May 4, 2010

VIA HAND DELIVERY

The Honorable Kimberly D. Bose, Secretary
The Honorable Nathaniel J. Davis, Sr., Deputy Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: *ISO New England Inc.*, Docket No. ER10-___-000, Filing of Installed Capacity Requirement, Hydro Quebec Interconnection Capability Credits and Related Values for the 2013/2014 Capability Year

Dear Secretary Bose and Deputy Secretary Davis:

Pursuant to Section 205 of the Federal Power Act ("FPA"),[1] ISO New England Inc. (the "ISO") hereby submits an original and five (5) copies of this transmittal letter and related materials, which identify the Installed Capacity Requirement,[2] Local Sourcing Requirements and Maximum Capacity Limits (collectively, the "ICR-Related Values") and Hydro Quebec Interconnection Capability Credits ("HQICCs") for the 2013/2014 Capability Year Forward Capacity Auction to be held in August 2010.[3] The August 2010 auction is the primary Forward Capacity Auction for the 2013/2014 Capability Year.

[1] 16 U.S.C. § 824d (2006).

[2] Capitalized terms used but not defined in this filing are intended to have the meaning given to such terms in the ISO New England Inc. Transmission, Markets and Services Tariff, FERC Electric Tariff No. 3 ("ISO Tariff" or "the Tariff"), the Second Restated New England Power Pool Agreement, and the Participants Agreement. Market Rule 1 is Section III of the ISO Tariff.

[3] The 2013/2014 Capability Year runs from June 1, 2013 to May 31, 2014. Pursuant to Section III.12.3 of Market Rule 1, the Installed Capacity Requirement must be filed 90 days prior to the applicable Forward Capacity Auction.

The 2013/2014 ICR-Related Values

As detailed below, the ISO proposes an Installed Capacity Requirement value of 33,043 MW. This value accounts for tie benefits (emergency energy assistance) assumed obtainable from Quebec, New Brunswick (Maritimes) and New York of 1,700 MW, but it does not reflect a reduction in capacity requirements relating to HQICCs. The HQICC value of 916 MW per month is applied to reduce the portion of the Installed Capacity Requirement that is allocated to the Interconnection Rights Holders. Thus, the net amount of capacity to be purchased in the Forward Capacity Auction to meet the Installed Capacity Requirement, after deducting the HQICC value of 916 MW per month,[4] is 32,127 MW.[5]

The Forward Capacity Auction process requires the modeling of certain constraints, including Local Sourcing Requirements and Maximum Capacity Limits for Load Zones that may be import- or export-constrained. Local Sourcing Requirements for the Connecticut and Northeast Massachusetts/Boston ("NEMA/Boston") Load Zones are 7,419 MW and 2,957 MW, respectively. While final zonal determinations for the fourth Forward Capacity Auction will be submitted in a separate filing, neither the Connecticut nor NEMA/Boston Load Zones are expected to be modeled as separate Capacity Zones in the 2013/2014 Forward Capacity Auction. The Maximum Capacity Limit for the Maine export-constrained Load Zone is 3,187 MW.[6]

In calculating the Local Sourcing Requirements for the Connecticut and NEMA/Boston Load Zones, the ISO utilized for the first time a revised calculation methodology that was filed with the Commission on February 22, 2010[7] and accepted by the Commission in an order issued April 23, 2010 (the "Revised LSR Calculation Methodology").[8] As discussed in more detail in

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[4] HQICCs are monthly values.

[5] Prepared Joint Testimony of Mr. Mark G. Karl and Mr. Peter K. Wong on Behalf of ISO New England Inc. ("Karl-Wong Testimony") (Attachment 1) at p. 12.

[6] The Local Sourcing Requirement and Maximum Capacity Limit values are used to determine whether separate zones must be modeled in the fourth Forward Capacity Auction. The determinations regarding separate zones are being provided in a contemporaneous filing regarding numerous inputs into the Forward Capacity Auction as required by Section III.13.8.1 of the ISO Tariff. *See ISO New England Inc.*, Informational Filing for Qualification in the Forward Capacity Market, Docket No. ER10-___-000 (filed May 4, 2010), Transmittal Letter at pp. 9-10**.**

[7] *See ISO New England Inc. and New England Power Pool*, Various Revisions to FCM Rules Related to FCM Redesign, Docket No. ER10-787-000 (filed February 22, 2010) ("February 22 Filing"), Transmittal Letter at pp. 24-26.

[8] *ISO New England Inc. et al.*, Order On Forward Capacity Market Revisions and Related Complaints, 131 FERC ¶ 61,065 (2010) ("April 23 Order") at PP 16, 108.

Section V of this filing letter, the revised methodology incorporates into the Local Sourcing Requirement calculation the criteria used in the transmission security analysis that the ISO uses to maintain system reliability when reviewing de-list bids for a Forward Capacity Auction. Since the system ultimately must meet both resource adequacy and transmission security requirements, the revised Local Sourcing Requirement provisions provide that both resource adequacy and transmission security-based requirements be developed for each import-constrained zone. A "higher of" analysis is then utilized to determine the Local Sourcing Requirement.[9]

The proposed HQICC values have the support of the New England Power Pool ("NEPOOL") Participants Committee. The proposed 2013/2014 Installed Capacity Requirement, Local Sourcing Requirements and Maximum Capacity Limit values did not receive the support of the Participants Committee.

In accordance with the Code of Federal Regulations, the ISO requests that the Federal Energy Regulatory Commission ("Commission") accept the values reflected herein effective July 6, 2010, which is more than 60 days from the filing date.[10]

I. COMMUNICATIONS

The ISO is the private, non-profit entity that serves as the regional transmission organization ("RTO") for New England. The ISO operates the New England bulk power system and administers New England's organized wholesale electricity market pursuant to the Tariff and the Transmission Operating Agreement with the New England Participating Transmission Owners. In its capacity as an RTO, the ISO has the responsibility to protect the short-term reliability of the New England Control Area and to operate the system according to reliability standards established by the Northeast Power Coordinating Council, Inc. and the North American Electric Reliability Corporation.

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[9] Market Rule 1, Section III.12.2.1.

[10] 18 C.F.R. § 35.3(a)(1) (2009).

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II. BACKGROUND AND OVERVIEW

As part of the Forward Capacity Market, the ISO is preparing to conduct the Forward Capacity Auction for the 2013/2014 Capability Year. The auction, which will commence on August 2, 2010, is intended to result in capacity commitments of sufficient megawatts to meet the projected Installed Capacity Requirement for 2013/2014.[11] In this filing, the ISO is submitting the 2013/2014 Capability Year values for the Installed Capacity Requirement, Local Sourcing Requirements and Maximum Capacity Limit – all of which are key inputs in the Forward Capacity Auction – and HQICCs, which are a key input into the calculation of the Installed Capacity Requirement values.

A. Installed Capacity Requirement

The Installed Capacity Requirement is a measure of the installed resources that are projected to be necessary to meet reliability standards in light of total forecasted load requirements for the New England Control Area and to maintain sufficient reserve capacity to meet reliability standards. More specifically, the Installed Capacity Requirement is the amount of resources needed to meet the reliability requirements defined for the New England Control Area of disconnecting non-interruptible customers (a loss of load expectation or "LOLE") no more than once every ten years (a LOLE of 0.1 days per year). The methodology for calculating the Installed Capacity Requirement is set forth in Section III.12 of Market Rule 1.

The Installed Capacity Requirement for the 2013/2014 Capability Year is the amount of installed capacity to be procured in the Forward Capacity Auction that will be held in August

[11] The August 2, 2010 Forward Capacity Auction, like future Forward Capacity Auctions, is conducted in advance of the Capability Year in which the capacity will actually be supplied. The August 2010 Forward Capacity Auction applies to a supply commitment period that corresponds to the 2013/2014 Capability Year (*i.e.*, June 1, 2013 to May 31, 2014). Resources that clear in the Forward Capacity Auction will be obligated to supply capacity to the New England Control Area during the 2013/2014 Capability Year and load-serving entities will be obligated to pay for the capacity procured.

2010.[12] The values for this year's filing, as in previous years, are based on three essential components: the load forecast, resource availability, and tie benefits. The methodologies for determining projected load and resource outage rates are the same as those used in previous filings, albeit adjusted due to the need under the Forward Capacity Market to project the Installed Capacity Requirement three years in advance.[13] The methodology for determining tie benefits is the same as that used for the 2011/2012 and 2012/2013 Installed Capacity Requirement calculations.[14]

As in past years, the ISO developed the initial Installed Capacity Requirement recommendation with stakeholder input, which was provided in part through the NEPOOL committee processes through review by NEPOOL's Power Supply Planning Committee ("PSPC") during the course of three meetings, by the NEPOOL Reliability Committee at its March 17, 2010 meeting and by the NEPOOL Participants Committee at its April 9, 2010 meeting. Although, as noted above, NEPOOL did not support the proposed values for the Installed Capacity Requirement, the Local Sourcing Requirements and the Maximum Capacity Limit, NEPOOL participants were actively involved in reviewing and providing input on the development of those values.[15] In addition, in 2007 the New England States Committee on

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[12] Pursuant to Section III.13 of Market Rule 1, the ISO administers the Forward Capacity Auction in order "to procure the amount of capacity needed in the New England Control Area."

[13] *See, e.g., ISO New England Inc.*, 111 FERC ¶ 61,185, *reh'g denied*, 112 FERC ¶ 61,254 (2005), *appealed on jurisdictional grounds, Conn. Dept. of Pub. Util. Control v. FERC*, 484 F.3d 558 (D.C. Cir. 2007), *reh'g denied*, 2007 U.S. App. LEXIS 17020 (July 13, 2007), *mandate issued* (July 27, 2007), *on remand to*, 122 FERC ¶ 61, 144 (2008), *reh'g denied*, 123 FERC ¶ 61, 036 (2008) (2005/2006 Capability Year Installed Capacity Requirements); and *ISO New England Inc.*, 119 FERC ¶ 61,161 (2007), *reh'g denied*, 121 FERC ¶ 61, 125 (2007) (2007/2008 Capability Year Installed Capacity Requirements). *See also ISO New England Inc. and New England Power Pool*, 121 FERC ¶ 61,250 (2007); *order on reh'g*, 123 FERC ¶ 61,129 (2008) ("2010/2011 ICR Order").

[14] *See ISO New England Inc*., Filing of Installed Capacity Requirement, Hydro-Quebec Interconnection Capability Credits and Related Values for the 2012/2013 Capability Year, Docket No. ER09-1415-000, (filed July 6, 2009), Transmittal Letter at pp. 13-15 ("2012/2013 ICR Filing"); *ISO New England Inc.*, Filing of Installed Capacity Requirement, Hydro Quebec Interconnection Capability Credits and Related Values for the 2011/2012 Capability Year, Docket No. ER08-1512-000 (filed September 9, 2008), Transmittal Letter at pp. 12-14 ("2011/2012 ICR Filing"). The ISO is utilizing for this filing the tie benefits methodology approved by the Commission in Docket No. ER08-41-002, which was first utilized by the ISO in filing the 2011/2012 Installed Capacity Requirement values. *ISO New England Inc. and New England Power Pool*, 124 FERC ¶ 61,298 (2008) (the "September 29, 2008 Tie Benefits Order").

[15] All of the load and resource assumptions needed for the Westinghouse/ABB Capacity Model Program ("Capacity Model") were reviewed by the PSPC, a subcommittee of the NEPOOL Reliability Committee.

Electricity ("NESCOE") was formed.[16] Among other responsibilities, NESCOE is responsible for providing feedback on the annual proposed Installed Capacity Requirement value at the relevant NEPOOL Reliability Committee meeting and presenting NESCOE's position on Installed Capacity Requirement matters at the NEPOOL Participants Committee meeting at which the values are voted upon.[17]

B. Local Sourcing Requirements and Maximum Capacity Limits

Under the Forward Capacity Market, the ISO must also calculate Local Sourcing Requirements and Maximum Capacity Limits to be used, if necessary, in each Forward Capacity Auction and the reconfiguration auctions for a Capability Year. A Local Sourcing Requirement is "the minimum amount of capacity that must be electrically located within an import-constrained Load Zone."[18] A Maximum Capacity Limit is "the maximum amount of capacity that can be procured in an export-constrained Load Zone [to meet the Installed Capacity Requirement]."[19] The general purpose of Local Sourcing Requirements and Maximum Capacity Limits is to provide that capacity resources, when considered in combination with the transfer capability of the transmission system, are electrically distributed within the New England Control Area in a manner that ensures that the minimum amount of resources purchased in the Forward Capacity Auction will meet the Northeast Power Coordinating Council's and ISO's bulk power system reliability planning criteria.

For the 2013/2014 Forward Capacity Auction, the ISO calculated the Local Sourcing Requirements for Connecticut and NEMA/Boston Load Zones and the Maximum Capacity Limit for the Maine Load Zone. As noted above and as described in more detail below in Section V, the Local Sourcing Requirements and Maximum Capacity Limit were calculated using a Revised LSR Calculation Methodology that is reflected in Section III.12.2.1 of Market Rule 1.

C. HQICCs

HQICCs are capacity credits that are allocated to the Interconnection Rights Holders,

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[16] *ISO New England Inc.*, Docket No. ER07-1324-000, Formation of the New England States Committee on Electricity (filed August 31, 2007) (proposing to add a new rate schedule to the ISO Tariff for the purpose of recovering funding for NESCOE's operation) (the "NESCOE Funding Filing"); *ISO New England Inc.*, 121 FERC ¶ 61,105 (2007) (order accepting the ISO's proposed rate schedule for funding of NESCOE's operations).

[17] *See* the NESCOE Funding Filing at p. 14.

[18] Market Rule 1, Section III.12.2.

[19] *Id.*

which are entities that hold certain rights over the Hydro-Quebec Interconnection ("HQ Interconnection"). Pursuant to Sections III.12.9.1 and III.12.9.2 of Market Rule 1, the tie benefit value for the HQ Interconnection was established using the results of a probabilistic calculation of tie benefits with Quebec. The ISO calculates HQICCs, which are allocated to Interconnection Rights Holders in proportion to their individual rights over the HQ Interconnection, and must file the HQICC values established for each Capability Year. The HQICC values for the 2013/2014 Capability Year are 916 MW per month. At its April 9, 2010 meeting, the NEPOOL Participants Committee voted to support these values, with 77.98% of participants voting in favor of the motion.

D. Process for Developing Installed Capacity Requirement and Related Values

The ISO, in consultation with NEPOOL and other interested parties, developed the proposed Installed Capacity Requirement and related values for the 2013/2014 Capability Year through an extensive stakeholder process over the course of three months. The ISO used the methodologies and assumptions for determining the ICR-Related Values that are set out in Section III.12 of Market Rule 1. With the exception of the calculation of Local Sourcing Requirements as described below, the methodology and assumptions used to calculate the proposed ICR-Related Values are consistent with the approach utilized in calculating capacity requirement values submitted and accepted for other recent Capability Years.[20]

The specific ICR-Related Values and HQICC values proposed in this submittal, and the derivation of those values, is discussed further in Sections IV-V of this filing letter and in the joint testimony of Messrs. Karl and Wong submitted with this filing. As explained in Sections IV-V and the Karl-Wong Testimony, the proposed Installed Capacity Requirement and related values were calculated based on a Commission-approved methodology and a reasonable set of assumptions. Accordingly, the Commission should accept the proposed values for filing without change to become effective on July 6, 2010.

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[20] *See, e.g., ISO New England Inc.*, Letter Order accepting filing of Installed Capacity Requirement, Hydro Quebec Interconnection Capability Credits and Related Values for the 2012/2013 Capability Year, Docket No. ER09-1415-000 (Aug. 14, 2009) ("2012/2013 ICR Order") *ISO New England Inc.*, Order Accepting, With Conditions, Proposed Installed Capacity Requirement, Hydro Quebec Interconnection Capability Credits, and Related Values, 125 FERC ¶ 61,154 (2008) (accepting ISO-proposed Installed Capacity Requirements for the 2011/2012 Capability Year) ("2011/2012 ICR Order"); 2010/2011 ICR Order; *ISO New England Inc. and New England Power Pool Participants Committee*, 127 FERC ¶ 61,142 (2009) (accepting ISO-proposed Installed Capacity Requirements for the 2009/2010 Power Year) ("2009/2010 ICR Order").

E. Proposed Values

The ISO is proposing an Installed Capacity Value of 33,043 MW for the 2013/2014 Forward Capacity Auction. The 33,043 MW Installed Capacity Requirement value for the 2013/2014 Capability Year reflects tie benefits (emergency energy assistance) assumed obtainable from New Brunswick (Maritimes), New York and Quebec in the aggregate amount of 1,700 MW. However, the 33,043 MW Installed Capacity Requirement value does not reflect a reduction in capacity requirements relating to HQICCs. The HQICC value of 916 MW per month is applied to reduce the portion of the Installed Capacity Requirement that is allocated to the Interconnection Rights Holders. Thus, the net amount of capacity to be purchased in the Forward Capacity Auction to meet the Installed Capacity Requirement, after deducting the HQICC value, is 32,127 MW.

The 2013/2014 Capability Year Local Sourcing Requirements for the Connecticut and NEMA/Boston Load Zones are 7,419 MW and 2,957 MW, respectively. The Maximum Capacity Limit for the Maine export-constrained Load Zone is 3,187 MW.

III. STANDARD OF REVIEW

The ISO submits the proposed ICR-Related Values and HQICC values for the 2013/2014 Forward Capacity Auction pursuant to Section 205 of the Federal Power Act, which "gives a utility the right to file rates and terms for services rendered with its assets."[21] Under Section 205, the Commission "plays 'an essentially passive and reactive' role"[22] whereby it "can reject [a filing] only if it finds that the changes proposed by the public utility are not 'just and reasonable.'"[23] The Commission limits this inquiry "into whether the rates proposed by a utility are reasonable – and [this inquiry does not] extend to determining whether a proposed rate schedule is more or less reasonable than alternative rate designs."[24] The ICR-Related Values and HQICCs submitted herein "need not be the only reasonable methodology, or even the most accurate."[25] As a result, even if an intervenor or the Commission develops an alternative

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[21] *Atlantic City Elec. Co. v. FERC*, 295 F.3d 1, 9 (D.C. Cir. 2002).

[22] *Id.* at 10 (*quoting City of Winnfield v. FERC*, 744 F.2d 871, 876 (D.C. Cir. 1984)).

[23] *Id.* at 9.

[24] *Cities of Bethany, et al. v. FERC*, 727 F.2d 1131, 1136 (D.C. Cir. 1984), *cert. denied*, 469 U.S. 917 (1984).

[25] *OXY USA, Inc. v. FERC*, 64 F.3d 679, 692 (D.C. Cir. 1995) (*citing Cities of Bethany*, 727 F.2d at 1136).

proposal, the Commission must accept this Section 205 filing if it is just and reasonable.[26]

IV. DEVELOPMENT OF THE INSTALLED CAPACITY REQUIREMENT FOR THE 2013/2014 FORWARD CAPACITY AUCTION

The proposed Installed Capacity Requirement value for the 2013/2014 Forward Capacity Auction was determined using the established calculation methodology and updated system modeling data regarding factors such as forecast load, resource availability and relief assumed obtainable by implementation of operator actions during a capacity deficiency (with the exceptions addressed herein regarding the calculation of tie benefits from neighboring Control Areas).[27] The calculation methodology and the methodology used to develop the assumptions generally are the same as those used to calculate the Installed Capacity Requirement for previous Forward Capacity Auctions, with the important qualifications noted below. Most of the modeling assumptions have been updated to reflect changed system conditions since the development of the Installed Capacity Requirement for the 2012/2013 Forward Capacity Auction.

A. Load Forecast

The forecasted peak loads of the entire New England Control Area for the 2013/2014 Capability Year are one major input into the calculation of the Installed Capacity Requirement detailed in this filing, and the forecasted peak loads for the individual Load Zones are used to develop the associated Local Sourcing Requirements and Maximum Capacity Limit. For the purpose of calculating the Installed Capacity Requirement for the 2013/2014 Capability Year, the ISO used the ten-year load forecast covering the years 2010 through 2019 published in April 2010 in the ISO New England "2010 – 2019 Forecast Report of Capacity, Energy, Loads, And Transmission" ("2010 CELT Report").[28] The 2010 CELT Report forecast was developed by the ISO using the same methodology that the ISO has used for determining load forecasts in

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[26] *Cf. Southern California Edison Co., et al.*, 73 FERC ¶ 61,219 at 61,608 n.73 (1995) ("Having found the plan to be just and reasonable, there is no need to consider in any detail the alternative plans proposed by the Joint Protesters." (*citing Cities of Bethany*, 727 F.2d at 1136)).

[27] *See* the Karl-Wong Testimony at pp. 6-12 for a discussion of the methodology used to calculate the Installed Capacity Requirement for the 2013/2014 Capability Year and the Karl-Wong Testimony at pp. 12-25 for a discussion of the assumptions relied upon for this calculation.

[28] Two locations on the ISO website contain more detailed information on the following: short-run and long-run forecast methodologies; models and inputs; weather normalization; regional, state, and subarea annual electric energy and peak-load forecasts; high- and low-forecast bandwidths; and retail electricity prices. *See* "CELT Forecasting Details 2010," http://www.iso-ne.com/trans/celt/fsct_detail/2010/index.html and "CELT Report 2010," http://www.iso-ne.com/trans/celt/report/2010/index.html (CELT stands for "capacity, energy, loads, and transmission.").

previous years and to develop the peak load assumptions reflected in the Commission-approved Installed Capacity Requirement in previous years.[29] This methodology reflects economic and demographic assumptions as reviewed and supported by the NEPOOL Load Forecast Committee.[30]

The projected New England Control Area summer 50/50 peak load[31] for the 2013/2014 Capability Year is 28,570 MW. In determining the Installed Capacity Requirement, the load forecast is represented by a weekly probability distribution of daily peak loads. This probability distribution is meant to quantify the New England weekly system peak load's relationship to weather. The 50/50 peak load is used solely for reference purposes. In the Installed Capacity Requirement calculations, the methodology determines the amount of capacity resources needed to meet every expected peak load of the weekly distribution given the probability of occurrence associated with that load level.[32]

B. Resource Capacity Ratings

The Installed Capability Requirement for the 2013/2014 Forward Capacity Auction is based on ratings[33] of Qualified Existing Capacity Resources that have qualified for the 2013/2014 Forward Capacity Auction. These resources are described in the qualification informational filing for the 2013/2014 Forward Capacity Auction that is being filed concurrently with this filing of the ICR-Related Values and HQICCs.[34]

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[29] *See, e.g.*, 2012/2013 ICR Order; 2011/2012 ICR Order at PP 5-6; 2010/2011 ICR Order at PP 5-6; 2009/2010 ICR Order at P 5.

[30] The methodology is reviewed periodically and updated when deemed necessary in consultation with the NEPOOL Load Forecasting Committee.

[31] The New England Control Area is a summer-peaking system, meaning that the highest load occurs during the summer. The 50/50 peak refers to the peak load having a 50% chance of being exceeded, and is expected to occur at a weighted New England-wide temperature of 90.4 ºF.

[32] *See* Karl-Wong Testimony at pp. 14-15.

[33] The resource capacity ratings for the 2013/2014 Capability Year were calculated in accordance with Section III.12.7.2 of Market Rule 1 using the methods and procedures that were employed for calculating resource capacity ratings reflected in the Commission-approved Installed Capacity Requirements for the first three primary Forward Capacity Auctions. *See* 2012/2013 ICR Filing, Transmittal Letter at pp. 11-12 and the 2012/2013 ICR Order; 2011/2012 ICR Filing, Transmittal Letter at p. 11 and the 2011/2012 ICR Order; 2010/2011 ICR Filing, Transmittal Letter at pp. 11-12 and 2010/2011 ICR Order.

[34] *ISO New England Inc.*, Informational Filing for Qualification in the Forward Capacity Market, Docket No. ER10-___-000 (filed May 4, 2010), Transmittal Letter at p. 12**.**

Resource additions and attritions are not assumed in the calculation of the Installed Capacity Requirement for the 2013/2014 Forward Capacity Auction, pursuant to Market Rule 1, because there is no certainty that new resource additions or existing resource attritions will clear the auction. Not modeling undetermined resource additions and attritions will not have a significant effect on the calculated Installed Capacity Requirement since the availability characteristics and sizes of these resources are expected to be similar to those of the Existing Resources. The additional load carrying capability ("ALCC") adjustments, discussed in Mr. Karl and Mr. Wong's joint testimony, are designed to compensate for these uncertainties.[35]

C. Unit Availability

The proposed Installed Capacity Requirement value for the 2013/2014 Forward Capacity Auction reflects unit availability assumptions based on historical scheduled maintenance and forced outages of the capacity resources.[36] For generating resources, individual unit scheduled maintenance assumptions are based on each unit's most recent historical five-year average of scheduled maintenance. If the individual resource has not been operational for five years, then North American Electric Reliability Corporation ("NERC") class average data is used to substitute for the missing annual data. The individual generating resource's forced outage assumptions are based on the generator's five-year historical equivalent forced outage rate data submitted to the ISO database. If the resource has been in commercial operation less than five years, the NERC class average data for the same class of units is used to substitute for the missing annual data.

The Qualified Capacity of an Intermittent Power Resource is the resource's median output during the Reliability Hours averaged over a period of five years. Based on the Intermittent Power Resources rating methodology, these resources are assumed to be 100% available because the outages are already incorporated into the resource ratings.

In the Installed Capacity Requirement calculations, performance assumptions for the Passive Demand Response Resources and the Active Demand Resources in the Real-Time Demand Response, Critical Peak and Real-Time Emergency Generator categories are based on presumed or actual responses during all historical ISO New England Operating Procedure No. 4 events (Action During a Capacity Deficiency) and ISO performance audits.

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[35] Karl-Wong Testimony at pp. 9-10.

[36] The resource availability ratings for the 2013/2014 Capability Year were calculated in accordance with Section III.12.7.3 of Market Rule 1 using the methods and procedures that were employed for calculating resource capacity ratings reflected in the Commission-approved Installed Capacity Requirements for the first three primary Forward Capacity Auctions. *See* the 2012/2013 ICR Filing at pp. 12-13 and the 2012/2013 ICR Order; 2011/2012 ICR Filing at pp. 11-12 and the 2011/2012 ICR Order; 2010/2011 ICR Filing at p. 12 and the 2010/2011 ICR Order.

D. Assumptions Utilized for the Transmission Security Analysis

As noted above, and as explained in more detail below in Section V, the Revised LSR Calculation Methodology utilized for calculating Local Sourcing Requirements for the 2013/2014 Capability Year requires the ISO to perform a Transmission Security Analysis as part of the calculation of Local Sourcing Requirements for import-constrained Load Zones.[37] The conditions used for completing the Transmission Security Analysis within the Forward Capacity Market are documented in section 6 of ISO Planning Procedure 10, Planning Procedure to Support the Forward Capacity Market ("PP-10").[38] The Transmission Security Analysis utilizes the same set of data underlying the load forecast, resource capacity ratings and resource availability that are used in calculating the Installed Capacity Requirement, Maximum Capacity Limit and other inputs into the Local Sourcing Requirement. However, due to the deterministic and transmission security oriented nature of the Transmission Security Analysis, some of the assumptions utilized in performing the Transmission Security Analysis differ from the assumptions used in calculating the Installed Capacity Requirement, Maximum Capacity Limit and other aspects of the Local Sourcing Requirement. These differences relate to the manner in which load forecast data, forced outage rates for certain resource types, and OP 4 action events are utilized in the Transmission Security Analysis. These differences are described in more detail in Mr. Karl's and Mr. Wong's joint testimony at pp. 13-14 and 24-25.

E. Tie Benefits

New England's Commission-approved method for establishing the Installed Capacity Requirement requires that assumptions be made regarding the tie benefits value to be used as an input in the formula.[39] Tie benefits from neighboring Control Areas reduce the Installed Capacity Requirement and the need to buy capacity to meet the New England resource adequacy criterion. The tie benefits from neighboring Control Areas reflect the amount of emergency assistance from neighboring Control Areas that New England could rely on, without jeopardizing reliability in New England or the neighboring Control Areas, in the event of a capacity shortage in New England.

The Installed Capacity Requirement for the 2013/2014 Capability Year proposed by the ISO reflects tie benefits calculated from the Quebec, New Brunswick and New York Control

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[37] Market Rule 1, Section III.12.2.1.2.

[38] Copy available at http://www.iso-ne.com/rules_proceds/isone_plan/pp10_r7.pdf. The ISO is currently in the process of updating the procedure with the NEPOOL Reliability Committee to reflect the changes proposed by the ISO and filed with the Commission on February 22, 2010 in Docket No. ER10-787-000.

[39] Market Rule 1, Section III.12.9.

Areas.[40] The ISO utilizes a probabilistic multi-area reliability model to calculate total tie benefits from these three Control Areas. The neighboring Control Areas are modeled using "At Criteria" modeling assumptions. Tie benefits from each individual Control Area are determined based on the results of individual probabilistic calculations performed for each of the three neighboring Control Areas.

Based on the methodology described above, a total of 1,700 MW of tie benefits are assumed in the Installed Capacity Requirement calculations for the 2013/2014 Capability Year, which includes: 922 MW from Quebec, 584 MW from New Brunswick (Maritimes) and 194 MW from New York.

F. Proposed HQICC Values

The ISO proposes HQICC values of 916 MW for each month of the 2013/2014 Capability Year.[41] These values were developed in consultation with NEPOOL through the Power Supply Planning Committee process. At its March 17, 2010 meeting, the NEPOOL Reliability Committee voted to recommend that the Participants Committee support these HQICC values. At its April 9, 2010 meeting, the NEPOOL Participants Committee voted to support these values, with 77.98% voting in favor of the motion.

V. DEVELOPMENT OF THE LOCAL SOURCING REQUIREMENTS AND MAXIMUM CAPACITY LIMIT

Under the Forward Capacity Market, the ISO must also calculate Local Sourcing Requirements and Maximum Capacity Limits to be used, if necessary, in each Forward Capacity Auction and reconfiguration auction.[42] A Local Sourcing Requirement is the minimum amount of capacity that must be electrically located within an import-constrained Load Zone, and a Maximum Capacity Limit is the maximum amount of capacity that can be procured in an export-constrained Load Zone to meet the Installed Capacity Requirement.[43] Local Sourcing Requirements and Maximum Capacity Limits help to ensure that capacity resources are distributed geographically within the New England Control Area in a manner that ensures

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[40] *See* the Karl-Wong Testimony at pp. 26-32 for an explanation of the methodology employed by the ISO in determining tie benefits for the 2013/2014 Capability Year.

[41] Market Rule 1, Section III.12.9.2.

[42] Market Rule 1, Section III.12.2.

[43] *Id.*

compliance with reliability criteria.[44]

As noted above, on February 22, 2010, the ISO filed with the Commission revised tariff provisions for the calculation of Local Sourcing Requirements for import-constrained Load Zones.[45] The ISO utilized the new tariff provisions for the determination of Local Sourcing Requirements for the 2013/2014 Capability Year, with the understanding that these provisions, if accepted by the Commission in the normal course, would be in effect well in advance of the 2013/2014 Forward Capacity Auction in August 2010. On April 23, 2010, the Commission issued an order accepting the tariff revisions regarding the calculation of Local Sourcing Requirements.[46]

Prior to implementation of the revised tariff provisions, Local Sourcing Requirements were calculated utilizing only local resource adequacy criteria. The revised tariff provisions for calculating Local Sourcing Requirements incorporate into the calculation methodology the criteria used in the transmission security analysis that the ISO uses to maintain system reliability when reviewing de-list bids for a Forward Capacity Auction. Since the system ultimately must meet both resource adequacy and transmission security requirements, the revised Local Sourcing Requirement provisions provide that both resource adequacy and transmission security-based requirements be developed for each import-constrained zone. Specifically, under the revised methodology, the Local Sourcing Requirement is calculated for an import-constrained Load Zone as the amount of capacity needed to satisfy the higher of (i) the Local Resource Adequacy Requirement or (ii) the Transmission Security Analysis.[47]

The calculation of the Local Resource Adequacy Requirement largely utilizes the same analysis that was utilized for calculating the Local Sourcing Requirement prior to implementation of the revised tariff provisions, with the term "Local Resource Adequacy

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[44] In general, the Local Sourcing Requirements and Maximum Capacity Limits are calculated using the same load and resource assumptions as those used in calculating the Installed Capacity Requirement. In their joint testimony filed herewith, Mr. Karl and Mr. Wong explain certain differences between the assumptions underlying the Transmission Security Analysis, which is one input into the Local Sourcing Requirement under the Revised LSR Calculation Methodology, and the assumptions utilized for the remainder of the Local Sourcing Requirement calculation and the Maximum Capacity Limit calculation. Karl-Wong Testimony at pp. 24-25.

[45] February 22 Filing, Transmittal Letter at pp. 24-26.

[46] April 23 Order at PP 16, 108. It should be noted that in the April 23 Order the Commission set certain tariff provisions for paper hearing. This issue, however, was expressly excluded from the paper hearing proceeding.

[47] Market Rule 1, Section III.12.2.1.

Requirement" replacing the term "Local Sourcing Requirement."[48] Under the revised tariff provisions, the term Local Sourcing Requirement now refers to the higher of the Local Resource Adequacy Requirement and the Transmission Security Analysis Requirement. As with the previous tariff language, the Local Resource Adequacy Requirement is a local zonal capacity requirement calculated using a probabilistic modeling technique that ensures the zone meets the one-day-in-ten years reliability standard. However, as described in the Prepared Testimony of Mark G. Karl in the February 22 Filing, the Local Resource Adequacy Requirement analysis has been changed to only include the contribution of resources sufficient to meet the Installed Capacity Requirement, rather than all interconnected resources.[49]

The calculation of the Transmission Security Analysis requirement is addressed in Section III.12.2.1 of the tariff. The Transmission Security Analysis results in a local zonal capacity requirement calculated using deterministic transmission load flow analyses that are focused on ensuring that the identified zone will have sufficient resources to operate the transmission system securely following selected contingency events.[50] Specifically, the Transmission Security Analysis uses a series of transmission load flow studies aimed at determining the performance of the system under future stressed conditions and develops a resource requirement sufficient to allow the system to operate through the stressed situation.[51] The Transmission Security Analysis is generally the same analysis that the ISO utilizes during the reliability review of de-list bids.[52]

The following table contains the Local Resource Adequacy Requirement values and Transmission Security Analysis values for the Connecticut and NEMA/Boston Load Zones calculated for the 2013/2014 Forward Capacity Auction. Applying the "higher of" standard contained in Section III.12.2.1 of the Tariff, the resulting Local Sourcing Requirement values are represented in bold.

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[48] Market Rule 1, Section III.12.2.1.1.

[49] *See* February 22 Filing, Attachment 4, Prepared Testimony of Mark G. Karl, at pp. 12-14.

[50] Market Rule 1, Section III.12.2.1.2.

[51] Market Rule 1, Section III.12.2.1.2(a).

[52] *See* the Commission's June 20, 2008 Order in Docket No. ER08-633-000, *ISO New England Inc.*, 123 FERC ¶ 61,290 at PP 26-31 (2008).

The table also represents the Maximum Capacity Limit value, represented in bold, calculated in accordance with Section III.12.2.2 of the Tariff, for the Maine Load Zone.[53] This is the maximum amount of capacity resources that the 2013/2014 Forward Capacity Auction can procure from the Maine Capacity Zone, including capacity resource imports over the New Brunswick ties. This number also reflects the tie benefits assumed available over the New Brunswick ties.[54]

	NEMA/Boston	**Connecticut**	**Maine**
Transmission Security Analysis	2,957 MW	7,419 MW	
Local Resource Adequacy Requirement	2,549 MW	7,266 MW	
Local Sourcing Requirement	**2,957 MW**	**7,419 MW**	
Maximum Capacity Limit			**3,187 MW**

VI. STAKEHOLDER PROCESS

At its March 17, 2009 meeting, the NEPOOL Reliability Committee reviewed and considered the outcome of the PSPC's efforts with respect to the development of the ICR-Related Values and HQICCs for the 2013/2014 Forward Capacity Auction. A motion that the Reliability Committee recommend that the NEPOOL Participants Committee support the ISO's proposed ICR-Related Values passed with 65.83% in favor. A motion that the Reliability Committee recommend that the Participants Committee support the ISO's proposed HQICC values passed by a show of hands with 5 oppositions and 1 abstention. At its April 9, 2010

[53] The ISO notes that the ISO Tariff revisions filed on February 22 pertain only to import-constrained Load Zones. For export-constrained Load Zones, the procedure for calculating Maximum Capacity Limits has not changed. *See* Market Rule 1, Section III.12.2.2.

[54] That is, the Maximum Capacity Limit is reduced to reflect the flows required to receive the assumed tie benefits from New Brunswick to assist the New England Control Area at times of capacity shortage. Allowing more purchases of capacity from Maine could preclude the energy flows required to realize these tie benefits.

meeting, the Participants Committee did not support the IRC-Related Values, with a vote of 48.94% in favor. However, the Participants Committed voted to support the HQICC Values with a vote of 77.98% in favor.

VII. REQUESTED EFFECTIVE DATE

The ISO requests that the Commission accept the proposed ICR-Related Values and HQICCs for the 2013/2014 Forward Capacity Auction to be effective on July 6, 2010,[55] so that the proposed values and market rule changes can be used as part of the fourth Forward Capacity Auction to be conducted in August 2010.

VIII. ADDITIONAL SUPPORTING INFORMATION

This filing identifies ICR-Related Values and HQICC Values for the 2013/2014 Capability Year and is made pursuant to Section 205 of the FPA. Section 35.13 of the Commission's regulations generally requires public utilities to file certain cost and other information related to an examination of cost-of-service rates.[56] However, the proposed ICR-Related Values and HQICC Values are not traditional "rates." Furthermore, the ISO is not a traditional investor-owned utility. Therefore, to the extent necessary, the ISO requests waiver of Section 35.13 of the Commission's regulations. Notwithstanding its request for waiver, the ISO submits the following additional information in compliance with the identified filing regulations of the Commission applicable to Section 205 filings.

35.13(b)(1) - Materials included herewith are as follows:

- This transmittal letter;
- Attachment 1: Joint Testimony of Messrs. Mark G. Karl and Peter K. Wong;
- Attachment 2: List of governors and utility regulatory agencies in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont to which a copy of this filing has been sent.

35.13(b)(2) – the ISO respectfully requests that the Commission accept this filing to become effective on July 6, 2010.

35.13(b)(3) – Pursuant to Section 17.11(e) of the Participants Agreement, Governance

[55] 18 C.F.R. § 35.3 (2009).

[56] 18 C.F.R. § 35.13.

Participants are being served electronically rather than by paper copy. The names and addresses of the Governance Participants are posted on the ISO's website at http://www/iso-ne.com/regulatory/ferc/nepool/gov_prtcpnts_eserved.pdf. An electronic copy of this transmittal letter and the accompanying materials has also been sent to the governors and electric utility regulatory agencies for the six New England states which comprise the New England Control Area, and to the New England Conference of Public Utility Commissioners, Inc. The names and addresses of these governors and regulatory agencies are shown in Attachment 2. In accordance with Commission rules and practice, there is no need for the entities identified on Attachment 2 to be included on the Commission's official service list in the captioned proceedings unless such entities become intervenors in this proceeding.

35.13(b)(4) - A description of the materials submitted pursuant to this filing is contained in this transmittal letter.

35.13(b)(5) - The reasons for this filing are discussed in the background section to this transmittal letter.

35.13(b)(6) - As explained above, the ISO has sought the advisory input from Governance Participants pursuant to Section 11.4 of the Participants Agreement.

35.13(b)(7) - The ISO has no knowledge of any relevant expenses or costs of service that have been alleged or judged in any administrative or judicial proceeding to be illegal, duplicative, or unnecessary costs that are demonstrably the product of discriminatory employment practices.

35.13(c)(2) - The ISO does not provide services under other rate schedules that are similar to the sale for resale and transmission services it provides under the ISO Tariff.

35.13(c)(3) - No specifically assignable facilities have been or will be installed or modified in order to supply service with respect to the proposed Installed Capacity Requirement and related values.

IX. CONCLUSION

The ISO requests that the Commission accept the proposed ICR-Related Values and HQICC Values reflected in this submission for filing without change to become effective July 6, 2010.

Please acknowledge receipt of the foregoing by date-stamping the enclosed extra copies of this filing and returning them to the courier delivering the filing.

Respectfully submitted,

ISO NEW ENGLAND INC.

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Attachments
cc: Entities listed in Attachment 2

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ATTACHMENT 1

Joint Testimony of Mark G. Karl and Peter K. Wong

On behalf of ISO New England Inc.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

ISO New England Inc. **)** **Docket No. ER10-___-000**

PREPARED TESTIMONY OF

MR. MARK G. KARL and MR. PETER K. WONG

ON BEHALF OF ISO NEW ENGLAND INC.

Q: PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.

A. **Mr. Karl:** My name is Mark G. Karl. I am the Senior Director of Resource Adequacy with ISO New England Inc. (the "ISO"). My business address is One Sullivan Road, Holyoke, Massachusetts 01040-2841.

Mr. Wong: My name is Peter K. Wong. I am the Manager of Resource Adequacy with the ISO. My business address is One Sullivan Road, Holyoke, Massachusetts 01040-2841.

Q: MR. KARL, PLEASE DESCRIBE, BRIEFLY, YOUR EDUCATIONAL AND EMPLOYMENT BACKGROUND.

A. I have nearly 28 years of diverse experience in the electric utility industry, of which 9 years have been with the ISO. I earned my Bachelor's Degree in Mechanical/Aerospace Engineering from the University of Pittsburgh in 1980, and my Master's Degree in Business Administration from the University of Pittsburgh in 1989, and I am a registered

Professional Engineer in the Commonwealth of Pennsylvania.

I presently have senior management responsibility for the Load Forecasting, Resource Adequacy, Forward Capacity Market Tariff and Administration, and the Forward Capacity Market Auction Groups at the ISO.[1] These groups have overall responsibility for operating the Forward Capacity Market, performing the load forecasting and planning studies to set the New England resource capacity and Local Sourcing Requirements for that market, qualifying generation and demand resources for participating in the market, performing economic and production cost studies, and operating the New England transmission cost allocation process. Prior to that I was Director of Market Development and Integration and Manager of Market Design where I was extensively involved in the ongoing development of the Resource Adequacy/Forward Capacity Market, the Forward Reserve Market, and the Long Term Transmission Rights process, and was responsible for development of the market rules and NEPOOL Manuals for the ISO Standard Market Design.

Prior to joining the ISO, I worked at the Duquesne Light Company in Pittsburgh in a number of areas including Fossil and Nuclear Generation Engineering and Operations, Risk Assessment, Regulatory Analysis, Finance, Structured Transactions and System Planning, as well as participating in a number of unregulated electric market related ventures. At Duquesne, I had a total of five years of experience specifically in planning,

[1] Capitalized terms used but not defined in this testimony are intended to have the meaning given to such terms in the ISO New England Inc. Transmission, Markets and Services Tariff, FERC Electric Tariff No. 3 ("ISO Tariff"), the Second Restated New England Power Pool Agreement, and the Participants Agreement. Market Rule 1 is Section III of the ISO Tariff.

managing the Integrated Resource Planning Group, as well as load forecasting, tariff administration, and financial and strategic planning groups. I had extensive involvement in the restructuring and deregulation of the electric industry in Pennsylvania, including development of retail choice pilot programs, asset valuation, stranded cost filings, and asset divestiture.

Q: MR. WONG, PLEASE DESCRIBE, BRIEFLY, YOUR EDUCATIONAL AND EMPLOYMENT BACKGROUND.

A. I hold a Bachelor of Science degree in Electrical Engineering from the University of Connecticut and a Master of Business Administration degree from Western New England College.

I have been the Manager of Resource Adequacy for the ISO since 1999. Before that, I served for about seven years as the Manager of Operations Planning & Analysis for the staff of the New England Power Exchange ("NEPEX"), the operating arm of the New England Power Pool ("NEPOOL"), and for the ISO after the staff of NEPOOL was transferred to the ISO.

I have worked with NEPOOL and the ISO for more than 35 years. During this time, in addition to my most recent duties described above, I have held various positions in the Power Supply Planning department of New England Power Planning ("NEPLAN"), the planning arm of NEPOOL. My last position at NEPLAN was Manager of Power Supply Planning. During my 15 years with NEPLAN Power Supply Planning, I was involved in all matters related to NEPOOL Objective Capability (which is now referred to as the

"Installed Capacity Requirement") and resource adequacy. I currently serve as the Chair of the NEPOOL Power Supply Planning Committee, the NEPOOL technical committee that assists the ISO in the review and development of all assumptions used for the calculation and development of Installed Capacity Requirements, Local Sourcing Requirements, Transmission Security Analysis Requirements, Local Resource Adequacy Requirements and Maximum Capacity Limits for New England.

I. BACKGROUND

Q: WHAT IS THE PURPOSE OF THIS TESTIMONY?

A. This testimony discusses the derivation of the Installed Capacity Requirement, Local Sourcing Requirements and Maximum Capacity Limits (collectively, the "ICR-Related Values") and Hydro-Quebec Interconnection Capability Credits ("HQICCs") for the 2013/2014 Capability Year's Forward Capacity Auction to be conducted in August 2010. The 2013/2014 Capability Year starts on June 1, 2013 and ends on May 31, 2014.

This testimony addresses the general process and methodology for developing the assumptions utilized in calculating the Installed Capacity Requirement, including assumptions about load, resource capacity values and availability, and transmission interface transfer capabilities. We also address the calculation of Local Sourcing Requirements for import-constrained Load Zones, including the Transmission Security Analysis Requirements and Local Resource Adequacy Requirements that are inputs into

the calculation of Local Sourcing Requirements, and Maximum Capacity Limits for export-constrained Load Zones.

Q: HAS ANY OF THE PROCESS OR METHODOLOGY FOR DEVELOPING THE ICR-RELATED VALUES CHANGED SINCE THE LAST INSTALLED CAPACITY REQUIREMENT FILING?

A. Yes, it has. In accordance with the ISO tariff revisions filed with the Federal Energy Regulatory Commission (the "Commission") on February 22, 2010 in Docket No. ER10-787-000, the methodology for calculating Local Sourcing Requirements for import-constrained Load Zones has been revised. These revisions harmonize the use of local resource adequacy criteria – which is currently used to determine the Local Sourcing Requirement for import-constrained Load Zones – with the transmission security criteria that the ISO uses to maintain system operational reliability when reviewing de-list bids for the auctions of the Forward Capacity Market. The system must meet both resource adequacy and transmission security requirements and, under the new tariff language, these two requirements are developed for each import-constrained zone. To satisfy the resource adequacy criteria, the ISO continues to calculate a zonal requirement using the methodology that has traditionally been utilized for calculating the Local Sourcing Requirement value for the Load Zone, but the requirement is renamed the "Local Resource Adequacy Requirement." To satisfy the transmission security criteria, the ISO calculates a zonal requirement that is named the "Transmission Security Analysis." Under the new tariff language, the Local Sourcing Requirement for an import-constrained zone is now the amount of capacity needed to satisfy "the higher of" (i) the Local

Resource Adequacy Requirement or (ii) the Transmission Security Analysis Requirement.

II. CALCULATION OF THE INSTALLED CAPACITY REQUIREMENT - OVERVIEW

Q: WHAT IS THE "INSTALLED CAPACITY REQUIREMENT"?

A. The Installed Capacity Requirement is the minimum level of capacity required to meet the reliability requirements defined for the New England Control Area. This requirement is documented in Section 2 of ISO New England Planning Procedure No. 3, Reliability Standards for the New England Area Bulk Power Supply System, which states:

> **Resources** will be planned and installed in such a manner that, after due allowance for the factors enumerated below, the probability of disconnecting noninterruptible customers due to **resource** deficiency, on the average, will be no more than once in ten years. Compliance with this criteria shall be evaluated probabilistically, such that the loss of load expectation [LOLE] of disconnecting noninterruptible customers due to resource deficiencies shall be, on average, no more than 0.1 day per year.
>
> a. The possibility that load forecasts may be exceeded as a result of weather variations.
>
> b. Immature and mature **equivalent forced outage rates** appropriate for generating units of various sizes and types, recognizing partial and full outages.
>
> c. Due allowance for scheduled outages and deratings.
>
> d. Seasonal adjustment of **resource** capability.
>
> e. Proper maintenance requirements.
>
> f. Available operating procedures.
>
> g. The reliability benefits of interconnections with systems that are not Governance Participants.

h. Such other factors as may from time-to-time be appropriate.[2]

The Installed Capacity Requirement reflects estimated tie benefits, and is calculated along with associated Local Sourcing Requirements and Maximum Capacity Limits. As discussed in more detail below, Local Sourcing Requirements and Maximum Capacity Limits are calculated to ensure that capacity resources, when considered in combination with the transfer capability of the transmission system, are electrically distributed within the New England Control Area in a manner that ensures that the minimum amount of resources purchased in the Forward Capacity Auction will meet the Northeast Power Coordinating Council's reliability criteria.

Q: PLEASE EXPLAIN THE GENERAL PROCESS FOR ESTABLISHING THE INSTALLED CAPACITY REQUIREMENT.

A. The Installed Capacity Requirement for the 2013/2014 Capability Year was established through a stakeholder process and in accordance with the calculation methodology prescribed in Section III.12 of Market Rule 1. The stakeholder process consisted of NEPOOL Power Supply Planning Committee and NEPOOL Reliability Committee review and comment on the ISO's development of load and resource assumptions and the ISO's calculation of the ICR-Related Values for the 2013/2014 Capability Year's Forward Capacity Auction. After the Power Supply Planning Committee's review and comment, the ISO developed a recommendation regarding the ICR-Related Values and HQICCs for the 2013/2014 Capability Year and presented this recommendation, along with the associated load and resource assumptions, to the Reliability Committee for its

[2] Copy available at http://www.iso-ne.com/rules_proceds/isone_plan/PP3_R5.pdf (emphasis in original).

review, comment and action. The ISO then presented the ICR-Related Values and HQICCs and the results of the Reliability Committee action to the NEPOOL Participants Committee for its review and action. The Installed Capacity Requirement recommendation was also presented to the New England State Committee on Electricity ("NESCOE") for their review and comment. After taking the comments received from the Participants Committee and NESCOE into consideration, the ISO is filing with the Commission the ICR-Related Values and HQICCs for the 2013/2014 Forward Capacity Auction.

Q: PLEASE EXPLAIN IN MORE DETAIL THE POWER SUPPLY PLANNING COMMITTEE'S INVOLVEMENT IN THE DETERMINATION AND REVIEW OF THE INSTALLED CAPACITY REQUIREMENT AND RELATED VALUES.

A. The Power Supply Planning Committee is a non-voting technical subcommittee under the Reliability Committee chaired by the ISO. Power Supply Planning Committee members are representatives of the NEPOOL Participants. The Power Supply Planning Committee assists the ISO with the review and development of resource adequacy-based requirements such as the Installed Capacity Requirement, Local Sourcing Requirements and Maximum Capacity Limits, including appropriate load and resource assumptions for modeling the expected system conditions. Representatives of the six New England States' public utilities regulatory commissions are also invited to attend and participate in the Power Supply Planning Committee meetings, and were present for the meetings at which the resource adequacy based requirements and HQICCs for the 2013/2014 Forward Capacity Auction were discussed and considered.

Q: PLEASE EXPLAIN THE CALCULATION METHODOLOGY FOR ESTABLISHING THE INSTALLED CAPACITY REQUIREMENT.

A. The Installed Capacity Requirement was established using the Westinghouse/ABB Capacity Model Program ("Capacity Model") developed by Westinghouse Electric Corporation. The Capacity Model is a computer program that uses probabilistic mathematics to simulate the random behavior of load and resources of a power system and calculates the expected days per year that the electric system would not have adequate resources to meet the daily peak loads. Inputs to the Capacity Model are various assumptions regarding load and capacity resources. The Capacity Model is a one bus model and the New England transmission system is assumed to have no internal transmission constraints in this simulation. In other words, all the modeled resources are assumed to be deliverable to meet forecasted load. The program compares, on a weekly basis, the available capacity resources with the range of expected daily loads to determine the weekly Loss of Load Probability. Summation of the weekly Loss of Load Probability over the Capability Year (June 2013 – May 2014) gives the Loss of Load Expectation ("LOLE"). The calculation process starts with the determination of the system LOLE with existing and known resource additions to meet the expected load. If the system is more reliable than the resource-adequacy criterion (*i.e.*, the system LOLE is less than or equal to 0.1 days per year), additional resources are not required. However, if the system is less reliable than the resource-adequacy criterion (*i.e.*, the system LOLE is greater than 0.1 days per year), additional resources are needed to meet the criterion. Under the condition where New England is forecasted to be less reliable than the resource-adequacy criterion, proxy resources are used within the model to meet this additional need. The

methodology calls for adding proxy units until the New England LOLE is less than 0.1 days per year. When the LOLE is less than 0.1 days per year, then the Installed Capacity Requirement is determined by increasing loads (additional load carrying capability or "ALCC") so that New England's LOLE is exactly at 0.1 days per year. That is how the single number called Installed Capacity Requirement is established. The modeled New England system must meet the reliability criterion.

The use of proxy resources, if needed, avoids an inappropriate increase or decrease in the system LOLE that may result from assuming a specific type of unit addition. Proxy resources reflect the New England system's average availability characteristics and are determined based on the average availability and size of all New England resources.[3] Specifically, each proxy resource has size and availability characteristics such that when proxy resources are used in place of all the resources assumed to be available to the system, the resulting LOLE is unchanged. The use of proxy resources for calculating the Installed Capacity Requirement is a methodology supported by New England stakeholders since the establishment of a regional installed capacity/reserve requirement in the 1970s.

[3] A presentation made to the Installed Capacity Working Group on this topic can be found at: http://www.iso-ne.com/committees/comm_wkgrps/othr/icsp/mtrls/2006/apr132006/expansion_units.pdf

Q: IN CALCULATING THE ICR-RELATED VALUES AND HQICCs FOR THE 2013/2014 FORWARD CAPACITY AUCTION, WAS THE CALCULATION METHODOLOGY THE SAME AS THE METHODOLOGY USED PREVIOUSLY TO DETERMINE THESE VALUES FOR PRIOR CAPABILITY YEARS?

A. In general, the methodology for calculating the ICR-Related Values for the 2013/2014 Forward Capacity Auction is consistent with the methodology used in prior years to develop the New England Installed Capacity Requirements and related values. However, as noted above, the ISO is for the first time utilizing the new Local Sourcing Requirement calculation methodology, filed with the Commission in Docket No. ER10-787-000 on February 22, 2010, and accepted by the Commission in an order issued April 23, 2010. That calculation methodology, described in Section VI of this testimony, introduces the Transmission Security Analysis as a new input into the Local Sourcing Requirement calculation methodology.

Q: PLEASE IDENTIFY THE INSTALLED CAPACITY REQUIREMENT VALUE ESTABLISHED BY THE ISO FOR THE 2013/2014 FORWARD CAPACITY AUCTION.

A. The Installed Capacity Requirement value for the 2013/2014 Forward Capacity Auction is 33,043 MW.

Q: IS THIS THE AMOUNT OF INSTALLED CAPACITY THAT WILL BE RELIED UPON FOR PURPOSES OF CONDUCTING THE 2013/2014 FORWARD CAPACITY AUCTION?

A. No. The 33,043 MW Installed Capacity Requirement value does not reflect a reduction in capacity requirements relating to HQICCs that are allocated to the Interconnection Rights Holders in accordance with Section III.12.9.2 of Market Rule 1. After deducting the HQICC value of 916 MW per month, the net Installed Capacity Requirement for use in the 2013/2014 Forward Capacity Auction is 32,127 MW.

III. THE ASSUMPTIONS UNDERLYING THE ICR-RELATED VALUES

Q: WHAT ARE THE MAIN ASSUMPTIONS UPON WHICH THE ICR-RELATED VALUES FOR THE 2013/2014 FORWARD CAPACITY AUCTION ARE BASED?

A. One of the first steps in the process of determining the ICR-Related Values is for the ISO to identify reasonable assumptions relating to expected system conditions for the 2013/2014 Capability Year. These assumptions include the expected daily peak loads; the available capacity resources; the expected performance of these capacity resources (such as forced and scheduled outage rates); de-rating of import capacity resources due to transmission transfer capability limits; and the amount of load and/or capacity relief obtainable from certain actions specified in Operating Procedure No. 4, Action During a Capacity Deficiency ("Operating Procedure No. 4"), which system operators invoke in real time to balance system supply with demand at expected capacity shortage conditions. Relief from Operating Procedure No. 4 actions includes the amount of possible

emergency assistance obtainable from New England's interconnections with neighboring Control Areas.

Q: YOU NOTE ABOVE THAT THE NEW METHODOLOGY FOR CALCULATING LOCAL SOURCING REQUIREMENTS INCORPORATES BOTH A LOCAL RESOURCE ADEQUACY REQUIREMENT CALCULATION AND A TRANSMISSION SECURITY ANALYSIS CALCULATION. ARE THE SAME ASSUMPTIONS USED FOR THE DETERMINATION OF TRANSMISSION SECURITY ANALYSIS REQUIREMENTS AS ARE USED FOR THE DETERMINATION OF LOCAL RESOURCE ADEQUACY REQUIREMENTS?

A. The conditions used for transmission security analyses within the Forward Capacity Market are documented in section 6 of ISO Planning Procedure No. 10, Planning Procedure to Support Forward Capacity Market.[4] The calculation of the Installed Capacity Requirement, Local Resource Adequacy Requirement and Transmission Security Analysis all rely on the same data set. However, due to the deterministic and transmission security-oriented nature of the Transmission Security Analysis, some of the assumptions for completing the Transmission Security Analysis differ from the assumptions used in determining the Local Resource Adequacy Requirements. The differences are as follows: the assumed loads for Transmission Security Analysis are the 90/10 peak loads[5] for the load zones for the 2013/14 Capability Year, whereas for Local

[4] Copy is available at http://www.iso-ne.com/rules_proceds/isone_plan/pp10_r7.pdf. The ISO is currently in the process of updating the procedure with the NEPOOL Reliability Committee to reflect the changes proposed by the ISO and filed with the Commission on February 22, 2010 in Docket No. ER10-787-000.

[5] The 90/10 peak load is a point on the forecasted peak load distribution curve. 90/10 refers to the 10% probability that the annual peak would be higher than the amount assumed.

Resource Adequacy Requirement calculations a distribution of loads covering the range of possible peak loads for that Capability Year is used. In addition, for the Transmission Security Analysis, the forced outage of fast-start (peaking) generation is based on an assumed percentage instead of being based on historical five-year average performance. Finally, the load relief from actions of Operating Procedure No. 4 is not assumed in Transmission Security Analysis calculations.

Q: PLEASE EXPLAIN HOW THE ISO DERIVED THE LOAD DATA USED IN DEVELOPING THE ICR-RELATED VALUES FOR THE 2013/2014 FORWARD CAPACITY AUCTION.

A. The ISO develops, for each state, a forecasted distribution of typical daily peak loads for each week of the year based on each week's historical weather distribution, and an econometrically estimated monthly model of typical daily peak loads. Each weekly distribution of typical daily peak loads includes the full range of daily peaks that could occur over the full range of weather experienced in that week and their associated probabilities.

The models, for each of the six New England states, were estimated using 15 years of weekday daily peaks, the weather conditions at the time of the daily peak, a seasonal relationship that captures the change in peak load response to weather over time, and a seasonal relationship that captures the change in peak load response to base load energy (and therefore economic and demographic factors) over time. The weather response relationships are forecasted to grow at their historical rates but are adjusted for expected changes in appliance saturations. The base load relationships are forecasted to grow at

the same rate as the energy forecast. The weather is represented by over 35 years of historically-based weekly weather.

The energy forecast for each state is econometrically estimated using forecasts of the real price of electricity and either real income or real gross state product.

For purposes of determining the load forecast, the New England Control Area's load is defined as the sum of the load of each of the six New England states calculated as described above.

Q: PLEASE DESCRIBE THE FORECASTED LOAD WITHIN LOAD ZONES FOR THE 2013/2014 CAPABILITY YEAR.

A. The forecasted loads for the Connecticut and Maine Load Zones are the forecasted loads for the states of Connecticut and Maine. The forecasted load for the NEMA/Boston Load Zone is developed using a load share ratio of the NEMA/Boston load to the forecasted load for the entire state of Massachusetts. The load share ratio is based on detailed bus load data from the network model for NEMA/Boston as compared to all of Massachusetts.

Q: PLEASE DESCRIBE THE PROJECTED 50/50 AND 90/10 PEAK LOADS FOR THE 2013/2014 CAPABILITY YEAR.

A. The projected New England Control Area 50/50 peak load (summer) for the 2013/2014 Capability Year is 28,570 MW as published in the April 2010 Capacity Energy Loads

and Transmission (CELT) Report, and is 2.7% lower (795 MW lower) than forecasted in the April 2009 CELT Report (29,365 MW). The corresponding 90/10 peak load for the 2013/2014 Capability Year is 30,840 MW, and is 2.0% lower (630 MW lower) than forecasted in the April 2009 CELT Report (31,470 MW).

Q: PLEASE DESCRIBE THE PROJECTED 90/10 PEAK LOADS FOR THE 2013/2014 CAPABILITY YEAR FOR CONNECTICUT AND NEMA/BOSTON.

A. The projected 90/10 peak loads for the 2013/2014 Capability Year for Connecticut and NEMA/BOSTON are 8,220 MW and 6,160 MW, respectively. As noted above, these peak load values are inputs into the Transmission Security Analysis calculation, which in turn is an input into the Local Sourcing Requirement calculation.

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Q: PLEASE DESCRIBE THE RESOURCE DATA USED TO DEVELOP THE ICR-RELATED VALUES FOR THE 2013/2014 CAPABILITY YEAR.

A. The ICR-Related Values for the 2013/2014 Forward Capacity Auction are developed based on the Existing Qualified Capacity Resources for the 2013/2014 Capability Year.

Q: WHAT ARE THE RESOURCE CAPACITY VALUES FOR THE 2013/2014 CAPABILITY YEAR?

A. The following tables show the 38,872 MW of Capacity Resources assumed in the ICR-Related Values calculations.

Table 1 – Qualified Existing Generating Capacity by Load Zone

Load Zone	Summer (MW)
MAINE	3,012
NEW HAMPSHIRE	4,019
VERMONT	885
CONNECTICUT	7,966
RHODE ISLAND	2,604
SOUTH EAST MASSACHUSETTS	6,010
WEST CENTRAL MASSACHUSETTS	3,861
NORTH EAST MASSACHUSETTS & BOSTON	3,272
Total New England	**31,629**

Table 2 – Qualified Existing Intermittent Power Resources by Load Zone

Load Zone	Summer (MW)	Winter (MW)
MAINE	237	292
NEW HAMPSHIRE	158	200
VERMONT	76	117
CONNECTICUT	414	430
RHODE ISLAND	6	9
SOUTH EAST MASSACHUSETTS	79	84
WEST CENTRAL MASSACHUSETTS	48	68
NORTH EAST MASSACHUSETTS & BOSTON	68	71
Total New England	**1,086**	**1,271**

Table 3 – Qualified Import Capacity by Region

Resource Name	Interface	Summer Qualified Capacity (MW)	Import Capacity Modeled in ICR (MW)
NYPA - CMR	NY AC Ties	69	69
NYPA - VT	NY AC Ties	15	15
VJO - Highgate	HQ Highgate	225	194
VJO - Phase I/II	Phase I/II	110	39
Lievre River Project - Import	Phase I/II	240	240
Erie Boulevard Hydropower - Import	NY AC Ties	697	697
Total Imports		**1,356**	**1,254**

Table 4 – Qualified Existing Demand Resources by Load Zone

Load Zone	On-Peak (MW)	Seasonal Peak (MW)	RT Demand Response (MW)	RT Emergency Gen (MW)	Total (MW)
MAINE	58	-	279	35	373
NEW HAMPSHIRE	62	-	45	39	146
VERMONT	72	-	33	18	123
CONNECTICUT	116	251	292	299	957
RHODE ISLAND	69	2	51	93	215
SOUTH EAST MASSACHUSETTS	113	2	154	79	347
WEST CENTRAL MASSACHUSETTS	95	19	143	100	356
NORTH EAST MASSACHUSETTS & BOSTON	209	-	255	149	612
Total New England	792	273	1252	812	3130

Also modeled in the Installed Capacity Requirement was one Administrative Export (known sale) of 100 MW to the Long Island Power Authority ("LIPA") over the Cross Sound Cable ("CSC") Direct Current ("DC") interface.

Table 5 – Qualified Administrative Exports (Known Sales)

Export	Summer (MW)
LIPA over Cross Sound Cable	100

Please note that although capacity resource data are tabulated under the eight settlement Load Zones, only the Load Zones of Connecticut, NEMA/Boston and Maine are relevant for the 2013/2014 Forward Capacity Auction.

Q: WHAT ARE THE ASSUMPTIONS RELATING TO RESOURCE ADDITIONS (THOSE WITHOUT CAPACITY SUPPLY OBLIGATIONS) AND ATTRITIONS?

A. Resource additions, beyond those classified as "Existing Resources", and attritions (resources wanting to de-list) are not assumed in the calculation of the ICR-Related Values for the 2013/2014 Capability Year because there is no certainty that new resource additions or resource attritions will clear the auction.

Q: PLEASE EXPLAIN THE RESOURCE AVAILABILITY ASSUMPTIONS UNDERLYING THE CALCULATIONS OF THE ICR-RELATED VALUES FOR THE 2013/2014 CAPABILITY YEAR.

A. Resource availability is modeled in the calculation of the ICR-Related Values. Availability modeling reflects the projected scheduled maintenance and forced outages of capacity resources. For generating resources, scheduled maintenance assumptions are based on each unit's historical five-year average of scheduled maintenance. If the individual resource has not been operational for 5 years, then North American Electric Reliability Corporation ("NERC") class average data is used to substitute for the missing annual data. It is assumed that generating resources will not schedule their maintenance outages during the peak load season of June through August. An individual generating resource's forced outage assumption is based on the resource's five-year historical data

from the ISO's database of NERC Generator Availability Database ("GADS"). If the individual resource has not been operational for five years, then NERC class average data is also used. As stated earlier, the same resource availability assumptions are used in all the calculations except for the Transmission Security Analysis, which requires the modeling of the start-up availability of the fast-start (peaking) resources to reflect their performance when dispatched.

The capacity of an Intermittent Power Resource is based on the resource's historical median output during the Reliability Hours averaged over a period of four years. The Reliability Hours are specific, defined hours during the summer and the winter, and hours during the year in which the ISO has declared a system-wide or a Load Zone specific shortage event. Since this method already takes into account the resource's availability, Intermittent Power Resources are assumed to be 100% available in the models at their "Qualified Capacity" and not based on "nameplate" ratings. Qualified Capacity is the megawatt amount of a capacity resource, or demand resource that may provide in the summer or winter in a Capacity Commitment Period, as determined in the Forward Capacity Market qualification process.

Performance of Demand Resources in the Real-Time Demand Response and Real-Time Emergency Generator categories is measured by actual response during performance audits and Operating Procedure No. 4 events that occurred in 2006 through 2009. To calculate historical availability, the actual load curtailed or generation provided during such events is divided by the megawatts of resources enrolled within the program.

Demand Resources in the On-Peak Demand and Seasonal Peak Demand categories are non-dispatchable resources that reduce load across pre-defined hours, typically by means of energy efficiency. These types of Demand Resources are assumed 100% available.

Q: PLEASE EXPLAIN THE ROLE OF EXTERNAL TRANSMISSION IMPORT TRANSFER CAPABILITIES IN DEVELOPING THE INSTALLED CAPACITY REQUIREMENT AND LOCAL RESOURCE ADEQUACY REQUIREMENTS FOR THE 2013/2014 CAPABILITY YEAR.

A. External transmission import transfer capabilities are not an input to the ICR-Related Values calculations. However, they do impact the tie benefit assumptions, which are used in the calculations for the Installed Capacity Requirement, Local Resource Adequacy Requirements, and Maximum Capacity Limit. Tie benefits represent the possible emergency energy assistance from the interconnected neighboring Control Areas when a capacity shortage occurs. The external transmission import transfer capabilities would impact the amount of emergency energy, if available, that could be imported into New England. In modeling the import transfer capabilities for tie benefits calculations, the total interface import limit with each neighboring Control Area is adjusted to reflect grandfathered Existing Import Capacity Resources. A grandfathered Existing Import Capacity Resource is an existing capacity resource offered to provide capacity in the New England Control Area from an external Control Area. The other use of the external transmission import transfer capabilities in the Forward Capacity Market is to limit the amount of total capacity that can be imported into New England from the neighboring Control Areas.

Q: PLEASE DESCRIBE THE ROLE OF INTERNAL TRANSMISSION INTERFACE TRANSFER CAPABILITIES IN DEVELOPING THE ICR-RELATED VALUES FOR THE 2013/2014 CAPABILITY YEAR.

A. Internal transmission interface transfer capabilities are not used to develop the 2013/2014 Capability Year Installed Capacity Requirement since the methodology used assumes no internal transmission constraints in New England. However, internal transmission interface import transfer capabilities for the Connecticut and NEMA/Boston Load Zones are used to calculate the Local Sourcing Requirements (Transmission Security Analysis Requirements and Local Resource Adequacy Requirements) for these two Load Zones. Internal transmission interface export transfer capabilities for the Maine Load Zone are used to calculate its Maximum Capacity Limit.

Q: PLEASE DESCRIBE THE ASSUMPTIONS RELATING TO INTERNAL TRANSMISSION INTERFACE TRANSFER CAPABILITIES FOR THE DEVELOPMENT OF ICR-RELATED VALUES FOR THE 2013/2014 CAPABILITY YEAR.

A. Assumed transmission interface import transfer capabilities for the Connecticut and NEMA/Boston Load Zones are 2,500 MW and 4,900 MW, respectively. Assumed transmission interface export transfer capability for the Maine Load Zone is 1,600 MW.

Q: PLEASE DISCUSS THE ISO'S ASSUMPTIONS REGARDING THE ACTIONS OF OPERATING PROCEDURE NO. 4 IN DEVELOPING THE ICR-RELATED VALUES FOR THE 2013/2014 CAPABILITY YEAR.

A. Under the Forward Capacity Market, assumed emergency assistance (tie benefits) available from neighboring Control Areas, load reduction from implementation of 5% voltage reductions and capacity available from dispatch of Real-Time Emergency Generation are used in developing the ICR-Related Values. These all constitute actions that system operators invoke under Operating Procedure No. 4 in real time to balance system demand with supply under expected capacity shortage conditions. The amount of load relief assumed obtainable from invoking 5% voltage reductions is based on the performance standard established in ISO New England Operating Procedure No. 13, Standards for Voltage Reduction and Load Shedding Capability ("Operating Procedure No. 13"). Operating Procedure No. 13 requires that "…each Market Participant with control over transmission/distribution facilities must have the capability to reduce system load demand at the time a voltage reduction is initiated by at least one and one-half (1.5) percent through implementation of a voltage reduction" as recommended by the ISO Operations Department and accepted by the NEPOOL Power Supply Planning Committee. The voltage reduction load relief values assumed as offsets against the Installed Capacity Requirement are 413 MW for June through September 2013 and 320 MW for October 2013 through May 2014. This assumption uses the benchmark 1.5% load relief value specified in Appendix A of Operating Procedure No. 4. This benchmark reduction value is set based on the value actually observed by the ISO during voltage

reduction tests, rather than at the self-reported values submitted by Market Participants with control over transmission/distribution facilities as was used previously.

Real-time Emergency Generators are modeled as capacity resources and are modeled with an expected availability factor as previously described.

The details of the tie benefit assumptions are described below.

Q: COULD YOU PLEASE ELABORATE UPON THE DIFFERENCES BETWEEN THE ASSUMPTIONS USED FOR THE DETERMINATION OF TRANSMISSION SECURITY ANALYSIS REQUIREMENTS AND THE ASSUMPTIONS USED FOR THE DETERMINATION OF LOCAL RESOURCE ADEQUACY REQUIREMENTS?

A. As discussed above, the Transmission Security Analysis and Local Resource Adequacy Requirement calculation are both inputs into the Local Sourcing Requirement calculation. This calculation methodology is discussed in more detail in Section VI below. As we explained above, there are three differences between the assumptions relied upon for the Transmission Security Analysis and the assumptions relied upon for determining Local Resource Adequacy Requirements. The first difference relates to the load forecast assumption. Resource adequacy analyses (*i.e.*, the analysis performed in determining the Installed Capacity Requirement and Local Resource Adequacy Requirements) are performed using the full probability distribution of load variations due to weather uncertainty. For the purpose of performing deterministic Transmission Security

Analyses, single discreet points on the probability distribution are used; in accordance with Planning Procedure 10, the analysis is performed using the 90/10 point, which corresponds to a peak load that has a 10% probability of being exceeded based on weather variation. This corresponds to a modeled New England Control Area 90/10 peak load (summer) for the 2013/2014 Capability Year of 30,840 MW.

The second difference relates to the application of assumed forced outages to fast-start (or referred to as "peaking") generating resources. For peaking generating resources, an operational de-rating factor of 20% was applied instead of a forced outage assumption based on the resource's five-year historical data from the ISO database. The reason for applying this 20% de-rating factor is because traditional statistical measures, such as the ones calculated from the ISO database, do not capture the ability of peaking generating resources to start and remain on-line. Consequently, it has been the ISO's experience and practice to model the start-up performance of the peaking generation in transmission security analyses.

The third difference relates to the reliance on Operating Procedure No. 4 actions, which are not traditionally relied upon in Transmission Security Analyses. Therefore, with the exception of the reliance on Real-Time Emergency Generator resources, no Operating Procedure No. 4 actions are included in the completion of Transmission Security Analyses.

IV. TIE BENEFITS

Q: PLEASE EXPLAIN HOW TIE BENEFITS WITH NEIGHBORING CONTROL AREAS ARE ACCOUNTED FOR IN DETERMINING THE INSTALLED CAPACITY REQUIREMENT.

A. The New England resource planning reliability criterion requires that adequate capacity resources be planned and installed such that disconnection of firm load would not occur more often than once in 10 years due to a capacity deficiency after taking into account the load and capacity relief obtainable from implementing Operating Procedure No. 4. In other words, load and capacity relief assumed obtainable from implementing Operating Procedure No. 4 actions are direct substitutes for capacity resources for meeting the once in 10 years disconnection of firm load criterion. Calling on neighboring Control Areas to provide emergency energy assistance (tie benefits) is one of the actions of Operating Procedure No. 4. Therefore, the amount of tie benefits assumed obtainable from the interconnected neighboring Control Areas directly displaces that amount of installed capacity resources needed to meet the resource planning reliability criterion. When determining the amount of tie benefits to assume in Installed Capacity Requirement calculations, it is necessary to recognize that while reliance on tie benefits can reduce capacity resource needs, over-reliance on tie benefits decreases system reliability. System reliability would decrease because each time that emergency assistance is requested; there is a possibility that the available assistance will not be sufficient to meet the capacity deficiency. The more tie benefits are relied upon to meet the resource reliability criterion, and the greater the amount of assistance requested, the greater the

possibility that it will not be available or sufficient to avoid implementing deeper actions of Operating Procedure No. 4, including interrupting firm load. For example, some of the resources that New York has available to provide tie benefits are demand response resources which have limits on the number of times they can be activated. In addition, none of the neighboring Control Areas is conducting its planning, maintenance scheduling, unit commitment or real-time operations with a goal of maintaining its emergency assistance at a level needed to maintain the reliability of the New England system.

Q: PLEASE EXPLAIN THE ISO'S METHODOLOGY FOR DETERMINING TOTAL TIE BENEFITS.

A. The tie benefits study for the 2013/2014 Capability Year was conducted using the probabilistic General Electric ("GE") Multi-area Reliability Simulation ("MARS") program to model the expected system conditions of New England and its directly interconnected neighboring Control Areas of Quebec, New Brunswick and New York. All of these Control Areas were assumed to be "At-Criteria," which means that the capacity of all three neighboring Control Areas was adjusted so that they would each have a LOLE of once in ten years (0.1 days per year LOLE). The "At-Criteria" approach was applied to represent the expected amounts of capacity in each Control Area since each of these areas has structured its planning processes and markets (where applicable) to achieve the "At-Criteria" level of reliability. While it is possible that a Control Area may have more or less capacity available than the "At-Criteria" amount, the "At-Criteria" approach is the proper assumption to prevent an over- or under-estimate of available tie

benefits since the exact system conditions of the neighboring Control Areas are not knowable for the Capability Year 2013/2014. However, it is reasonable to assume each Control Area should have minimum installed capacity to meet the 0.1 days per year disconnection of firm load criterion. Any amount of capacity above this minimum could be contracted to a third party since each of these areas has structured its planning processes and markets (where applicable) to achieve the "At-Criteria" level of reliability and therefore may become inaccessible to New England without any prior notice or warning.

Total tie benefits were calculated using the results of a probabilistic analysis that determines LOLE indices for the New England system and surrounding Control Areas. LOLE calculations were first done on an interconnected basis that included all existing connections between New England's directly connected neighboring Control Areas. This established the minimum amount of capacity that each area needed in order to attain the Northeast Power Coordinating Council ("NPCC") resource adequacy requirements of 0.1 days per year LOLE.

These LOLE calculations were then repeated with New England isolated from all neighboring Control Areas, except for allowing the capability to import capacity based on the ISO's estimation of grandfathered capacity imports for the 2013/2014 Capability Year. This analysis was performed by reducing the transfer capability of each of the interconnections into New England, to the point where only grandfathered capacity imports are allowed to flow, with no additional transfer capability available.

Limiting the import capabilities of the external ties to only grandfathered capacity imports effectively eliminates the tie benefits, causing the calculated New England LOLE to increase. The tie benefits are quantified by adding firm capacity resources within the isolated New England area until the LOLE is returned back to 0.1 days per year. The resources added to return New England to a LOLE of 0.1 days per year are called "firm capacity equivalents" and are New England's total tie benefits.

Q: DOES THIS CALCULATION METHODOLOGY CONFORM WITH INDUSTRY PRACTICE AND COMMISSION FILED MARKET RULES?

A. Yes. This probabilistic calculation methodology is widely used by the electric industry. The NPCC regional reliability council has been using this methodology for many years. The ISO has been using this specific probabilistic calculation methodology using the GE MARS program for tie benefits calculations since 2002 and similar methodologies in previous years.

The calculation methodology was previously filed with and approved by the Commission.[6] Specifically, it conforms to the Commission-approved Section III.12.9 of Market Rule 1, which states:

> The ISO shall calculate tie benefits, using a probabilistic multi-area reliability model. The method of calculating the tie benefits associated with the interconnections between the New England Control Area and adjacent Control Areas shall be based on the LOLE calculated before and after interconnecting the New England Control Area to the surrounding Control Areas.

[6] *ISO New England Inc. and New England Power Pool*, 124 FERC ¶ 61,298 (2008).

Q: PLEASE DESCRIBE THE ALLOCATION METHODOLOGY USED TO DETERMINE TIE BENEFITS FROM EACH OF NEW ENGLAND'S NEIGHBORING CONTROL AREAS

A. The allocation process used to calculate tie benefits from each of the New England directly connected neighboring Control Areas was filed with and accepted by the Commission in response to the Commission's directives in its December 10, 2007 order in Docket No. ER08-41-000.[7]

Under the tie benefits allocation methodology, tie benefits from each Control Area are calculated using the same GE MARS program with "At Criteria" modeling assumptions that are used for calculating the total tie benefits discussed above. Tie benefits for each of the three Control Areas are determined based on the LOLE calculated before and after removing any assumed emergency assistance associated with the direct interconnections between New England and the target Control Area. In other words, only the import capability of the direct interconnections needed to import grandfathered capacity imports (based on the ISO's estimation of these imports for the 2013/2014 Capability Year) would remain. All additional import capability is removed. The change in the New England LOLE value with and without the transfer capability of the interconnections assumed to import emergency assistance from the target Control Area would represent the reliability contribution of the target Control Area's emergency assistance (under the assumption that quantum of emergency assistance is 100% available when called). This reliability contribution is quantified in terms of equivalent capacity by identifying the

[7] *ISO New England Inc. and New England Power Pool Participants Committee*, 121 FERC ¶ 61,250 (2007), *reh'g denied*, 123 FERC ¶ 61,129 (2008).

amount of firm capacity needed to bring the LOLE (when calculated without connections to the target Control Area) to the same level it was prior to removal of the interconnections with the target Control Area. In the likely event the sum of the individually-calculated capacity equivalents from each of the three neighboring Control Areas does not exactly equal the total tie benefits calculated using the multi-area reliability model, tie benefits from each Control Area are adjusted in a pro rata manner based on a ratio of the tie benefits from each individual Control Area to the sum of the tie benefits from all Control Areas.

Q: PLEASE DESCRIBE THE TIE BENEFITS ASSUMPTIONS INCLUDED AS AN OFFSET TO THE INSTALLED CAPACITY REQUIREMENT AND RESOURCE ADEQUACY BASED REQUIREMENTS FOR THE 2013/2014 CAPABILITY YEAR.

A. A total of 1,700 MW of tie benefits are used as an offset to the Installed Capacity Requirement calculations for the 2013/2014 Capability Year. This tie benefits value is also utilized in the calculation of the Local Resource Adequacy Requirements and Maximum Capacity Limit. The breakdown of this total value is as follows: 916 MW from Quebec over the Phase II interconnection, 6 MW from Quebec over the Highgate interconnection, 584 MW from New Brunswick (Maritimes) and 194 MW from New York. As noted earlier, the total tie benefits assumption was obtained from the results of a probabilistic study which assumes that New England and the three directly interconnected neighboring Control Areas of Quebec, New Brunswick and New York are

at no more or less than their reliability criterion of one disconnection of firm load in 10 years, enforced as 0.1 days per year.

V. HYDRO QUEBEC INTERCONNECTION CAPABILITY CREDITS ("HQICCs")

Q: PLEASE EXPLAIN HYDRO-QUEBEC INTERCONNECTION CAPABILITY CREDIT VALUES.

A. Hydro Quebec Interconnection Capability Credits, or HQICCs, are a preferential allocation of the total New England tie benefit to the Interconnection Rights Holders, which are entities that hold certain rights over the Hydro-Quebec Interconnection. These rights are monetized as credits in the form of reduced capacity requirements.

Q: WHAT ARE THE PROPOSED HQICC VALUES FOR THE 2013/2014 CAPABILITY YEAR?

A. The proposed HQICC values are 916 MW for every month of the 2013/2014 Capability Year.

VI. LOCAL SOURCING REQUIREMENTS FOR IMPORT-CONSTRAINED LOAD ZONES AND MAXIMUM CAPACITY LIMIT FOR EXPORT-CONSTRAINED LOAD ZONES

Q: WHAT ARE IMPORT-CONSTRAINED LOAD ZONES?

A. Import-constrained Load Zones are areas within New England that, due to transmission constraints are close to the threshold where they may not have enough local resources and transmission import capability to reliably serve local demand.

Q: WHAT IS THE LOCAL SOURCING REQUIREMENT?

A. The Local Sourcing Requirement is the minimum amount of capacity that must be electrically located within an import-constrained Load Zone. The Local Sourcing Requirement is the mechanism used to assist in valuing capacity appropriately in constrained areas. It is the amount of capacity needed to satisfy "the higher of" the local Resource Adequacy Requirement or (ii) Transmission Security Analysis Requirement.

Q: WHAT ARE EXPORT-CONSTRAINED LOAD ZONES?

A. Export-constrained Load Zones are areas within New England where the available resources, after serving local load, may exceed the areas' transmission capability to export excess resource capacity.

Q: WHAT IS THE MAXIMUM CAPACITY LIMIT?

A. The Maximum Capacity Limit is the maximum amount of resources that can be procured from an export-constrained Load Zone to meet the Installed Capacity Requirement. Generally speaking, this is the amount of capacity that can be used to fully meet the needs within the export-constrained Load Zone plus that amount which can reasonably be expected to be exported from the Load Zone to meet regional needs. The Maximum Capacity Limit is applied to export-constrained Load Zones within New England.

Q: PLEASE DESCRIBE THE METHODOLOGY FOR CALCULATING THE LOCAL SOURCING REQUIREMENT.

A. As we explained above, on February 22, 2010, the ISO filed with the Commission in Docket No. ER10-787-000 revisions to the methodology for calculating the Local Sourcing Requirement for import-constrained Load Zones, and indicated that it would utilize the revised methodology in calculating Local Sourcing Requirements for the 2013/2014 Forward Capacity Auction. The Commission accepted these revisions in its April 23, 2010 Order.

The revised methodology harmonizes the use of the local resource adequacy criteria previously used to determine the Local Sourcing Requirement for Load Zones and the transmission security criteria that the ISO uses to maintain system operational reliability when reviewing de-list bids for the Forward Capacity Auction. Since the system must meet both resource adequacy and transmission security requirements, both are developed for each import-constrained zone under the new tariff language. Specifically, the Local

Sourcing Requirement for an import-constrained zone is now the amount of capacity needed to satisfy "the higher of" (i) the Local Resource Adequacy Requirement and (ii) the Transmission Security Analysis Requirement. Under the new tariff language, the ISO continues to calculate a zonal requirement using resource adequacy criteria, but the requirement is renamed as the "Local Resource Adequacy Requirement." The term Local Sourcing Requirement has been retained but now refers to "the higher of" the Local Resource Adequacy Requirement or the requirement calculated based on the Transmission Security Analysis.

Q: PLEASE DESCRIBE THE METHODOLOGY FOR CALCULATING THE LOCAL RESOURCE ADEQUACY REQUIREMENTS.

A. The Local Resource Adequacy Requirements are calculated using the same assumptions of forecasted load and resources as those used in the calculation of the Installed Capacity Requirement. In order to determine the locational requirements of the system, the Local Resource Adequacy Requirements are calculated using a multi-area reliability model according to the methodology specified in Section III.12.2 of Market Rule 1.

For each import-constrained zone, the Local Resource Adequacy Requirement is determined by modeling the zone under study vis-à-vis the rest of New England. This, in effect, turns the modeling effort into a series of two-area reliability simulations. The reliability target of this analysis is a system-wide LOLE of 0.105 days per year when the transmission constraints between the two zones are included in the model. Because the Local Resource Adequacy Requirement is the minimum amount of resources that must be located in a zone to meet the system-reliability requirements for a zone with excess

capacity, the process to calculate this value involves shifting capacity out of the zone under study until the reliability threshold, or target LOLE, is achieved. If a zone has insufficient capacity, capacity would be shifted into that zone. Shifting capacity, however, may lead to skewed results, as capacity is not homogeneous. For example, one megawatt of capacity from a nuclear plant is not necessarily the same as one megawatt of capacity from a wind turbine. Consequently, in order to model the effect of shifting "generic" capacity, firm load is shifted. Specifically, as one megawatt of load is added to an import-constrained zone, a megawatt of load is subtracted from the rest of New England, thus keeping the entire system load constant. If a zone has insufficient capacity, load is shifted out of that import-constrained zone. This process continues until the LOLE of the New England Control Area is equal to 0.105 days per year. At this point, if additional capacity were to be shifted out of the zone (or additional load were added), the LOLE criterion would not be met.

The Local Resource Adequacy Requirement is calculated using the value of shifted load and the existing resources in the zone, including any proxy units that were added as a result of the total system not meeting the LOLE criteria. The load that was shifted must be subtracted from the total resources (including proxy units) to determine the minimum amount of resources that are required in that zone. Before the shifted load is subtracted, it is first converted to equivalent capacity by using the average resource-unavailability rate in the zone. Thus, the Local Resource Adequacy Requirement is calculated as the existing resources in the zone, plus proxy units in the zone, minus the unavailability-adjusted, load-shift amount.

As this load shift test is being performed over a transmission interface internal to the New England Control Area, an allowance for transmission-related LOLE must be applied. This allowance is 0.005 days per year and is only applied when determining the Local Resource Adequacy Requirements of a zone. An LOLE of 0.105 days per year is the point at which it becomes clear that the remaining resources within the zone under study are becoming insufficient. Further reduction in local sources would cause the LOLE in New England to rapidly increase above the criterion.

Q: PLEASE DESCRIBE THE METHODOLOGY FOR CALCULATING THE TRANSMISSION SECURITY ANALYSIS REQUIREMENTS.

A. The Transmission Security Analysis is a deterministic reliability screen of an import constrained area and is a basic security review set out in Section 3 of Planning Procedure No. 3 and in Section 5.4 of NPCC's Regional Reliability Reference Directory # 1, Design and Operation of the Bulk Power System[8]. This review determines the requirement of the sub-area to meet its load through internal generation and import capacity and is performed via a series of discrete transmission load flow study scenarios. In performing the analysis, static transmission interface transfer limits are established as a reasonable representation of the transmission system's capability to serve sub-area load with available existing resources and results are presented under the form of a deterministic operable capacity analysis. In accordance with ISO Planning Procedure No. 3 and NPCC's Regional Reliability Reference Directory #1, this analysis also includes evaluations of both (1) the loss of the most critical generator and the most critical

[8] A copy can be found at http://www.npcc.org/documents/regStandards/Directories.aspx.

transmission element ("Line-Gen"), and (2) the loss of the most critical transmission element followed by loss of the next most critical transmission element ("Line-Line"). These deterministic analyses are currently used each day by System Operations to assess the amount of capacity to be committed day-ahead. Further, such deterministic sub-area transmission security analyses have consistently been used for reliability review studies performed to determine if a resource seeking to retire or de-list would violate reliability criteria.

Q: PLEASE DESCRIBE THE METHODOLOGY FOR CALCULATING THE MAXIMUM CAPACITY LIMIT.

A. Another aspect of the Forward Capacity Market is a method to model export-constrained zones. Because of transmission constraints out of these zones, not all potentially available resources can simultaneously supply capacity to the export-constrained zone and to the "Rest of New England." Rest of New England refers to all areas except the export-constrained Load Zone under study. Export-constrained zones are incorporated into the Forward Capacity Market through the calculation of the Maximum Capacity Limit.

In order to determine the Maximum Capacity Limit, the New England total Installed Capacity Requirement and the Local Resource Adequacy Requirement of the Rest of New England are needed. Given that the Installed Capacity Requirement is the total amount of resources that need to be purchased in New England, and the Local Resource Adequacy Requirement for the Rest of New England is the minimum amount of

resources required for that area to satisfy its reliability criterion, the difference between the two is the maximum amount of resources that can be purchased within the export-constrained zone.

Q: PLEASE DESCRIBE THE LOCAL RESOURCE ADEQUACY REQUIREMENTS FOR THE 2013/2014 CAPABILITY YEAR.

A. For the 2013/2014 Capability Year, Local Resource Adequacy Requirements for the Connecticut and NEMA/Boston Load Zones are 7,266 MW and 2,549 MW, respectively.

Q: PLEASE DESCRIBE THE TRANSMISSION SECURITY ANALYSIS REQUIREMENTS FOR THE 2013/2014 CAPABILITY YEAR.

A. For the 2013/2014 Capability Year, Transmission Security Analysis Requirements for the Connecticut and NEMA/Boston Load Zones are 7,419 MW and 2,957 MW, respectively.

Q: PLEASE DESCRIBE THE LOCAL SOURCING REQUIREMENTS FOR THE 2013/2014 CAPABILITY YEAR.

A. The Local Sourcing Requirement for the Connecticut or NEMA/Boston Load Zone is the higher of the Local Resource Adequacy Requirement or Transmission Security Analysis Requirement for the Load Zone. The table below summarizes the Local Resource Adequacy and Transmission Security Analysis Requirements for the Connecticut and Boston Load Zones. As shown, the Transmission Security Analysis Requirement is the highest requirement for both Load Zones. Therefore the Local Sourcing Requirements

for the Connecticut and NEMA/Boston Load Zones are 7,419 MW and 2,957 MW, respectively.

Table 6 – Local Sourcing Requirements for the 2013/2014 Capability Year

Load Zone	Local Resource Adequacy Requirement (MW)	Transmission Security Analysis Requirement (MW)	Local Sourcing Requirement (MW)
Connecticut	7,266	7,419	7,419
NEMA/Boston	2,549	2,957	2,957

Q: PLEASE DESCRIBE THE MAXIMUM CAPACITY LIMIT FOR THE MAINE LOAD ZONE FOR THE 2013/2014 CAPABILITY YEAR.

A. For the 2013/2014 Capability Year, the Maximum Capacity Limit for the Maine Load Zone is 3,187 MW. This is the amount of capacity resources that the 2013/2014 Forward Capacity Auction can procure from the Maine Capacity Zone, including capacity resource imports using the New Brunswick ties.

Q: DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

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

Executed on 5/4/10

Mark G. Karl

Executed on 05/05/2010

Peter K. Wong

ATTACHMENT 2

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