therefore always expect a net negative revenue adjustment, which could be significant, especially for fossil steam resources. *See*: Analysis Group Report. p14-15

² Frayer February 12 Testimony. p46.

1 application of PI and future market conditions and up-to-date historical market data.
2 Naturally, generators (and their lenders and investors) will want to know the “worst case.”
3 The many uncertainties that would be tested and represented in a going forward expectation
4 for such a “worst case” would be far greater than what I presented in my illustrative examples;
5 such analysis would ‘stress test’ the potential for catastrophic losses in an individual year,
6 regardless of expectations over a long-run average.

7 I believe that ISO-NE has misinterpreted and misrepresented my analysis as it relates
8 to the potential impact that the PI Proposal would have on both existing resources and new
9 investment in existing and new capacity resources because ISO-NE seeks to minimize the
10 magnitude and implications of the risks that PI would introduce into the Forward Capacity
11 Market (“FCM”) through the penalty-centric approach of PI. The increased risks under PI
12 would directly affect expectations of net capacity revenues for many generators and would
13 create negative consequences for the New England system and its customers.

1 **II. IMPACT OF ISO-NE'S PI ON EXISTING CAPACITY RESOURCES**

2 **Q. ISO-NE has stated that under the PI Proposal most existing resources would have**
3 **greater net FCM revenue than under the current market design, and that this would**
4 **improve their financial incentive and ability to undertake investment. Do you agree?**

5 **A.** No, I do not. On the contrary, PI would likely have a negative impact on many existing
6 resources when considering the net FCM revenues because virtually all existing resources
7 would face the risk of individual months or years with significant losses as a result of outages
8 or other conditions outside their control during periods of scarcity as defined by the PI
9 Proposal. As I wrote in my February 12 testimony, the PI Proposal effectively creates winners
10 and losers *ex ante*. The risks imposed under the PI Proposal, the prospect of significant
11 monetary penalties, and the lack of reasonable commercial means to hedge such risks, leads to
12 the potential to have net capacity revenues that are far below minimum going forward fixed
13 costs. This consequence of the PI Proposal would result in large amounts of retirements of
14 existing capacity. Such retirements may be premature (in the sense that they would have not
15 occurred but for the PI Proposal) and could undermine system reliability. ISO-NE has
16 acknowledged that its system is already fairly tight and that there are many areas of the
17 network that could face transmission problems if there are too many retirements, which
18 indicates that premature retirements could have a significant negative impact on system
19 reliability.³ I would characterize such an outcome of premature retirements of operable

³ The ISO-NE market is currently tight, as indicated by the results of the recent FCA8, which concluded with just over 33,700 MW having obligations out of the 33,855 MW of capacity required for the 2017-2018 Capacity Commitment Period. In addition, ISO-NE estimates that, absent new resources, less than 1,000 MW of resources

1 resources as emblematic of a failure of the capacity market. Solutions to solve such market
2 failures are costly – it would take more money to entice investment to replace the retired
3 capacity because of the risks of PI Proposal (new investment is not immune from the risks of
4 facing penalties). And it would be customers that would have to pay the ‘bill.’

5 **Q. What analysis have you conducted to determine the potential impact of the PI Proposal**
6 **on existing capacity resources?**

7 **A.** In my February 12 testimony, I provided an illustrative example of the financial impact of the
8 PI Proposal on various resource classes using the data provided by the Analysis Group.⁴
9 Specifically, in the example in Figures 12 and 13 of my February 12 testimony, I showed how
10 the PI proposal could impact the revenues of various resources over a single month (not over
11 the course of the year, as ISO-NE incorrectly stated). In this same illustrative example, I also
12 examined the sensitivity of the capacity payments to a resource’s performance.⁵ The
13 calculations presented in Figure 12 are correct (and they correctly apply the formulas
14 presented by ISO-NE and the Analysis Group in their original filing).⁶ There is, however, a
15 typographical error in my illustrative example in Figure 12 that may have confused ISO-NE.
16 The typographical error is in the cross-references that pointed the reader to the wrong rows.

can retire across the New England system without causing reliability problems. *See*: ISO New England’s Strategic Transmission Analysis. p14
<http://www.iso-ne.com/pubs/pubcomm/pres_spchs/2013/final_rourke_raab_06141.pdf>; Forward Capacity Auction 2017-2018 Results. February 7, 2014. <http://iso-ne.com/markets/othrmkts_data/fcm/cal_results/ccp18/fca18/fca_8_result_report.pdf>

⁴ Frayer Testimony. Figures 12 and 13.

⁵ Frayer Testimony. p46-48

⁶ White Testimony. p94.

1 However, the values were calculated using the correct rows (a corrected figure can be found
2 on the following page; the red oval highlights the modifications to reflect the correct row
3 references).

4 I recognize that the capacity clearing price for an FCA under FCM design with PI
5 should be higher than in a FCM design without the PI, *ceteris paribus*. Thus, ISO-NE claims
6 using a historical figure for the capacity price is not correct. However, the indicative capacity
7 price used in this example (\$3.15/kW-month or \$3,150/MW-month) is appropriate, contrary
8 to ISO-NE's remarks.⁷ The price I used in the illustrative example in my February 12
9 testimony is consistent with prior FCAs. Notably, the capacity price that I used for this
10 example also falls within the range forecast by the Analysis Group in its Impact Assessment.⁸
11 Indeed, the price is almost exactly the midpoint of the Analysis Group's projections of FCA
12 clearing prices under PI, which range from \$1.93/kW-month to \$4.49/kW-month.⁹ The
13 conclusions I had observed based on the illustrative example in Figure 12 and 13 in my
14 February 12 testimony hold in principle even if capacity prices under PI are higher, especially
15 given recently revealed data on winter scarcity conditions in recent months, as I discuss
16 further below.

⁷ ISO-NE March 3 Pleading. p8.

⁸ At the time that I was writing my February 12 testimony, the reasons for the high, administratively-triggered prices from FCA8, which were higher than previous FCA prices, were not publicly known.

⁹ Analysis Group Report. p4.

1

Figure 1. Amended Figure 12 from Frayer February 12 Testimony

Variable	Value/Calculation	Source	
A	CSO	100 MW	Assumption
B	FCA Clearing Price	\$3,150/MW-month	Assumption (FCA 7 Clearing Price)
C	FCA Starting Price	\$15,000/MW-month	Assumption (FCA 7 Starting Price)
D	Balancing Ratio	0.75	Analysis Group (all months average)
E	Shortage Hours (monthly)	3.85	ISO-NE (scarcity hours observed in July 2011)
F	Performance	varies by technology	Analysis Group (all months average)
G	Capacity Performance Payment Rate	\$5,455/MWh	ISO-NE
H	Monthly Base Payment	A*B	
I	Capacity Performance Score	(A*F)-(A*D)	
J	Capacity Performance Payment	G*E*I	
K	Monthly Capacity Payment	H + J	
L	Monthly Stop-loss Limit	\$1,500,000 (A*C)	

2

	Average Performance (F)	Monthly Base Payment (H)	Capacity Performance Score (I)	Capacity Performance Payment (J)	Monthly Capacity Payment (K)
CCGT	0.6	\$315,000	(15)	(\$315,026)	(\$26)
CT Oil	0.84	\$315,000	9	\$189,016	\$504,016
CT NG	0.74	\$315,000	(1)	(\$21,002)	\$293,998
CT other	0.98	\$315,000	23	\$483,040	\$798,040
Coal	0.64	\$315,000	(11)	(\$231,019)	\$83,981
Steam NG	0.45	\$315,000	(30)	(\$630,053)	(\$315,053)
Nuclear	0.91	\$315,000	16	\$336,028	\$651,028
Steam Oil	0.22	\$315,000	(53)	(\$1,113,093)	(\$798,093)
Steam other	0.83	\$315,000	8	\$168,014	\$483,014
IC	0.57	\$315,000	(18)	(\$378,032)	(\$63,032)
Hydro	0.59	\$315,000	(16)	(\$336,028)	(\$21,028)
Wind	2.12	\$315,000	137	\$2,877,240	\$3,192,240

3

4

5

6

7

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9

*The red oval highlights the corrected text. As previously noted, the figure corrects typographical errors in the cross-references that pointed the reader to the wrong rows. For example, in my February 12 testimony the figure indicated that the capacity performance score (I) was calculated as (A*E)-(A*C) while in fact the correct reference is (A*F)-(A*D) as shown above.

Note: Balancing Ratio and Average Performance ratings taken from Analysis Group Report, p59.

1 **Q. For ease of reference, please re-state your key findings from the above analysis in**
2 **relation to ISO-NE’s PI Proposal.**

3 **A.** There are two key takeaways from the illustrative example. As shown in Figures 12
4 (replicated earlier) and Figure 13 (replicated below) in my February 12 testimony, there are
5 clear winners and losers under the PI Proposal; and the PI Proposal creates considerable
6 volatility in a resource’s total capacity revenues. Capacity revenues are no longer stable and
7 become sensitive to a resource’s real-time market performance during uncertain and
8 unpredictable scarcity conditions. Furthermore, net capacity revenues are known only after
9 real-time market operations conclude for a specific capacity commitment period. As a result,
10 capacity revenues awarded in the FCA (base capacity payments) would be difficult to rely on
11 for investment and going forward decision-making.

12 **Figure 2. Figure 13 from Frayer February 12 Testimony**

	Average Performance (F)	Monthly Base Payment (H)	Capacity Performance Score (I)	Capacity Performance Payment (J)	Monthly Capacity Payment (K)	Monthly Capacity Payment (\$/MW)
Historical (Base)	0.6	\$315,000	(15)	(\$315,026)	(\$26)	(\$0.3)
Lower Performance	0.54	\$315,000	(21)	(\$441,037)	(\$126,037)	(\$1,260)
Better Performance	0.66	\$315,000	(9)	(\$189,016)	\$125,984	\$1,260

14 **Q. How do recent events further reveal PI’s potential negative impact on existing**
15 **resources?**

16 **A.** In its filing on February 12, 2014, ISO-NE stated that during the period of November 1, 2013
17 through the date of the filing (i.e., February 12, 2014), 7.5 hours in New England would have

1 qualified as scarcity conditions if PI had been in effect.¹⁰ ISO-NE noted that this number of
2 scarcity conditions far exceeded the hours that would have qualified as scarcity conditions
3 observed during previous years. One question that arises immediately is whether the
4 frequency of scarcity conditions is increasing. ISO-NE's commentary about the mounting
5 concerns regarding real-time operations would suggest that ISO-NE believes that there is
6 some merit in this argument. However, ISO-NE has failed to acknowledge the consequences
7 of increased scarcity conditions on existing generation under its PI Proposal. If the PI
8 Proposal were in place, the increased frequency of scarcity conditions would make the
9 financial impacts on certain existing generators much worse than I had previously illustrated
10 and therefore retirements would be even more likely. Moreover, whether one accepts that
11 there is an increasing trend in scarcity conditions, the events of this winter do show that actual
12 events can deviate significantly from long-run average historical information.

13 Using the limited information that ISO-NE provided in its February 12 filing, I
14 calculated the notional impact of the recent observed frequency of the scarcity conditions on
15 existing generators and their revenue streams assuming, hypothetically, that the PI Proposal
16 were in place. The Analysis Group has noted in its report that scarcity conditions due to gas
17 deliverability shortages in the winter are difficult to predict.¹¹ At the same time, for this
18 winter, ISO-NE, in light of the region's reliance on natural gas, paid for oil inventories

¹⁰ ISO-NE Answer in Opposition to NEPOOL Alternative Proposal. February 12, 2014. p3-4.

¹¹ "To date, while there have been many instances of reliability challenges tied to gas supply limitations during winter and non-winter months, there is no clear information on the relationship between market conditions related to gas supply and reserve shortages." *See*: Analysis Group Report. p18.

1 through out-of-market arrangements (an action that was intended to improve the overall
2 availability of generation during winter conditions).¹² On one hand, given the unpredictability
3 of winter scarcity conditions, it is reasonable to assume that generators could not have
4 responded to the scarcity conditions with improved operations. On the other hand, the ‘firm
5 fuel arrangements’ (in the form of oil inventories) that the PI Proposal is meant to motivate
6 were already provided for. Nevertheless, ISO-NE reported an increase in the frequency of
7 scarcity conditions and mounting concerns about real-time operability of the system.

8 In the illustrative example in this Responsive Testimony, I have focused on those
9 classes of resources that, according to the Analysis Group Report, would have the lowest real-
10 time performance rate during the winter period (such as gas and oil steam resources).¹³
11 Collectively, these units represent over 5,900 MW of total capacity in New England, or
12 approximately 17% of ISO-NE’s installed capacity of over 34,000 MW.¹⁴ For simplicity, I
13 assumed in this example that the 7.5 hours of scarcity conditions actually experienced

¹² Under ISO-NE’s Winter Reliability Program (approved by this Commission), ISO-NE will pay certain oil and dual-fuel generators and demand response providers to take on certain fuel inventory and related obligations. See: FERC Docket No. ER13-1851. Order Conditionally Accepting Tariff Revisions. September 16, 2013. <<http://ofccolo.sn1.com/Cache/C492DA3CFD19830473.PDF?CachePath=%5c%5cdmzdoc2%5cwebcache%24%5c&D=&T=&Y=&O=PDF>>

¹³ Analysis Group Report. p14.

¹⁴ The capacity figures for the gas and oil steam units are based on seasonal claimed capacity ratings for these fuel types for FCA 4. See: ISO-NE. *2013-2022 Forecast Report of Capacity, Energy, Loads, and Transmission*. May 1, 2013.

1 between November 1, 2013 and February 12, 2014 occurred over a three month period
2 (November to February).¹⁵

3 I first start with a calculation of the total (base) capacity revenues for these resources.
4 I began with the capacity clearing prices from FCA 4, the auction that covers the current
5 Capacity Commitment Period (June 1, 2013 to May 31, 2014) and the historical period in
6 question.¹⁶ Under the current market design, based on just this FCA price and total capacity
7 represented by this group of generators, the capacity revenues would have been \$2.516/kW-
8 month multiplied by 5,923 MW or \$14.9 million per month, a total of \$44.7 million over the
9 three month period.

10 Next, I apply ISO-NE's formula for the PI penalty, assuming the full PI penalty rate of
11 \$5,455/MWh. The net FCM payment for oil-fired steam resources during the November 2013
12 to February 2014 period had PI been fully in effect would have been:

$$\begin{aligned} \text{FCM Payment} &= \text{FCA Price} + \text{Performance Payment Rate} \times \text{scarcity hours} \times (\text{average} \\ &\quad \text{performance} - \text{Balancing Ratio}) \\ &= (\$2.516/\text{kW-month}) + \$5,455/\text{MWh} \times 7.5 \text{ hours} \times (0.2 - 0.61) / \\ &\quad (1,000 \text{ kW-month}/\text{MW-month} * 3 \text{ months}) \end{aligned}$$

¹⁵ The timing of the scarcity conditions was not provided by ISO-NE in its filing. I assumed that the events were distributed across the three months in such a way that the stop-loss mechanism would not have come into effect. In order for the stop-loss mechanism to have come into effect, the majority of scarcity conditions would need to have occurred in a single month.

¹⁶ The starting price for FCA 4 was \$9.836/kW-month (or \$9,836/MW-month). FCA 4 cleared at the floor price with an Effective Payment Rate of \$2.516/kW-month (or \$2,516/MW-month). Although Maine had a lower effective payment rate of \$2.336/kW-month (or \$2,336/MW-month), I have used the higher Rest of Pool effective payment rate as the majority of the gas and oil steam resources are located outside of Maine. *See*: ISO-NE. "Results of New England's FCA #4." August 2010. <http://www.iso-ne.com/markets/othrmkts_data/fcm/cal_results/ccp14/fca14/fca_4_totals_flow_diagram.pdf>

1 = -\$3.057/kW-month, or -\$3,075/MW-month

2 A similar calculation can be done for the gas-fired steam units:

3 = (\$2.516/kW-month) + \$5,455/MWh x 7.5 hours x (0.16 – 0.61) /
4 (1,000 kW-month/MW-month * 3 months)
5 = -\$3.621/kW-month, or -\$3,621/MW-month

6 That is, during the three month winter period, had PI been fully implemented, oil-fired
7 steam resources would have incurred a net payment obligation to the ISO, after offsetting all
8 of the anticipated base revenues, of \$3,075/MW-month, while gas-fired steam resources
9 would have incurred a net payment obligation of \$3,621/MW-month. In total, this represents
10 a net payment obligation of \$55.8 million dollars for the 5,923 MW of oil and gas steam
11 resources in just three months, and a total loss of \$100.5 million (\$55.8 million + \$44.7
12 million) from the base payment level.¹⁷

13 **Q. ISO-NE has stated that using historical capacity prices in such an example is**
14 **inappropriate, as capacity prices under PI would likely increase. Would higher capacity**
15 **prices change your result?**

16 **A.** No. First, I would note that the use of FCA 4 actual clearing price is appropriate for
17 illustrative purposes given that we are basing our analysis on actual data over a specific
18 period. However, I recognize that the PI Proposal would have in theory driven up the clearing
19 price because of generators' expectations about the PI penalties under ISO-NE's proposal.

¹⁷ The net losses reflect 5,215 MW of oil-fired steam resources and 708 MW of gas-fired steam resources in ISO-NE. For dual-fuel (i.e., gas/oil) steam resources, the primary fuel (as listed in the CELT report) was used to define the capacity as either oil or gas fired.

1 Specifically, the capacity clearing price would be based on the ‘marginal’ resource’s
2 expectations regarding the minimum going forward fixed costs of continued operation (or new
3 investment, in the case of new resources) plus its risks under the PI Proposal. Those risks
4 depend on events that are difficult to predict (e.g., the timing and duration of scarcity
5 conditions; resources’ performance during those scarcity conditions), so the PI Proposal
6 introduces a risk of forecasting error that is likely to be substantial to the capacity pricing
7 process.

8 Although forecasting future capacity prices is beyond the scope of illustrative
9 example, I extended the illustrative calculations described above to demonstrate the
10 implications of higher capacity prices in conjunction with recent scarcity conditions. For
11 example, assuming a capacity price of \$5/kW-month (or \$5,000/MW-month), these steam
12 resources would still have incurred a net loss over the three month period. Oil steam
13 resources would have experienced a loss of \$0.6/kW-month (or \$600/MW-month) and gas
14 steam resources would have experienced a loss of \$1.1/kW-month (or \$1,100/MW-month).
15 This represents a net loss of \$11.7 million for the combined capacity of oil and gas steam
16 resources in that three month period. Therefore, a higher base capacity price would still create
17 financial difficulties for fossil steam units.

18 **Q. How do your results change if the performance rate is lower than what was documented**
19 **as the average rate for the 2010-2012 timeframe?**

20 **A.** Since the capacity price outlook under PI also depends on performance during scarcity
21 conditions, it would be best to test varying performance levels. The performance rates
22 provided by the Analysis Group are average rates. However, for a downside, “worst case”
23 analysis, generators (and investors and lenders) are likely to use an assumed “worst case”

1 performance rate. For illustrative purposes, I have chosen to test 25% lower performance
 2 rates than the reported three-year average (for oil steam units, the “worst case” performance
 3 rate would be 0.15, for gas steam units, the “worst case” performance rate would be 0.12).
 4 Based on the same formulas demonstrated above, I have calculated a sensitivity table that
 5 shows the net losses per month (during the three month period) around a range of capacity
 6 clearing prices and “worst case” performance rate. Across 87% of the combinations, steam-
 7 fired units face a net loss rather than net positive FCM revenue. In the remaining 13% of
 8 combinations, the resulting positive capacity revenues (net of PI penalties) would be very low
 9 (below \$0.75/kW-month) and insufficient to continue operations. I discuss the implications of
 10 such low capacity revenues further below.

11 **Figure 3. “Worst Case” Monthly Net Capacity Revenues for Fossil Steam Units (\$/kW-**
 12 **month)**

		Capacity Clearing Price (\$/kW-month)									
		\$ 2.5	\$ 3.0	\$ 3.5	\$ 4.0	\$ 4.5	\$ 5.0	\$ 5.5	\$ 6.0	\$ 6.5	\$ 7.0
Performance	0.10	(4.46)	(3.96)	(3.46)	(2.96)	(2.46)	(1.96)	(1.46)	(0.96)	(0.46)	0.04
	0.11	(4.32)	(3.82)	(3.32)	(2.82)	(2.32)	(1.82)	(1.32)	(0.82)	(0.32)	0.18
	0.12	(4.18)	(3.68)	(3.18)	(2.68)	(2.18)	(1.68)	(1.18)	(0.68)	(0.18)	0.32
	0.13	(4.05)	(3.55)	(3.05)	(2.55)	(2.05)	(1.55)	(1.05)	(0.55)	(0.05)	0.45
	0.14	(3.91)	(3.41)	(2.91)	(2.41)	(1.91)	(1.41)	(0.91)	(0.41)	0.09	0.59
	0.15	(3.77)	(3.27)	(2.77)	(2.27)	(1.77)	(1.27)	(0.77)	(0.27)	0.23	0.73

14 **Q. Your example only covers part of the year. Couldn’t these resources recoup their losses**
 15 **by “over performing” at other times during the year if there are other scarcity**
 16 **conditions?**

17 **A.** That would be very unlikely. According to the historical data in the Analysis Group Report,
 18 these resources have always had performance less than the balancing ratio, in both summer
 19 and winter periods. If we are to believe the historical data that ISO-NE has provided, the

1 average performance by these resources is always below the balancing ratio, making it very
2 unlikely that they would earn back any of the lost capacity revenues through positive
3 performance payments under the ISO-NE PI Proposal.¹⁸ In fact, it would be more likely that
4 they would continue to incur losses if other scarcity conditions were to occur over the course
5 of the year.

6 **Q. Your examples and illustrative calculations are based on a monthly timeframe (or in the**
7 **case above, a seasonal timeframe). Could these resources end up with a net positive**
8 **FCM payment over the course of the year?**

9 **A.** Yes, it is theoretically possible, though unlikely for purposes of the stress test analysis and
10 setting of expectations for these generators given historical performance. Moreover, even if a
11 generator were to assume that there were no additional scarcity conditions for the rest of the
12 year, net capacity revenues may not be sufficient for going forward operations. For example,
13 under the assumption of a capacity clearing price of \$2.516/kW-month (or \$2,516/MW-
14 month), and assuming no additional scarcity conditions occur over the course of the rest of the
15 year, the resources would receive an additional 9 months of their base capacity payments in
16 full. This would result in a net positive payment of \$78.3 million to steam units (or
17 \$1,118/MW-month over the year for oil steam units and \$982/MW-month for gas steam units
18 per my example). However, this is a very small capacity revenue stream. To put this in
19 perspective, ISO-NE has proposed increasing the dynamic delist bid threshold to more than
20 triple this amount from its current level of \$1/kW-month to \$3.94/kW-month based on its

¹⁸ Analysis Group Report. p14.

1 estimates of the going forward costs of fossil steam units under the PI Proposal.¹⁹ ISO-NE
2 estimates these going forward costs to be in the range of \$2.75/kW-month.²⁰ These types of
3 steam resources are not often dispatched by ISO-NE in the energy markets, as evidenced by
4 their low load factors.²¹ This means that these resources rely primarily on their capacity
5 revenues to fund fixed costs of operations. An overall or net capacity revenue of \$1/kW-
6 month is not sufficient based on the minimum going forward fixed costs estimated by ISO-
7 NE, which does not even account for return of and return on capital invested, as I will discuss
8 below. Even if there were no additional scarcity conditions, such resources would have been
9 under pressure to retire if the events of this past winter are an indication of future years'
10 market dynamics.

11 There appears to be a paradoxical set of presumptions being made by ISO-NE
12 regarding existing capacity resources which are at risk for retirement. On one hand, ISO-NE
13 is critical of my analysis in the ISO-NE March 3 Pleading, which would suggest that the ISO-
14 NE would like this Commission to believe that any net positive FCM payment would be

¹⁹ Joint Testimony of David LaPlante and Seyed Parviz Gheblealivand on behalf of the ISO. p53-54.

²⁰ The Internal Market Monitor calculated the increased dynamic delist bid threshold assuming that fossil steam units were the marginal unit. The calculation of the dynamic delist bid threshold includes assumed net going forward costs. According to ISO-NE market rules, these going forward costs are those costs that might be otherwise avoided if the resources did not have a capacity supply obligation (i.e., operations and maintenance costs are considered going forward costs while debt service is not considered a going forward cost). "Unadjusted for inflation, the weighted average net going forward costs of [fossil steam] units was \$2.41/kW-month. Using the expected inflation figures published by the Federal Reserve Bank of Cleveland in December 2013, after adjusting for inflation, the weighted average net going-forward cost of these units is \$2.56/kW-month. To reduce the likelihood of reviewing competitive offers, the IMM used \$2.75 as the net-going forward cost establishing the Dynamic De-List Bid Threshold." *See*: LaPlante Testimony. P60; ISO-NE Market Rule Section III.13.1.2.3.2.1.2.

²¹ For the period 2010-2013, gas steam units had an average load factor of 20%, while oil steam units had an average load factor of 6.5%. *Source*: Ventyx Energy Velocity Suite

1 sufficient for such resources to remain in the market rather than retiring and therefore, that
2 there is no “retirement problem” associated with the PI Proposal. However, in the Jump Ball
3 filing, ISO-NE presumes that some resources would forego the FCM altogether but remain
4 operational such that they can positively contribute to the resource adequacy challenges of the
5 system under such a scenario.²² Neither of these scenarios is realistic.

6 **Q. Why would a net positive annual FCM payment be insufficient for certain resources?**

7 **A.** As I mentioned earlier, resources that run infrequently will require net FCM payments that at
8 least cover their going forward fixed costs. Such going forward fixed costs include operations
9 and maintenance costs, which are reflected in ISO-NE’s estimates of minimum going forward
10 fixed costs discussed above. From the perspective of investors and lenders, debt costs are
11 another real cost that resources must recoup from the markets and pay back. Although debt
12 financings vary over time and by company and are linked to the financial situation of the
13 owner, it is reasonable to assume that a generic cost of debt can conservatively amount to
14 additional going forward costs in the range of \$1 to \$2.6/kW-month.²³ Including this notional
15 range for the cost of debt increases the going forward costs for steam resources to \$3.75/kW-
16 month to \$5.35/kW-month. Indeed, even with the higher capacity clearing prices (for
17 example, \$5/kW-month as I used in my example above), oil-fired steam units would net only

²² ISO-NE and its consultant, the Analysis Group, unrealistically assume that a resource may commit to continue to operate without participating in the capacity market (i.e., without a capacity supply obligation). Fossil steam resources, which run infrequently, cannot reasonably expect to earn sufficient energy and reserve market profits even with greatly increased reserve scarcity pricing to cover their fixed costs. *See*: Analysis Group Report. p17; ISO-NE Jump Ball Filing Transmittal Letter. p25.

²³ This range was calculated based on a range of assumed asset values (\$150/kW to \$350/kW) as well as a range of assumed interest rates (5% to 8%). The calculations further assumed a 10-year term and a 60% leverage rate on the asset values.

1 \$3.60/kW-month in annual capacity payments (gas steam units would net only \$3.50/kW-
2 month for the year), which is less than the amount needed to cover going forward fixed
3 operating costs and the cost of debt.

4 **Q. You mentioned that information on unit performance during the recent scarcity**
5 **conditions is not yet available. Is this an issue? How could this information be used to**
6 **analyze the impact of the PI Proposal on capacity resources?**

7 **A.** ISO-NE did not provide details of the actual performance rate of various generation units
8 during the recent scarcity conditions this winter, but this information would be valuable in
9 analyzing the PI Proposal in a particular set of challenging market conditions. For example,
10 details on performance rates can help determine if the average performance levels used in the
11 Analysis Group Report (and which I relied on in my examples) fairly reflect current
12 performance given the various changes in New England's markets. Such data would also
13 allow for a "forensic" investigation of the underlying drivers of the scarcity conditions and
14 would allow for a better understanding of the source of the performance problems (e.g., were
15 the scarcity conditions caused by start-up problems? pipeline problems?). Actual
16 performance from recent events could also help in identifying weaknesses in the conclusions
17 that ISO-NE drew from the Analysis Group's Report. For example, in its Report, the
18 Analysis Group expected that combined cycle plants over-perform in the winter (i.e., they
19 have a performance rate that is higher than the balancing ratio). However, if one reads more
20 deeply into the study's assumptions, it becomes clear that this is not necessarily an accurate
21 representation of these units' performance during reserve shortages. Indeed, the Analysis
22 Group report states that the performance rate of units during the winter is not based on
23 performance during actual reserve shortages because performance during those conditions was

1 so variable, but rather based on performance during high load conditions in the winter
2 season.²⁴ Recall that the Analysis Group Report uses this average performance (based on
3 historical performance) to assess outcomes under a variety of conditions, including scarcity
4 conditions during the winter months, which imply gas shortage conditions. However, it
5 appears that the performance rate analyzed is not actually consistent with the conditions
6 assumed for the scarcity conditions in question.

7 Recent events demonstrate that combined cycle plants are not immune from the risk of
8 PI penalties and this knowledge is what would drive up the cost of financing and would make
9 new investment under the PI Proposal more difficult in New England. ISO-NE notes that a
10 large combined cycle resource was on an unplanned outage for six weeks during the recent
11 months in which the high number of scarcity conditions were observed.²⁵ If the PI Proposal
12 were in place already, the combined cycle plant that was on outage would have faced penalties
13 because PI would have deemed that it was “unable to perform”. Assuming that this CCGT
14 was unable to perform during any of the scarcity conditions, it would have incurred a financial
15 loss of \$5.81/kW-month. For a large (500 MW) CCGT, this would be equal to a loss of \$8.7
16 million over the three month period. It is precisely this type of event that investors and lenders
17 would be most concerned with, as I will discuss in Section III of this Responsive Testimony.
18 ISO-NE’s PI has no reasonableness safeguards or exemptions from penalties when
19 unexpected outages or other events beyond the control of the generator that impact

²⁴ Analysis Group Report. p57.

²⁵ ISO-NE Comments. p4.

1 performance occur. As I noted in my February 12 testimony, the ‘standards’ of performance
2 in the proposed PI would be outside the range of what has conventionally been accepted as
3 commercially reasonable in this industry.

1 **III. IMPACT OF ISO-NE’S PI ON NEW INVESTMENT IN CAPACITY RESOURCES**

2 **Q. How will PI affect new investment in capacity resources?**

3 **A.** As I previously testified, I expect that the risks that would be introduced in the PI Proposal
4 would have a chilling effect on new investment. Those risks are asymmetric because the
5 structure of the PI penalties places all liability on generators (i.e., “no exemptions”). In
6 addition, the lack of reasonable exemptions from situations that are beyond the control of the
7 generators also makes these risks unhedgeable under current market institutions and trading
8 arrangements. These risks, which have been acknowledged by all stakeholders as well as
9 ISO-NE,²⁶ would increase the costs of financing. The increased risks under PI (and resulting
10 higher financing costs) would also make investment practically more difficult in New
11 England, particularly relative to opportunities in other markets. Indeed, this effect on new
12 investment may already be occurring.

13 **Q. Please explain how the PI Proposal may already be contributing to a heightened risk**
14 **profile for investment in the ISO-NE market.**

15 **A.** Recent changes implemented for FCA8 (i.e., the removal of the price floor) created
16 uncertainty in the market. Furthermore, there was also lack of clarity before FCA8 as to how
17 the Commission would address concerns related to insufficient competition and/or inadequate
18 supply. Indeed, ISO-NE disclosed that phenomenon in its Exigent Circumstances filing with

²⁶ ISO-NE is proposing changes to its market monitoring rules to address the risks introduced by PI. The Analysis Group also recognizes the increased uncertainty (and risks) in the ISO-NE Proposal in its Report. *See*: LaPlante Testimony. P38; Analysis Group Report. p23.

1 this Commission²⁷ and retirements started being announced as early May 2013.²⁸ Despite tell-
2 tale signs about the need for incremental supply, FCA8 concluded with only 27 MW of new
3 generating resources clearing, while there were 4,009 MW of static delists and 3,135 MW of
4 non-price retirement requests as reported by ISO-NE in its public report on the results of
5 FCA8.²⁹ The PI Proposal's unprecedented and untested market design adds to the risks and
6 uncertainties in the investment environment for the ISO-NE market. From an investment
7 evaluation perspective, this uncertainty is equivalent to increased regulatory risk: the ISO-NE
8 would like generators to commit to make investments both in new capacity and in
9 improvements to existing capacity, but generators are not sure what market design they will
10 be operating under in the future. In the face of such uncertainty, equity investors and lenders
11 would be significantly more cautious, leading to difficulty accessing capital, and increased
12 costs for the capital that can be raised. Although there may be initial interests for new
13 investment arising from the relatively high administratively-set pricing in FCA8, the risk that
14 the proposed PI market redesign creates may ultimately deter investment when the time comes
15 for project developers to make binding financial commitments in future FCAs.

²⁷ FERC Docket No. ER14-463-00. ISO-NE Exigent Circumstances Filing of Revisions to Forward Capacity Market Rules.

²⁸ On May 21, 2013, NRG announced its intention to deactivate its 336 MW Norwalk Harbor Generation Station. *See*: "NRG to deactivate Conn. oil-fired plant, citing low capacity payments." SNL Financial. May 21, 2013.

²⁹ 1,154 MW of new import capacity and 355 MW of new demand resources cleared as well. *See*: FERC Docket No. ER14-1409. *ISO New England Forward Capacity Auction Results Filing*. February 28, 2014.

1 **Q. ISO-NE and its consultant, Robert Mudge, state that the analysis you provided related**
2 **to the impact of PI on new investment does not demonstrate any appreciable impact on**
3 **the terms of financing. Do you agree?**

4 **A.** No. ISO-NE and Mr. Mudge, who provided testimony on behalf of ISO-NE (the “Mudge
5 Testimony”), have misinterpreted the implications of the illustrative example I presented in
6 my February 12 testimony. The example was intended to explain and show the connection
7 between PI’s penalty-centric risk allocation and the costs of new entry. The illustrative
8 example is an extension of what ISO-NE’s consultant, Analysis Group, had already stated in
9 the record. The Analysis Group Report clearly and pointedly recognized that the cost of
10 capacity will increase under PI.³⁰ However, the Analysis Group only assumed that an
11 extremely small portion of capacity (1,000 MW out of a total of over 30,000 MW) would
12 have increased risk premiums under the PI Proposal, which I believe is an understatement of
13 the risk premiums one would expect under the PI Proposal.³¹ Therefore, my example took
14 that referenced connection between risks of the PI Proposal and the cost of new entry one step
15 further to examine certain elements of the cost of new entry that would be affected by the PI
16 Proposal. I focused and tested only a narrow aspect of the cost of new entry – the variability
17 in interest coverage based on a lender’s perception of the uncertain capacity revenues (which
18 the lender would be relying on to receive payment of interest and pay back of the loan). Other

³⁰ Analysis Group Report. p5.

³¹ Indeed, the Analysis Group concedes that its risk estimation understates real risks of PI. *See*: Analysis Group Report. p28-29.

1 elements of the cost of new entry would also change, but I did not test those numerically in
2 my original example. For example, the cost of equity should increase with the increased risk
3 premium.

4 Importantly, there are many more uncertainties under the PI Proposal that would
5 impact the cost of new entry that are difficult to test without more detailed information on
6 resource performance during varying types of scarcity conditions, and other factors, such as
7 the evolving supply-demand balance, and the correlation of real-time delivery performance
8 with increased reliance on constrained gas pipeline networks. There is simply not enough
9 information currently available in the public domain to measure the magnitude of the impact
10 these uncertainties could have, and ISO-NE has not presented information on which the
11 Commission could reasonably rely on for this issue. But the overall impact could be
12 significant.

13 For example, a plausible “worst case” scenario can be defined using recent scarcity
14 conditions. With the limited information released by ISO-NE in its February 12 filing, we
15 know the frequency of recent scarcity conditions has risen. According to ISO-NE there were
16 7.5 hours of scarcity conditions this winter – more than ten times the amount of winter
17 scarcity conditions observed during 2010-2012 (according to ISO-NE data, there were 0.7
18 hours of scarcity conditions in the winter of 2011-2012).³² ISO-NE has also stated that a large
19 CCGT was on an unplanned outage for six weeks this winter and therefore would have been

³² Winter months include December and January. *See*: ISO-NE. “RCPF Activation Data”. <http://www.iso-ne.com/committees/comm_wkgrps/mrks_comm/mrks/mtrls/2013/mar11122013/a14_iso_rcpf_activation_data_03_05_13.xlsx>

1 deemed to be “underperforming” during those scarcity conditions.³³ As a “worst case,” we
2 can combine the recently observed winter conditions with presumed similar “worst case”
3 summer conditions (i.e., ten times the highest observed summer scarcity conditions). There
4 were 3.85 hours of scarcity conditions in the summer of 2011, which would lead to 38.5 hours
5 of scarcity condition in the “worst case” summer. Figure 4 below, which uses the same
6 approach I presented in Figure 18 of my February 12 testimony, represents the impact that the
7 frequency of scarcity conditions under this “worst case” scenario would have on the interest
8 coverage ratio. In recognition that this is a stress test rather than calculation of long-run
9 average performance, I have assumed that the CCGT was unable to perform for the complete
10 7.5 hours of scarcity conditions observed in the winter, and performed at 25% of its average
11 level during the 2010-2012 summer period, as a proxy for “worst performance”. All other
12 assumptions used in my February 12 testimony remain unchanged (i.e., capacity clearing
13 price, plant size, etc.). Under this hypothetical “worst case” the implied interest coverage ratio
14 from net capacity revenues decreases to 0.78x (see Figure 4).³⁴ Such levels could impact the
15 costs of debt and equity. For example, if both the cost of debt and the cost of equity increased
16 by 100 basis points, the all-in fixed costs of a new CCGT could increase by \$8/kW-year, a
17 material 6% increase over the cost of new entry that is being proposed for the FCM demand
18 curve (\$11/kW-month).³⁵

³³ ISO-NE Comments. February 12, 2014. p4.

³⁴ Due to the high number of scarcity conditions during the “worst case” summer, the monthly stop-loss limit was triggered.

³⁵ ISO-NE. *Capacity Demand Curve: ISO’s Recommended Curve and Net CONE*. March 12, 2014.

Figure 4. Illustrative Impact on Interest Coverage under a Hypothetical “Worst Case” Scenario

[\$000]		
A	Capacity Base Payment	\$48,000
B	Performance Payment	(\$34,978)
C	A+B Total Capacity Revenue*	\$13,022
D	Debt Interest**	(\$16,620)
E	A/D Interest Coverage Provided by Base Capacity Revenue	2.89
F	C/D Interest Coverage Provided by Total Capacity Revenue (Base + Performance)	0.78

*Capacity revenue analysis assumes a capacity clearing price of \$8/kW-month.

**Debt interest analysis assumes a capital cost of \$1,108 and 50% leverage, in line with assumptions use by ISO-NE in its Offer Review Trigger Price Calculation. I assumed a borrowing rate of 6% and a 20-year loan, consistent with calculations in Figure 18 in my February 12 testimony. Calculations assume a 500 MW CCGT plant.

It is, however, questionable whether there will be sufficient commercial remuneration for those risks and uncertainties, and indeed whether the market monitor would allow such remuneration.³⁶ Given that there are many other market opportunities for generators to make investments, investment capital may well flow elsewhere, especially if the risks are too high and the opportunities too limited in New England. This concern is reflected in numerous other comments filed in this docket.³⁷

Q. ISO-NE’s consultant, Robert Mudge, has stated that projects with a coverage ratio as low as 1.0x at an exceedance probability level of 99% (“P99”) are considered financeable, how can you relate your analysis to this conclusion?

³⁶ Under the PI Proposal, “risk adjustment is being removed from the net going forward cost formula and is being replaced by a separate risk premium component” in the delist bid. The Internal Market Monitor will review this risk component – if it does not agree with the participant’s risk assessment, it may not authorize the delist bid based on the risk estimated by a resource owner. *See*: LaPlante Testimony. p38-40.

³⁷ See, for example, the Lagano, Pope, Dykes, Falk, and Katz Testimonies.

1 A. The key point to take away from Mr. Mudge’s statement is that he refers to a 1.0x coverage
2 ratio as it relates to a probability-based outlook for renewable resources.³⁸ My illustrative
3 example cannot be compared to a probability-based outlook. My illustrative example was not
4 intended to represent that analysis. In my February 12 testimony, I had recommended a more
5 comprehensive analysis of the PI Proposal be performed where the energy market dynamics
6 are simulated alongside FCA (the Analysis Group only simulated FCA dynamics).³⁹ If such
7 an analysis were to be performed (and, indeed, it should be performed), it would provide the
8 necessary information for a probability-based outlook where resources’ performance can be
9 evaluated dynamically in response to a range of system conditions and market uncertainties.
10 In other words, in order to look at whether the PI Proposal can meet the financing tests that
11 Mr. Mudge refers to, one would need to add in many other potential combinations of key
12 uncertainties beyond those presented by Mr. Mudge, and more fully assess the joint
13 distribution of the risks.

14 Q. **Would the ISO-NE PI Proposal make financing more difficult as well as more costly?**

15 A. Yes, it would make financing new investment in generation in the FCM both more costly and
16 more difficult. In my February 12 testimony, I discussed the impact the PI Proposal could
17 have on the cost of financing new generation. Although I did not discuss in great detail the
18 effort involved in securing such financing, it should go without saying that higher risk

³⁸ Although Mr. Mudge indicated that wind projects have been financed with interest coverage ratios of 1x under a P99 scenario, the required coverage ratio for conventional generation resources is likely higher given the different dispatch risks for conventional fossil fuel fired generation relative to renewables.

³⁹ Frayer February 12 Testimony. p52-53.

1 financing is more difficult to acquire than lower risk financing. Moreover, lenders will tend to
2 be wary and reluctant to fund investments that involve regulatory risks (i.e., market design
3 changes) and other asymmetric and unhedegable risks. So there is a direct connection
4 between risks, financing costs, and the feasibility (or difficulty) of financing the investment.

5 The significantly increased risks under the PI Proposal would make it more difficult to
6 get cost-effective financing that the market is willing to bear. Lenders with a lower risk
7 appetite may choose not to lend under PI, reducing the pool of available lenders to New
8 England developers. Those remaining lenders that might be willing to lend under PI would
9 likely do so only at higher rates to reflect to riskiness of the investment. Furthermore,
10 developers would also likely require a higher return on equity to reflect the riskiness of the
11 capital they invest as equity. Higher required returns on equity would, in turn, make it
12 challenging for developers to successfully develop new projects in New England. There
13 would be a real possibility that developers would choose to invest in other markets in which
14 the opportunities are more profitable on a risk-adjusted basis. Such investment trends have
15 been observed in power markets, when regulatory risks and other uncertainties arise.⁴⁰

16 **Q. Wouldn't markets evolve to create new products to manage this risk, thereby reducing**
17 **the cost of financing and the difficulty in securing financing that you describe above?**

18 **A.** ISO-NE and the Analysis Group have claimed that resources would be able to mitigate the
19 performance risks (including those beyond their control) through bilateral contracting. The

⁴⁰ For instance, the expiration of New York's comprehensive power plant siting law ("Article X") in 2002 led to increased regulatory uncertainty in the New York power market. Independent power producers in New York claimed that the regulatory uncertainty and difficulty in siting generation hindered investment in the New York power market. A revised Article X was reinstated in the New York Power Act of 2011. *See*: New York State Bill S5844-2011; New York State Public Service Commission Case 06-M-1017.

1 ISO-NE goes so far as to coin terminology for potential new financial products -- so-called
2 “PI options”.⁴¹ Currently, no such financial products exist. Nor is there a balance of under-
3 and over-performers that would be predictable and known in advance that would facilitate
4 effective bilateral trading around the real-time obligations under PI. To the extent that ISO-
5 NE is relying on these future developments, this demonstrates yet another weakness in the PI
6 design. ISO-NE’s PI Proposal should not be approved and implemented if it requires new
7 institutions and trading arrangements that have not yet been (and may not be) developed.

8 **Q. In your February 12 testimony you likened the PI Proposal to an expensive insurance**
9 **policy (if it were possible to find such a policy at all). Do you still believe that this an apt**
10 **analogy?**

11 **A.** Yes, I certainly do believe that this is an accurate analogy. With the PI Proposal, ISO-NE is
12 asking for an incredibly expensive insurance policy that no one would likely write (i.e., it is
13 both costly and difficult to find) unless they were “forced” to do so. And if the PI is approved
14 as proposed, a generator would be able to avoid writing this expensive insurance only if it
15 decided not to participate in the FCM, causing some generators to exit the market prematurely
16 with a doubtful prospect for new investment to fill the reliability gap.

17 **Q. Does this conclude your Responsive Testimony?**

18 **A.** Yes, it does.

⁴¹ White January 17 Testimony. p160-165; Analysis Group Report. p24.

1 I declare under penalty of perjury that the foregoing is true and correct.

2

3

4



5 Julia Frayer

6

7

8 Executed on: March 18, 2014

CERTIFICATE OF SERVICE

I hereby certify that I caused a copy of the foregoing document to be served electronically upon each person designated on the official service list compiled by the Secretary of the Federal Energy Regulatory Commission.

Dated at Hartford, Connecticut this 18th day of March 2014.

A handwritten signature in black ink that reads "Patrick M. Gerity". The signature is written in a cursive style and is positioned above a horizontal line.

Patrick M. Gerity
Day Pitney LLP
242 Trumbull Street
Hartford, CT 06103
Tel: (860) 275-0533
Fax: (860) 881-2505
E-mail: pmgerity@daypitney.com