



June 2, 2020

VIA eTARIFF FILING

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: *ISO New England Inc. and New England Power Pool, Docket No. ER20-__ - 000; Energy Efficiency Treatment During Capacity Scarcity Conditions*

Dear Secretary Bose:

Pursuant to Section 205 of the Federal Power Act,¹ ISO New England Inc. (the “ISO”), joined by the New England Power Pool (“NEPOOL”) Participants Committee (together, the “Filing Parties”),² hereby submits to the Federal Energy Regulatory Commission (the “Commission”) this transmittal letter and revisions to the ISO’s Transmission, Markets and Services Tariff (the “Tariff”) to address an implementation issue regarding the treatment of energy efficiency resources during Capacity Scarcity Conditions and to more fully align the Tariff rules with the Commission’s directives.³ As more fully described in this filing letter and in the attached Testimony of Ryan McCarthy, Lead Analyst in the ISO’s Department of Market Development, (the “McCarthy Testimony,” sponsored solely by the ISO), these revisions more appropriately implement the Commission-directed treatment of energy efficiency resources when Capacity Scarcity Conditions occur during hours in which energy efficiency resource performance is not reported to the ISO. The revisions also make several clarifying changes. As

¹ 16 U.S.C. § 824d (2018).

² Under New England’s RTO arrangements, the ISO has the rights to make this filing of changes to the Tariff under Section 205 of the Federal Power Act. NEPOOL, which pursuant to the Participants Agreement provides the sole Market Participant stakeholder process for advisory voting on ISO matters, supported the changes reflected in this filing and accordingly, joins in this Section 205 filing.

³ Capitalized terms used but not defined in this filing are intended to have the meaning given to such terms in the Tariff.

explained in Part V of this filing letter, the complete set of revisions were supported overwhelmingly by NEPOOL.

I. DESCRIPTION OF THE FILING PARTIES; COMMUNICATIONS

ISO-NE is the private, non-profit entity that serves as the Regional Transmission Organization (“RTO”) for New England. ISO-NE 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 (“TOA”) with the New England Participating Transmission Owners. In its capacity as an RTO, ISO-NE 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 and the North American Electric Reliability Corporation.

NEPOOL is a voluntary association organized in 1971 pursuant to the New England Power Pool Agreement, and it has grown to include more than 500 members. The participants include all of the electric utilities rendering or receiving service under the Tariff, as well as independent power generators, marketers, load aggregators, brokers, consumer-owned utility systems, end users, demand resource providers, developers and a merchant transmission provider. Pursuant to revised governance provisions accepted by the Commission,⁴ the participants act through the NEPOOL Participants Committee. The Participants Committee is authorized by Section 6.1 of the Second Restated NEPOOL Agreement and Section 8.1.3(c) of the Participants Agreement to represent NEPOOL in proceedings before the Commission. Pursuant to Section 2.2 of the Participants Agreement, “NEPOOL provide[s] the sole Participant Processes for advisory voting on ISO matters and the selection of ISO Board members, except for input from state regulatory authorities and as otherwise may be provided in the Tariff, TOA and the Market Participant Services Agreement included in the Tariff.”

All correspondence and communications in this proceeding should be addressed to the undersigned for the ISO as follows:

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⁴ See *ISO New England Inc., et al.*, 109 FERC ¶ 61,147 (2004).

And to NEPOOL as follows:

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II. STANDARD OF REVIEW

These changes are being submitted pursuant to Section 205, which “gives a utility the right to file rates and terms for services rendered with its assets.”⁶ Under Section 205, the Commission “plays ‘an essentially passive and reactive role’”⁷ whereby it “can reject [a filing] only if it finds that the changes proposed by the public utility are not ‘just and reasonable.’”⁸ 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.”⁹ The changes proposed herein “need not be the only reasonable methodology, or even the most accurate.”¹⁰ As a result, even if an intervenor or the Commission develops an alternative proposal, the Commission must accept this Section 205 filing if it is just and reasonable.¹¹

⁵ Due to the joint nature of this filing, the Filing Parties respectfully request a waiver of Section 385.203(b)(3) of the Commission’s regulations to allow the inclusion of more than two persons on the service list in this proceeding.

⁶ *Atlantic City Elec. Co. v. FERC*, 295 F.3d 1, 9 (D.C. Cir. 2002).

⁷ *Id.* at 10 (quoting *City of Winnfield v. FERC*, 744 F.2d 871, 876 (D.C. Cir. 1984)).

⁸ *Id.* at 9.

⁹ *City of Bethany v. FERC*, 727 F.2d 1131, 1136 (D.C. Cir. 1984).

¹⁰ *Oxy USA, Inc. v. FERC*, 64 F.3d 679, 692 (D.C. Cir. 1995).

¹¹ *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 *Bethany*, 727 F.2d at 1136)).

III. EXPLANATION OF THE CHANGES

A. 2014 Commission Order and Pay For Performance Overview

In 2014, the ISO made significant changes to the Forward Capacity Market intended to link capacity revenues to resource performance during Capacity Scarcity Conditions (or scarcity conditions).¹² Under this design, commonly referred to as “Pay For Performance” or “PFP,” a capacity resource’s total capacity revenue consists of a Capacity Base Payment and a Capacity Performance Payment (or performance payment),¹³ the dollar amount of the latter depending on the resource’s performance during scarcity conditions.¹⁴ In those 2014 changes, the ISO initially proposed that energy efficiency resources—which are required to submit performance data only for a limited number of peak “measure” hours¹⁵—either be assessed zero performance when a scarcity condition occurs outside of measure hours or submit performance data for all hours.¹⁶

In ruling on PFP, the Commission found the ISO’s proposed treatment of energy efficiency resources to be unduly discriminatory.¹⁷ The Commission reasoned that, because the ISO’s proposal assumed that energy efficiency resources provided zero performance in hours outside of measure hours, energy efficiency resources “must either incur significant costs to measure and verify their load reductions around-the-clock . . . or face guaranteed negative Capacity Performance Payments during any Capacity Scarcity Condition during off-peak hours.”¹⁸ The Commission therefore directed the ISO to submit Tariff revisions “ensuring that energy efficiency resources’ Capacity Performance Payments are calculated only for Capacity

¹² See *ISO New England Inc. and New England Power Pool*, Filings of Performance Incentives Market Rule Changes, Docket Nos. ER14-1050-000 and ER14-1050-001, January 17, 2014, joint cover letter at 1 (“PFP Filing”); and see Section I.2.2 (defining Capacity Scarcity Condition as “a period during which performance is measured in the Forward Capacity Market, as described in Section III.13.7.2.1 of Market Rule 1.”).

¹³ Section I.2.2 defines Capacity Performance Payment as “the performance-dependent portion of revenue received in the Forward Capacity Market, as described in Section III.13.7.2 of Market Rule 1.”

¹⁴ See McCarthy Testimony at 3.

¹⁵ These energy efficiency reporting hours, termed Demand Resource On-Peak Hours and Demand Resource Seasonal Peak Hours in the Tariff, are variously referred to as measure hours, performance hours, and peak hours.

¹⁶ See Testimony of Matthew White on behalf of the ISO, Attachment I-1c to PFP Filing at 152-153.

¹⁷ See Order on Tariff Filing and Instituting Section 206 Proceeding, 147 FERC ¶ 61,172 at P 89 (issued May 30, 2014) (“2014 PFP Order”).

¹⁸ 2014 PFP Order at P 89.

Scarcity Conditions during hours in which demand reduction values are calculated under the Tariff for that particular type of resource.”¹⁹

On compliance, the ISO added a provision to the Tariff to ensure that the performance of an energy efficiency resource would not impact (either negatively or positively) the resource’s Capacity Performance Payment when a scarcity condition occurred outside of measure hours.²⁰ The Commission accepted this aspect of the ISO’s compliance filing, finding that:

A Capacity Performance Score of zero during a particular time interval ensures that a resource will not be subject to Capacity Performance Payments if a Capacity Scarcity Condition occurs during that time interval. Therefore, ISO-NE’s proposal to set the Capacity Performance Score at zero for an energy efficiency resource during any Capacity Scarcity Condition outside of the resource’s measured hours ensures that energy efficiency resources will not be subject to Capacity Performance Payments outside those resources’ measured hours. . . . We therefore find that ISO-NE’s proposed treatment of energy efficiency resources complies with the Commission’s directive in the May 30, 2014 Order.²¹

In 2018, the ISO filed, and the Commission accepted, additional revisions to enhance and clarify the Pay For Performance market rules prior to the rules’ June 1, 2018 effective date.²² Among other changes, the ISO added detail to the Tariff regarding how one of the components used to determine a resource’s performance payment during a scarcity condition—Actual

¹⁹ 2014 PFP Order at P 89.

²⁰ See *ISO New England Inc. and New England Power Pool, Compliance Filing of Two-Settlement Forward Capacity Market Design*, Docket ER14-2419 (filed July 14, 2014) (adding the following language to Section III.13.7.2.4: “for an On-Peak Demand Resource or a Seasonal Peak Demand Resource, if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided and Capacity Supply Obligation associated with any Energy Efficiency Demand Response Assets shall be excluded from the calculation of the resource’s Capacity Performance Score.”).

²¹ Order on Compliance Filing, 149 FERC ¶61,009 at P 33 (issued October 2, 2014).

²² See *ISO New England Inc. and New England Power Pool, Pay For Performance Enhancements*, Docket No. ER18-1223 (filed March 29, 2018) (“PFP Enhancements Filing”); accepted by Letter Order issued May 11, 2018.

Capacity Provided²³—would be calculated for Demand Capacity Resources,²⁴ including those consisting of energy efficiency measures.²⁵ Consistent with the treatment of energy efficiency directed by the Commission in the 2014 PFP Order, the ISO added language specifying that for energy efficiency resources, if a scarcity condition occurred during measure hours, then the Actual Capacity Provided would be equal to the reported monthly performance value; otherwise, the Actual Capacity Provided would be zero.²⁶ Crucially for the analysis here, setting a resource’s Actual Capacity Provided to zero in turn affects another component of the Pay For Performance calculations, the Capacity Balancing Ratio (or balancing ratio); as explained below, this change to the balancing ratio caused the settlement imbalance that led to this filing.

The balancing ratio is the system’s *total load and reserve requirement* at the time of a scarcity condition *divided by the total Capacity Supply Obligation MW* of all capacity suppliers, and it is used to determine the share of the total system requirements each capacity resource is obligated to cover during a scarcity condition.²⁷ That is, for purposes of Pay For Performance settlement, resources are not required to cover energy and reserves in the full MW amount of their Capacity Supply Obligations during scarcity conditions; instead, the Capacity Balancing Ratio determines the portion of a resource’s Capacity Supply Obligation that it must cover.²⁸ The balancing ratio established for each interval of scarcity condition therefore establishes the benchmark for how much energy and reserves each capacity resource must cover during the interval in order to be considered performing. (Generally, the balancing ratio varies directly with

²³ Section I.2.2. defines Actual Capacity Provided as “a measure of capacity provided during a Capacity Scarcity Condition.”

²⁴ Section I.2.2 states that a Demand Capacity Resource “means an Existing Demand Capacity Resource or a New Demand Capacity Resource. There are three Demand Capacity Resource types: Active Demand Capacity Resources, On-Peak Demand Resources, and Seasonal Peak Demand Resources.”

²⁵ See PFP Enhancements Filing at 8-9; see also Section I.2.2 (stating that “Energy Efficiency is installed measures (e.g., products, equipment, systems, services, practices and/or strategies) on end-use customer facilities that reduce the total amount of electrical energy needed, while delivering a comparable or improved level of end-use service. Such measures include, but are not limited to, the installation of more energy efficient lighting, motors, refrigeration, HVAC equipment and control systems, envelope measures, operations and maintenance procedures, and industrial process equipment.”).

²⁶ See PFP Enhancements Filing at 9, 347 (adding the following provision as Section III.13.7.2.2(c)(i): “For Energy Efficiency measures, if the Capacity Scarcity Condition occurs during Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided shall be equal to the applicable reported monthly performance value; if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided shall be zero.”).

²⁷ See McCarthy Testimony at 5.

²⁸ See McCarthy Testimony at 5.

system load at the time of the scarcity condition—that is, higher balancing ratios are associated with higher system loads.)

A resource is said to be “over-performing” if it supplies more energy and reserves than its balancing-ratio adjusted Capacity Supply Obligation, and “under-performing” if it supplies less. The former results in a positive Capacity Performance Payment, the latter in a negative one. For example, if a scarcity condition occurs during a period when load is fairly low, the balancing ratio (that is, total load + reserve requirement as a share of total Capacity Supply Obligations) is likely to also be fairly low. If system conditions result in a balancing ratio of 60%, a resource providing energy and reserves in any amount over 60% of its Capacity Supply Obligation would be over-performing and would receive a positive Capacity Performance Payment (for the amount of MWhs it provides above 60% of its Capacity Supply Obligation).²⁹ On the other hand, if the scarcity condition occurs on a hot summer day when load is high, the balancing ratio is likely to also be high. If conditions resulted in a balancing ratio of 98%, the same resource would be under-performing if it provided energy and reserves in any amount less than 98% of its Capacity Supply Obligation and would receive a negative Capacity Performance Payment (a charge) (for the MWhs it failed to provide below 98% of its Capacity Supply Obligation).³⁰

As noted above, the numerator of the balancing ratio equals the system’s *load + reserve requirement* at the time of the scarcity condition. The term *load* in turn equals “the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the New England Control Area during the interval.”³¹ Because Actual Capacity Provided appears in the numerator of the balancing ratio, setting the Actual Capacity Provided of energy efficiency resources to zero outside of measure hours reduces the numerator of the ratio in those hours. Conceptually, this zero value for the Actual Capacity Provided of energy efficiency resources represents mathematically the assumption that energy efficiency resources cover *none* of their Capacity Supply Obligation outside of measure hours—that is, that New England’s roughly 2,500 MWs of energy efficiency resources fail entirely to perform during scarcity conditions outside of measure hours.

Reducing the numerator of the balancing ratio, in the absence of a corresponding change to the denominator, lowers the overall balancing ratio. Because the balancing ratio is used to determine the share of total system requirements each capacity resource is obligated to cover during a scarcity condition, lowering the balancing ratio reduces the portion of the total Capacity

²⁹ See McCarthy Testimony at 5-6.

³⁰ See McCarthy Testimony at 6.

³¹ Section III.13.7.2.3.

Supply Obligation (and the portion of its own individual Capacity Supply Obligation) that each resource is obligated to cover during the scarcity interval.

B. The September 2018 Scarcity Condition and its Settlement

On September 3, 2018, the region experienced a two hour and forty minute scarcity condition. The scarcity condition occurred outside of measure hours, and so the Commission-directed treatment of energy efficiency applied.³² Under the Pay For Performance design, total charges to resources that under-perform (by providing less than their balancing-ratio-adjusted Capacity Supply Obligation) are expected to slightly exceed total credits to resources that over-perform (by providing more than their balancing-ratio-adjusted Capacity Supply Obligation), resulting in a slight surplus that is allocated back to Capacity Supply Obligation holders through a mechanism often referred to as the “mutual insurance” system.³³ However, on September 13, 2018, the ISO informed stakeholders that Capacity Performance Payment *credits* for the September third event exceeded Capacity Performance Payment *charges* by \$7.8 million.³⁴ “This imbalance,” wrote the ISO, “is due to the FERC-mandated exclusion of Energy Efficiency resources from Performance Payments when the [scarcity condition] occurs in off-peak hours.”³⁵ In order to “balance the settlement” so that total payments and collections net to zero, the ISO explained that the “[i]mbalance will be collected pro-rata from all [Capacity Supply Obligation holders], including Energy Efficiency.”³⁶ In other words, instead of the small mutual insurance *payment* anticipated under the Pay For Performance design, the imbalance was collected from all Capacity Supply Obligation holders through the mutual insurance system as a pro-rata *charge*.³⁷

While the settlement imbalance and mutual insurance system charges were by all accounts a surprise to stakeholders, as explained below, they were the direct result of the ISO’s implementation of the Commission-directed treatment of energy efficiency. The ISO

³² See McCarthy Testimony at 11.

³³ See McCarthy Testimony at 8-9; see also Section III.13.7.4(a), Allocation of Deficient or Excess Capacity Performance Payments (stating that “If the sum of all Capacity Performance Payments to all resources subject to the Capacity Scarcity Condition in the Capacity Zone in an Obligation Month is positive, the deficiency will be charged to resources in proportion to each such resource’s Capacity Supply Obligation for the Obligation.”).

³⁴ *September 3 OP-4 Event and Capacity Scarcity Condition*, presentation by ISO Chief Operating Officer Vamsi Chadalavada to the September 12, 2018 meeting of the NEPOOL Participants Committee at slide 27 (available at <https://www.iso-ne.com/static-assets/documents/2018/09/september-2018-op4-coo-report.pdf>).

³⁵ *Id.*

³⁶ *Id.*

³⁷ See McCarthy Testimony at 11.

implemented the Commission's mandate that energy efficiency resources not face negative Capacity Performance Payments outside of measure hours. However, due to the way in which the ISO's implementation affected the balancing ratio, energy efficiency resources were nevertheless assessed a charge via the mutual insurance system.³⁸ For the September 2018 Capacity Scarcity Condition, the ISO's implementation of the Commission-directed treatment of Energy Efficiency resources cost Energy Efficiency resources approximately \$665,000 in mutual insurance allocations when compared to the proposed design, or about 1.5% of the total \$44.9 million settlement credits of the Capacity Scarcity Condition.³⁹

As noted above, setting the Actual Capacity Provided of energy efficiency to zero in the numerator of the balancing ratio (in the absence of a corresponding change to the denominator, which includes the Capacity Supply Obligations of all resources, including energy efficiency resources) decreased the share of system needs each resource was responsible for during the scarcity condition. This overstated the MWhs of over-performance and understated the MWhs of under-performance during each scarcity interval, resulting in Capacity Performance Payments that overcompensated non-energy efficiency resources (either by overpaying them or under-penalizing them); this in turn resulted in a fleet-wide under-collection.

All else equal,⁴⁰ under the current implementation of the Commission's 2014 directive, a scarcity condition that occurs outside of measure hours will *always* result in a system-wide under-collection of performance payments, necessitating that the deficiency be charged to resources in proportion to their Capacity Supply Obligations. This means that, following a Capacity Scarcity Condition in non-measure hours, all Forward Capacity Market resources will receive a (positive or negative) performance payment and an *additional charge* from the mutual insurance pool. For non-energy efficiency resources, the increase in performance payments (or reduction in performance penalties) resulting from the ISO's implementation of the Commission-directed treatment of energy efficiency more than offsets the additional charge. However, because energy efficiency resources by design cannot receive performance payments outside of measure hours, they have no performance payments to offset the mutual insurance pool charge and are therefore *guaranteed* under the current implementation to receive a charge that is not offset when a scarcity condition occurs outside of measure hours.⁴¹

³⁸ See McCarthy Testimony at 11-13.

³⁹ See McCarthy Testimony at 14.

⁴⁰ For example, in the absence of a dramatic change in the participation level of energy efficiency resources.

⁴¹ Again assuming no dramatic change to energy efficiency penetration.

C. The Instant Revisions

As discussed below in Part V, within two months of the September 2018 scarcity event, stakeholders representing both generation and energy efficiency resources had brought alternative proposals for consideration before the NEPOOL Markets Committee to address the issue. These discussions continued into 2019 and through early this year, when NEPOOL approved the revisions being filed here. With the benefit of these additional, robust, stakeholder discussions and the further analysis that they inspired, the ISO agrees that the revisions approved by NEPOOL and filed here are valuable changes that more fully implement the Commission-directed treatment of energy efficiency resources in the 2014 PFP Order.

The revisions filed here make one substantive change. Specifically, the *Capacity Supply Obligations* of energy efficiency resources will be removed from the *denominator* of the balancing ratio outside of measure hours, so that energy efficiency resources will be absent from both the numerator and the denominator of the ratio in those hours.⁴² Such a balancing ratio effectively assumes that energy efficiency resources perform exactly at their balancing-ratio-adjusted Capacity Supply Obligation in a scarcity condition outside of measure hours. (A mathematically equivalent way to conceptualize this balancing ratio is that energy efficiency resources effectively do not exist outside of measure hours.) This will eliminate the under-collection problem and associated mutual insurance pool charges,⁴³ and will more appropriately allocate Pay For Performance proceeds, all while more fully honoring the Commission's directive in the 2014 PFP Order to calculate performance payments for energy efficiency resources only when scarcity conditions occur during measure hours.⁴⁴

Had the balancing ratio for the 2018 event been set according to the revisions filed here, with energy efficiency excluded from both the numerator and the denominator, the average balancing ratio would have been 77.7% rather than the 72.7% that was used in the 2018 event.⁴⁵ Pay For Performance is designed to result in a slight surplus under normal scarcity conditions,⁴⁶ so a balancing ratio of 77.7% would have resulted in a total *surplus of* approximately \$1.6 million (as opposed to the under-collection of \$7.8 million that resulted from the 72.7%

⁴² See McCarthy Testimony at 14-15.

⁴³ As Mr. McCarthy explains at page 16 of his Testimony, energy efficiency resources will still be subject to mutual insurance pool charges outside of measure hours in the case of a "stop-loss."

⁴⁴ See McCarthy Testimony at 12-13, 15.

⁴⁵ See McCarthy Testimony at 13.

⁴⁶ As explained in the McCarthy Testimony at 8, because a scarcity condition is, by definition, a shortage in reserves, under normal conditions, Pay For Performance charges will exceed credits in an amount proportional to the MWh of shortage, resulting in a slight surplus.

balancing ratio).⁴⁷ That surplus would have been distributed to capacity resources via the mutual insurance pool in proportion to each resource's share of the system's total Capacity Supply Obligations.

IV. DESCRIPTION OF THE TARIFF REVISIONS

The heart of the Tariff revisions are found in Section III.13.7.2.3, which establishes the balancing ratio. The section first sets out the balancing ratio calculation at a high level, stating that "the ISO shall calculate a Capacity Balancing Ratio using the following formula: (Load + Reserve Requirement) / Total Capacity Supply Obligation." Subsections (a) through (c) then describe how to calculate each of the individual terms used in the formula, with each subsection applicable to a scarcity condition resulting from a violation of a different type of reserve requirement. The revisions filed here add a phrase to the definition of the term "Load" and a phrase to the definition of the term "Total Capacity Supply Obligation" in each subsection.⁴⁸ The changes made to each of the subsections are identical.

First, Sections III.13.7.2.3(a), (b), and (c), which define "Load," are each revised with the addition of the following underlined language:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the New England Control Area during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Actual Capacity Provided of any applicable Energy Efficiency measures shall be zero, as specified in Section III.13.7.2.2(c)(i).

This addition does not change the Tariff substantively, as an earlier provision excludes the Actual Capacity Provided of energy efficiency resources from the numerator of the balancing ratio when a scarcity condition occurs outside of measure hours, as discussed above. Specifically, as the new language notes, Section III.13.7.2.2.(c)(i) sets the Actual Capacity Provided of energy efficiency resources to zero whenever a Capacity Scarcity Condition interval occurs outside of energy efficiency measure hours.⁴⁹ This new language is added here simply so all the provisions applicable to the calculation of the balancing ratio can be found in one place in the Tariff.

⁴⁷ See McCarthy Testimony at 12-14.

⁴⁸ See McCarthy Testimony at 14-16.

⁴⁹ See McCarthy Testimony at 16-17.

Next, Sections III.13.7.2.3(a), (b), and (c), which define “Total Capacity Supply Obligation,” are each revised with the addition of the following underlined language:

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the New England Control Area during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Capacity Supply Obligations associated with any applicable Energy Efficiency measures shall be excluded from the total amount of Capacity Supply Obligations.

This revision comprises the substantive change being made with this filing. That is, with this revision, outside of energy efficiency measure hours, the Capacity Supply Obligations associated with energy efficiency resources will be excluded from the Total Capacity Supply Obligation—the denominator of the balancing ratio.

Finally, the revisions add the word “applicable” in Section III.13.7.2.4, as follows:

if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided and Capacity Supply Obligation associated with any applicable Energy Efficiency measures shall be excluded from the calculation of the resource’s Capacity Performance Score;

The phrase “applicable Energy Efficiency measures” is used elsewhere in Section III.13.7.2 (including in the revisions discussed above), but was inadvertently omitted here. The word “applicable” is a useful addition here because an energy efficiency measure (thus far, this filing letter has referred to energy efficiency *resources*, but in fact they are more accurately termed energy efficiency *measures*) can be part of one of two types of resources—On-Peak Demand Resources or Seasonal Peak Demand Resources. The two types of resources have different measure hours (unsurprisingly referred to as Demand Resource On-Peak Hours and Demand Resource Seasonal Peak Hours) and the measure hours need not coincide. If a Capacity Scarcity Condition occurs in, for example, an interval outside of Demand Resource *Seasonal* Peak Hours, the remainder of the sentence is applicable only to those energy efficiency measures that are associated with *Seasonal* Peak Demand Resources—the addition of the word “applicable” helps clarify this point.⁵⁰

⁵⁰ See McCarthy Testimony at 17.

V. STAKEHOLDER PROCESS

From late 2018 through early 2019, NEPOOL participants presented several approaches to the Markets Committee to revise the treatment of energy efficiency resources during Capacity Scarcity Conditions.⁵¹ In March 2019, to assist stakeholders in their deliberations, the Markets Committee instructed one of its standing working groups, the Demand Resources Working Group, “to consider how [energy efficiency resource] performance in all hours for existing and new measures could be established and, what, if any, additional methodological standards and reporting mechanisms are required to accommodate such a change.”⁵² Intended to inform the Markets Committee and assist in its efforts, the working group issued a final report detailing each of the alternative methods evaluated for measuring energy efficiency performance in all hours.⁵³ Following issuance of the working group’s final report, discussions at the Markets Committee continued through this year, when NEPOOL approved the revisions, initially sponsored by the New England States Committee on Electricity, which are being filed here.

Specifically, at its March 12, 2020 meeting, the NEPOOL Markets Committee considered and, with a 94.21% vote in favor, recommended that the NEPOOL Participants Committee support these revisions.⁵⁴ Subsequent to the Markets Committee’s consideration, the NEPOOL Participants Committee overwhelmingly approved the revisions filed here as part of the Consent Agenda for its April 2, 2020 teleconference meeting.⁵⁵

⁵¹ See, e.g., *Settlement Shortfall Caused by the Energy Efficiency Resource Exemption from Pay For Performance Penalties in Off-Peak Hours*, presentation of New England Power Generators Association, Inc. to the November 2018 NEPOOL Markets Committee meeting (available at https://www.iso-ne.com/static-assets/documents/2018/11/a3_nepga_presentation_ee_exemption_from_pfp_penalties.pdf); see also *Energy Efficiency in Capacity Scarcity Conditions*, presentation of Vermont Energy Investment Corp. to November 2018 NEPOOL Markets Committee meeting (available at https://www.iso-ne.com/static-assets/documents/2018/11/a3a_synapse_presentation_energy_efficiency.pdf).

⁵² *Final Problem Statement*, Markets Committee referral to Demand Resources Working Group, https://www.iso-ne.com/static-assets/documents/2019/02/a5_ee_problem_statement_and_referral.docx.

⁵³ *Assessing Energy Efficiency Resource Performance in All Hours*, presentation of Henry Yoshimura, Chair, Demand Resources Working Group, to September 2019 Markets Committee meeting (available at https://www.iso-ne.com/static-assets/documents/2019/09/a4_presentation_drwg_report_for_assessing_ee_performance.pptx).

⁵⁴ The result of the roll-call vote at the Markets Committee meeting was as follows: Generation Sector (16.79% in favor, 0.00% opposed, 3 abstentions); Transmission Sector (16.79% in favor, 0.00% opposed, 0 abstentions); Supplier Sector (13.06% in favor, 3.73% opposed, 5 abstentions); Publicly Owned Entity Sector (16.79% in favor, 0.00% opposed, 0 abstentions); Alternative Resources Sector (13.98% in favor, 2.06% opposed, 3 abstentions); and End User Sector (16.79% in favor, 0.00% opposed, 1 abstention).

⁵⁵ The Consent Agenda for a Participants Committee meeting, similar to the Consent Agenda for a Commission open meeting, is a group of actions (each recommended by a Technical Committee or

VI. ISO'S REQUESTED EFFECTIVE DATE

The ISO respectfully requests that the Commission accept these Tariff revisions as filed, without suspension or hearing, to be effective on August 1, 2020. Because NEPOOL does not typically vote on proposed effective dates or implementation timing, it did not vote on the ISO's requested effective date for the revisions filed here. Accordingly, NEPOOL has no position with respect to the requested effective date.

These revisions are fully prospective, becoming effective on August 1, 2020. However, the ISO acknowledges that the currently-effective rules governing the treatment of energy efficiency resources in scarcity conditions outside of measure hours were in place when market participants made their decisions about whether and how to participate in prior Forward Capacity Auctions and, to a more limited extent, at the time of certain deadlines in connection with the next capacity auction. In such cases, the Commission has applied a "balancing of equities" test, weighing the importance of the change (the significance of the problem to be fixed) against the harm to the settled expectations of participants of Forward Capacity Auctions conducted before the change becomes effective.⁵⁶

The ISO believes that, in this case, there are good reasons to implement these revisions at this time. As explained previously and in the McCarthy Testimony, the current implementation results in a settlement imbalance and an unanticipated mutual insurance system charge. While

subgroup established by the Participants Committee) to be taken by the Participants Committee through approval of a single motion at a meeting. Although voted as a single motion, all recommendations voted on as part of the Consent Agenda are deemed to have been voted on individually and independently. In this case, the Participants Committee's approval of the April 2 Consent Agenda included its support for the changes filed herein. Of note, oppositions by Jericho Power LLC and PSEG Energy Resources & Trade LLC and abstentions by Enel X North America, Inc. and Mr. Michael Kuser were specifically attributed to the revisions filed herein.

⁵⁶ See, e.g., Order Accepting Tariff Revisions, 165 FERC ¶ 61,266 at P 24 (issued December 20, 2018) ("...the Commission has previously found that the terms and conditions of performance and other obligations that are a part of forward capacity markets may be revised, even after a forward auction for a future delivery year is completed, if the changes are made prospectively" (citation omitted)); Order Accepting Tariff Revisions, 165 FERC ¶ 61,088 at PP 24-28 (issued November 9, 2018) ("As the Commission has previously determined, there is a difference between upsetting the expectations of market participants and retroactive ratemaking. Where protestors have asserted that proposed Tariff revisions would disrupt settled expectations mid-course and harm market participants who relied on the existing Tariff in calculating prices and entering into contracts, the Commission has considered a "balancing of interests" or "balancing of equities" in determining the appropriate outcome. Thus, in certain circumstances, the Commission has accepted revisions where the benefits outweighed any settled expectations, and we do so here." (citations omitted)). See also Order Accepting Tariff Revisions, 148 FERC ¶ 61,185 at P 29 (issued September 12, 2014); Order on Proposed Tariff Revisions, 145 FERC ¶ 61,095 at PP 28-31 (issued November 1, 2013).

the September 2018 scarcity condition resulted in an approximate \$552,000 charge to energy efficiency resources (totaling approximately 1.2% of the settlement credits from the scarcity condition),⁵⁷ going forward, if the region were to experience multiple scarcity conditions outside of measure hours, the harm to energy efficiency resources would accrue quickly.

Furthermore, it does not appear to the ISO that the currently-effective Tariff language implementing the energy efficiency treatment reflects “settled expectations.” By all accounts, the credits and charges resulting from the September 2018 scarcity condition came as a surprise to participants. Nor can it be said that since September 2018, when the operation of the currently effective energy efficiency treatment became known, the treatment in its current manifestation became a “settled” expectation: since late 2018, participants and stakeholders whose financial interests in the treatment of energy efficiency resources are diametrically opposed have been working through the NEPOOL process to revise or replace the relevant market rules. This is therefore not a case where there exists a settled expectation that outweighs an important change.

Finally, the revisions filed here more fully reflect the treatment of energy efficiency resources that the Commission directed the ISO to add to the Tariff in 2014. In the 2014 PFP Order, the Commission cautioned that, under the ISO’s initial proposal, energy efficiency resources “must either incur significant costs to measure and verify their load reductions around-the-clock, rather than only in certain peak hours of the year, or face guaranteed negative Capacity Performance Payments during any Capacity Scarcity Condition during off-peak hours.”⁵⁸ Under the ISO’s current implementation,⁵⁹ while energy efficiency resources do not face negative *Capacity Performance Payments* in scarcity conditions outside of measure hours, they *do* face a guaranteed *charge from the mutual insurance pool* when Capacity Scarcity Conditions occur in non-measure hours. Thus, the ISO’s current implementation only partially implements the Commission-directed treatment.

In sum, because the revisions filed here will eliminate the under-collection and mutual insurance pool charges attributable to the existing implementation of the Commission-directed treatment of energy efficiency resources and will more fully implement the Commission’s directive in the 2014 PFP Order, the Commission should accept these Tariff changes effective August 1, 2020, as requested.

⁵⁷ See McCarthy Testimony at 13-14; \$552,000 is about 1.2% of the \$44.9 million settlement credits from the scarcity condition.

⁵⁸ 2014 PFP Order at P 89.

⁵⁹ And, as noted above, absent a major change in the participation rates of capacity resource types.

VII. ADDITIONAL SUPPORTING INFORMATION

Section 35.13 of the Commission's regulations generally requires public utilities to file certain cost and other information related to an examination of traditional cost-of-service rates. However, the market rule changes do not modify a traditional "rate" and the ISO is not a traditional investor-owned utility. Therefore, to the extent necessary, the Filing Parties request waiver of Section 35.13 of the Commission's regulations.⁶⁰ Notwithstanding its request for waiver, the Filing Parties submit the following additional information in substantial compliance with relevant provisions of Section 35.13 of the Commission's regulations:

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

- This transmittal letter;
- Testimony of Ryan McCarthy, sponsored solely by the ISO;
- Redlined Tariff sections effective August 1, 2020;
- Clean Tariff sections effective August 1, 2020; and
- 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) – As set forth above, the ISO requests that the Tariff revisions filed herewith become effective on August 1, 2020.

35.13(b)(3) – Pursuant to Section 17.11(e) of the Participants Agreement, Governance 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 <https://www.iso-ne.com/participate/participant-asset-listings/directory?id=1&type=committee>. A copy of this transmittal letter and the accompanying materials have also been sent to the governors and electric utility regulatory agencies for the six New England states that comprise the New England Control Area, the New England Conference of Public Utility Commissioners, Inc., and to the New England States Committee on Electricity. Their names and addresses are shown in the attached listing. In accordance with Commission rules and practice, there is no need for the Governance Participants or the entities identified in the listing to be included on the

⁶⁰ 18 C.F.R. § 35.13 (2018).

Commission's official service list in the captioned proceeding 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 Part VII of this transmittal letter.

35.13(b)(5) – The reasons for this filing are discussed in Parts III through VI of this transmittal letter.

35.13(b)(6) – The ISO's approval of these changes is evidenced by this filing. These changes reflect the results of the Participant Processes required by the Participants Agreement and reflect the support of the Participants Committee.

35.13(b)(7) – Neither the ISO nor NEPOOL has 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(b)(8) – A form of notice and electronic media are no longer required for filings in light of the Commission's Combined Notice of Filings notice methodology.

35.13(c)(1) – The market rule changes herein do not modify a traditional "rate," and the statement required under this Commission regulation is not applicable to the instant filing.

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

35.13(c)(3) – No specifically assignable facilities have been or will be installed or modified in connection with the revisions filed herein.

VIII. CONCLUSION

For the reasons set forth above, the Filing Parties respectfully request that the Commission accept the revisions filed here without condition or delay to become effective on August 1, 2020.

Respectfully submitted,

The Honorable Kimberly D. Bose

June 2, 2020

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

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

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Docket No. ER20-____-000

**PREPARED TESTIMONY OF RYAN McCARTHY
ON BEHALF OF ISO NEW ENGLAND INC.**

1 **I. WITNESS IDENTIFICATION**

2 **Q: Please state your name, title, and business address.**

3 A: My name is Ryan McCarthy. I am a Lead Analyst in the Market Development
4 Department at ISO New England Inc. (the "ISO"). My business address is One Sullivan
5 Road, Holyoke, Massachusetts 01040.

6
7 **Q: Please describe your responsibilities, work experience, and educational background.**

8 A: I have been a Lead Analyst in the Market Development Department at the ISO since
9 August 2013. In this role, I am responsible for identifying and developing market
10 improvements for New England's competitive wholesale electricity markets, which the
11 ISO administers. I am also responsible for presenting these market design improvements
12 to external stakeholders. Prior to joining the ISO, I held various power marketing
13 positions in the energy market industry, including four years as a power trader at NRG
14 Energy and two years as a vice president in the power trading division of Citibank Global
15 Commodities. I also worked for five years as an equity options trader on the Philadelphia

16 Stock Exchange for Interactive Brokers, LLC. I hold a B.A. in Economics from
17 Lycoming College.

18

19 **II. OVERVIEW AND BACKGROUND**

20 **Q: What is the purpose of your testimony?**

21 A: The purpose of my testimony is to explain the revision being made with this filing to the
22 Capacity Balancing Ratio. Specifically, the Capacity Supply Obligations (or CSO) of
23 Energy Efficiency resources are being removed from the calculation's denominator when
24 Capacity Scarcity Conditions occur during times when Energy Efficiency performance is
25 not assessed. I also explain the two clarifying changes being made.

26

27 **Q: How is your testimony organized?**

28 A: In the next section, I discuss the mechanics of the Pay For Performance design, including
29 the Capacity Performance Score, Actual Capacity Provided, and the Capacity Balancing
30 Ratio, as well as their interplay during the September 2018 Capacity Scarcity Condition.
31 Following that, in Section IV, I first discuss the substantive change being made to the
32 Capacity Balancing Ratio and then the implications of that change. Finally, I discuss the
33 two clarifying revisions.

34

35 **III. PAY FOR PERFORMANCE MECHANICS**

36 **Q: Please provide an overview of performance requirements during Capacity Scarcity**
37 **Conditions.**

38 A: At a high level, a resource’s Forward Capacity Market revenue consists of two parts: a
39 capacity “base” payment and a payment that depends on a resource’s performance during
40 real-time reserve deficiencies. This filing concerns only the latter—capacity payments
41 during real-time reserve deficiencies. Real-time reserve deficiencies, also known as
42 Capacity Scarcity Conditions (or scarcity conditions), occur when the total amount of
43 energy and reserves supplied are insufficient to meet the total real-time load and reserve
44 requirements.

45
46 A resource’s performance during a Capacity Scarcity Condition is based on the total
47 quantity of energy and reserves it provides in each interval of the scarcity condition. The
48 total amount of real-time energy and reserves provided by a resource during a Capacity
49 Scarcity Condition is referred to as the resource’s Actual Capacity Provided. For
50 example, a resource supplying 100 MW of power continuously for a 5-minute interval,
51 and an additional 50 MW of reserves during the interval, would have an Actual Capacity
52 Provided of 150 MW for the 5-minute interval.

53
54 During a Capacity Scarcity Condition, a resource that has acquired a CSO is obligated to
55 cover its proportional share of the system’s real-time load and reserve requirements. The
56 difference between the resource’s Actual Capacity Provided and its share of the system’s
57 requirements is measured by the resource’s Capacity Performance Score. The Capacity

58 Performance Score is a value that reflects the MW amount by which a resource over-
59 performs or under-performs relative to its share of the system's requirements at the time
60 of a Capacity Scarcity Condition. A resource's Capacity Performance Score may be
61 positive or negative, depending on whether the resource provided more or less than its
62 share of the system's requirements during the scarcity condition.

63

64 **Q: Please explain the calculation of a resource's Capacity Performance Score.**

65 A: As mentioned above, a Capacity Performance Score is calculated for each resource in
66 each 5-minute interval in which a scarcity condition occurs. In each interval determined
67 to be a Capacity Scarcity Condition, a resource's Capacity Performance Score is the
68 difference between the amount of energy and reserves provided by the resource during
69 the interval and the resource's share of the system's requirements during that interval, as
70 shown in the following formula:

71

72
$$\text{Resource's Capacity Performance Score} = \text{Resource's Actual Capacity Provided}$$

73
$$- (\text{Capacity Balancing Ratio} \times \text{Resource's Capacity Supply Obligation})$$

74

75 A resource that has not acquired a CSO, or that acquired a CSO and subsequently bought
76 out of the position, has no share of system requirements and the resource's Capacity
77 Performance Score equals its Actual Capacity Provided.

78

79 **Q: Please provide more detail regarding the Capacity Balancing Ratio.**

80 A: The Capacity Balancing Ratio is the scaling factor used to determine a resource's share of
81 the system requirements during a Capacity Scarcity Condition. The numerator of the
82 calculation equals the sum of total system load and the reserve requirement. The
83 denominator of the Capacity Balancing Ratio equals the total CSO MW of all capacity
84 suppliers. The resulting quotient scales a resource's forward obligation such that, instead
85 of being an obligation to cover its full, fixed MW CSO, it becomes an obligation to cover
86 its share of the system's needs—whatever they happen to be—during the Capacity
87 Scarcity Condition. Generally, if the scarcity condition occurs on a high-load day, the
88 Capacity Balancing Ratio will be higher, and the participant's performance will be
89 assessed relative to a higher percentage of its CSO; conversely, if the scarcity condition
90 occurs on a low-load day, the Capacity Balancing Ratio will be lower, and the
91 participant's performance will be assessed relative to a lower percentage of its CSO. A
92 single Capacity Balancing Ratio is calculated for each five-minute interval of a scarcity
93 condition and applies to all resources in that interval. The concept is expressed
94 mathematically, in its most general form, as follows:

$$\text{Capacity Balancing Ratio} = (\text{Load} + \text{Reserve Requirement}) / \text{Total CSO MW}$$

95
96
97
98 As an example, suppose an hour-long scarcity condition occurs during an off-peak period
99 when load is 16 GWh and the reserve requirement is 2 GW during the hour. Assume for
100 simplicity that the *Total CSO MW* (total Capacity Supply Obligation MW of all capacity
101 suppliers) is 30 GW. Then the Capacity Balancing Ratio would be $(16 + 2) / 30 = 60$

102 percent for the hour. A resource providing energy and reserves in any amount over 60%
103 of its CSO would be over-performing and would receive a positive Capacity Performance
104 Payment for the amount of MWhs it provided above 60% of its Capacity Supply
105 Obligation.

106
107 As another example, suppose that the hour-long scarcity condition occurs during a hot
108 summer day when load is 27 GWh and the reserve requirement is 2.4 GW during the
109 hour. Then the Capacity Balancing Ratio for that scarcity condition interval would be $(27$
110 $+ 2.4) / 30 = 98$ percent. The same resource would be under-performing if it provides
111 energy and reserves in any amount less than 98% of its Capacity Supply Obligation, and
112 will receive a negative Capacity Performance Payment (a charge) for all the MWhs it
113 failed to provide below 98% of its Capacity Supply Obligation.

114
115 Finally, it is important to note that in the numerator of the balancing ratio (which equals
116 the system's *load + reserve requirement*), the term "load" is defined pursuant to Section
117 III.13.7.2.3 to mean "the total amount of Actual Capacity Provided (excluding applicable
118 Real-Time Reserve Designations) from all resources in the New England Control Area
119 during the interval."

120

121 **Q: Please describe the treatment of Energy Efficiency Resources during Capacity**
122 **Scarcity Conditions.**

123 A: Energy Efficiency resources submit performance data to the ISO only for a limited set of
124 hours, referred to in the Tariff as Demand Resource On-Peak Hours and Demand

125 Resource Seasonal Peak Hours. If a scarcity condition occurs during these Energy
126 Efficiency “measure” hours, an Energy Efficiency resource’s reported performance is
127 used to determine its Capacity Performance Payment. For scarcity conditions that occur
128 in hours in which Energy Efficiency performance is *not* assessed, the Commission, in
129 ruling on the ISO’s initial Pay For Performance filing in 2014, directed that the ISO
130 should *not* calculate Capacity Performance Payments for Energy Efficiency resources.¹
131 In compliance with this directive, the ISO added a provision to the Tariff ensuring that
132 the performance of an Energy Efficiency resource would not impact (either negatively or
133 positively) the resource’s *Capacity Performance Payment* outside of the applicable
134 measure hours. The Commission accepted this treatment of Energy Efficiency resources,
135 noting that the ISO’s proposal “to set the Capacity Performance Score at zero for an
136 [E]nergy [E]fficiency resource during any Capacity Scarcity Condition outside of the
137 resource’s measured hours ensures that [E]nergy [E]fficiency resources will not be
138 subject to *Capacity Performance Payments* outside those resources’ measured hours.”²
139
140 In 2018, prior to the effective date of Pay For Performance, the ISO added additional
141 details to the Tariff regarding the calculation of the Actual Capacity Provided of Energy
142 Efficiency resources, among other resource types. Consistent with the treatment of
143 Energy Efficiency resources directed by the Commission in 2014, the ISO added
144 language stipulating that, during Capacity Scarcity Conditions outside of measure hours,
145 the Actual Capacity Provided of Energy Efficiency resources would be zero.

¹ See 147 FERC ¶ 61,172 at P 89 (2014).

² 149 FERC ¶ 61,009 at P 33 (2014) (emphasis added).

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Q: Does the Capacity Balancing Ratio exactly balance payments between over-performing resources and under-performing resource's?

A: No, not exactly. One reason they do not balance exactly was an intended feature of the Pay For Performance design from the start. Specifically, recall that in order for a Capacity Scarcity Condition to exist, the total amount of reserves provided by all resources must be less than the system's reserve requirement. Also recall that the Capacity Balancing Ratio establishes the share of system requirements that CSO-obligated resources are required to cover during a scarcity condition. Because the numerator of the Capacity Balancing Ratio includes the reserve *requirement* (not merely the amount of reserves actually being provided during the scarcity condition), it produces a scaled share of system requirements that is greater than the total amount of energy plus reserves actually provided during the reserve deficiency (greater by the amount of the reserve deficiency). To look at it another way, during a scarcity condition, the total amount of resource under-performance (in MWh) must by definition exceed the total amount of resource over-performance (in MWh). Because the under-performance and over-performance are settled at the same price (the Capacity Performance Payment Rate), the Pay For Performance design under most circumstances results in an over-collection of funds. That over-collection, again under most circumstances, is a dollar amount equal to the product of the reserve deficiency (in MWh) and the Capacity Performance Payment Rate specified in the Tariff (in \$ per MWh). The surplus funds are then redistributed back to CSO-obligated resources pursuant to Section III.13.7.4(a), Allocation of Deficient or

168 Excess Capacity Performance Payments, according to each resource’s share of total CSO,
169 a mechanism sometimes referred to as the “mutual insurance” system.

170

171 **Q: You mentioned that under most circumstances, the Capacity Balancing Ratio would**
172 **produce an over-collection of funds. What circumstances might produce an under**
173 **collection of funds?**

174 A: While Pay For Performance exposes poorly performing resources to potential losses, it
175 also includes a “stop-loss” mechanism to prevent unlimited exposure. If a CSO-obligated
176 resource would accrue losses in an amount greater than the stop-loss limit specified in the
177 Tariff, the resource’s charges are capped at the stop-loss limit and it is not assigned
178 charges in excess of that limit. Instead, all other CSO-obligated resources assume those
179 charges via the mutual insurance system, reducing their net payment for the scarcity
180 condition. If the total dollar amount of charges in excess of the stop-loss limit is greater
181 than the dollar amount of naturally over-collected funds described in my response to the
182 previous question, an under-collection results and the dollar amount of that deficiency is
183 allocated to resources in the form of a charge via the mutual insurance system in
184 proportion to each resource’s share of total CSO.

185

186 **Q: Are there other circumstances that can produce an under-collection of funds?**

187 A: Yes. The existing implementation of the Commission-directed treatment of Energy
188 Efficiency resources when scarcity conditions fall outside of Energy Efficiency measure
189 hours can also create an under-collection of funds. This is because, as I described above,
190 in hours in which Energy Efficiency measures do not submit performance data to the

191 ISO, Energy Efficiency measures are *not* assessed a Capacity Performance Payment and
192 their Actual Capacity Provided is assigned a zero value, thereby excluding Energy
193 Efficiency from the numerator of the Capacity Balancing Ratio. However, the CSO
194 quantities of Energy Efficiency measures are included in the denominator of the
195 calculation.

196
197 Because the existing implementation of the Commission-directed treatment of Energy
198 Efficiency outside of measure hours includes Energy Efficiency resources' CSO in the
199 denominator but no corresponding Energy Efficiency performance in the numerator, the
200 Capacity Balancing Ratio is too low, understating the share of the system requirements
201 that each CSO-obligated resource must supply. This reduces the surplus flowing through
202 mutual insurance system; as I described previously, if the dollar value of the under-
203 collection is greater than the amount of naturally over-collected funds, then resources
204 (including Energy Efficiency resources) are assessed a charge via the mutual insurance
205 system in proportion to their share of total CSO. Because the ISO combines resources'
206 Capacity Performance Payment charges or credits and mutual insurance pool charges or
207 credits in a single settlement following a scarcity condition, a mutual insurance pool
208 charge will only result in a resource receiving an overall charge for the scarcity condition
209 if the mutual insurance charge exceeds any positive Capacity Performance Payments
210 from the same event. In the case of Energy Efficiency resources, which (in accordance
211 with the Commission's directive) have no Capacity Performance Payments outside of
212 measure hours, a mutual insurance pool charge outside of measure hours would not be
213 offset and would result in an overall charge for the scarcity condition.

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Q: Please describe the September 2018 Capacity Scarcity Condition and its aftermath.

A: On September 3, 2018, the region experienced a two hour and forty minute scarcity condition. It was outside of Energy Efficiency measure hours, so the Commission-directed treatment of Energy Efficiency resources applied. Shortly after the event, the ISO informed stakeholders that Capacity Performance Payment *credits* (positive performance payments to resources that over-performed by providing more than their balancing-ratio-adjusted CSO) for the event exceeded Capacity Performance Payment *charges* (negative performance payments to resources that under-performed, by providing less than their balancing-ratio-adjusted CSO) by 7.8 million.³ The \$7.8 million dollars in excess payments were collected pro-rata from all Capacity Supply Obligation holders, including Energy Efficiency resources, via the mutual insurance pool.

This result, which by all accounts was not anticipated by stakeholders, was due to the ISO's implementation of the Commission-directed treatment of Energy Efficiency resources. As described above, in the ISO's implementation, the Actual Capacity Provided of Energy Efficiency resources was set equal to zero when a scarcity condition occurred outside of measure hours, meaning that Energy Efficiency's contribution was removed from the numerator of the Capacity Balancing Ratio in those hours. Reducing the numerator (in the absence of a corresponding change to the denominator, which

³ See *September 3 OP-4 Event and Capacity Scarcity Condition*, presentation by ISO Chief Operating Officer Vamsi Chadalavada to the September 12, 2018 meeting of the NEPOOL Participants Committee at slide 27 (available at <https://www.iso-ne.com/static-assets/documents/2018/09/september-2018-op4-coo-report.pdf>).

234 includes the Capacity Supply Obligations of all resources, including Energy Efficiency)
235 lowered the overall balancing ratio. And because the interval-specific balancing ratio
236 applies to all resources, lowering the balancing ratio in this manner, as I noted above,
237 understated the share of system requirements that each CSO-obligated resource was
238 responsible for during the scarcity condition. The result of this too-low balancing ratio
239 was to overstate the MWs of over-performance and understate the MWs of under-
240 performance during the September 2018 scarcity condition, resulting in Capacity
241 Performance Payments that overcompensated non-Energy Efficiency resources (either by
242 overpaying them or under-penalizing them). This in turn resulted in a fleet-wide under-
243 collection. As I discussed earlier, under Pay For Performance, fleet-wide under-
244 collections are allocated through the mutual insurance system.

245
246 While, as I mentioned above, the ISO settles Capacity Performance Payment charges and
247 credits and mutual insurance pool charges and credits together in a single bill, it is
248 nevertheless helpful to break out the individual components in order to highlight the
249 origin of the dollar amounts involved the 2018 scarcity condition. The average balancing
250 ratio over the 32 intervals of the September 2018 Capacity Scarcity Condition was
251 72.2%. That balancing ratio, which excluded Energy Efficiency from the numerator but
252 not the denominator, resulted in total Capacity Performance Payment *credits* of \$44.9
253 million and total Capacity Performance Payment *charges* of \$37 million,⁴ for a total
254 imbalance of approximately \$7.8 million dollars. Only non-Energy Efficiency resources
255 benefited from the over-allocation of Capacity Performance Payment credits and the

⁴ *See id.*

256 under-allocation of Capacity Performance charges that resulted in the settlement
257 imbalance, because Energy Efficiency resources, pursuant to the Commission-directed
258 treatment, received Capacity Performance Payments of zero.

259
260 The \$7.8 million dollar under-collection was then assessed, via the mutual insurance
261 pool, to all resources with Capacity Supply Obligations, in proportion to each resource's
262 share of total Capacity Supply Obligations. Energy Efficiency resources held
263 approximately 7% of total Capacity Supply Obligations, and so paid approximately
264 \$552,000 of the mutual insurance pool assessment. Non-Energy Efficiency CSO-
265 obligated resources (generators, imports, and demand response other than Energy
266 Efficiency), which held approximately 93% of total Capacity Supply Obligations, paid
267 \$7.3 million of the mutual insurance pool assessment. However, these non-Energy
268 Efficiency CSO-obligated resources had the benefit of a balancing ratio that was set too
269 low, which more than compensated for the mutual insurance pool charge.

270
271 Had the balancing ratio been set according to the revisions filed here, with Energy
272 Efficiency excluded from both the numerator and the denominator, the average balancing
273 ratio over the 32 intervals of the 2018 Capacity Scarcity Condition would have been
274 77.7%. A balancing ratio of 77.7% would have resulted in a total *surplus of*
275 approximately \$1.6 million. (In an earlier answer I described how, under most
276 circumstances, Pay For Performance will result in an over-collection of funds equal to the
277 product of the reserve deficiency (in MWh) and the Capacity Performance Payment Rate
278 (in \$ per MWh). In the case of the September 2018 scarcity condition, the average

279 reserve deficiency for the 32 five-minute intervals was 302 MW and the Capacity
280 Performance Payment Rate was \$2,000 per MWh, for a total of approximately \$1.6
281 million.) That \$1.6 million surplus would have been distributed via the mutual insurance
282 pool, with approximately \$113,000 going to Energy Efficiency resources and
283 approximately \$1.5 million going to non-Energy Efficiency resources. In sum, then, as
284 compared to the proposed design, the ISO's implementation of the Commission-directed
285 treatment of Energy Efficiency resources cost Energy Efficiency resources approximately
286 \$665,000 (\$552,000 + \$113,000) in mutual insurance allocations, or approximately 1.5%
287 of the total \$44.9 million settlement credits of the Capacity Scarcity Condition.

288

289 **IV. CHANGES MADE BY THE REVISIONS**

290 **Q: Please describe the primary change made by the revisions in this filing.**

291 A: The revisions filed here make one substantive change to the existing treatment of Energy
292 Efficiency described above; specifically, to the Capacity Balancing Ratio. As I discussed
293 earlier, the general formula for the Capacity Balancing Ratio is:

294

$$295 \quad \text{Capacity Balancing Ratio} = (\text{Load} + \text{Reserve Requirement}) /$$
$$296 \quad \text{Total Capacity Supply Obligation.}$$

297

298 The revisions alter the definition of the term "Total Capacity Supply Obligation" so that
299 it excludes the CSO of Energy Efficiency measures during hours when their performance
300 is not assessed. The currently effective Tariff states that "Total Capacity Supply
301 Obligation = the total amount of Capacity Supply Obligations in the New England

302 Control Area during the interval,” and the revisions will add, “provided, however, that if
303 the scarcity interval occurs outside of Demand Resource On-Peak Hours or Demand
304 Resource Seasonal Peak Hours, then the Capacity Supply Obligations associated with any
305 applicable Energy Efficiency measures shall be excluded from the total amount of
306 Capacity Supply Obligations.”

307

308 **Q: What is the impact of this change?**

309 A: With this change, Energy Efficiency resources will be absent from both the numerator
310 and the denominator of the Capacity Balancing Ratio in hours when their performance is
311 not assessed. The result is to assume that Energy Efficiency resources always perform
312 exactly at their balancing-ratio adjusted Capacity Supply Obligation during those hours
313 (or, alternatively, to assume that they do not exist outside of measure hours—the two are
314 arithmetically equivalent). This will result in a balancing ratio that will eliminate the
315 under-collection and mutual insurance pool charges attributable to the existing
316 implementation of the Commission-directed treatment of Energy Efficiency, thereby
317 more fully aligning with the intended CSO-scaling mechanics of Pay For Performance
318 and more fully implementing the Commission’s direction.

319

320 **Q: With these revisions, will it still be possible for an Energy Efficiency resource to**
321 **receive a charge via the mutual insurance system in hours when Energy Efficiency**
322 **performance is not assessed?**

323 A: Yes. As I discussed above, if a CSO-obligated resource performs sufficiently poorly such
324 that its charges exceed the stop-loss limit specified in the Tariff, the resource’s charges

325 are capped at the stop-loss limit and all other resources assume those charges via the
326 mutual insurance system in proportion to their share of the system's total CSO. This
327 filing makes no change to the treatment of Energy Efficiency resources in the mutual
328 insurance system; therefore, Energy Efficiency resources may still be assessed a charge
329 via the mutual insurance system in hours when Energy Efficiency performance is not
330 assessed.

331

332 **Q: Please describe any clarifying revisions being made.**

333 A: In addition to the change described in my responses to the previous questions, the
334 revisions in this filing make two clarifying changes. The first is a clarifying change to the
335 Capacity Balancing Ratio formula, specifically, to the definition of the "Load" term used
336 in the ratio's numerator. The currently effective Tariff states that "Load = the total
337 amount of Actual Capacity Provided (excluding applicable Real-Time Reserve
338 Designations) from all resources in the New England Control Area during the interval";
339 the revisions add "provided, however, that if the interval occurs outside of Demand
340 Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Actual
341 Capacity Provided of any applicable Energy Efficiency measures shall be zero, as
342 specified in Section III.13.7.2.2(c)(i)." This is a clarifying change because the Actual
343 Capacity Provided of Energy Efficiency resources is set to zero in an earlier section of
344 the currently effective Tariff (Section III.13.7.2.2). While this addition is therefore not
345 necessary, it is being added to serve as a clarifying reminder of how this calculation is
346 performed.

347

348 The second clarifying change is the addition of the modifier “applicable” before an
349 appearance of the phrase “Energy Efficiency measures” in Section III.13.7.2.4, which
350 discusses the Capacity Performance Score. The relevant portion of the sentence will now
351 read: “if the Capacity Scarcity Condition occurs in an interval outside of Demand
352 Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then
353 the Actual Capacity Provided and Capacity Supply Obligation associated with any
354 applicable Energy Efficiency measures shall be excluded from the calculation of the
355 resource’s Capacity Performance Score.”

356
357 The word “applicable” is a useful addition here because an Energy Efficiency measure
358 can be a component of one of two types of resources—On-Peak Demand Resources or
359 Seasonal Peak Demand Resources. The two types of resources have different reporting
360 hours (respectively referred to as Demand Resource On-Peak Hours and Demand
361 Resource Seasonal Peak Hours) and the reporting hours need not coincide. If a Capacity
362 Scarcity Condition occurs in, for example, an interval outside of Demand Resource
363 *Seasonal* Peak Hours, the remainder of the sentence is applicable only to those Energy
364 Efficiency measures that are associated with *Seasonal* Peak Demand Resources—the
365 addition of the word “applicable” helps clarify this point.

366

367 Q: Does this conclude your testimony?

368 A: Yes.

369

370

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

372

373

374 Executed on June 2, 2020

375

376

Ryan McCarthy

377 Ryan McCarthy, Lead Analyst, ISO New England Market Development Department

III.13.7. Performance, Payments and Charges in the FCM.

Revenue in the Forward Capacity Market for resources providing capacity shall be composed of Capacity Base Payments as described in Section III.13.7.1 and Capacity Performance Payments as described in Section III.13.7.2, adjusted as described in Section III.13.7.3 and Section III.13.7.4. Market Participants with a Capacity Load Obligation will be subject to charges as described in Section III.13.7.5.

In the event of a change in the Lead Market Participant for a resource that has a Capacity Supply Obligation, the Capacity Supply Obligation shall remain associated with the resource and the new Lead Market Participant for the resource shall be bound by all provisions of this Section III.13 arising from such Capacity Supply Obligation. The Lead Market Participant for the resource at the start of an Obligation Month shall be responsible for all payments and charges associated with that resource in that Obligation Month.

III.13.7.1. Capacity Base Payments.

Resources acquiring or shedding a Capacity Supply Obligation for the Obligation Month shall receive a Capacity Base Payment for the Obligation Month reflecting the payments and charges described in Section III.13.7.1.1, as adjusted to account for peak energy rents as described in Section III.13.7.1.2.

III.13.7.1.1. Monthly Payments and Charges Reflecting Capacity Supply Obligations.

Each resource that has: (i) cleared in a Forward Capacity Auction, except for the portion of resources designated as Self-Supplied FCA Resources; (ii) cleared in a reconfiguration auction; or (iii) entered into a Capacity Supply Obligation Bilateral shall be entitled to a monthly payment or charge during the Capacity Commitment Period based on the following amounts:

(a) **Forward Capacity Auction.** For a resource whose offer has cleared in a Forward Capacity Auction, the monthly capacity payment shall equal the product of its cleared capacity and the Capacity Clearing Price in the Capacity Zone in which the resource is located as adjusted by applicable indexing for resources with additional Capacity Commitment Period elections pursuant to Section III.13.1.1.2.2.4 in the manner described below. For a resource that has elected to have the Capacity Clearing Price and the Capacity Supply Obligation apply for more than one Capacity Commitment Period, payments associated with the Capacity Supply Obligation and Capacity Clearing Price (indexed using the Handy-Whitman Index of Public Utility Construction Costs in effect as of December 31 of the year preceding the Capacity Commitment Period) shall continue to apply after the Capacity Commitment Period associated

with the Forward Capacity Auction in which the offer clears, for up to six additional and consecutive Capacity Commitment Periods, in whole Capacity Commitment Period increments only.

(b) **Reconfiguration Auctions.** For a resource whose offer or bid has cleared in an annual or monthly reconfiguration auction, the monthly capacity payment or charge shall be equal to the product of its cleared capacity and the appropriate reconfiguration auction clearing price in the Capacity Zone in which the resource cleared.

(c) **Capacity Supply Obligation Bilaterals.** For resources that have acquired or shed a Capacity Supply Obligation through a Capacity Supply Obligation Bilateral, the monthly capacity payment or charge shall be equal to the product of the Capacity Supply Obligation being assumed or shed and price associated with the Capacity Supply Obligation Bilateral.

(d) **Substitution Auctions.** For a resource whose offer or bid has cleared in a substitution auction, the monthly capacity payment or charge shall be equal to the product of its cleared capacity and the substitution auction clearing price. Notwithstanding the foregoing, the monthly capacity charge for a demand bid cleared at a substitution auction clearing price above its bid price shall be calculated using its bid price.

III.13.7.1.2 Peak Energy Rents.

For Capacity Commitment Periods beginning prior to June 1, 2019, Capacity Base Payments to resources with Capacity Supply Obligations, except for (1) On-Peak Demand Resources, (2) Seasonal Peak Demand Resources, and (3) New Generating Capacity Resources that have cleared in the Forward Capacity Auction and have completed construction but due to a planned transmission facility (e.g., a radial interconnection) not being in service are not able to achieve FCM Commercial Operation, shall be decreased by Peak Energy Rents (“PER”) calculated in each Capacity Zone, as determined pursuant to Section III.13.2.3.4 in the Forward Capacity Auction, as provided below. The PER calculation shall utilize hourly integrated Real-Time LMPs. For each Capacity Zone in the Forward Capacity Auction, as determined pursuant to Section III.13.2.3.4, PER shall be computed based on the load-weighted Real-Time LMPs for each Capacity Zone, using the Real-Time Hub Price for the Rest-of-Pool Capacity Zone. Self-Supplied FCA Resources shall not be subject to a PER adjustment on the portion of the resource that is self-supplied.

III.13.7.1.2.1 Hourly PER Calculations.

(a) For hours with a positive difference between the hourly Real-Time energy price and a strike price, the ISO shall compute PER for each hour ("Hourly PER") equal to this positive difference in accordance with one of the following formulas, which include scaling adjustments for system load and availability:

For hours within the period beginning September 30, 2016 through May 31, 2018:

$$\text{Hourly PER}(\$/\text{kW}) = [(\text{LMP} - \text{Adjusted Hourly PER Strike Price}) * [\text{Scaling Factor}] * [\text{Availability Factor}]$$

Where:

$$\text{Adjusted Hourly PER Strike Price} = \text{Strike Price} + \text{Hourly PER Adjustment}$$

$$\text{Hourly PER Adjustment} = \text{average of Five-Minute PER Strike Price Adjustment values}$$

$$\text{Five-Minute PER Strike Price Adjustment} = \text{MAX} (\text{Thirty-Minute Operating Reserve clearing price} - \$500/\text{MWh}, 0) + \text{MAX} (\text{Ten-Minute Non-Spinning Reserve clearing price} - \text{Thirty-Minute Operating Reserve clearing price} - \$850/\text{MWh}, 0).$$

Strike Price = as defined below

Scaling Factor = as defined below

Availability Factor = as defined below

For all other hours:

$$\text{Hourly PER}(\$/\text{kW}) = [\text{LMP} - \text{Strike Price}] * [\text{Scaling Factor}] * [\text{Availability Factor}]$$

Where:

Strike Price = the heat rate x fuel cost of the PER Proxy Unit described below.

Scaling Factor = the ratio of actual hourly integrated system load (calculated as the sum of Real-Time Load Obligations for the system as calculated in the settlement of the Real-Time Energy Market and adjusted for losses and including imports delivered in the Real-Time Energy Market)

and the 50/50 predicted peak system load reduced appropriately for Demand Capacity Resources, used in the most recent calculation of the Installed Capacity Requirement for that Capacity Commitment Period, capped at an hourly ratio of 1.0.

Availability Factor = 0.95.

(b) PER Proxy Unit characteristics shall be as follows:

(i) The PER Proxy Unit shall be indexed to the marginal fuel, which shall be the higher of the following, as determined on a daily basis: ultra low-sulfur No. 2 oil measured at New York Harbor plus a seven percent markup for transportation; or day-ahead gas measured at the AGT-CG (Non-G) hub;

(ii) The PER Proxy Unit shall be assumed to have no start-up, ramp rate or minimum run time constraints;

(iii) The PER Proxy Unit shall have a 22,000 Btu/kWh heat rate. This assumption shall be periodically reviewed after the first Capacity Commitment Period by the ISO to ensure that the heat rate continues to reflect a level slightly higher than the marginal generating unit in the region that would be dispatched as the system enters a scarcity condition. Any changes to the heat rate of the PER Proxy Unit shall be considered in the stakeholder process in consultation with the state utility regulatory agencies, shall be filed pursuant to Section 205 of the Federal Power Act, and shall be applied prospectively to the settlement of future Forward Capacity Auctions.

III.13.7.1.2.2. Monthly PER Application.

The Hourly PER shall be summed for each calendar month to determine the total PER for that month ("Monthly PER"). The ISO shall then calculate the Average Monthly PER earned by the proxy unit. The Average Monthly PER shall be equal to the average of the Monthly PER values for the 12 months prior to the Obligation Month. The PER deduction for each resource shall be calculated as the Average Monthly PER multiplied by the resource's Capacity Supply Obligation for the Obligation Month (less any Capacity Supply Obligation MW from any portion of a Self-Supplied FCA Resource); provided, however, that in no case shall a resource's PER deduction for an Obligation Month be less than zero or greater than the product of the resource's Capacity Supply Obligation and the relevant Forward Capacity Auction Capacity Clearing Price.

III.13.7.1.3. Export Capacity.

If there are any Export Bids or Administrative Export De-List Bids from resources located in an export-constrained Capacity Zone or in the Rest-of-Pool Capacity Zone that have cleared in the Forward Capacity Auction and if the resource is exporting capacity at an export interface that is connected to an import-constrained Capacity Zone or the Rest-of-Pool Capacity Zone that is different than the Capacity Zone in which the resource is located, then charges and credits are applied as follows (for the following calculation, the Capacity Clearing Price will be the value prior to PER adjustments).

Charge Amount to Resource Exporting = [Capacity Clearing Price_{location of the interface} - Capacity Clearing Price_{location of the resource}] x Cleared MWs of Export Bid or Administrative Export De-List Bid]

Credit Amount to Capacity Load Obligations in the Capacity Zone where the export interface is located = [Capacity Clearing Price_{location of the interface} - Capacity Clearing Price_{location of the resource}] x Cleared MWs of Export Bid or Administrative Export De-list Bid]

Credits and charges to load in the applicable Capacity Zones, as set forth above, shall be allocated in proportion to each LSE's Capacity Load Obligation as calculated in Section III.13.7.5.2.

III.13.7.1.4. [Reserved.]

III.13.7.2 Capacity Performance Payments.

III.13.7.2.1 Definition of Capacity Scarcity Condition.

A Capacity Scarcity Condition shall exist in a Capacity Zone for any five-minute interval in which the Real-Time Reserve Clearing Price for that entire Capacity Zone is set based on the Reserve Constraint Penalty Factor pricing for: (i) the Minimum Total Reserve Requirement; (ii) the Ten-Minute Reserve Requirement; or (iii) the Zonal Reserve Requirement, each as described in Section III.2.7A(c); provided, however, that a Capacity Scarcity Condition shall not exist if the Reserve Constraint Penalty Factor pricing results only because of resource ramping limitations that are not binding on the energy dispatch.

III.13.7.2.2 Calculation of Actual Capacity Provided During a Capacity Scarcity Condition.

For each five-minute interval in which a Capacity Scarcity Condition exists, the ISO shall calculate the Actual Capacity Provided by each resource, whether or not it has a Capacity Supply Obligation, in any Capacity Zone that is subject to the Capacity Scarcity Condition. For resources not having a Capacity Supply Obligation (including External Transactions), the Actual Capacity Provided shall be calculated using the provision below applicable to the resource type. Notwithstanding the specific provisions of this Section III.13.7.2.2, no resource shall have an Actual Capacity Provided that is less than zero.

(a) A Generating Capacity Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the sum of the resource's output during the interval plus the resource's Reserve Quantity For Settlement during the interval; provided, however, that if the resource's output was limited during the Capacity Scarcity Condition as a result of a transmission system limitation, then the resource's Actual Capacity Provided may not be greater than the sum of the resource's Desired Dispatch Point during the interval, plus the resource's Reserve Quantity For Settlement during the interval. Where the resource is associated with one or more External Transaction sales submitted in accordance with Section III.1.10.7(f), the resource will have its hourly Actual Capacity Provided reduced by the hourly integrated delivered MW for the External Transaction sale or sales.

(b) An Import Capacity Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the net energy delivered during the interval in which the Capacity Scarcity Condition occurred. Where a single Market Participant owns more than one Import Capacity Resource, then the difference between the total net energy delivered from those resources and the total of the Capacity Supply Obligations of those resources shall be allocated to those resources pro rata.

(c) An On-Peak Demand Resource or Seasonal Peak Demand Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the sum of the Actual Capacity Provided for each of its components, as determined below, where the MWhs of reduction, other than MWhs associated with Net Supply, are increased by average avoided peak transmission and distribution losses.

(i) For Energy Efficiency measures, if the Capacity Scarcity Condition occurs during Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided shall be equal to the applicable reported monthly performance value; if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided shall be zero.

- (ii) For Distributed Generation measures submitting meter data for the full 24 hour calendar day during which the Capacity Scarcity Condition occurs, the Actual Capacity Provided shall be equal to the submitted meter data, adjusted as necessary for the five-minute interval in which the Capacity Scarcity Condition occurs.
 - (iii) For Load Management measures submitting meter data for the full 24 hour calendar day during which the Capacity Scarcity Condition occurs, the Actual Capacity Provided shall be equal to the submitted demand reduction data, adjusted as necessary for the five-minute interval in which the Capacity Scarcity Condition occurs.
 - (iv) Notwithstanding any other provision of this Section III.13.7.2.2(c), for any On-Peak Demand Resource or Seasonal Peak Demand Resource that fails to provide the data necessary for the ISO to determine the Actual Capacity Provided as described in this Section III.13.7.2.2(c), the Actual Capacity Provided shall be zero.
- (d) An Active Demand Capacity Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the sum of the Actual Capacity Provided by its constituent Demand Response Resources during the Capacity Scarcity Condition.
- (i) A Demand Response Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be: (1) the sum of the Real-Time demand reduction of its constituent Demand Response Assets (provided, however, that if the Demand Response Resource was limited during the Capacity Scarcity Condition as a result of a transmission system limitation, then the sum of the Real-Time demand reduction of its constituent Demand Response Assets may not be greater than its Desired Dispatch Point during the interval), plus (2) the Demand Response Resource's Reserve Quantity For Settlement, where the MW quantity, other than the MW quantity associated with Net Supply, is increased by average avoided peak transmission and distribution losses; provided, however, that a Demand Response Resource's Actual Capacity Provided shall not be less than zero.
 - (ii) The Real-Time demand reduction of a Demand Response Asset shall be calculated as described in Section III.8.4, except that: (1) in the case of a Demand Response Asset that is on a forced or scheduled curtailment as described in Section III.8.3, a Real-Time

demand reduction shall also be calculated for intervals in which the associated Demand Response Resource does not receive a non-zero Dispatch Instruction; (2) in the case of a Demand Response Asset that is on a forced or scheduled curtailment as described in Section III.8.3, the minuend in the calculation described in Section III.8.4 shall be the unadjusted Demand Response Baseline of the Demand Response Asset; and (3) the resulting MWhs of reduction, other than the MWhs associated with Net Supply, shall be increased by average avoided peak transmission and distribution losses.

III.13.7.2.3 Capacity Balancing Ratio.

For each five-minute interval in which a Capacity Scarcity Condition exists, the ISO shall calculate a Capacity Balancing Ratio using the following formula:

$$(\text{Load} + \text{Reserve Requirement}) / \text{Total Capacity Supply Obligation}$$

(a) If the Capacity Scarcity Condition is a result of a violation of the Minimum Total Reserve Requirement such that the associated system-wide Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the New England Control Area during the interval-; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Actual Capacity Provided of any applicable Energy Efficiency measures shall be zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Minimum Total Reserve Requirement during the interval.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the New England Control Area during the interval-; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Capacity Supply Obligations associated with any applicable Energy Efficiency measures shall be excluded from the total amount of Capacity Supply Obligations.

(b) If the Capacity Scarcity Condition is a result of a violation of the Ten-Minute Reserve Requirement such that the associated system-wide Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the New England Control Area during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Actual Capacity Provided of any applicable Energy Efficiency measures shall be zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Ten-Minute Reserve Requirement during the interval.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the New England Control Area during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Capacity Supply Obligations associated with any applicable Energy Efficiency measures shall be excluded from the total amount of Capacity Supply Obligations.

(c) If the Capacity Scarcity Condition is a result of a violation of the Zonal Reserve Requirement such that the associated Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the Capacity Zone during the interval plus the net amount of energy imported into the Capacity Zone from outside the New England Control Area during the interval (but not less than zero); provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Actual Capacity Provided of any applicable Energy Efficiency measures shall zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Zonal Reserve Requirement minus any reserve support coming into the Capacity Zone over the internal transmission interface.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the Capacity Zone during the interval; provided however, that if the interval occurs outside of Demand Resource On-

Peak Hours or Demand Resource Seasonal Peak Hours, then the Capacity Supply Obligations associated with any applicable Energy Efficiency measures shall be excluded from the total amount of Capacity Supply Obligations.

(d) The following provisions shall be used to determine the applicable Capacity Balancing Ratio where more than one of the conditions described in subsections (a), (b), and (c) apply in a Capacity Zone.

(i) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with both the Minimum Total Reserve Requirement and the Ten-Minute Reserve Requirement, but not the Zonal Reserve Requirement, the Capacity Balancing Ratio shall be calculated as described in Section III.13.7.2.3(a) for resources in that Capacity Zone.

(ii) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with both the Ten-Minute Reserve Requirement and the Zonal Reserve Requirement, but not the Minimum Total Reserve Requirement, the Capacity Balancing Ratio for resources in that Capacity Zone shall be the higher of the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(b) and the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(c).

(iii) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with the Minimum Total Reserve Requirement and the Zonal Reserve Requirement (regardless of whether the Capacity Zone is also subject to Reserve Constraint Penalty Factor pricing associated with the Ten-Minute Reserve Requirement), the Capacity Balancing Ratio for resources in that Capacity Zone shall be the higher of the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(a) and the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(c).

III.13.7.2.4 Capacity Performance Score.

Each resource, whether or not it has a Capacity Supply Obligation, will be assigned a Capacity Performance Score for each five-minute interval in which a Capacity Scarcity Condition exists in the Capacity Zone in which the resource is located. A resource's Capacity Performance Score for the interval shall equal the resource's Actual Capacity Provided during the interval minus the product of the resource's Capacity Supply Obligation (which for this purpose shall not be less than zero) and the applicable Capacity Balancing Ratio; provided, however, that for an On-Peak Demand Resource or a

Seasonal Peak Demand Resource, (i) if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided and Capacity Supply Obligation associated with any applicable Energy Efficiency measures shall be excluded from the calculation of the resource's Capacity Performance Score; and (ii) for any Energy Efficiency, Load Management, or Distributed Generation measures reflected as a reduction in the load forecast as described in Section III.12.8 the Actual Capacity Provided and Capacity Supply Obligation shall be excluded from the calculation of the resource's Capacity Performance Score. The resulting Capacity Performance Score may be positive, zero, or negative.

III.13.7.2.5 Capacity Performance Payment Rate.

For the three Capacity Commitment Periods beginning June 1, 2018 and ending May 31, 2021, the Capacity Performance Payment Rate shall be \$2000/MWh. For the three Capacity Commitment Periods beginning June 1, 2021 and ending May 31, 2024, the Capacity Performance Payment Rate shall be \$3500/MWh. For the Capacity Commitment Period beginning on June 1, 2024 and ending on May 31, 2025 and thereafter, the Capacity Performance Payment Rate shall be \$5455/MWh. The ISO shall review the Capacity Performance Payment Rate in the stakeholder process as needed and shall file with the Commission a new Capacity Performance Payment Rate if and as appropriate.

III.13.7.2.6 Calculation of Capacity Performance Payments.

For each resource, whether or not it has a Capacity Supply Obligation, the ISO shall calculate a Capacity Performance Payment for each five-minute interval in which a Capacity Scarcity Condition exists in the Capacity Zone in which the resource is located. A resource's Capacity Performance Payment for an interval shall equal the resource's Capacity Performance Score for the interval multiplied by the Capacity Performance Payment Rate. The resulting Capacity Performance Payment for an interval may be positive or negative.

III.13.7.3 Monthly Capacity Payment and Capacity Stop-Loss Mechanism.

Each resource's Monthly Capacity Payment for an Obligation Month, which may be positive or negative, shall be the sum of the resource's Capacity Base Payment for the Obligation Month plus the sum of the resource's Capacity Performance Payments for all five-minute intervals in the Obligation Month, except as provided in Section III.13.7.3.1 and Section III.13.7.3.2 below.

III.13.7.3.1 Monthly Stop-Loss.

If the sum of the resource's Capacity Performance Payments (excluding any Capacity Performance Payments associated with Actual Capacity Provided above the resource's Capacity Supply Obligation in any interval) for all five-minute intervals in the Obligation Month is negative, the amount subtracted from the resource's Capacity Base Payment for the Obligation Month will be limited to an amount equal to the product of the applicable Forward Capacity Auction Starting Price multiplied by the resource's Capacity Supply Obligation for the Obligation Month (or, in the case of a resource subject to a multi-year Capacity Commitment Period election made in a Forward Capacity Auction prior to the ninth Forward Capacity Auction as described in Sections III.13.1.1.2.2.4 and III.13.1.4.1.1.2.7, the amount subtracted from the resource's Capacity Base Payment for the Obligation Month will be limited to an amount equal to the product of the applicable Capacity Clearing Price (indexed for inflation) multiplied by the resource's Capacity Supply Obligation for the Obligation Month).

III.13.7.3.2 Annual Stop-Loss.

(a) For each Obligation Month, the ISO shall calculate a stop-loss amount equal to:

$$\text{MaxCSO} \times [3 \text{ months} \times (\text{FCACP} - \text{FCASP}) - (12 \text{ months} \times \text{FCACP})]$$

Where:

MaxCSO = the resource's highest monthly Capacity Supply Obligation in the Capacity Commitment Period to date.

FCACP = the Capacity Clearing Price for the relevant Forward Capacity Auction.

FCASP = the Forward Capacity Auction Starting Price for the relevant Forward Capacity Auction.

(b) For each Obligation Month, the ISO shall calculate each resource's cumulative Capacity Performance Payments as the sum of the resource's Capacity Performance Payments for all months in the Capacity Commitment Period to date, with those monthly amounts limited as described in Section III.13.7.3.1.

(c) If the sum of the resource's Capacity Performance Payments (excluding any Capacity Performance Payments associated with Actual Capacity Provided above the resource's Capacity Supply

Obligation in any interval) for all five-minute intervals in the Obligation Month is negative, the amount subtracted from the resource's Capacity Base Payment for the Obligation Month will be limited to an amount equal to the difference between the stop-loss amount calculated as described in Section III.13.7.3.2(a) and the resource's cumulative Capacity Performance Payments as described in Section III.13.7.3.2(b).

III.13.7.4 Allocation of Deficient or Excess Capacity Performance Payments.

For each type of Capacity Scarcity Condition as described in Section III.13.7.2.1 and for each Capacity Zone, the ISO shall allocate deficient or excess Capacity Performance Payments as described in subsections (a) and (b) below. Where more than one type of Capacity Scarcity Condition applies, then the provisions below shall be applied in proportion to the duration of each type of Capacity Scarcity Condition.

(a) If the sum of all Capacity Performance Payments to all resources subject to the Capacity Scarcity Condition in the Capacity Zone in an Obligation Month is positive, the deficiency will be charged to resources in proportion to each such resource's Capacity Supply Obligation for the Obligation Month, excluding any resources subject to the stop-loss mechanism described in Section III.13.7.3 for the Obligation Month. If the charge described in this Section III.13.7.4(a) causes a resource to reach the stop-loss limit described in Section III.13.7.3, then the stop-loss cap described in Section III.13.7.3 will be applied to that resource, and the remaining deficiency will be further allocated to other resources in the same manner as described in this Section III.13.7.4(a).

(b) If the sum of all Capacity Performance Payments to all resources subject to the Capacity Scarcity Condition in the Capacity Zone in an Obligation Month is negative, the excess will be credited to all such resources in proportion to each resource's Capacity Supply Obligation for the Obligation Month. For a resource subject to the stop-loss mechanism described in Section III.13.7.3 for the Obligation Month, any such credit shall be reduced (though not to less than zero) by the amount not charged to the resource as a result of the application of the stop-loss mechanism described in Section III.13.7.3, and the remaining excess will be further allocated to other resources in the same manner as described in this Section III.13.7.4(b)

III.13.7.5. Charges to Market Participants with Capacity Load Obligations.

III.13.7.5.1. Calculation of Capacity Charges Prior to June 1, 2022.

The provisions in this subsection apply to charges associated with Capacity Commitment Periods beginning prior to June 1, 2022. A load serving entity with a Capacity Load Obligation as of the end of the Obligation Month shall be subject to a charge equal to the product of: (a) its Capacity Load Obligation in the Capacity Zone; and (b) the applicable Net Regional Clearing Price. The Net Regional Clearing Price is defined as the sum of the total payments as defined in Section III.13.7 paid to resources with Capacity Supply Obligations in the Capacity Zone (excluding any capacity payments and charges made for Capacity Supply Obligation Bilaterals and excluding any Capacity Performance Payments), less PER adjustments for resources in the zone as defined in Section III.13.7.1.2, and including any applicable export charges or credits as determined pursuant to Section III.13.7.1.3 divided by the sum of all Capacity Supply Obligations (excluding (i) the quantity of capacity subject to Capacity Supply Obligation Bilaterals and (ii) the quantity of capacity clearing as Self-Supplied FCA Resources) assumed by resources in the zone. A load serving entity satisfying its Capacity Load Obligation by a Self-Supplied FCA Resource shall not receive a credit for any PER payment for its Capacity Load Obligation so satisfied. A load serving entity with a Capacity Load Obligation as of the end of the Obligation Month may also receive a failure to cover credit equal to the product of: (a) its Capacity Load Obligation in the Capacity Zone, and; (b) the sum of all failure to cover charges in the Capacity Zone calculated pursuant to Section III.13.3.4(b), divided by total Capacity Load Obligation in the Capacity Zone.

III.13.7.5.1.1. Calculation of Capacity Charges On and After June 1, 2022.

The provisions in this subsection apply to charges associated with Capacity Commitment Periods beginning on or after June 1, 2022. For purposes of this Section III.13.7.5.1.1, Capacity Zone costs calculated for a Capacity Zone that contains a nested Capacity Zone shall exclude the Capacity Zone costs of the nested Capacity Zone. A Market Participant with a Capacity Load Obligation as of the end of the Obligation Month shall be subject to the following charges and adjustments:

III.13.7.5.1.1.1 Forward Capacity Auction Charge.

The FCA charge, for each Capacity Zone, is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Capacity Zone FCA Costs divided by Zonal Capacity Obligation.

Where

Capacity Zone FCA Costs, for each Capacity Zone, are the Total FCA Costs multiplied by the Zonal Peak Load Allocator and divided by the Total Peak Load Allocator.

Total FCA Costs are the sum of, for all Capacity Zones, (i) Capacity Supply Obligations in each zone (the total obligation awarded to or shed by resources in the Forward Capacity Auction process for the Obligation Month in the zone, excluding any obligations awarded to Intermittent Power Resources that are the basis for the Intermittent Power Resource Capacity Adjustment specified in Section III.13.7.5.1.1.6 and excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A) multiplied by the applicable clearing price from the auction in which the obligation was awarded to (or shed by) the resource, and (ii) the difference between the bid price and the substitution auction clearing price that was not included in the capacity charge pursuant to the second sentence of Section III.13.7.1.1(d). Capacity Supply Obligations awarded to Proxy De-List Bids in the primary auction, or shed by demand bids entered into the substitution auction on behalf of a Proxy De-List Bid, are excluded from Total FCA Costs.

Zonal Peak Load Allocator is the Zonal Capacity Obligation multiplied by the zonal Capacity Clearing Price.

Total Peak Load Allocator is the sum of the Zonal Peak Load Allocators.

III.13.7.5.1.1.2 Annual Reconfiguration Auction Charge.

The total annual reconfiguration auction charge, for each Capacity Zone and each associated annual reconfiguration auction, is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Capacity Zone Annual Reconfiguration Auction Costs divided by Zonal Capacity Obligation.

Where

Capacity Zone Annual Reconfiguration Auction Costs, for each Capacity Zone, are the Total Annual Reconfiguration Costs multiplied by the Zonal Peak Load Allocator and divided by the Total Peak Load Allocator.

Total Annual Reconfiguration Auction Costs are the sum, for all Capacity Zones and each associated annual reconfiguration auction, of the product of the Capacity Supply Obligations acquired through the annual reconfiguration auction in each zone (adjusted for any obligations procured in the annual reconfiguration auction that are subsequently terminated pursuant to Section III.13.3.4A) and the zonal annual reconfiguration auction clearing price, minus the sum, for all Capacity Zones, of the product of the amount of any Capacity Supply Obligation shed

through the annual reconfiguration auction in each zone and the applicable annual reconfiguration auction clearing price.

Zonal Peak Load Allocator is the Zonal Capacity Obligation multiplied by the zonal annual reconfiguration auction clearing price.

Total Peak Load Allocator is the sum of the Zonal Peak Load Allocators.

III.13.7.5.1.1.3. Monthly Reconfiguration Auction Charge.

The monthly reconfiguration auction charge is: (a) total Capacity Load Obligation for all Capacity Zones; multiplied by (b) Total Monthly Reconfiguration Auction Costs divided by Total Zonal Capacity Obligation.

Where

Total Monthly Reconfiguration Auction Costs are the sum of, for all Capacity Zones, the product of Capacity Supply Obligations acquired through the monthly reconfiguration auction in each zone and the applicable monthly reconfiguration auction clearing price, minus the sum of, for all Capacity Zones, any Capacity Supply Obligations shed through the monthly reconfiguration auction in each zone and the applicable monthly reconfiguration auction clearing price.

Total Zonal Capacity Obligation is the total of the Zonal Capacity Obligation in all Capacity Zones.

III.13.7.5.1.1.4. HQICC Capacity Charge.

The HQICC capacity charge is: (a) total Capacity Load Obligation for all Capacity Zones; multiplied by (b) Total HQICC Credits divided by Total Capacity Load Obligation.

Where

Total HQICC credits are the product of HQICCs multiplied by the sum of the values calculated in Sections III.13.7.5.1.1.1(b), III.13.7.5.1.1.2(b), III.13.7.5.1.1.3(b), III.13.7.5.1.1.6(b), III.13.7.5.1.1.7(b), III.13.7.5.1.1.8(b), and III.13.7.5.1.1.9(b) in the Capacity Zone in which the HQ Phase I/II external node is located.

Total Capacity Load Obligation is the total Capacity Load Obligation in all Capacity Zones.

III.13.7.5.1.1.5. Self-Supply Adjustment.

The self-supply adjustment is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) the Self-Supply Variance divided by Total Capacity Load Obligation.

Where

Self-Supply Variance is the difference between foregone capacity payments and avoided capacity charges associated with designated self-supply quantities.

Foregone capacity payments to Self-Supplied FCA Resources are the sum, for all Capacity Zones, of the product of the zonal Capacity Supply Obligation (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A) designated as self-supply, multiplied by the applicable clearing price from the auction in which the obligation was awarded.

Avoided capacity charges are the sum, for all Capacity Zones, of the product of any designated self-supply quantities multiplied by the sum of the values calculated in Sections III.13.7.5.1.1.1(b), III.13.7.5.1.1.2(b), III.13.7.5.1.1.3(b), III.13.7.5.1.1.6(b), III.13.7.5.1.1.7(b), III.13.7.5.1.1.8(b), and III.13.7.5.1.1.9(b) in the Capacity Zone associated with the designated self-supply quantity.

Total Capacity Load Obligation is the total Capacity Load Obligation in all Capacity Zones.

III.13.7.5.1.1.6. Intermittent Power Resource Capacity Adjustment.

The Intermittent Power Resource capacity adjustment in a winter season for the Obligation Months from October through May is: (a) total Capacity Load Obligation for all Capacity Zones; multiplied by (b) the Intermittent Power Resource Seasonal Variance divided by Total Zonal Capacity Obligation.

Where

Intermittent Power Resource Seasonal Variance is the difference between the FCA payments for Intermittent Power Resource in the Obligation Month and the base FCA payments for Intermittent Power Resources.

FCA payments to Intermittent Power Resources are the sum, for all Capacity Zones, of the product of the Capacity Supply Obligations awarded to or shed by Intermittent Power Resources in the Forward Capacity Auction process for the Obligation Month pursuant to Section III.13.2.7.6 or Section III.13.2.8.1.1 (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A), multiplied by the applicable clearing price from the auction in which the obligation was awarded.

Base FCA payments for Intermittent Power Resources are the sum, for all Capacity Zones, of the product of the FCA Qualified Capacity procured from or shed by Intermittent Power Resources in the Forward Capacity Auction process (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A), multiplied by the applicable clearing price from the auction in which the obligation was awarded.

Total Zonal Capacity Obligation is the total Capacity Load Obligation in all Capacity Zones.

III.13.7.5.1.1.7. Multi-Year Rate Election Adjustment.

For multi-year rate elections made in the primary Forward Capacity Auction for Capacity Commitment Periods beginning on or after June 1, 2022, the multi-year rate election adjustment, for each Capacity Zone, is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Zonal Multi-Year Rate Election Costs divided by Zonal Capacity Obligation.

Where

Zonal Multi-Year Rate Election Costs is the sum, for each resource with a multi-year rate election in the Obligation Month, of the amount of Capacity Supply Obligation designated to receive the multi-year rate (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A), multiplied by the difference in the applicable zonal Capacity Clearing Price for the Forward Capacity Auction in which the resource originally was awarded a Capacity Supply Obligation (indexed using the Handy-Whitman Index of Public Utility Construction Costs in effect as of December 31 of the year preceding the Capacity Commitment Period) and the applicable zonal Capacity Clearing Price for the current Capacity Commitment Period, multiplied by the Zonal Peak Load Allocator for the Forward Capacity Auction in which the resource originally was awarded a Capacity Supply Obligation and divided by the Total Peak Load Allocator for the Forward Capacity Auction in which the resource originally was awarded a Capacity Supply Obligation.

Zonal Peak Load Allocator is the Zonal Capacity Obligation multiplied by the zonal Capacity Clearing Price.

Total Peak Load Allocator is the sum of the Zonal Peak Load Allocators.

For multi-year rate elections made in the primary Forward Capacity Auction for Capacity Commitment Periods beginning prior to June 1, 2022, the multi-year rate election adjustment, for each Capacity Zone, is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Zonal Multi-Year Rate Election Costs divided by Zonal Capacity Obligation.

Where

Zonal Multi-Year Rate Election Costs is the sum in each Capacity Zone, for each resource with a multi-year rate election in the Obligation Month, of the amount of Capacity Supply Obligation designated to receive the multi-year rate (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A), multiplied by the difference in the applicable zonal Capacity Clearing Price for the Forward Capacity Auction in which the resource originally was awarded a Capacity Supply Obligation (indexed using the Handy-Whitman Index of Public Utility Construction Costs in effect as of December 31 of the year preceding the Capacity Commitment Period) and the applicable zonal Capacity Clearing Price for the current Capacity Commitment Period.

III.13.7.5.1.1.8 CTR Transmission Upgrade Charge.

The CTR transmission upgrade charge is: (a) the Capacity Load Obligation in the Capacity Zones to which the applicable interface limits the transfer of capacity, multiplied by (b) Zonal CTR Transmission Upgrade Cost divided by Zonal Capacity Obligation.

Where

Zonal CTR Transmission Upgrade Cost for each Capacity Zone to which the interface limits the transfer of capacity is the amount calculated pursuant to Section III.13.7.5.4.4 (f), multiplied by the Zonal Capacity Obligation and divided by the sum of the Zonal Capacity Obligation for all Capacity Zones to which the interface limits the transfer of capacity.

III.13.7.5.1.1.9 CTR Pool-Planned Unit Charge.

The CTR Pool-Planned Unit charge is: (a) the Capacity Load Obligation in the Capacity Zone less the amount of any CTRs specifically allocated pursuant to Section III.13.7.5.4.5, multiplied by (b) CTR Pool-Planned Unit Cost divided by Total Zonal Capacity Obligation less the amount of any CTRs specifically allocated pursuant to Section III.13.7.5.4.5.

Where

The CTR Pool-Planned Unit Cost for each Capacity Zone is the sum of the amounts calculated pursuant to Section III.13.7.5.4.5 (b).

Total Zonal Capacity Obligation is the total of the Zonal Capacity Obligation in all Capacity Zones.

III.13.7.5.1.1.10. Failure to Cover Charge Adjustment.

The failure to cover charge adjustment, for each Capacity Zone, is (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Zonal Failure to Cover Charges divided by Zonal Capacity Obligation.

Where:

Zonal Failure to Cover Charges are the product of: (1) the sum, for all Capacity Zones, of the failure to cover charges calculated pursuant to Section III.13.3.4(b), and; (2) the Zonal Peak Load Allocator and divided by the Total Peak Load Allocator.

Zonal Peak Load Allocator is the Zonal Capacity Obligation multiplied by the zonal annual reconfiguration auction clearing price as determined pursuant to Section III.13.3.4.

Total Peak Load Allocator is the sum of the Zonal Peak Load Allocators.

III.13.7.5.2. Calculation of Capacity Load Obligation and Zonal Capacity Obligation.

The ISO shall assign each Market Participant a share of the Zonal Capacity Obligation prior to the commencement of each Obligation Month for each Capacity Zone established in the Forward Capacity Auction pursuant to Section III.13.2.3.4. The Zonal Capacity Obligation of a Capacity Zone that contains a nested Capacity Zone shall exclude the Zonal Capacity Obligation of the nested Capacity Zone.

Zonal Capacity Obligation for each month and Capacity Zone shall equal the product of: (i) the total of the system-wide Capacity Supply Obligations (excluding the quantity of capacity subject to Capacity

Supply Obligation Bilaterals for Capacity Commitment Periods beginning prior to June 1, 2022 and excluding any additional obligations awarded to Intermittent Power Resources pursuant to Section III.13.2.7.6 that exceed the FCA Qualified Capacity procured in the Forward Capacity Auction for Capacity Commitment Periods beginning on or after June 1, 2022) plus HQICCs; and (ii) the ratio of the sum of all load serving entities' annual coincident contributions to the system-wide annual peak load in that Capacity Zone from the calendar year two years prior to the start of the Capacity Commitment Period (for Capacity Commitment Periods beginning prior to June 1, 2022) and from the calendar year one year prior to the start of the Capacity Commitment Period (for Capacity Commitment Periods beginning on or after June 1, 2022) to the system-wide sum of all load serving entities' annual coincident contributions to the system-wide annual peak load from the calendar year two years prior to the start of the Capacity Commitment Period (for Capacity Commitment Periods beginning prior to June 1, 2022) and from the calendar year one year prior to the start of the Capacity Commitment Period (for Capacity Commitment Periods beginning on or after June 1, 2022).

The following loads are assigned a peak contribution of zero for the purposes of assigning obligations and tracking load shifts: load associated with the receipt of electricity from the grid by Storage DARDs for later injection of electricity back to the grid; Station service load that is modeled as a discrete Load Asset and the Resource is complying with the maintenance scheduling procedures of the ISO; load that is modeled as a discrete Load Asset and is exclusively related to an Alternative Technology Regulation Resource following AGC Dispatch Instructions; and transmission losses associated with delivery of energy over the Control Area tie lines.

A Market Participant's share of Zonal Capacity Obligation for each month and Capacity Zone shall equal the product of: (i) the Capacity Zone's Zonal Capacity Obligation as calculated above and (ii) the ratio of the sum of the load serving entity's annual coincident contributions to the system-wide annual peak load in that Capacity Zone from the calendar year prior to the start of the Capacity Commitment Period to the sum of all load serving entities' annual coincident contributions to the system-wide annual peak load in that Capacity Zone from the calendar year prior to the start of the Capacity Commitment Period.

A Market Participant's Capacity Load Obligation shall be its share of Zonal Capacity Obligation for each month and Capacity Zone, adjusted as appropriate to account for any relevant Capacity Load Obligation Bilaterals, HQICCs, and Self-Supplied FCA Resource designations. A Capacity Load Obligation can be a positive or negative value.

A Market Participant's share of Zonal Capacity Obligation will not be reconstituted to include the demand reduction of a Demand Capacity Resource or Demand Response Resource.

III.13.7.5.2.1. Charges Associated with Dispatchable Asset Related Demands.

Dispatchable Asset Related Demand resources will not receive Forward Capacity Market payments, but instead each Dispatchable Asset Related Demand resource will receive an adjustment to its share of the associated Coincident Peak Contribution based on the ability of the Dispatchable Asset Related Demand resource to reduce consumption. The adjustment to a load serving entity's Coincident Peak Contribution resulting from Dispatchable Asset Related Demand resource reduction in consumption shall be based on the Nominated Consumption Limit submitted for the Dispatchable Asset Related Demand resource. The Nominated Consumption Limit value of each Dispatchable Asset Related Demand resource is subject to adjustment as further described in the ISO New England Manuals, including adjustments based on the results of Nominated Consumption Limit audits performed in accordance with the ISO New England Manuals.

III.13.7.5.3. Excess Revenues.

(a) For Capacity Commitment Periods beginning prior to June 1, 2022, revenues collected from load serving entities in excess of revenues paid by the ISO to resources shall be paid by the ISO to the holders of Capacity Transfer Rights, as detailed in Section III.13.7.5.3.

(b) Any payment associated with a Capacity Supply Obligation Bilateral that was to accrue to a Capacity Acquiring Resource for a Capacity Supply Obligation that is terminated pursuant to Section III.13.3.4A shall instead be allocated to Market Participants based on their pro rata share of all Capacity Load Obligations in the Capacity Zone in which the terminated resource is located.

III.13.7.5.4. Capacity Transfer Rights.

III.13.7.5.4.1. Definition and Payments to Holders of Capacity Transfer Rights.

This subsection applies to Capacity Commitment Periods beginning prior to June 1, 2022.

Capacity Transfer Rights are calculated for each internal interface associated with a Capacity Zone established in the Forward Capacity Auction (as determined pursuant to Section III.13.2.3.4). Based upon results of the Forward Capacity Auction and reconfiguration auctions, the total CTR fund will be calculated as the difference between the charges to load serving entities with Capacity Load Obligations

and the payments to Capacity Resources as follows: The system-wide sum of the product of each Capacity Zone's Net Regional Clearing Price and absolute value of each Capacity Zone's Capacity Load Obligations, as calculated in Section III.13.7.5.1, minus the sum of the monthly capacity payments to Capacity Resources within each zone, as adjusted for PER.

Each Capacity Zone established in the Forward Capacity Auction (as determined pursuant to Section III.13.2.3.4) will be assigned its portion of the CTR fund.

For CTRs resulting from an export constrained zone, the assignment will be calculated as the product of: (i) the Net Regional Clearing Price for the Capacity Zone to which the applicable interface limits the transfer of capacity minus the Net Regional Clearing Price for the Capacity Zone from which the applicable interface limits the transfer of capacity; and (ii) the difference between the absolute value of the total Capacity Supply Obligations obtained in the exporting Capacity Zone, adjusted for Capacity Supply Obligations associated with Self-Supplied FCA Resources, and the absolute value of the total Capacity Load Obligations in the exporting Capacity Zone.

For CTRs resulting from an import constrained zone, the assignment will be calculated as the product of: (i) the Net Regional Clearing Price for the Capacity Zone to which the applicable interface limits the transfer of capacity minus the Net Regional Clearing Price for the absolute value of the Capacity Zone from which the applicable interface limits the transfer of capacity; and (ii) the difference between absolute value of the total Capacity Load Obligations in the importing Capacity Zone and the total Capacity Supply Obligations obtained in the importing Capacity Zone, adjusted for Capacity Supply Obligations associated with Self-Supplied FCA Resources.

III.13.7.5.4.2. Allocation of Capacity Transfer Rights.

This subsection applies to Capacity Commitment Periods beginning prior to June 1, 2022.

For Capacity Zones established in the Forward Capacity Auction as determined pursuant to Section III.13.2.3.4, the CTR fund shall be allocated among load serving entities using their Capacity Load Obligation (net of HQICCs) described in Section III.13.7.5.1. Market Participants with CTRs specifically allocated under Section III.13.7.5.3.6 will have their specifically allocated CTR MWs netted from their Capacity Load Obligation used to establish their share of the CTR fund.

(a) **Connecticut Import Interface.** The allocation of the CTR fund associated with the Connecticut Import Interface shall be made to load serving entities based on their Capacity Load Obligation in the Connecticut Capacity Zone.

(b) **NEMA/Boston Import Interface.** Except as provided in Section III.13.7.5.3.6 of Market Rule 1, the allocation of the CTR fund associated with the NEMA/Boston Import Interface shall be made to load serving entities based on their Capacity Load Obligation in the NEMA/Boston Capacity Zone.

III.13.7.5.4.3. Allocations of CTRs Resulting From Revised Capacity Zones.

This subsection applies to Capacity Commitment Periods beginning prior to June 1, 2022.

The portion of the CTR fund associated with revised definitions of Capacity Zones shall be fully allocated to load serving entities after deducting the value of applicable CTRs that have been specifically allocated. Allocations of the CTR fund among load serving entities will be made using their Capacity Load Obligations (net of HQICCs) as described in Section III.13.7.5.3.1. Market Participants with CTRs specifically allocated under Section III.13.7.5.3.6 will have their specifically allocated CTR MWs netted from the Capacity Load Obligation used to establish their share of the CTR fund.

(a) **Import Constraints.** The allocation of the CTR fund associated with newly defined import-constrained Capacity Zones restricting the transfer of capacity into a single adjacent import-constrained Capacity Zone shall be allocated to load serving entities with Capacity Load Obligations in that import-constrained Capacity Zone.

(b) **Export Constraints.** The allocation of the CTR fund associated with newly defined export-constrained Capacity Zones shall be allocated to load serving entities with Capacity Load Obligations on the import-constrained side of the interface.

III.13.7.5.4.4. Specifically Allocated CTRs Associated with Transmission Upgrades.

(a) A Market Participant that pays for transmission upgrades not funded through the Pool PTF Rate and which increase transfer capability across existing or potential Capacity Zone interfaces may request a specifically allocated CTR in an amount equal to the number of CTRs supported by that increase in transfer capability.

- (b) The allocation of additional CTRs created through generator interconnections completed after February 1, 2009 shall be made in accordance with the provisions of the ISO generator interconnection or planning standards. In the event the ISO interconnection or planning standards do not address this issue, the CTRs created shall be allocated in the same manner as described in Section III.13.7.5.4.2.
- (c) Specifically allocated CTRs shall expire when the Market Participant ceases to pay to support the transmission upgrades.
- (d) CTRs resulting from transmission upgrades funded through the Pool PTF Rate shall not be specifically allocated but shall be allocated in the same manner as described in Section III.13.7.5.4.2.
- (e) **Maine Export Interface.** Casco Bay shall receive specifically allocated CTRs of 325 MW across the Maine export interface for as long as Casco Bay continues to pay to support the transmission upgrades.
- (f) The value of CTRs specifically allocated pursuant to this Section shall be calculated as the product of: (i) the Capacity Clearing Price to which the applicable interface limits the transfer of capacity minus the Capacity Clearing Price from which the applicable interface limits the transfer of capacity; and (ii) the MW quantity of the specifically allocated CTRs across the applicable interface.

III.13.7.5.4.5. Specifically Allocated CTRs for Pool-Planned Units.

- (a) In import-constrained Capacity Zones, in recognition of longstanding life of unit contracts, the municipal utility entitlement holder of a resource constructed as Pool-Planned Units shall receive an initial allocation of CTRs equal to the most recent seasonal claimed capability of the ownership entitlements in such unit, adjusted for any designated self-supply quantities as described in Section III.13.1.6.2. Municipal utility entitlements are set as shown in the table below and are not transferrable.

Millstone 3		Seabrook	Stonybrook GT 1A	Stonybrook GT 1B	Stonybrook GT 1C	Stonybrook 2A	Stonybrook 2B	Wyman 4	Summer	Winter
									(MW)	(MW)
Nominal Summer (MW)	1155.001	1244.275	104.000	100.000	104.000	67.400	65.300	586.725		
Nominal Winter (MW)	1155.481	1244.275	119.000	116.000	119.000	87.400	85.300	608.575		
Danvers	0.2627%	1.1124%	8.4569%	8.4569%	8.4569%	11.5551%	11.5551%	0.0000%	58.26	63.73
Georgetown	0.0208%	0.0956%	0.7356%	0.7356%	0.7356%	1.0144%	1.0144%	0.0000%	5.04	5.55
Ipswich	0.0608%	0.1066%	0.2934%	0.2934%	0.2934%	0.0000%	0.0000%	0.0000%	2.93	2.37
Marblehead	0.1544%	0.1351%	2.6840%	2.6840%	2.6840%	1.5980%	1.5980%	0.2793%	15.49	15.64
Middleton	0.0440%	0.3282%	0.8776%	0.8776%	0.8776%	1.8916%	1.8916%	0.1012%	10.40	11.07
Peabody	0.2969%	1.1300%	13.0520%	13.0520%	13.0520%	0.0000%	0.0000%	0.0000%	57.69	60.26
Reading	0.4041%	0.6351%	14.4530%	14.4530%	14.4530%	19.5163%	19.5163%	0.0000%	82.98	92.77
Wakefield	0.2055%	0.3870%	3.9929%	3.9929%	3.9929%	6.3791%	6.3791%	0.4398%	30.53	32.64
Ashburnham	0.0307%	0.0652%	0.6922%	0.6922%	0.6922%	0.9285%	0.9285%	0.0000%	4.53	5.22
Boylston	0.0264%	0.0849%	0.5933%	0.5933%	0.5933%	0.9120%	0.9120%	0.0522%	4.71	5.35
Braintree	0.0000%	0.6134%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	7.63	7.63
Groton	0.0254%	0.1288%	0.8034%	0.8034%	0.8034%	1.0832%	1.0832%	0.0000%	5.81	6.61
Hingham	0.1007%	0.4740%	3.9815%	3.9815%	3.9815%	5.3307%	5.3307%	0.0000%	26.40	30.36
Holden	0.0726%	0.3971%	2.2670%	2.2670%	2.2670%	3.1984%	3.1984%	0.0000%	17.01	19.33
Holyoke	0.3194%	0.3096%	0.0000%	0.0000%	0.0000%	2.8342%	2.8342%	0.6882%	15.34	16.63

Hudson	0.1056%	1.6745%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.3395%	24.05	24.12
Hull	0.0380%	0.1650%	1.4848%	1.4848%	1.4848%	2.1793%	2.1793%	0.1262%	10.70	12.28
Littleton	0.0536%	0.1093%	1.5115%	1.5115%	1.5115%	3.0607%	3.0607%	0.1666%	11.67	13.63
Mansfield	0.1581%	0.7902%	5.0951%	5.0951%	5.0951%	7.2217%	7.2217%	0.0000%	36.93	42.17
Middleborough	0.1128%	0.5034%	2.0657%	2.0657%	2.0657%	4.9518%	4.9518%	0.1667%	21.48	24.45
North Attleborough	0.1744%	0.3781%	3.2277%	3.2277%	3.2277%	5.9838%	5.9838%	0.1666%	25.58	29.49
Pascoag	0.0000%	0.1068%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.33	1.33
Paxton	0.0326%	0.0808%	0.6860%	0.6860%	0.6860%	0.9979%	0.9979%	0.0000%	4.82	5.53
Shrewsbury	0.2323%	0.5756%	3.9105%	3.9105%	3.9105%	0.0000%	0.0000%	0.4168%	24.33	26.23
South Hadley	0.5755%	0.3412%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	10.89	10.90
Sterling	0.0294%	0.2044%	0.7336%	0.7336%	0.7336%	1.1014%	1.1014%	0.0000%	6.60	7.38
Taunton	0.0000%	0.1003%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.25	1.25
Templeton	0.0700%	0.1926%	1.3941%	1.3941%	1.3941%	2.3894%	2.3894%	0.0000%	10.67	12.27
Vermont Public Power Supply Authority	0.0000%	0.0000%	2.2008%	2.2008%	2.2008%	0.0000%	0.0000%	0.0330%	6.97	7.99
West Boylston	0.0792%	0.1814%	1.2829%	1.2829%	1.2829%	2.3041%	2.3041%	0.0000%	10.18	11.69
Westfield	1.1131%	0.3645%	9.0452%	9.0452%	9.0452%	13.5684%	13.5684%	0.7257%	67.51	77.27

This allocation of CTRs shall expire on December 31, 2040. If a resource listed in the table above retires prior to December 31, 2040, however, its allocation of CTRs shall expire upon retirement. In the event that the NEMA zone either becomes or is forecast to become a separate zone for Forward Capacity Auction purposes, National Grid agrees to discuss with Massachusetts Municipal Wholesale Electric Company (“MMWEC”) and Wellesley Municipal Light Plant, Reading Municipal Light Plant and Concord Municipal Light Plant (“WRC”) any proposal by National Grid to develop cost effective transmission improvements that would mitigate or alleviate the import constraints and to work cooperatively and in good faith with MMWEC and WRC regarding any such proposal. MMWEC and WRC agree to support any proposals advanced by National Grid in the regional system planning process to construct any such transmission improvements, provided that MMWEC and WRC determine that the proposed improvements are cost effective (without regard to CTRs) and will mitigate or alleviate the import constraints.

(b) The value of CTRs specifically allocated pursuant to this Section shall be calculated as the product of: (i) the Capacity Clearing Price for the Capacity Zone where the load of the municipal utility entitlement holder is located minus the Capacity Clearing Price for the Capacity Zone in which the Pool-Planned Unit is located, and; (ii) the MW quantity of the specifically allocated CTRs.

III.13.7.5.5. Forward Capacity Market Net Charge Amount.

The Forward Capacity Market net charge amount for each Market Participant as of the end of the Obligation Month shall be equal to the sum of: (a) its Capacity Load Obligation charges; (b) its revenues from any applicable specifically allocated CTRs; (c) its share of the CTR fund (for Capacity Commitment Periods beginning prior to June 1, 2022); and (d) any applicable export charges.

III.13.7. Performance, Payments and Charges in the FCM.

Revenue in the Forward Capacity Market for resources providing capacity shall be composed of Capacity Base Payments as described in Section III.13.7.1 and Capacity Performance Payments as described in Section III.13.7.2, adjusted as described in Section III.13.7.3 and Section III.13.7.4. Market Participants with a Capacity Load Obligation will be subject to charges as described in Section III.13.7.5.

In the event of a change in the Lead Market Participant for a resource that has a Capacity Supply Obligation, the Capacity Supply Obligation shall remain associated with the resource and the new Lead Market Participant for the resource shall be bound by all provisions of this Section III.13 arising from such Capacity Supply Obligation. The Lead Market Participant for the resource at the start of an Obligation Month shall be responsible for all payments and charges associated with that resource in that Obligation Month.

III.13.7.1. Capacity Base Payments.

Resources acquiring or shedding a Capacity Supply Obligation for the Obligation Month shall receive a Capacity Base Payment for the Obligation Month reflecting the payments and charges described in Section III.13.7.1.1, as adjusted to account for peak energy rents as described in Section III.13.7.1.2.

III.13.7.1.1. Monthly Payments and Charges Reflecting Capacity Supply Obligations.

Each resource that has: (i) cleared in a Forward Capacity Auction, except for the portion of resources designated as Self-Supplied FCA Resources; (ii) cleared in a reconfiguration auction; or (iii) entered into a Capacity Supply Obligation Bilateral shall be entitled to a monthly payment or charge during the Capacity Commitment Period based on the following amounts:

(a) **Forward Capacity Auction.** For a resource whose offer has cleared in a Forward Capacity Auction, the monthly capacity payment shall equal the product of its cleared capacity and the Capacity Clearing Price in the Capacity Zone in which the resource is located as adjusted by applicable indexing for resources with additional Capacity Commitment Period elections pursuant to Section III.13.1.1.2.2.4 in the manner described below. For a resource that has elected to have the Capacity Clearing Price and the Capacity Supply Obligation apply for more than one Capacity Commitment Period, payments associated with the Capacity Supply Obligation and Capacity Clearing Price (indexed using the Handy-Whitman Index of Public Utility Construction Costs in effect as of December 31 of the year preceding the Capacity Commitment Period) shall continue to apply after the Capacity Commitment Period associated

with the Forward Capacity Auction in which the offer clears, for up to six additional and consecutive Capacity Commitment Periods, in whole Capacity Commitment Period increments only.

(b) **Reconfiguration Auctions.** For a resource whose offer or bid has cleared in an annual or monthly reconfiguration auction, the monthly capacity payment or charge shall be equal to the product of its cleared capacity and the appropriate reconfiguration auction clearing price in the Capacity Zone in which the resource cleared.

(c) **Capacity Supply Obligation Bilaterals.** For resources that have acquired or shed a Capacity Supply Obligation through a Capacity Supply Obligation Bilateral, the monthly capacity payment or charge shall be equal to the product of the Capacity Supply Obligation being assumed or shed and price associated with the Capacity Supply Obligation Bilateral.

(d) **Substitution Auctions.** For a resource whose offer or bid has cleared in a substitution auction, the monthly capacity payment or charge shall be equal to the product of its cleared capacity and the substitution auction clearing price. Notwithstanding the foregoing, the monthly capacity charge for a demand bid cleared at a substitution auction clearing price above its bid price shall be calculated using its bid price.

III.13.7.1.2 Peak Energy Rents.

For Capacity Commitment Periods beginning prior to June 1, 2019, Capacity Base Payments to resources with Capacity Supply Obligations, except for (1) On-Peak Demand Resources, (2) Seasonal Peak Demand Resources, and (3) New Generating Capacity Resources that have cleared in the Forward Capacity Auction and have completed construction but due to a planned transmission facility (e.g., a radial interconnection) not being in service are not able to achieve FCM Commercial Operation, shall be decreased by Peak Energy Rents (“PER”) calculated in each Capacity Zone, as determined pursuant to Section III.13.2.3.4 in the Forward Capacity Auction, as provided below. The PER calculation shall utilize hourly integrated Real-Time LMPs. For each Capacity Zone in the Forward Capacity Auction, as determined pursuant to Section III.13.2.3.4, PER shall be computed based on the load-weighted Real-Time LMPs for each Capacity Zone, using the Real-Time Hub Price for the Rest-of-Pool Capacity Zone. Self-Supplied FCA Resources shall not be subject to a PER adjustment on the portion of the resource that is self-supplied.

III.13.7.1.2.1 Hourly PER Calculations.

(a) For hours with a positive difference between the hourly Real-Time energy price and a strike price, the ISO shall compute PER for each hour ("Hourly PER") equal to this positive difference in accordance with one of the following formulas, which include scaling adjustments for system load and availability:

For hours within the period beginning September 30, 2016 through May 31, 2018:

$$\text{Hourly PER}(\$/\text{kW}) = [(\text{LMP} - \text{Adjusted Hourly PER Strike Price}) * [\text{Scaling Factor}] * [\text{Availability Factor}]$$

Where:

$$\text{Adjusted Hourly PER Strike Price} = \text{Strike Price} + \text{Hourly PER Adjustment}$$

$$\text{Hourly PER Adjustment} = \text{average of Five-Minute PER Strike Price Adjustment values}$$

$$\text{Five-Minute PER Strike Price Adjustment} = \text{MAX} (\text{Thirty-Minute Operating Reserve clearing price} - \$500/\text{MWh}, 0) + \text{MAX} (\text{Ten-Minute Non-Spinning Reserve clearing price} - \text{Thirty-Minute Operating Reserve clearing price} - \$850/\text{MWh}, 0).$$

Strike Price = as defined below

Scaling Factor = as defined below

Availability Factor = as defined below

For all other hours:

$$\text{Hourly PER}(\$/\text{kW}) = [\text{LMP} - \text{Strike Price}] * [\text{Scaling Factor}] * [\text{Availability Factor}]$$

Where:

Strike Price = the heat rate x fuel cost of the PER Proxy Unit described below.

Scaling Factor = the ratio of actual hourly integrated system load (calculated as the sum of Real-Time Load Obligations for the system as calculated in the settlement of the Real-Time Energy Market and adjusted for losses and including imports delivered in the Real-Time Energy Market)

and the 50/50 predicted peak system load reduced appropriately for Demand Capacity Resources, used in the most recent calculation of the Installed Capacity Requirement for that Capacity Commitment Period, capped at an hourly ratio of 1.0.

Availability Factor = 0.95.

(b) PER Proxy Unit characteristics shall be as follows:

(i) The PER Proxy Unit shall be indexed to the marginal fuel, which shall be the higher of the following, as determined on a daily basis: ultra low-sulfur No. 2 oil measured at New York Harbor plus a seven percent markup for transportation; or day-ahead gas measured at the AGT-CG (Non-G) hub;

(ii) The PER Proxy Unit shall be assumed to have no start-up, ramp rate or minimum run time constraints;

(iii) The PER Proxy Unit shall have a 22,000 Btu/kWh heat rate. This assumption shall be periodically reviewed after the first Capacity Commitment Period by the ISO to ensure that the heat rate continues to reflect a level slightly higher than the marginal generating unit in the region that would be dispatched as the system enters a scarcity condition. Any changes to the heat rate of the PER Proxy Unit shall be considered in the stakeholder process in consultation with the state utility regulatory agencies, shall be filed pursuant to Section 205 of the Federal Power Act, and shall be applied prospectively to the settlement of future Forward Capacity Auctions.

III.13.7.1.2.2. Monthly PER Application.

The Hourly PER shall be summed for each calendar month to determine the total PER for that month ("Monthly PER"). The ISO shall then calculate the Average Monthly PER earned by the proxy unit. The Average Monthly PER shall be equal to the average of the Monthly PER values for the 12 months prior to the Obligation Month. The PER deduction for each resource shall be calculated as the Average Monthly PER multiplied by the resource's Capacity Supply Obligation for the Obligation Month (less any Capacity Supply Obligation MW from any portion of a Self-Supplied FCA Resource); provided, however, that in no case shall a resource's PER deduction for an Obligation Month be less than zero or greater than the product of the resource's Capacity Supply Obligation and the relevant Forward Capacity Auction Capacity Clearing Price.

III.13.7.1.3. Export Capacity.

If there are any Export Bids or Administrative Export De-List Bids from resources located in an export-constrained Capacity Zone or in the Rest-of-Pool Capacity Zone that have cleared in the Forward Capacity Auction and if the resource is exporting capacity at an export interface that is connected to an import-constrained Capacity Zone or the Rest-of-Pool Capacity Zone that is different than the Capacity Zone in which the resource is located, then charges and credits are applied as follows (for the following calculation, the Capacity Clearing Price will be the value prior to PER adjustments).

Charge Amount to Resource Exporting = [Capacity Clearing Price_{location of the interface} - Capacity Clearing Price_{location of the resource}] x Cleared MWs of Export Bid or Administrative Export De-List Bid]

Credit Amount to Capacity Load Obligations in the Capacity Zone where the export interface is located = [Capacity Clearing Price_{location of the interface} - Capacity Clearing Price_{location of the resource}] x Cleared MWs of Export Bid or Administrative Export De-list Bid]

Credits and charges to load in the applicable Capacity Zones, as set forth above, shall be allocated in proportion to each LSE's Capacity Load Obligation as calculated in Section III.13.7.5.2.

III.13.7.1.4. [Reserved.]

III.13.7.2 Capacity Performance Payments.

III.13.7.2.1 Definition of Capacity Scarcity Condition.

A Capacity Scarcity Condition shall exist in a Capacity Zone for any five-minute interval in which the Real-Time Reserve Clearing Price for that entire Capacity Zone is set based on the Reserve Constraint Penalty Factor pricing for: (i) the Minimum Total Reserve Requirement; (ii) the Ten-Minute Reserve Requirement; or (iii) the Zonal Reserve Requirement, each as described in Section III.2.7A(c); provided, however, that a Capacity Scarcity Condition shall not exist if the Reserve Constraint Penalty Factor pricing results only because of resource ramping limitations that are not binding on the energy dispatch.

III.13.7.2.2 Calculation of Actual Capacity Provided During a Capacity Scarcity Condition.

For each five-minute interval in which a Capacity Scarcity Condition exists, the ISO shall calculate the Actual Capacity Provided by each resource, whether or not it has a Capacity Supply Obligation, in any Capacity Zone that is subject to the Capacity Scarcity Condition. For resources not having a Capacity Supply Obligation (including External Transactions), the Actual Capacity Provided shall be calculated using the provision below applicable to the resource type. Notwithstanding the specific provisions of this Section III.13.7.2.2, no resource shall have an Actual Capacity Provided that is less than zero.

(a) A Generating Capacity Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the sum of the resource's output during the interval plus the resource's Reserve Quantity For Settlement during the interval; provided, however, that if the resource's output was limited during the Capacity Scarcity Condition as a result of a transmission system limitation, then the resource's Actual Capacity Provided may not be greater than the sum of the resource's Desired Dispatch Point during the interval, plus the resource's Reserve Quantity For Settlement during the interval. Where the resource is associated with one or more External Transaction sales submitted in accordance with Section III.1.10.7(f), the resource will have its hourly Actual Capacity Provided reduced by the hourly integrated delivered MW for the External Transaction sale or sales.

(b) An Import Capacity Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the net energy delivered during the interval in which the Capacity Scarcity Condition occurred. Where a single Market Participant owns more than one Import Capacity Resource, then the difference between the total net energy delivered from those resources and the total of the Capacity Supply Obligations of those resources shall be allocated to those resources pro rata.

(c) An On-Peak Demand Resource or Seasonal Peak Demand Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the sum of the Actual Capacity Provided for each of its components, as determined below, where the MWhs of reduction, other than MWhs associated with Net Supply, are increased by average avoided peak transmission and distribution losses.

(i) For Energy Efficiency measures, if the Capacity Scarcity Condition occurs during Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided shall be equal to the applicable reported monthly performance value; if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided shall be zero.

- (ii) For Distributed Generation measures submitting meter data for the full 24 hour calendar day during which the Capacity Scarcity Condition occurs, the Actual Capacity Provided shall be equal to the submitted meter data, adjusted as necessary for the five-minute interval in which the Capacity Scarcity Condition occurs.
 - (iii) For Load Management measures submitting meter data for the full 24 hour calendar day during which the Capacity Scarcity Condition occurs, the Actual Capacity Provided shall be equal to the submitted demand reduction data, adjusted as necessary for the five-minute interval in which the Capacity Scarcity Condition occurs.
 - (iv) Notwithstanding any other provision of this Section III.13.7.2.2(c), for any On-Peak Demand Resource or Seasonal Peak Demand Resource that fails to provide the data necessary for the ISO to determine the Actual Capacity Provided as described in this Section III.13.7.2.2(c), the Actual Capacity Provided shall be zero.
- (d) An Active Demand Capacity Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the sum of the Actual Capacity Provided by its constituent Demand Response Resources during the Capacity Scarcity Condition.
- (i) A Demand Response Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be: (1) the sum of the Real-Time demand reduction of its constituent Demand Response Assets (provided, however, that if the Demand Response Resource was limited during the Capacity Scarcity Condition as a result of a transmission system limitation, then the sum of the Real-Time demand reduction of its constituent Demand Response Assets may not be greater than its Desired Dispatch Point during the interval), plus (2) the Demand Response Resource's Reserve Quantity For Settlement, where the MW quantity, other than the MW quantity associated with Net Supply, is increased by average avoided peak transmission and distribution losses; provided, however, that a Demand Response Resource's Actual Capacity Provided shall not be less than zero.
 - (ii) The Real-Time demand reduction of a Demand Response Asset shall be calculated as described in Section III.8.4, except that: (1) in the case of a Demand Response Asset that is on a forced or scheduled curtailment as described in Section III.8.3, a Real-Time

demand reduction shall also be calculated for intervals in which the associated Demand Response Resource does not receive a non-zero Dispatch Instruction; (2) in the case of a Demand Response Asset that is on a forced or scheduled curtailment as described in Section III.8.3, the minuend in the calculation described in Section III.8.4 shall be the unadjusted Demand Response Baseline of the Demand Response Asset; and (3) the resulting MWhs of reduction, other than the MWhs associated with Net Supply, shall be increased by average avoided peak transmission and distribution losses.

III.13.7.2.3 Capacity Balancing Ratio.

For each five-minute interval in which a Capacity Scarcity Condition exists, the ISO shall calculate a Capacity Balancing Ratio using the following formula:

$$(\text{Load} + \text{Reserve Requirement}) / \text{Total Capacity Supply Obligation}$$

(a) If the Capacity Scarcity Condition is a result of a violation of the Minimum Total Reserve Requirement such that the associated system-wide Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the New England Control Area during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Actual Capacity Provided of any applicable Energy Efficiency measures shall be zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Minimum Total Reserve Requirement during the interval.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the New England Control Area during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Capacity Supply Obligations associated with any applicable Energy Efficiency measures shall be excluded from the total amount of Capacity Supply Obligations.

(b) If the Capacity Scarcity Condition is a result of a violation of the Ten-Minute Reserve Requirement such that the associated system-wide Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the New England Control Area during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Actual Capacity Provided of any applicable Energy Efficiency measures shall be zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Ten-Minute Reserve Requirement during the interval.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the New England Control Area during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Capacity Supply Obligations associated with any applicable Energy Efficiency measures shall be excluded from the total amount of Capacity Supply Obligations.

(c) If the Capacity Scarcity Condition is a result of a violation of the Zonal Reserve Requirement such that the associated Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the Capacity Zone during the interval plus the net amount of energy imported into the Capacity Zone from outside the New England Control Area during the interval (but not less than zero); provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then the Actual Capacity Provided of any applicable Energy Efficiency measures shall zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Zonal Reserve Requirement minus any reserve support coming into the Capacity Zone over the internal transmission interface.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the Capacity Zone during the interval; provided however, that if the interval occurs outside of Demand Resource On-

Peak Hours or Demand Resource Seasonal Peak Hours, then the Capacity Supply Obligations associated with any applicable Energy Efficiency measures shall be excluded from the total amount of Capacity Supply Obligations.

(d) The following provisions shall be used to determine the applicable Capacity Balancing Ratio where more than one of the conditions described in subsections (a), (b), and (c) apply in a Capacity Zone.

(i) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with both the Minimum Total Reserve Requirement and the Ten-Minute Reserve Requirement, but not the Zonal Reserve Requirement, the Capacity Balancing Ratio shall be calculated as described in Section III.13.7.2.3(a) for resources in that Capacity Zone.

(ii) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with both the Ten-Minute Reserve Requirement and the Zonal Reserve Requirement, but not the Minimum Total Reserve Requirement, the Capacity Balancing Ratio for resources in that Capacity Zone shall be the higher of the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(b) and the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(c).

(iii) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with the Minimum Total Reserve Requirement and the Zonal Reserve Requirement (regardless of whether the Capacity Zone is also subject to Reserve Constraint Penalty Factor pricing associated with the Ten-Minute Reserve Requirement), the Capacity Balancing Ratio for resources in that Capacity Zone shall be the higher of the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(a) and the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(c).

III.13.7.2.4 Capacity Performance Score.

Each resource, whether or not it has a Capacity Supply Obligation, will be assigned a Capacity Performance Score for each five-minute interval in which a Capacity Scarcity Condition exists in the Capacity Zone in which the resource is located. A resource's Capacity Performance Score for the interval shall equal the resource's Actual Capacity Provided during the interval minus the product of the resource's Capacity Supply Obligation (which for this purpose shall not be less than zero) and the applicable Capacity Balancing Ratio; provided, however, that for an On-Peak Demand Resource or a

Seasonal Peak Demand Resource, (i) if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided and Capacity Supply Obligation associated with any applicable Energy Efficiency measures shall be excluded from the calculation of the resource's Capacity Performance Score; and (ii) for any Energy Efficiency, Load Management, or Distributed Generation measures reflected as a reduction in the load forecast as described in Section III.12.8 the Actual Capacity Provided and Capacity Supply Obligation shall be excluded from the calculation of the resource's Capacity Performance Score. The resulting Capacity Performance Score may be positive, zero, or negative.

III.13.7.2.5 Capacity Performance Payment Rate.

For the three Capacity Commitment Periods beginning June 1, 2018 and ending May 31, 2021, the Capacity Performance Payment Rate shall be \$2000/MWh. For the three Capacity Commitment Periods beginning June 1, 2021 and ending May 31, 2024, the Capacity Performance Payment Rate shall be \$3500/MWh. For the Capacity Commitment Period beginning on June 1, 2024 and ending on May 31, 2025 and thereafter, the Capacity Performance Payment Rate shall be \$5455/MWh. The ISO shall review the Capacity Performance Payment Rate in the stakeholder process as needed and shall file with the Commission a new Capacity Performance Payment Rate if and as appropriate.

III.13.7.2.6 Calculation of Capacity Performance Payments.

For each resource, whether or not it has a Capacity Supply Obligation, the ISO shall calculate a Capacity Performance Payment for each five-minute interval in which a Capacity Scarcity Condition exists in the Capacity Zone in which the resource is located. A resource's Capacity Performance Payment for an interval shall equal the resource's Capacity Performance Score for the interval multiplied by the Capacity Performance Payment Rate. The resulting Capacity Performance Payment for an interval may be positive or negative.

III.13.7.3 Monthly Capacity Payment and Capacity Stop-Loss Mechanism.

Each resource's Monthly Capacity Payment for an Obligation Month, which may be positive or negative, shall be the sum of the resource's Capacity Base Payment for the Obligation Month plus the sum of the resource's Capacity Performance Payments for all five-minute intervals in the Obligation Month, except as provided in Section III.13.7.3.1 and Section III.13.7.3.2 below.

III.13.7.3.1 Monthly Stop-Loss.

If the sum of the resource's Capacity Performance Payments (excluding any Capacity Performance Payments associated with Actual Capacity Provided above the resource's Capacity Supply Obligation in any interval) for all five-minute intervals in the Obligation Month is negative, the amount subtracted from the resource's Capacity Base Payment for the Obligation Month will be limited to an amount equal to the product of the applicable Forward Capacity Auction Starting Price multiplied by the resource's Capacity Supply Obligation for the Obligation Month (or, in the case of a resource subject to a multi-year Capacity Commitment Period election made in a Forward Capacity Auction prior to the ninth Forward Capacity Auction as described in Sections III.13.1.1.2.2.4 and III.13.1.4.1.1.2.7, the amount subtracted from the resource's Capacity Base Payment for the Obligation Month will be limited to an amount equal to the product of the applicable Capacity Clearing Price (indexed for inflation) multiplied by the resource's Capacity Supply Obligation for the Obligation Month).

III.13.7.3.2 Annual Stop-Loss.

(a) For each Obligation Month, the ISO shall calculate a stop-loss amount equal to:

$$\text{MaxCSO} \times [3 \text{ months} \times (\text{FCACP} - \text{FCASP}) - (12 \text{ months} \times \text{FCACP})]$$

Where:

MaxCSO = the resource's highest monthly Capacity Supply Obligation in the Capacity Commitment Period to date.

FCACP = the Capacity Clearing Price for the relevant Forward Capacity Auction.

FCASP = the Forward Capacity Auction Starting Price for the relevant Forward Capacity Auction.

(b) For each Obligation Month, the ISO shall calculate each resource's cumulative Capacity Performance Payments as the sum of the resource's Capacity Performance Payments for all months in the Capacity Commitment Period to date, with those monthly amounts limited as described in Section III.13.7.3.1.

(c) If the sum of the resource's Capacity Performance Payments (excluding any Capacity Performance Payments associated with Actual Capacity Provided above the resource's Capacity Supply

Obligation in any interval) for all five-minute intervals in the Obligation Month is negative, the amount subtracted from the resource's Capacity Base Payment for the Obligation Month will be limited to an amount equal to the difference between the stop-loss amount calculated as described in Section III.13.7.3.2(a) and the resource's cumulative Capacity Performance Payments as described in Section III.13.7.3.2(b).

III.13.7.4 Allocation of Deficient or Excess Capacity Performance Payments.

For each type of Capacity Scarcity Condition as described in Section III.13.7.2.1 and for each Capacity Zone, the ISO shall allocate deficient or excess Capacity Performance Payments as described in subsections (a) and (b) below. Where more than one type of Capacity Scarcity Condition applies, then the provisions below shall be applied in proportion to the duration of each type of Capacity Scarcity Condition.

(a) If the sum of all Capacity Performance Payments to all resources subject to the Capacity Scarcity Condition in the Capacity Zone in an Obligation Month is positive, the deficiency will be charged to resources in proportion to each such resource's Capacity Supply Obligation for the Obligation Month, excluding any resources subject to the stop-loss mechanism described in Section III.13.7.3 for the Obligation Month. If the charge described in this Section III.13.7.4(a) causes a resource to reach the stop-loss limit described in Section III.13.7.3, then the stop-loss cap described in Section III.13.7.3 will be applied to that resource, and the remaining deficiency will be further allocated to other resources in the same manner as described in this Section III.13.7.4(a).

(b) If the sum of all Capacity Performance Payments to all resources subject to the Capacity Scarcity Condition in the Capacity Zone in an Obligation Month is negative, the excess will be credited to all such resources in proportion to each resource's Capacity Supply Obligation for the Obligation Month. For a resource subject to the stop-loss mechanism described in Section III.13.7.3 for the Obligation Month, any such credit shall be reduced (though not to less than zero) by the amount not charged to the resource as a result of the application of the stop-loss mechanism described in Section III.13.7.3, and the remaining excess will be further allocated to other resources in the same manner as described in this Section III.13.7.4(b)

III.13.7.5. Charges to Market Participants with Capacity Load Obligations.

III.13.7.5.1. Calculation of Capacity Charges Prior to June 1, 2022.

The provisions in this subsection apply to charges associated with Capacity Commitment Periods beginning prior to June 1, 2022. A load serving entity with a Capacity Load Obligation as of the end of the Obligation Month shall be subject to a charge equal to the product of: (a) its Capacity Load Obligation in the Capacity Zone; and (b) the applicable Net Regional Clearing Price. The Net Regional Clearing Price is defined as the sum of the total payments as defined in Section III.13.7 paid to resources with Capacity Supply Obligations in the Capacity Zone (excluding any capacity payments and charges made for Capacity Supply Obligation Bilaterals and excluding any Capacity Performance Payments), less PER adjustments for resources in the zone as defined in Section III.13.7.1.2, and including any applicable export charges or credits as determined pursuant to Section III.13.7.1.3 divided by the sum of all Capacity Supply Obligations (excluding (i) the quantity of capacity subject to Capacity Supply Obligation Bilaterals and (ii) the quantity of capacity clearing as Self-Supplied FCA Resources) assumed by resources in the zone. A load serving entity satisfying its Capacity Load Obligation by a Self-Supplied FCA Resource shall not receive a credit for any PER payment for its Capacity Load Obligation so satisfied. A load serving entity with a Capacity Load Obligation as of the end of the Obligation Month may also receive a failure to cover credit equal to the product of: (a) its Capacity Load Obligation in the Capacity Zone, and; (b) the sum of all failure to cover charges in the Capacity Zone calculated pursuant to Section III.13.3.4(b), divided by total Capacity Load Obligation in the Capacity Zone.

III.13.7.5.1.1. Calculation of Capacity Charges On and After June 1, 2022.

The provisions in this subsection apply to charges associated with Capacity Commitment Periods beginning on or after June 1, 2022. For purposes of this Section III.13.7.5.1.1, Capacity Zone costs calculated for a Capacity Zone that contains a nested Capacity Zone shall exclude the Capacity Zone costs of the nested Capacity Zone. A Market Participant with a Capacity Load Obligation as of the end of the Obligation Month shall be subject to the following charges and adjustments:

III.13.7.5.1.1.1 Forward Capacity Auction Charge.

The FCA charge, for each Capacity Zone, is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Capacity Zone FCA Costs divided by Zonal Capacity Obligation.

Where

Capacity Zone FCA Costs, for each Capacity Zone, are the Total FCA Costs multiplied by the Zonal Peak Load Allocator and divided by the Total Peak Load Allocator.

Total FCA Costs are the sum of, for all Capacity Zones, (i) Capacity Supply Obligations in each zone (the total obligation awarded to or shed by resources in the Forward Capacity Auction process for the Obligation Month in the zone, excluding any obligations awarded to Intermittent Power Resources that are the basis for the Intermittent Power Resource Capacity Adjustment specified in Section III.13.7.5.1.1.6 and excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A) multiplied by the applicable clearing price from the auction in which the obligation was awarded to (or shed by) the resource, and (ii) the difference between the bid price and the substitution auction clearing price that was not included in the capacity charge pursuant to the second sentence of Section III.13.7.1.1(d). Capacity Supply Obligations awarded to Proxy De-List Bids in the primary auction, or shed by demand bids entered into the substitution auction on behalf of a Proxy De-List Bid, are excluded from Total FCA Costs.

Zonal Peak Load Allocator is the Zonal Capacity Obligation multiplied by the zonal Capacity Clearing Price.

Total Peak Load Allocator is the sum of the Zonal Peak Load Allocators.

III.13.7.5.1.1.2 Annual Reconfiguration Auction Charge.

The total annual reconfiguration auction charge, for each Capacity Zone and each associated annual reconfiguration auction, is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Capacity Zone Annual Reconfiguration Auction Costs divided by Zonal Capacity Obligation.

Where

Capacity Zone Annual Reconfiguration Auction Costs, for each Capacity Zone, are the Total Annual Reconfiguration Costs multiplied by the Zonal Peak Load Allocator and divided by the Total Peak Load Allocator.

Total Annual Reconfiguration Auction Costs are the sum, for all Capacity Zones and each associated annual reconfiguration auction, of the product of the Capacity Supply Obligations acquired through the annual reconfiguration auction in each zone (adjusted for any obligations procured in the annual reconfiguration auction that are subsequently terminated pursuant to Section III.13.3.4A) and the zonal annual reconfiguration auction clearing price, minus the sum, for all Capacity Zones, of the product of the amount of any Capacity Supply Obligation shed

through the annual reconfiguration auction in each zone and the applicable annual reconfiguration auction clearing price.

Zonal Peak Load Allocator is the Zonal Capacity Obligation multiplied by the zonal annual reconfiguration auction clearing price.

Total Peak Load Allocator is the sum of the Zonal Peak Load Allocators.

III.13.7.5.1.1.3. Monthly Reconfiguration Auction Charge.

The monthly reconfiguration auction charge is: (a) total Capacity Load Obligation for all Capacity Zones; multiplied by (b) Total Monthly Reconfiguration Auction Costs divided by Total Zonal Capacity Obligation.

Where

Total Monthly Reconfiguration Auction Costs are the sum of, for all Capacity Zones, the product of Capacity Supply Obligations acquired through the monthly reconfiguration auction in each zone and the applicable monthly reconfiguration auction clearing price, minus the sum of, for all Capacity Zones, any Capacity Supply Obligations shed through the monthly reconfiguration auction in each zone and the applicable monthly reconfiguration auction clearing price.

Total Zonal Capacity Obligation is the total of the Zonal Capacity Obligation in all Capacity Zones.

III.13.7.5.1.1.4. HQICC Capacity Charge.

The HQICC capacity charge is: (a) total Capacity Load Obligation for all Capacity Zones; multiplied by (b) Total HQICC Credits divided by Total Capacity Load Obligation.

Where

Total HQICC credits are the product of HQICCs multiplied by the sum of the values calculated in Sections III.13.7.5.1.1.1(b), III.13.7.5.1.1.2(b), III.13.7.5.1.1.3(b), III.13.7.5.1.1.6(b), III.13.7.5.1.1.7(b), III.13.7.5.1.1.8(b), and III.13.7.5.1.1.9(b) in the Capacity Zone in which the HQ Phase I/II external node is located.

Total Capacity Load Obligation is the total Capacity Load Obligation in all Capacity Zones.

III.13.7.5.1.1.5. Self-Supply Adjustment.

The self-supply adjustment is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) the Self-Supply Variance divided by Total Capacity Load Obligation.

Where

Self-Supply Variance is the difference between foregone capacity payments and avoided capacity charges associated with designated self-supply quantities.

Foregone capacity payments to Self-Supplied FCA Resources are the sum, for all Capacity Zones, of the product of the zonal Capacity Supply Obligation (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A) designated as self-supply, multiplied by the applicable clearing price from the auction in which the obligation was awarded.

Avoided capacity charges are the sum, for all Capacity Zones, of the product of any designated self-supply quantities multiplied by the sum of the values calculated in Sections III.13.7.5.1.1.1(b), III.13.7.5.1.1.2(b), III.13.7.5.1.1.3(b), III.13.7.5.1.1.6(b), III.13.7.5.1.1.7(b), III.13.7.5.1.1.8(b), and III.13.7.5.1.1.9(b) in the Capacity Zone associated with the designated self-supply quantity.

Total Capacity Load Obligation is the total Capacity Load Obligation in all Capacity Zones.

III.13.7.5.1.1.6. Intermittent Power Resource Capacity Adjustment.

The Intermittent Power Resource capacity adjustment in a winter season for the Obligation Months from October through May is: (a) total Capacity Load Obligation for all Capacity Zones; multiplied by (b) the Intermittent Power Resource Seasonal Variance divided by Total Zonal Capacity Obligation.

Where

Intermittent Power Resource Seasonal Variance is the difference between the FCA payments for Intermittent Power Resource in the Obligation Month and the base FCA payments for Intermittent Power Resources.

FCA payments to Intermittent Power Resources are the sum, for all Capacity Zones, of the product of the Capacity Supply Obligations awarded to or shed by Intermittent Power Resources in the Forward Capacity Auction process for the Obligation Month pursuant to Section III.13.2.7.6 or Section III.13.2.8.1.1 (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A), multiplied by the applicable clearing price from the auction in which the obligation was awarded.

Base FCA payments for Intermittent Power Resources are the sum, for all Capacity Zones, of the product of the FCA Qualified Capacity procured from or shed by Intermittent Power Resources in the Forward Capacity Auction process (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A), multiplied by the applicable clearing price from the auction in which the obligation was awarded.

Total Zonal Capacity Obligation is the total Capacity Load Obligation in all Capacity Zones.

III.13.7.5.1.1.7. Multi-Year Rate Election Adjustment.

For multi-year rate elections made in the primary Forward Capacity Auction for Capacity Commitment Periods beginning on or after June 1, 2022, the multi-year rate election adjustment, for each Capacity Zone, is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Zonal Multi-Year Rate Election Costs divided by Zonal Capacity Obligation.

Where

Zonal Multi-Year Rate Election Costs is the sum, for each resource with a multi-year rate election in the Obligation Month, of the amount of Capacity Supply Obligation designated to receive the multi-year rate (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A), multiplied by the difference in the applicable zonal Capacity Clearing Price for the Forward Capacity Auction in which the resource originally was awarded a Capacity Supply Obligation (indexed using the Handy-Whitman Index of Public Utility Construction Costs in effect as of December 31 of the year preceding the Capacity Commitment Period) and the applicable zonal Capacity Clearing Price for the current Capacity Commitment Period, multiplied by the Zonal Peak Load Allocator for the Forward Capacity Auction in which the resource originally was awarded a Capacity Supply Obligation and divided by the Total Peak Load Allocator for the Forward Capacity Auction in which the resource originally was awarded a Capacity Supply Obligation.

Zonal Peak Load Allocator is the Zonal Capacity Obligation multiplied by the zonal Capacity Clearing Price.

Total Peak Load Allocator is the sum of the Zonal Peak Load Allocators.

For multi-year rate elections made in the primary Forward Capacity Auction for Capacity Commitment Periods beginning prior to June 1, 2022, the multi-year rate election adjustment, for each Capacity Zone, is: (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Zonal Multi-Year Rate Election Costs divided by Zonal Capacity Obligation.

Where

Zonal Multi-Year Rate Election Costs is the sum in each Capacity Zone, for each resource with a multi-year rate election in the Obligation Month, of the amount of Capacity Supply Obligation designated to receive the multi-year rate (excluding any obligations procured in the Forward Capacity Auction that are terminated pursuant to Section III.13.3.4A), multiplied by the difference in the applicable zonal Capacity Clearing Price for the Forward Capacity Auction in which the resource originally was awarded a Capacity Supply Obligation (indexed using the Handy-Whitman Index of Public Utility Construction Costs in effect as of December 31 of the year preceding the Capacity Commitment Period) and the applicable zonal Capacity Clearing Price for the current Capacity Commitment Period.

III.13.7.5.1.1.8 CTR Transmission Upgrade Charge.

The CTR transmission upgrade charge is: (a) the Capacity Load Obligation in the Capacity Zones to which the applicable interface limits the transfer of capacity, multiplied by (b) Zonal CTR Transmission Upgrade Cost divided by Zonal Capacity Obligation.

Where

Zonal CTR Transmission Upgrade Cost for each Capacity Zone to which the interface limits the transfer of capacity is the amount calculated pursuant to Section III.13.7.5.4.4 (f), multiplied by the Zonal Capacity Obligation and divided by the sum of the Zonal Capacity Obligation for all Capacity Zones to which the interface limits the transfer of capacity.

III.13.7.5.1.1.9 CTR Pool-Planned Unit Charge.

The CTR Pool-Planned Unit charge is: (a) the Capacity Load Obligation in the Capacity Zone less the amount of any CTRs specifically allocated pursuant to Section III.13.7.5.4.5, multiplied by (b) CTR Pool-Planned Unit Cost divided by Total Zonal Capacity Obligation less the amount of any CTRs specifically allocated pursuant to Section III.13.7.5.4.5.

Where

The CTR Pool-Planned Unit Cost for each Capacity Zone is the sum of the amounts calculated pursuant to Section III.13.7.5.4.5 (b).

Total Zonal Capacity Obligation is the total of the Zonal Capacity Obligation in all Capacity Zones.

III.13.7.5.1.1.10. Failure to Cover Charge Adjustment.

The failure to cover charge adjustment, for each Capacity Zone, is (a) Capacity Load Obligation in the Capacity Zone; multiplied by (b) Zonal Failure to Cover Charges divided by Zonal Capacity Obligation.

Where:

Zonal Failure to Cover Charges are the product of: (1) the sum, for all Capacity Zones, of the failure to cover charges calculated pursuant to Section III.13.3.4(b), and; (2) the Zonal Peak Load Allocator and divided by the Total Peak Load Allocator.

Zonal Peak Load Allocator is the Zonal Capacity Obligation multiplied by the zonal annual reconfiguration auction clearing price as determined pursuant to Section III.13.3.4.

Total Peak Load Allocator is the sum of the Zonal Peak Load Allocators.

III.13.7.5.2. Calculation of Capacity Load Obligation and Zonal Capacity Obligation.

The ISO shall assign each Market Participant a share of the Zonal Capacity Obligation prior to the commencement of each Obligation Month for each Capacity Zone established in the Forward Capacity Auction pursuant to Section III.13.2.3.4. The Zonal Capacity Obligation of a Capacity Zone that contains a nested Capacity Zone shall exclude the Zonal Capacity Obligation of the nested Capacity Zone.

Zonal Capacity Obligation for each month and Capacity Zone shall equal the product of: (i) the total of the system-wide Capacity Supply Obligations (excluding the quantity of capacity subject to Capacity

Supply Obligation Bilaterals for Capacity Commitment Periods beginning prior to June 1, 2022 and excluding any additional obligations awarded to Intermittent Power Resources pursuant to Section III.13.2.7.6 that exceed the FCA Qualified Capacity procured in the Forward Capacity Auction for Capacity Commitment Periods beginning on or after June 1, 2022) plus HQICCs; and (ii) the ratio of the sum of all load serving entities' annual coincident contributions to the system-wide annual peak load in that Capacity Zone from the calendar year two years prior to the start of the Capacity Commitment Period (for Capacity Commitment Periods beginning prior to June 1, 2022) and from the calendar year one year prior to the start of the Capacity Commitment Period (for Capacity Commitment Periods beginning on or after June 1, 2022) to the system-wide sum of all load serving entities' annual coincident contributions to the system-wide annual peak load from the calendar year two years prior to the start of the Capacity Commitment Period (for Capacity Commitment Periods beginning prior to June 1, 2022) and from the calendar year one year prior to the start of the Capacity Commitment Period (for Capacity Commitment Periods beginning on or after June 1, 2022).

The following loads are assigned a peak contribution of zero for the purposes of assigning obligations and tracking load shifts: load associated with the receipt of electricity from the grid by Storage DARDs for later injection of electricity back to the grid; Station service load that is modeled as a discrete Load Asset and the Resource is complying with the maintenance scheduling procedures of the ISO; load that is modeled as a discrete Load Asset and is exclusively related to an Alternative Technology Regulation Resource following AGC Dispatch Instructions; and transmission losses associated with delivery of energy over the Control Area tie lines.

A Market Participant's share of Zonal Capacity Obligation for each month and Capacity Zone shall equal the product of: (i) the Capacity Zone's Zonal Capacity Obligation as calculated above and (ii) the ratio of the sum of the load serving entity's annual coincident contributions to the system-wide annual peak load in that Capacity Zone from the calendar year prior to the start of the Capacity Commitment Period to the sum of all load serving entities' annual coincident contributions to the system-wide annual peak load in that Capacity Zone from the calendar year prior to the start of the Capacity Commitment Period.

A Market Participant's Capacity Load Obligation shall be its share of Zonal Capacity Obligation for each month and Capacity Zone, adjusted as appropriate to account for any relevant Capacity Load Obligation Bilaterals, HQICCs, and Self-Supplied FCA Resource designations. A Capacity Load Obligation can be a positive or negative value.

A Market Participant's share of Zonal Capacity Obligation will not be reconstituted to include the demand reduction of a Demand Capacity Resource or Demand Response Resource.

III.13.7.5.2.1. Charges Associated with Dispatchable Asset Related Demands.

Dispatchable Asset Related Demand resources will not receive Forward Capacity Market payments, but instead each Dispatchable Asset Related Demand resource will receive an adjustment to its share of the associated Coincident Peak Contribution based on the ability of the Dispatchable Asset Related Demand resource to reduce consumption. The adjustment to a load serving entity's Coincident Peak Contribution resulting from Dispatchable Asset Related Demand resource reduction in consumption shall be based on the Nominated Consumption Limit submitted for the Dispatchable Asset Related Demand resource. The Nominated Consumption Limit value of each Dispatchable Asset Related Demand resource is subject to adjustment as further described in the ISO New England Manuals, including adjustments based on the results of Nominated Consumption Limit audits performed in accordance with the ISO New England Manuals.

III.13.7.5.3. Excess Revenues.

(a) For Capacity Commitment Periods beginning prior to June 1, 2022, revenues collected from load serving entities in excess of revenues paid by the ISO to resources shall be paid by the ISO to the holders of Capacity Transfer Rights, as detailed in Section III.13.7.5.3.

(b) Any payment associated with a Capacity Supply Obligation Bilateral that was to accrue to a Capacity Acquiring Resource for a Capacity Supply Obligation that is terminated pursuant to Section III.13.3.4A shall instead be allocated to Market Participants based on their pro rata share of all Capacity Load Obligations in the Capacity Zone in which the terminated resource is located.

III.13.7.5.4. Capacity Transfer Rights.

III.13.7.5.4.1. Definition and Payments to Holders of Capacity Transfer Rights.

This subsection applies to Capacity Commitment Periods beginning prior to June 1, 2022.

Capacity Transfer Rights are calculated for each internal interface associated with a Capacity Zone established in the Forward Capacity Auction (as determined pursuant to Section III.13.2.3.4). Based upon results of the Forward Capacity Auction and reconfiguration auctions, the total CTR fund will be calculated as the difference between the charges to load serving entities with Capacity Load Obligations

and the payments to Capacity Resources as follows: The system-wide sum of the product of each Capacity Zone's Net Regional Clearing Price and absolute value of each Capacity Zone's Capacity Load Obligations, as calculated in Section III.13.7.5.1, minus the sum of the monthly capacity payments to Capacity Resources within each zone, as adjusted for PER.

Each Capacity Zone established in the Forward Capacity Auction (as determined pursuant to Section III.13.2.3.4) will be assigned its portion of the CTR fund.

For CTRs resulting from an export constrained zone, the assignment will be calculated as the product of: (i) the Net Regional Clearing Price for the Capacity Zone to which the applicable interface limits the transfer of capacity minus the Net Regional Clearing Price for the Capacity Zone from which the applicable interface limits the transfer of capacity; and (ii) the difference between the absolute value of the total Capacity Supply Obligations obtained in the exporting Capacity Zone, adjusted for Capacity Supply Obligations associated with Self-Supplied FCA Resources, and the absolute value of the total Capacity Load Obligations in the exporting Capacity Zone.

For CTRs resulting from an import constrained zone, the assignment will be calculated as the product of: (i) the Net Regional Clearing Price for the Capacity Zone to which the applicable interface limits the transfer of capacity minus the Net Regional Clearing Price for the absolute value of the Capacity Zone from which the applicable interface limits the transfer of capacity; and (ii) the difference between absolute value of the total Capacity Load Obligations in the importing Capacity Zone and the total Capacity Supply Obligations obtained in the importing Capacity Zone, adjusted for Capacity Supply Obligations associated with Self-Supplied FCA Resources.

III.13.7.5.4.2. Allocation of Capacity Transfer Rights.

This subsection applies to Capacity Commitment Periods beginning prior to June 1, 2022.

For Capacity Zones established in the Forward Capacity Auction as determined pursuant to Section III.13.2.3.4, the CTR fund shall be allocated among load serving entities using their Capacity Load Obligation (net of HQICCs) described in Section III.13.7.5.1. Market Participants with CTRs specifically allocated under Section III.13.7.5.3.6 will have their specifically allocated CTR MWs netted from their Capacity Load Obligation used to establish their share of the CTR fund.

(a) **Connecticut Import Interface.** The allocation of the CTR fund associated with the Connecticut Import Interface shall be made to load serving entities based on their Capacity Load Obligation in the Connecticut Capacity Zone.

(b) **NEMA/Boston Import Interface.** Except as provided in Section III.13.7.5.3.6 of Market Rule 1, the allocation of the CTR fund associated with the NEMA/Boston Import Interface shall be made to load serving entities based on their Capacity Load Obligation in the NEMA/Boston Capacity Zone.

III.13.7.5.4.3. Allocations of CTRs Resulting From Revised Capacity Zones.

This subsection applies to Capacity Commitment Periods beginning prior to June 1, 2022.

The portion of the CTR fund associated with revised definitions of Capacity Zones shall be fully allocated to load serving entities after deducting the value of applicable CTRs that have been specifically allocated. Allocations of the CTR fund among load serving entities will be made using their Capacity Load Obligations (net of HQICCs) as described in Section III.13.7.5.3.1. Market Participants with CTRs specifically allocated under Section III.13.7.5.3.6 will have their specifically allocated CTR MWs netted from the Capacity Load Obligation used to establish their share of the CTR fund.

(a) **Import Constraints.** The allocation of the CTR fund associated with newly defined import-constrained Capacity Zones restricting the transfer of capacity into a single adjacent import-constrained Capacity Zone shall be allocated to load serving entities with Capacity Load Obligations in that import-constrained Capacity Zone.

(b) **Export Constraints.** The allocation of the CTR fund associated with newly defined export-constrained Capacity Zones shall be allocated to load serving entities with Capacity Load Obligations on the import-constrained side of the interface.

III.13.7.5.4.4. Specifically Allocated CTRs Associated with Transmission Upgrades.

(a) A Market Participant that pays for transmission upgrades not funded through the Pool PTF Rate and which increase transfer capability across existing or potential Capacity Zone interfaces may request a specifically allocated CTR in an amount equal to the number of CTRs supported by that increase in transfer capability.

- (b) The allocation of additional CTRs created through generator interconnections completed after February 1, 2009 shall be made in accordance with the provisions of the ISO generator interconnection or planning standards. In the event the ISO interconnection or planning standards do not address this issue, the CTRs created shall be allocated in the same manner as described in Section III.13.7.5.4.2.
- (c) Specifically allocated CTRs shall expire when the Market Participant ceases to pay to support the transmission upgrades.
- (d) CTRs resulting from transmission upgrades funded through the Pool PTF Rate shall not be specifically allocated but shall be allocated in the same manner as described in Section III.13.7.5.4.2.
- (e) **Maine Export Interface.** Casco Bay shall receive specifically allocated CTRs of 325 MW across the Maine export interface for as long as Casco Bay continues to pay to support the transmission upgrades.
- (f) The value of CTRs specifically allocated pursuant to this Section shall be calculated as the product of: (i) the Capacity Clearing Price to which the applicable interface limits the transfer of capacity minus the Capacity Clearing Price from which the applicable interface limits the transfer of capacity; and (ii) the MW quantity of the specifically allocated CTRs across the applicable interface.

III.13.7.5.4.5. Specifically Allocated CTRs for Pool-Planned Units.

- (a) In import-constrained Capacity Zones, in recognition of longstanding life of unit contracts, the municipal utility entitlement holder of a resource constructed as Pool-Planned Units shall receive an initial allocation of CTRs equal to the most recent seasonal claimed capability of the ownership entitlements in such unit, adjusted for any designated self-supply quantities as described in Section III.13.1.6.2. Municipal utility entitlements are set as shown in the table below and are not transferrable.

Millstone 3		Seabrook	Stonybrook GT 1A	Stonybrook GT 1B	Stonybrook GT 1C	Stonybrook 2A	Stonybrook 2B	Wyman 4	Summer	Winter
									(MW)	(MW)
Nominal Summer (MW)	1155.001	1244.275	104.000	100.000	104.000	67.400	65.300	586.725		
Nominal Winter (MW)	1155.481	1244.275	119.000	116.000	119.000	87.400	85.300	608.575		
Danvers	0.2627%	1.1124%	8.4569%	8.4569%	8.4569%	11.5551%	11.5551%	0.0000%	58.26	63.73
Georgetown	0.0208%	0.0956%	0.7356%	0.7356%	0.7356%	1.0144%	1.0144%	0.0000%	5.04	5.55
Ipswich	0.0608%	0.1066%	0.2934%	0.2934%	0.2934%	0.0000%	0.0000%	0.0000%	2.93	2.37
Marblehead	0.1544%	0.1351%	2.6840%	2.6840%	2.6840%	1.5980%	1.5980%	0.2793%	15.49	15.64
Middleton	0.0440%	0.3282%	0.8776%	0.8776%	0.8776%	1.8916%	1.8916%	0.1012%	10.40	11.07
Peabody	0.2969%	1.1300%	13.0520%	13.0520%	13.0520%	0.0000%	0.0000%	0.0000%	57.69	60.26
Reading	0.4041%	0.6351%	14.4530%	14.4530%	14.4530%	19.5163%	19.5163%	0.0000%	82.98	92.77
Wakefield	0.2055%	0.3870%	3.9929%	3.9929%	3.9929%	6.3791%	6.3791%	0.4398%	30.53	32.64
Ashburnham	0.0307%	0.0652%	0.6922%	0.6922%	0.6922%	0.9285%	0.9285%	0.0000%	4.53	5.22
Boylston	0.0264%	0.0849%	0.5933%	0.5933%	0.5933%	0.9120%	0.9120%	0.0522%	4.71	5.35
Braintree	0.0000%	0.6134%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	7.63	7.63
Groton	0.0254%	0.1288%	0.8034%	0.8034%	0.8034%	1.0832%	1.0832%	0.0000%	5.81	6.61
Hingham	0.1007%	0.4740%	3.9815%	3.9815%	3.9815%	5.3307%	5.3307%	0.0000%	26.40	30.36
Holden	0.0726%	0.3971%	2.2670%	2.2670%	2.2670%	3.1984%	3.1984%	0.0000%	17.01	19.33
Holyoke	0.3194%	0.3096%	0.0000%	0.0000%	0.0000%	2.8342%	2.8342%	0.6882%	15.34	16.63

Hudson	0.1056%	1.6745%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.3395%	24.05	24.12
Hull	0.0380%	0.1650%	1.4848%	1.4848%	1.4848%	2.1793%	2.1793%	0.1262%	10.70	12.28
Littleton	0.0536%	0.1093%	1.5115%	1.5115%	1.5115%	3.0607%	3.0607%	0.1666%	11.67	13.63
Mansfield	0.1581%	0.7902%	5.0951%	5.0951%	5.0951%	7.2217%	7.2217%	0.0000%	36.93	42.17
Middleborough	0.1128%	0.5034%	2.0657%	2.0657%	2.0657%	4.9518%	4.9518%	0.1667%	21.48	24.45
North Attleborough	0.1744%	0.3781%	3.2277%	3.2277%	3.2277%	5.9838%	5.9838%	0.1666%	25.58	29.49
Pascoag	0.0000%	0.1068%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.33	1.33
Paxton	0.0326%	0.0808%	0.6860%	0.6860%	0.6860%	0.9979%	0.9979%	0.0000%	4.82	5.53
Shrewsbury	0.2323%	0.5756%	3.9105%	3.9105%	3.9105%	0.0000%	0.0000%	0.4168%	24.33	26.23
South Hadley	0.5755%	0.3412%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	10.89	10.90
Sterling	0.0294%	0.2044%	0.7336%	0.7336%	0.7336%	1.1014%	1.1014%	0.0000%	6.60	7.38
Taunton	0.0000%	0.1003%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	0.0000%	1.25	1.25
Templeton	0.0700%	0.1926%	1.3941%	1.3941%	1.3941%	2.3894%	2.3894%	0.0000%	10.67	12.27
Vermont Public Power Supply Authority	0.0000%	0.0000%	2.2008%	2.2008%	2.2008%	0.0000%	0.0000%	0.0330%	6.97	7.99
West Boylston	0.0792%	0.1814%	1.2829%	1.2829%	1.2829%	2.3041%	2.3041%	0.0000%	10.18	11.69
Westfield	1.1131%	0.3645%	9.0452%	9.0452%	9.0452%	13.5684%	13.5684%	0.7257%	67.51	77.27

This allocation of CTRs shall expire on December 31, 2040. If a resource listed in the table above retires prior to December 31, 2040, however, its allocation of CTRs shall expire upon retirement. In the event that the NEMA zone either becomes or is forecast to become a separate zone for Forward Capacity Auction purposes, National Grid agrees to discuss with Massachusetts Municipal Wholesale Electric Company (“MMWEC”) and Wellesley Municipal Light Plant, Reading Municipal Light Plant and Concord Municipal Light Plant (“WRC”) any proposal by National Grid to develop cost effective transmission improvements that would mitigate or alleviate the import constraints and to work cooperatively and in good faith with MMWEC and WRC regarding any such proposal. MMWEC and WRC agree to support any proposals advanced by National Grid in the regional system planning process to construct any such transmission improvements, provided that MMWEC and WRC determine that the proposed improvements are cost effective (without regard to CTRs) and will mitigate or alleviate the import constraints.

(b) The value of CTRs specifically allocated pursuant to this Section shall be calculated as the product of: (i) the Capacity Clearing Price for the Capacity Zone where the load of the municipal utility entitlement holder is located minus the Capacity Clearing Price for the Capacity Zone in which the Pool-Planned Unit is located, and; (ii) the MW quantity of the specifically allocated CTRs.

III.13.7.5.5. Forward Capacity Market Net Charge Amount.

The Forward Capacity Market net charge amount for each Market Participant as of the end of the Obligation Month shall be equal to the sum of: (a) its Capacity Load Obligation charges; (b) its revenues from any applicable specifically allocated CTRs; (c) its share of the CTR fund (for Capacity Commitment Periods beginning prior to June 1, 2022); and (d) any applicable export charges.

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