

## **SECTION III**

### **MARKET RULE 1**

#### **APPENDIX F**

#### **NET COMMITMENT PERIOD COMPENSATION**

#### **ACCOUNTING**



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## NCPC ACCOUNTING

### **III.F.1. Overview.**

Accounting for the provision of Operating Reserve and Replacement Reserve is performed on a daily basis. A generating Resource of a Market Participant that is capable of providing Operating Reserve, Replacement Reserve or VAR support is eligible to receive NCPC Credits in the Day-Ahead Energy Market subject to limitations when the Supply Offer includes Self-Scheduled hours as discussed in Section III.F.1.1.1. A generating Resource of a Market Participant, including a Local Second Contingency Protection Resource, that is capable of providing Operating Reserve, Replacement Reserve or VAR support is eligible to receive NCPC Credits in the Real-Time Energy Market provided that the Resource satisfies the criteria specified in Sections III.F.1.1.2 and III.F.2.1.7 below. The total Resource offer amount for generation, including Start-Up Fee and No-Load Fee as applicable and as limited to an Effective Offer Price of \$1,000/MWh during anticipated or actual Emergency Conditions (in this case, declaration of a New England Control Area-wide capacity shortage), is compared to that Resource's total energy market value during the day. If the total value is less than the offer amount, the difference is credited to the Market Participant.

NCPC Credits are also provided for Dispatchable External Transactions (both purchases and sales), for generating units operating as Synchronous Condensers at the direction of the ISO, for Dispatchable Loads (pumping load only) that are not Self-Scheduled, for cancellation of generating Resources that are Pool-Scheduled Resources, for generating units backed down for the purposes of providing Operating Reserve or VAR support, and for generating Resources providing Operating Reserve during Reserve Shortage Condition Pricing Events.

NCPC calculations shall be performed separately for the Day-Ahead and Real-Time Energy Markets.

**III.F.1.1 Effect of Self-Schedules on NCPC Credits**

**III.F.1.1.1 Ineligibility for NCPC Credits (Day-Ahead Energy Market).**

In the Day-Ahead Energy Market, the Resource's Self-Scheduled hours shall be the Self-Scheduled hours submitted in the Supply Offer.

(a) A generating Resource will not be eligible for Day-Ahead NCPC Credit for the Operating Day if its Supply Offer contains a Self-Schedule that is for fewer contiguous hours than its Minimum Run Time. For purposes of this calculation, a contiguous block of Self-Scheduled hours starting in hour 1 shall qualify as long as the number of Self-Scheduled hours when added to the hours on-line at the end of the previous Operating Day equals or exceeds the Resource's Minimum Run Time and a contiguous block of Self-Scheduled hours that crosses the boundary into a second Operating Day shall qualify in the first day but may result in the Resource not being eligible in the second Operating Day as described in subsection (c).

(b) A generating Resource will not be eligible for Day-Ahead NCPC Credit for the Operating Day if its Supply Offer contains two blocks of contiguous Self-Scheduled hours separated by less than the Resource's minimum down time. For purposes of this calculation, a contiguous block of non Self-Scheduled hours that crosses the boundary into a second Operating Day shall qualify in the first day but may result in the Resource not being eligible in the second Operating Day as described in subsection (d).

(c) If a contiguous block of Self-Scheduled hours begins on the boundary between two Operating Days, or crosses the boundary between two Operating Days as described in (a) above, and the Resource did not satisfy its Minimum Run Time in Real-Time during the first Operating Day, the generating Resource will not be eligible for Day-Ahead NCPC Credit for the second Operating Day unless the contiguous block of hours beginning in the first hour of the second Operating Day equals or exceeds the remaining portion of its Minimum Run Time.

(d) If a contiguous block of non Self-Scheduled hours crosses the boundary between two Operating Days and the Resource did not satisfy its minimum down time in Real-Time during the first Operating Day, the generating Resource will not be eligible for Day-Ahead NCPC Credit for the second Operating Day unless the contiguous block of non Self-Scheduled hours beginning in the first hour of the second Operating Day equals or exceeds the remaining portion of its minimum down time.

#### **III.F.1.1.2 Ineligibility for NCPC Credits (Real-Time Energy Market).** In

the Real-Time Energy Market, the Self-Scheduled hours for the purpose of determining NCPC Credit eligibility shall be the Self-Scheduled hours from the Day-Ahead Schedule as modified in the Re-Offer electronic bidding (the Real-Time schedule as of 18:00 hours of the day prior to the Operating Day), including any Redeclaration of Self-Scheduled hours by a Participant pursuant to Section 8 of ISO New England Manual-11.

(a) A generating Resource will not be eligible for Real-Time NCPC Credit for the Operating Day if its Supply Offer (submitted either in the Day-Ahead Energy Market or during the Re-Offer Period) contains a Self-Schedule that is for fewer contiguous hours than its Minimum Run Time. For purposes of this calculation a contiguous block of Self-Scheduled hours starting in hour 1 shall qualify as long as the number of Self-Scheduled hours when added to the hours on-line at the end of the previous Operating Day equals or exceeds the Resource's Minimum Run Time and a contiguous block of Self-Scheduled hours that crosses the boundary into a second Operating Day shall qualify in the first day but may result in the Resource not being eligible in the second Operating Day as described in subsection (c).

(b) A generating Resource will not be eligible for Real-Time NCPC Credit for the Operating Day if it submits (as a Supply Offer in the Day-Ahead Energy Market or during the Re-Offer Period) two Self-Schedules separated by less than the Resource's minimum down time. For purposes of this calculation a contiguous block of non Self-Scheduled hours that crosses the boundary into a second Operating Day shall qualify in the first Operating Day as meeting the minimum down time requirement but may result in the Resource not being eligible in the second Operating Day as described in subsection (d).

(c) If a contiguous block of Self-Scheduled hours begins on the boundary between two Operating Days or crosses the boundary between two Operating Days and the Resource did not satisfy its Minimum Run Time in Real-Time during the first Operating Day, the generating Resource will not be eligible for Real-Time NCPC Credit for the second Operating Day unless the contiguous block of hours beginning in the first hour of the second Operating Day equals or exceeds the remaining portion of its Minimum Run Time.

(d) If a contiguous block of non Self-Scheduled hours crosses the boundary between two Operating Days and the Resource did not satisfy its minimum down time in Real-Time during the first Operating Day, the generating Resource will not be eligible for Real-Time NCPC Credit for the second Operating Day unless the contiguous block of hours beginning in the first hour of the second Operating Day equals or exceeds the remaining portion of its minimum down time.

(e) For purposes of the above determinations, the Minimum Run Time portion of a Real-Time Commitment Period commences with the first hour of the Real-Time Commitment Period in which the actual metered output of the generating Resource equals or exceeds 75 percent of the generating Resource's Economic Minimum Limit; provided that, if the Resource is a Fast Start Generator that never reaches 75 percent of its Economic Minimum Limit during its Real-Time Commitment Period, its Minimum Run Time will commence with the first hour in which it has positive output. Each Real-time Commitment Period is evaluated separately for the purpose of determining NCPC Credit eligibility.

The Real-Time NCPC Credit eligibility criteria set forth in subsections (a) through (e), above, shall be waived for additional hours of operation that result from an ISO request for extension of the Resource's operating schedule.

### **III.F.2. NCPC Credits.**

NCPC Credits for Resources capable of providing Operating Reserve, Replacement Reserve or VAR support are calculated for each of the following situations:

- (1) Pool-Scheduled Resources (Generators), including Local Second Contingency Protection Resources (Generators) and External Transactions (Day-Ahead and Real-Time Energy Markets).
- (2) Pool-Scheduled Resources (Synchronous Condensers and Special Constraint Resources (“SCR”) - Real-Time Energy Market)
- (3) Canceled Pool-Scheduled Resources (Real-Time Energy Market)
- (4) Resources postured for reliability purposes (Real-Time Energy Market)
- (5) Generating Resources providing Operating Reserve during Reserve Shortage Condition Pricing Events
- (6) Dispatchable Load (pumps only) that are not Self-Scheduled
- (7) Self-Scheduled generating Resources providing Operating Reserves by operating in accordance with Dispatch Instructions in non-Self-Scheduled hours or at levels above the Self-Scheduled MW in Self-Scheduled hours during an Operating Day in which they have offered a contiguous block of Self-Scheduled hours, which meet the criteria for such Self-Schedules set forth in Section III.F.1, at least equal to their Minimum Run Times.

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**III.F.2.1 Credits for Generating Resources.** For each Operating Day, the ISO calculates the NCPC Credit due each Market Participant for generating Resources.

In the Day-Ahead Energy Market, eligible generating Resources shall receive Day-Ahead NCPC Credits for all hours that are not Self-Scheduled. Except as otherwise provided in this Appendix F, all eligible generating Resources are eligible except as noted below:

(a) Generating Resources that have sold Forward Reserve as On-Line Forward Reserve Resources and that have a Delivery Requirement for the Operating Day are ineligible for Day-Ahead Energy Market NCPC Credits.

(b) Generating Resources that have Self-Scheduled hours that do not meet the criteria set forth in Section III.F.1.1.1 are ineligible for Day-Ahead NCPC Credit. For purposes of the Day-Ahead NCPC Credit calculations, the Self-Scheduled hours shall be the Self-Scheduled hours in the Participant's Supply Offer.

In the Real-Time Energy Market, an eligible generating Resource is eligible to receive Real-Time NCPC Credits for all hours that are not Self-Scheduled and for MW amounts in excess of the Self-Scheduled MW for Self-Scheduled hours when the Resource operates above the Self-Scheduled MWs at the ISO's request. A generating Resource is not eligible to receive Real-Time NCPC Credits for any hour in which the Resource is ramping up from an off-line state prior to being released for dispatch, or ramping down after receiving a shutdown order. Self-Scheduled hours include hours when the Resource is ramping

up to a Self-Scheduled hour from an off-line state, or down from a Self-Scheduled hour to an off-line state and hours when the Resource is Self-Scheduled for Regulation. Eligible generating Resources shall consist of Pool-Scheduled and Self-Scheduled Resources that meet the criteria in Section III.F.1.1.2 and any generating Resources specifically made eligible for Real-Time NCPC Credits in other Sections of this Market Rule 1.

**III.F.2.1.1 Information Retrieved.** The ISO retrieves the following information:

- (a) dispatcher generation scheduling and operations logs;
- (b) Generator Offer Data and Supply Offer data;
- (c) scheduled MWh for generating Resources cleared in Day-Ahead Energy Market;
- (d) metered generation MWh as submitted by Assigned Meter Reader;

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- (e) operational flags;
- Real-Time Emergency Conditions flag;
  - Special Constraint Resource flag;
- (f) Generating Resource Desired Dispatch Points and Economic Minimum Limits;
- (g) Day-Ahead and Real-Time LMPs; and
- (h) Generator flags (for example the Failure to Follow Dispatch Instruction (“FTF”) flag) as set using the criterion set forth in Section 2 of the ISO New England Manual for Market Operations, M-11).

**III.F.2.1.2 Hourly Day-Ahead Offer Amount.** The ISO calculates the generating Resource’s hourly Day-Ahead offer amount based on its Day-Ahead Offer Data that was utilized by the ISO in making the initial commitment decision and the generating Resource’s cleared Day-Ahead MWh for that hour.

For a generating Resource continuing to run into a second Operating Day to satisfy its Minimum Run Time, the Supply Offer prices originally used by the ISO to commit the Resource in the first Operating Day will continue to be binding for the purpose of calculating NCPC Credits into the second Operating Day until such time as the Resource’s Minimum Run Time has been satisfied.

(a) The ISO accounting process applies the Start-Up Fee and hourly No-Load Fee if the start-up and no-load switch is set in the Resource Offer Data and if the Start-Up Fee is applicable for the MWh and status of the Resource. The Start-Up Fee is not applicable in the case where a Market Participant has initially Self-Scheduled a generating Resource Day-Ahead and the ISO subsequently schedules this generating Resource as a Pool-Scheduled Resource once the Self-Schedule is terminated by the Market Participant. The Start-Up Fee will be associated with the first hour of the Resource's minimum run time on the day for which the Resource is committed. The Start-Up Fee will always be on the same Operating Day for both the Day-Ahead and Real-Time Energy Markets for purposes of calculating Real-Time NCPC Charges/Credits.

(b) Day-Ahead NCPC Credit calculations reflect the Start-Up Fee for the appropriate hot, intermediate, or cold state of the generating unit as it was scheduled in the Day-Ahead Energy Market.

**III.F.2.1.3 Hourly Day-Ahead Value.** The ISO *calculates* the generating Resource's hourly Day-Ahead value as:

generating Resource cleared Day-Ahead MWh \* Day-Ahead LMP

**III.F.2.1.4 Daily Day-Ahead Credit.** The ISO calculates the daily Day-Ahead Credit for each generating Resource as follows:

(a) Sum hourly Day-Ahead offer amounts, including applicable No-Load Fees and Start-Up Fees, for the day.

(b) Sum hourly Day-Ahead values for the day.

(c) Day-Ahead Credit equals any portion of the generating Resource's total Day-Ahead offer amount in excess of its total Day-Ahead value.

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**III.F.2.1.5 Day-Ahead Credit Allocation.** The ISO *allocates* the Day-Ahead Credits, for each generating Resource for each Operating Day, back to each hour in the Operating Day in which the generating Resource was scheduled and was eligible for NCPC Credit pro-rata based on Day-Ahead Load Obligations as follows:

Hourly Credit = Daily Credit \* ( Day-Ahead Load Obligations in scheduled hour) / (Total Day-Ahead Load Obligations in all scheduled hours))

[Note: Each credit is allocated back retaining its flag (Local Second Contingency Protection Resource, VAR etc.)]

**III.F.2.1.6 Day-Ahead NCPC Credit: Hourly Market Participant Credit; Operating Day Total.** The ISO calculates each Market Participant's hourly Day-Ahead NCPC Credit and the total Day-Ahead NCPC Credit for each Operating Day as follows:

(a) For each scheduled hour, if the generating Resource is flagged as a Local Second Contingency Protection Resource, the Market Participant's share of Day-Ahead Local Second Contingency Protection Resource NCPC Credits is equal to the Day-Ahead Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset.

(b) For each scheduled hour, if the generating Resource is flagged specifically for the provision of VAR or voltage support, the Market Participant's share of Day-Ahead VAR Credits is equal to the Day-Ahead Credit in that hour multiplied by the Market

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Participant's Ownership Share in the Generator Asset. The ISO then sums all Day-Ahead VAR Credits for all generating Resources for that Operating Day.

(c) For each scheduled hour, if the generating Resource is flagged as both VAR and a Local Second Contingency Protection Resource, the Market Participant's share of Day-Ahead VAR Credits is equal to 50% of the Day-Ahead Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset and the Market Participant's share of Day-Ahead Local Second Contingency Protection Resource NCPC Credits is equal to 50% of the Day-Ahead Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset. The ISO then sums all Day-Ahead VAR Credits and all Local Second Contingency Protection Resource NCPC Credits for all generating Resources for that Operating Day.

(d) For each scheduled hour, if the generating Resource is not flagged as a Local Contingency Protection Resource or VAR, the Market Participant's share of Day-Ahead economic NCPC Credits is equal to the Day-Ahead Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset. The ISO then sums all Day-Ahead NCPC Credits for all generating Resources for that Operating Day.

**III.F.2.1.7 Real-Time NCPC Credit Eligibility.** The ISO determines eligibility for Real-Time NCPC Credits. The following operating guidelines are used in the determination of Real-Time NCPC Credit eligibility:

(a) Generating Resources must be following ISO Dispatch Instructions as defined in Market Rule 1 and the ISO New England Manuals. For any hour that the generating Resource is not following ISO Dispatch Instructions and the difference between the generating Resource's energy value, in dollars, and energy offer amount, in dollars, (in this

case, energy offer amount includes No-Load Fee and incremental energy price and does not include any Start-Up Fee) in that hour is negative, the generating Resource's energy offer amount, in dollars, and energy value, in dollars, in that hour is excluded from the Real-Time NCPC Credit calculations.

(b) Generating Resources that trip during their Real-Time Commitment Periods are treated as set forth below:

(i) If the generating Resource trips during its Minimum Run Time period and the generating Resource is otherwise eligible to receive Real-Time NCPC Credit, the Resource will be eligible for Real-Time NCPC Credit for the period beginning with the start of the Real-Time Commitment Period and ending at the time of the trip. For purposes of determining such generating Resource's eligibility for Real-Time NCPC Credit, such generating Resource shall be eligible to recover a portion of its Start-Up Fee equal to the applicable Start-Up Fee multiplied by the quotient (not to exceed 1) of the generating Resource's hours of operation during the current Real-Time Commitment Period and the generating Resource's Minimum Run Time (Start-Up Fee\* (Hours of operation/Minimum Run Time)).

(ii) If the generating Resource trips after its Minimum Run Time has been satisfied and the generating Resource is otherwise eligible to receive Real-Time NCPC Credits, the generating Resource will be eligible to receive Real-Time NCPC Credit for hours that were not Self-Scheduled during that Real-Time Commitment Period.

(iii) If the generating Resource trips, is requested to restart by the ISO, and returns to operate as requested, and the generating Resource is otherwise eligible to receive Real-Time NCPC Credits, the generating Resource is eligible to receive Real-Time NCPC Credits (including Start-Up Fee, No-Load Fee and incremental Energy price) for the new Real-Time Commitment Period.

(iv) Generating Resources that trip and return to operate that are not requested to restart by the ISO are treated as Self-Scheduled Resources and are not eligible for Real-Time NCPC Credits (Start-Up and No Load Fees) for the new Real-Time Commitment Period.

When a generating Resource trips off line as the result of an equipment failure that involves equipment located on the electric network beyond the low voltage terminals of the generating unit step-up transformer, the ISO shall not treat the event as a trip for the purposes of determining the generating Resource's eligibility for Real-Time NCPC Credit for that Commitment Period. It is the responsibility of the Lead Market Participant for the generating Resource to inform the ISO at [xtrip@iso-ne.com](mailto:xtrip@iso-ne.com) within thirty (30) days that the trip was the result of such a transmission-related event.

(c) If a Pool-Scheduled generating Resource is otherwise eligible to receive Real-Time NCPC Credit and waives its Minimum Run Time at the ISO's request, or if the ISO accepts an offer from a Pool-Scheduled generating Resource that is otherwise eligible to receive Real-Time NCPC Credit to waive its Minimum Run Time and the ISO agrees to allow the Resource to shut down prior to completion of the Pool-Scheduled generating Resource's Minimum Run Time:

(i) The Pool-Scheduled generating Resource shall be considered to have completed its Minimum Run Time in calculating Real-Time NCPC Credits for which the Pool-Scheduled generating Resource is otherwise eligible; and

(ii) The Pool-Scheduled generating Resource's applicable Start-Up Fee shall be included in the calculation of said NCPC Credits.

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**III.F.2.1.8 Hourly Real-Time MWh.** The ISO determines the generating Resource's hourly Real-Time MWh based on the values submitted to the ISO by the Assigned Meter Reader for that hour.

**III.F.2.1.9 Hourly Real-Time Energy Offer Amount.** The ISO calculates the generating Resource's hourly Real-Time energy offer amount based on its prices contained in the Supply Offer (if said Supply Offer has been mitigated, the mitigated Supply Offer shall be used for this calculation) for all eligible hours. For Pool-Scheduled hours, the Supply Offer price is multiplied by the lesser of the generating Resource's Desired Dispatch Point (provided that any Desired Dispatch Point below the Resource's Economic Minimum Limit will be deemed equal to the Economic Minimum Limit) or its actual metered output for that hour less the Resource's cleared Day-Ahead MWh. For generating Resources operating above their Self-Scheduled MW at the ISO's direction or request during Self-Scheduled hours, the Supply Offer price (excluding the Start-Up and No-Load Fees) is multiplied by the lesser of the DDP or actual metered quantity less the greater of the Resource's Self-Scheduled MW or the Resource's cleared Day-Ahead MWh. Self-Scheduled MW equals the higher of the Resource's Economic Minimum Limit or the output of the unit that

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is attributable to its submittal of a Self-Schedule for Regulation. For a generating Resource continuing to run into a second Operating Day to satisfy its Minimum Run Time, the Supply Offer prices originally used by the ISO to commit the Resource in the first Operating Day will continue to be binding for the purpose of calculating NCPC Credits into the second Operating Day until such time as the Resource's Minimum Run Time has been satisfied.

**III.F.2.1.10 Application of Start-Up Fee and Hourly No-Load Fee.** The ISO applies the Start-Up Fee and hourly No-Load Fee if the start-up and no-load switch is set in the Generator Offer Data and if the Start-Up Fee is applicable for the MWh and status of the generating Resource. The Start-Up Fee is not applicable in the case where a Market Participant has initially Self-Scheduled a generating Resource in Real-Time and the ISO subsequently schedules this generating Resource as a Pool-Scheduled Resource once the Self-Schedule is terminated by the Market Participant or if that Participant's Resource was scheduled in the Day-Ahead Energy Market. The No-Load Fee is not applicable in any hour if the total number of hours that the Resource cleared in the Day-Ahead Energy Market is greater than the total number of hours that the Resource had actual generation greater than zero. If the total number of hours that the Resource had actual generation greater than zero is greater than the total number of hours that the Resource cleared in the Day-Ahead Energy Market, the No-Load Fees would be applicable once the total number of hours that the Resource actually ran in Real-Time exceeded the total number of hours that the Resource cleared in the Day-Ahead Energy Market.

**III.F.2.1.11** If applicable, when a generating Resource is started during the day at the direction of the ISO, the generating Resource's Real-Time offer amount calculated for that day includes its Start-Up Fee based on the appropriate hot, intermediate, or cold state of the generating Resource. For generating Resources that start generating for the ISO from a condensing state, the applicable Start-Up Fee for that generating Resource shall be the Start-Up Fee submitted that is associated with the hot state of the unit.

**III.F.2.1.12** If applicable, the generating Resource's Real-Time calculated offer amount includes its hourly No-Load Fee prorated for all hours of operation as follows, using a 10% tolerance:

If: lesser of (Real-Time MWh or Desired MW) < .9 \* (lesser of: Economic Minimum Limit submitted Day-Ahead or any Economic Minimum Limit submitted in Real-Time),

Then: hourly No-Load Fee is prorated by (lesser of (Real-Time MWh or Desired MW) / (lesser of: Economic Minimum Limit submitted Day-Ahead or any Economic Minimum Limit submitted in Real-Time)).

**III.F.2.1.13 Generating Resource Hourly Real-Time Value.** The ISO calculates the generating Resource's hourly Real-Time value for all eligible hours as:

((generating Resource metered value – max (generating Resource cleared Day-Ahead MWh, generating Resource Real-Time Self-Schedule MWh)) \* (Real-Time LMP at generating Resource Node)) + generating Resource Reserve Shortage Opportunity Cost credit for providing Operating Reserve during Reserve Shortage Condition Pricing Events + generating Resource Regulation Opportunity Cost.

**III.F.2.1.14 Generating Resource Daily Real-Time Credits.** The ISO

calculates the daily Real-Time Credits for each generating Resource as follows:

(a) Sum hourly Real-Time offer amounts and include applicable No-Load Fees and Start-Up Fees for the day. If the ISO declared an Emergency Condition (in this case has declared a New England Control Area-wide capacity shortage), the ISO limits this amount to \$1,000/MWh multiplied by the sum for the Operating Day of the lesser of: (i) the generating Resource's actual metered output or (ii) the higher of the generating Resource's Desired Dispatch Point or Economic Minimum Limit for each hour of pool-scheduled operation.

(b) Sum hourly Real-Time values for the day.

(c) Real-Time Credits are equal to any portion of the generating Resource's total Real-Time offer amount in excess of its total Real-Time value.

**III.F.2.1.15 Real-Time Credit Allocation.** The ISO allocates the Real-Time

Credits, for each generating Resource for each Operating Day, back to each hour in the Operating Day in which the generating Resource actually operated and was eligible for NCPC Credit as follows:

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$$\text{Hourly Credit} = \text{Daily Credit} * (\text{Real-Time Load Obligation in operating hour}) / \text{Total Real-Time Load Obligations in all operating hours}$$

### **III.F.2.1.16 Real-Time NCPC Credits; Hourly Market Participant Credit;**

**Operating Day Total.** The ISO calculates each Market Participant's hourly Real-Time NCPC Credits and the total Real-Time NCPC Credits for each Operating Day as follows:

(a) For each scheduled hour, if the generating Resource is flagged as providing Special Constraint Resource Service under Schedule 19 of Section II of the Transmission, Markets and Services Tariff, the Market Participant's share of Real-Time NCPC Credits is equal to the Real-Time Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset. The ISO then sums all Real-Time SCR NCPC Credits for all generating Resources for that Operating Day,

(b) For each scheduled hour, if the generating Resource is flagged as a Local Second Contingency Protection Resource, the Market Participant's share of Real-Time Local Second Contingency Protection Resource NCPC Credits is equal to the Real-Time Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset. The ISO then sums all Real-Time Local Second Contingency Protection Resource NCPC Credits for all generating Resources for that Operating Day,

(c) For each scheduled hour, if the generating Resource is flagged as a VAR Generator, the Market Participant's share of Real-Time VAR Credits is equal to the Real-Time Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset. The ISO then sums all Real-Time VAR Credits for all generating Resources for that Operating Day,

(d) For each scheduled hour, if the generating Resource is flagged as both VAR and a Local Second Contingency Protection Resource, the Market Participant's share of Real-Time VAR Credits is equal to 50% of the Real-Time Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset and the Market Participant's share of Real-Time Local Second Contingency Protection Resource NCPC Credits is equal to 50% of the Real-Time Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset. The ISO then sums all Real-Time VAR Credits and all Real-Time Local Second Contingency Protection Resource NCPC Credits for all generating Resources for that Operating Day,

(e) For each scheduled hour, if the generating Resource is not flagged as a Local Second Contingency Protection Resource or VAR, the Market Participant's share of Real-Time economic NCPC Credit is equal to the Real-Time Credit in that hour multiplied by the Market Participant's Ownership Share in the Generator Asset. The ISO then sums all Real-Time NCPC Credits for all generating Resources for that Operating Day.

**III.F.2.1.17 Addition of Hourly Shortfall Payments.** Generating Resources that are Pool-Scheduled Resources in the Day-Ahead Energy Market that are available, can deliver Energy and are not Postured, but are not economically dispatched in Real-Time and have not changed their incremental energy offers during the re-offer period, are eligible to receive the difference between the Real-Time and Day-Ahead LMP at the generator

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bus times the Day-Ahead scheduled MWh for hours when the Real-Time LMP is greater than the Day-Ahead LMP. Any payments made for each hourly shortfall are added to the total Real-Time economic NCPC Credits, Real-Time Local Second Contingency Protection Resource NCPC Credits or Real-Time VAR Credits, as applicable, for the applicable Operating Day.

**III.F.2.1.18 Addition of Minimum Generation Emergency Credits.** When a Minimum Generation Emergency has been declared (see Section 2.5.16.2 of ISO New England Manual M-11), generating Resources that are otherwise eligible to receive Real-Time NCPC Credits may be eligible to receive Minimum Generation Emergency Credits as provided below:

- (a) Minimum Generation Emergency Credits will only be available in the 90-day Resettlement of the Monthly Services Customer Bill for the Operating Day(s) in which the Minimum Generation Emergency was declared.
- (b) Minimum Generation Emergency Credits must be requested by sending a letter to the ISO's Manager of Settlements within 20 business days after issuance of the Monthly Services Customer Bill that covers the hours of Minimum Generation Emergency for which a claim is being made. Requests received later than 20 business days after the issuance of the Monthly Services Customer Bill that includes the Minimum Generation Emergency hours for which a claim is being made will not be accepted.
- (c) The lesser of the generating Resource's Desired Dispatch Point or actual metered output must be above the generating Resource's Economic Minimum Limit for each hour for which Minimum Generation Emergency Credit is requested.
- (d) The Minimum Generation Emergency Credit for each eligible hour will be calculated as follows:
  - (i) The generating Resource's Economic Minimum Limit will be subtracted from the lesser of the generating

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Resource's Desired Dispatch Point ("DDP") or Real-Time Generation Obligation. Generating Resources with DDPs above Economic Minimum Limits because they are ramp rate constrained when being dispatched down to their Emergency Minimum Limits will have the result of the above calculation set to zero.

- (ii) The result of step (i) will be multiplied by the Supply Offer Price (in this case excluding the daily Start-Up Fee but not the hourly No-Load Fee) associated with the appropriate Supply Offer Energy block
  - (iii) The result of step (ii) will be reduced by any revenue received during that hour in the Real-Time Energy Market due to a non-zero LMP for the hour(s) for which the Minimum Generation Emergency was declared.
- (e) Resources receiving Minimum Generation Emergency Credits under this Section III.F.2.1.18 shall be ineligible to receive Real-Time NCPC Credit for the same hour(s).

Charges associated with Minimum Generation Emergency Credits are discussed in Section 3 of this Appendix F.

**III.F.2.2 Real-Time Credits for Pool-Scheduled Synchronous Condensers.** For each Operating Day, the ISO calculates the NCPC Credits due each Market Participant for Pool-Scheduled Resources scheduled as Synchronous Condensers.

**III.F.2.2.1 Information Retrieved.** The ISO retrieves the following information:

- (a) Dispatcher generation scheduling and operations logs
- (b) Generator Offer Data

**III.F.2.2.2 Duration of Pool-scheduled Periods of Synchronous Condensing Operations.** The ISO calculates the duration of each pool-scheduled period of synchronous condensing operations based on logged start and stop times.

**III.F.2.2.3 Condensing Offer Amount.** The ISO calculates each generating Resource's condensing offer amount for each period by multiplying the duration (in hours) by the hourly price to condense as specified in the Offer Data. If no hourly price to condense is listed in the Generator Offer Data, an hourly price of zero will be assumed and no payment will be made.

**III.F.2.2.4 Condensing Credit.** When a generating Resource is requested to start condensing from an off-line state, a condensing Credit is provided equal to the Resource's condensing Start-Up Fee as specified in the Offer Data.

**III.F.2.2.5 VAR Credit.** If a unit is flagged as a VAR Resource and as a Synchronous Condenser, it will be compensated by a VAR Credit.

**III.F.2.2.6 Market Participant’s Real-Time NCPC Condensing Credits.**

The ISO calculates the daily Real-Time NCPC condensing Credits for each Market Participant by summing all remaining hourly condensing generating Resource offer amounts, including applicable Start-Up Fees, for the Operating Day taking the Market Participant’s Ownership Share into account.

**III.F.2.2.7 Total Real-Time NCPC Condensing Credits.**

The ISO sums the Real-Time NCPC condensing Credits for all Market Participants for each Operating Day.

**III.F.2.3 Credits for Pool-Scheduled External Transaction Purchases.**

For each Operating Day, the ISO calculates the Credits due each Market Participant for pool-scheduled External Transaction purchases (modeled as Supply Offers at External Nodes) as follows. These calculations only apply to External Transaction purchases submitted that are dispatchable and are submitted as Source equals Sink.

**III.F.2.3.1 Information Retrieved.** The ISO retrieves the following information:

- (a) dispatcher transaction logs
- (b) Pool-scheduled Day-Ahead scheduled and Real-Time scheduled External Transaction purchases
- (c) hourly pool-scheduled Day-Ahead and Real-Time External Transaction purchase offer price curve (\$/MWh, MW)
- (d) Day-Ahead and Real-Time LMPs
- (e) Transaction flags (Local Second Contingency Protection Resource)

**III.F.2.3.2 Day-Ahead Offer Amount.** The ISO calculates the hourly Day-Ahead offer amount for each pool-scheduled External Transaction purchase by multiplying the cleared Day-Ahead transaction MWh by the transaction offer price.

**III.F.2.3.3 Hourly Day-Ahead Value.** The ISO calculates the hourly Day-Ahead value for each pool-scheduled External Transaction purchase by multiplying the cleared Day-Ahead transaction MWh by the Day-Ahead LMP at the applicable External Node.

**III.F.2.3.4 Daily Day-Ahead Credits.** The ISO calculates the daily Day-Ahead Credits for each pool-scheduled External Transaction purchase as follows:

- (a) Sum hourly Day-Ahead offer amounts for the day
- (b) Sum hourly Day-Ahead values for the day
- (c) Day-Ahead External Transaction purchase Credit equals any portion of the import transaction's total daily Day-Ahead offer amount in excess of its total daily Day-Ahead value

**III.F.2.3.5 Day-Ahead Credit Allocation.** The ISO allocates the Day-Ahead Credits, for each External Transaction purchase for each Operating Day, back to each hour in the Operating Day in which the External Transaction purchase was scheduled as follows:

$$\text{Hourly Credit} = \text{Daily Credit} * ((\text{Day-Ahead Load Obligation in scheduled hour}) / (\text{Total Day-Ahead Load Obligations in all scheduled hours}))$$

**III.F.2.3.6 Day-Ahead NCPC Credits: Market Participant's Hourly Credits; Operating Day Total.** The ISO calculates each Market Participant's hourly Day-Ahead NCPC Credits and the total Day-Ahead NCPC Credits for each Operating Day as follows:

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(a) For each scheduled hour, if the External Transaction purchase is flagged as Local Second Contingency Protection Resource, the Market Participant's share of Day-Ahead Local Second Contingency Protection Resource NCPC Credits is equal to the Day-Ahead Credit in that hour. The ISO then sums all Day-Ahead Local Second Contingency Protection Resource NCPC Credits for all External Transaction purchases for that Operating Day,

(b) For each scheduled hour, if the External Transaction purchase is not flagged as Local Second Contingency Protection Resource, the Market Participant's share of Day-Ahead economic NCPC Credits is equal to the Day-Ahead Credit in that hour. The ISO then sums all Day-Ahead NCPC Credits for all External Transaction purchases for that Operating Day.

**III.F.2.3.7 Hourly Real-Time Offer Amount.** The ISO calculates the hourly Real-Time offer amount for each pool-scheduled External Transaction purchase by multiplying the scheduled Real-Time transaction MWh by the transaction offer price.

**III.F.2.3.8 Hourly Real-Time Value.** The ISO calculates the hourly Real-Time value for each pool-scheduled External Transaction purchase by multiplying the scheduled Real-Time transaction MWh hourly deviations from the cleared Day-Ahead transaction MWh amount by the Real-Time LMP of the applicable External Node.

**III.F.2.3.9 Real-Time Credits Calculation.** The ISO calculates the daily Real-Time Credits for Real-Time External Transaction purchases as follows:

(a) Sum hourly Real-Time offer amounts for the day

(b) Sum hourly Real-Time values for the day

(c) Real-Time daily Credit equals any portion of the External Transaction purchase's total daily Real-Time offer amount in excess of: (i) its daily Day-Ahead value, plus (ii) its daily Real-Time value, plus (iii) any Day-Ahead Credits (including any Day-Ahead Credits for which a Resource is determined to be ineligible).

**III.F.2.3.10 Real-Time Credits Allocation.** The ISO allocates the Real-Time Credits, for each External Transaction purchase for each Operating Day, back to each hour in the Operating Day in which the External Transaction was scheduled as follows:

$$\text{Hourly Credit} = \text{Daily Credit} * ((\text{Real-Time Load Obligation in operating hour}) / (\text{Total Real-Time Load Obligations in all operating hours}))$$

**III.F.2.3.11 Real-Time NCPC Credits: Market Participant's Hourly and Operating Day Total.** The ISO calculates each Market Participant's hourly Real-Time NCPC Credits and the total Real-Time NCPC Credits for each Operating Day as follows:

(a) For each scheduled hour, if the External Transaction purchase is flagged as Local Second Contingency Protection Resource, the Market Participant's share of Local Second Contingency Protection Resource Economic NCPC

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Credits is equal to the Real-Time Credit in that hour. The ISO then sums all Real-Time Local Second Contingency Protection Resource NCPC Credits for all External Transaction purchases for that Operating Day,

(b) For each scheduled hour, if the External Transaction purchase is not flagged as Local Second Contingency Protection Resource, the Market Participant's share of Real-Time NCPC Credits is equal to the Real-Time Credit in that hour. The ISO then sums all Real-Time NCPC Credits for all External Transaction purchases for that Operating Day.

**III.F.2.4 Credits for Pool-Scheduled External Transactions Sales and Dispatchable Load Pumps.** For each Operating Day, the ISO calculates the Credits due each Market Participant for pool-scheduled External Transaction sales (modeled as Demand Bids at External Nodes) and Dispatchable Loads (pumps only) as follows. Credits for pool-scheduled External Transaction sales only apply to External Transaction sales submitted that are Dispatchable and are submitted as Source equals Sink. Dispatchable Loads (pumps only) are eligible for NCPC Credits in hours for which they are not Self-Scheduled. Dispatchable Loads (pumps only) that are Self-Scheduled for any portion of an hour shall be considered Self-Scheduled for the entire hour.

**III.F.2.4.1 Information Retrieved.** The ISO retrieves the following information:

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- (a) dispatcher transaction logs
  - (b) Pool-scheduled Day-Ahead scheduled and Real-Time scheduled External Transaction sales (positive values)
  - (c) Pool-scheduled Day-Ahead scheduled and Real-Time scheduled Dispatchable Loads (pumps only) (positive values)
  - (d) hourly pool-scheduled Day-Ahead and Real-Time External Transaction Demand Bid cost curve (\$/MWh, MW)
  - (e) hourly pool-scheduled Day-Ahead and Real-Time Dispatchable Load (pumps only) Demand Bid cost curve (\$/MWh, MW)
  - (f) Day-Ahead and Real-Time LMPs

**III.F.2.4.2 Day-Ahead Bid Amount.** The ISO calculates the hourly Day-Ahead bid amount for each pool-scheduled External Transaction sale and Dispatchable Load pump by multiplying the cleared Day-Ahead MWs by the Demand Bid price.

**III.F.2.4.3 Day-Ahead Cost.** The ISO calculates the hourly Day-Ahead cost for each pool-scheduled External Transaction sale and Dispatchable Load pump by multiplying the cleared Day-Ahead MWs by the Day-Ahead LMP at the applicable External Node and Node, respectively.

**III.F.2.4.4 Day-Ahead Credits.** The ISO calculates the daily Day-Ahead Credits for each pool-scheduled External Transaction sale and Dispatchable Load pump as follows:

- (a) Sum hourly Day-Ahead bid amounts for the day
- (b) Sum hourly Day-Ahead costs for the day
- (c) Day-Ahead NCPC Credit for External Transaction sales equals any portion of the sale transaction's total daily Day-Ahead cost in excess of its total daily Day-Ahead bid amount
- (d) Day-Ahead NCPC Credit for Dispatchable Load pump equals any portion of the Dispatchable Load pump's total daily Day-Ahead cost in excess of its total daily Day-Ahead bid amount

**III.F.2.4.5 Day-Ahead Credit Allocation.** The ISO allocates the Day-Ahead NCPC Credits, for each External Transaction sale and Dispatchable Load pump for each Operating Day, back to each hour in the Operating Day in which the External Transaction or Dispatchable Load pump was scheduled as follows:

$$\text{Hourly Credit} = \text{Daily Credit} * ((\text{Day-Ahead Load Obligation in scheduled hour}) / (\text{Total Day-Ahead Load Obligations in all scheduled hours}))$$

**III.F.2.4.6 Real-Time Bid Amount - External Transaction Sale.** The ISO calculates the hourly Real-Time bid amount for each pool-scheduled External Transaction sale by multiplying the scheduled Real-Time transaction MWh by the transaction Demand Bid price.

**III.F.2.4.7 Real-Time Bid Amount - Dispatchable Load Pump.** The ISO calculates the hourly Real-Time bid amount for each pool-scheduled Dispatchable Load pump by multiplying the actual Real-Time consumption MWh by the Dispatchable Load pump Demand Bid price.

**III.F.2.4.8 Real-Time Cost - External Transaction Sale.** The ISO calculates the hourly Real-Time cost for each pool-scheduled External Transaction sale by multiplying the scheduled Real-Time transaction MWh hourly deviations from the cleared Day-Ahead transaction MWh amount by the Real-Time LMP of the applicable External Node.

**III.F.2.4.9 Real-Time Cost - Dispatchable Load Pump.** The ISO calculates the hourly Real-Time cost for each pool-scheduled Dispatchable Load pump by multiplying the

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actual Real-Time consumption MWh hourly deviations from the cleared Day-Ahead MWh amount by the Real-Time LMP of the applicable Node.

**III.F.2.4.10 Real-Time Credits - External Transaction Sale.** The ISO calculates the daily Real-Time NCPC Credits for Real-Time External Transaction sales as follows:

- (a) Sum hourly Real-Time bid amounts for the day
- (b) Sum hourly Real-Time costs for the day
- (c) Real-Time NCPC Credit equals any portion of the External Transaction sale's total daily Real-Time bid amount that is less than: (i) its daily Day-Ahead cost, plus (ii) its daily Real-Time cost, less (iii) any Day-Ahead NCPC Credits for External Transaction sales.

**III.F.2.4.11 Real-Time Credits Allocation - External Transaction Sale.** The ISO allocates the Real-Time NCPC Credits, for each External Transaction sale for each Operating Day, back to each hour in the Operating Day in which the External Transaction was scheduled as follows:

$$\text{Hourly Credit} = \text{Daily Credit} * ((\text{Real-Time Load Obligation in operating hour}) / (\text{Total Real-Time Load Obligations in all operating hours}))$$

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**III.F.2.4.12 Real-Time Credits - Dispatchable Load Pumps.** The ISO calculates the daily Real-Time NCPC Credits for Real-Time Dispatchable Load pumps as follows:

- (a) Sum hourly Real-Time bid amounts for the day
- (b) Sum hourly Real-Time costs for the day
- (c) Real-Time NCPC Credit equals the Dispatchable Load pump's total daily Real-Time bid amount less: (i) its daily Day-Ahead cost, plus (ii) its daily Real-Time cost, less (iii) any Day-Ahead NCPC Credits for Dispatchable Load pumps.

**III.F.2.4.13 Real-Time Credits Allocation - Dispatchable Load Pumps.** The ISO allocates the Real-Time NCPC Credits, for each Dispatchable Load pump for each Operating Day, back to each hour in the Operating Day in which the Dispatchable Load pump was scheduled as follows:

$$\text{Hourly Credit} = \text{Daily Credit} * ((\text{Real-Time Load Obligation in operating hour}) / (\text{Total Real-Time Load Obligations in all operating hours}))$$

**III.F.2.5 Credits for Canceled Pool-Scheduled Resources (Generators).** For each Operating Day, the ISO calculates the NCPC Credit due to each Market

Participant for Pool-Scheduled generating Resources that were scheduled by the ISO after the close of the Day-Ahead Energy Market and that were cancelled by the ISO prior to their assigned commitment time. The ISO bases this credit on values submitted by Market Participants as part of their Offer Data. The following Offer Data parameters are utilized in the Credit calculation: Hot to Cold Time, Hot to Inter Time, Hot Startup Cost, Inter Startup Cost, Cold Startup Cost, Hot Startup Time, Inter Startup Time and Cold Startup Time. Please see the ISO-NE User Guide for Submitting Bids and Offers via eMKT for the definition of these parameters.

**III.F.2.5.1 Information Retrieved.** The ISO retrieves the following information:

- (a) list of canceled generating Resources (dispatcher log)
- (b) Applicable Generator Start-Up Fee (Hot Startup Cost, Inter Startup Cost or Cold Startup Cost)
- (c) Generator Flags (Local Second Contingency Protection Resource, VAR)
- (d) generation data

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**III.F.2.5.2 Cancelled Start Credit Calculation.** The ISO Credits each Market Participant for cancellation based on a pro-rata share of the Applicable Generator Start-Up Fee and associated Time to Start parameter (Hot Startup Time, Inter Startup Time or Cold Startup Time) utilized by the ISO in the original commitment decision. The Credit for cancelled starts is calculated as follows:

$$\text{Cancelled Start Credit} = \text{Applicable Generator Start-Up Fee} * (1 - ((\text{Cancel Time}) / (\text{Time to Start}))),$$

Where,

Applicable Generator Start-Up Fee equals (i) Hot Startup Cost if the difference in hours between the ISO Commitment Order Time and the unit's last off-line time is less than the Hot to Inter Time; (ii) Inter Startup Cost if the difference in hours between the ISO Commitment Order Time and the unit's last off-line time is greater than or equal to the Hot to Inter Time and less than the Hot to Cold Time; or (iii) Cold Startup Cost if the difference in hours between the ISO Commitment Order Time and the unit's last off-line time is greater than or equal to the Hot to Cold Time,

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Cancel Time	equals the elapsed time, in hours, between the original ISO Commitment Order Time for the unit and the time at which the ISO cancelled the commitment of the unit. Cancel Time must be less than or equal to Time To Start, otherwise, the Cancelled Start Credit is set equal to zero,
ISO Commitment Order Time	equals the time at which the unit is to be synchronized to the system,
Time to Start	equals the applicable number of hours required to synchronize the unit to the system as submitted as part of the Market Participant's Offer Data (Hot Startup Time, Inter Startup Time or Cold Startup Time), and

Cancelled Start Credit is limited to be no greater than the applicable Start-Up Fee and Time to Start can not be greater than 24 hours.

**III.F.2.5.3 Real-Time NCPC Credit.** The Real-Time NCPC Credit for cancelled starts for the Operating Day is equal to the sum of the Real-Time Credits calculated in Section III.F.2.5.2 above for all Pool-Scheduled generating Resources that were not originally flagged as a Local Second Contingency Protection Resource or VAR.

**III.F.2.5.4 Local Second Contingency Protection Resource NCPC Credit.** The Real-Time Local Second Contingency Protection Resource NCPC Credit for cancelled starts for the Operating Day is equal to the sum of the Real-Time Credits calculated in

III.F.2.1.13 above for all Pool-Scheduled generating Resources that were originally flagged as Local Second Contingency Protection Resources.

**III.F.2.5.5 VAR Credit.** The Real-Time VAR Credit for cancelled starts for the Operating Day is equal to the sum of the Real-Time Credits calculated in III.F.2.5.2 above for all Pool-Scheduled generating Resources that were originally flagged as VAR.

**III.F.2.5.6 Reserved.**

**III.F.2.5.7 SCR Credits.** The Real-Time SCR Credits associated with generating units identified as SCR Resources are billed as provided for in Schedule 19 of Section II of the Transmission, Markets and Services Tariff.

**III.F.2.5.8 Example.** An example of the cancelled start calculation is as follows:

Asset ID ABC was scheduled after the close of the Day-Ahead Market to start at 6:00 am. ISO Cancelled the unit Start Time, in Real-Time, at 4:00 am. Cancel Time Column is calculated by subtracting Start time – *Cancel* time (6 – 4 = Cancel Time is 2)

To determine the amount Cancelled Start we look at the Start-Up Fee and we multiply it by 1 minus Cancel Time divided by Time to Start.

**III.F.2.6 Credits for Resources Postured for Reliability.** The ISO Credits postured generating Resources, both Pool-Scheduled and Self-Scheduled, for responding to the ISO's request to reduce or suspend normal economic operation. Whenever the ISO deviates from the normal security constrained economic Energy dispatch solution for a generating Resource produced by the Technical Software for the purpose of maintaining sufficient Operating Reserve (both on-line and off-line) levels or for the provision of voltage or VAR support, such generating Resources shall be considered postured. The ISO takes into account any Generator Regulation Credits associated with the postured generating Resource for the provision of Regulation while postured in calculating the posturing Credits for generating Resources.

**III.F.2.6.1 Information Retrieved.** The ISO retrieves the following information:

- (a) list of generating Resources reduced or suspended for reliability reasons (dispatcher log)
- (b) Generator Offer Data
- (c) 5 minute generation data from EMS
- (d) Real-Time LMP data
- (e) Real-Time Generation Obligation
- (f) Generator Regulation Credits

**III.F.2.6.2 Posturing Credit Calculation.** The ISO Credits Market Participants for each generating Resource for each hour reduced or suspended based on the following calculation:

(a) *Generating Resources Without Daily Energy Restrictions.* For generating Resources without energy restrictions, the posturing credit for each hour of reduced or suspended operation is:

$$\text{Posturing Credit} = (\text{PAG} - \text{AG}) \times (\text{ULMP} - \text{UB}) - \text{GRC}$$

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Where:

- PAG equals the estimated hourly generation had the generating Resource not responded to dispatch orders to reduce or suspend operation. Estimated operation for resources following the Day-Ahead schedule prior to posturing will be determined by the Day-Ahead schedules during the posturing event. For generating Resources responding to Real-Time prices prior to posturing, estimates will assume economic operation would have continued;
- AG equals the actual output of the generating Resource;
- ULMP equals the Real-Time LMP associated with the generating Resource that is reduced or suspended for each hour;
- UB equals the Supply Offer price (increment energy price only) associated with PAG for that generating Resource whose output is reduced or suspended;
- GRC (Generator Regulation Credits) is the value calculated under Section 4.2.1 of the ISO New England Manual for Market Rule 1 Accounting, M-28; and

where  $ULMP - UB$  shall not be negative and Posturing Credit shall not be negative.

(b) *Generating Resources With Daily Energy Restrictions.* For generating Resources with energy restrictions, a credit is determined based on an estimate of the daily net opportunity cost in the energy market. This daily net amount shall not be negative. The posturing credit is:

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Posturing Credit = net of Posturing Hourly Credits as defined below for all hours beginning with the hour that posturing began and ending at the end of the calendar day,

Where:

$$\text{Posturing Hourly Credit} = (\text{PAG} - \text{AG}) \times (\text{ULMP} - \text{UB}) - \text{GRC}$$

Where:

**PAG** equals the estimated hourly generation had the generating Resource not responded to Dispatch orders to reduce or suspend operation. Estimated operation for generating Resources following the Day-Ahead schedule prior to the posturing event will be determined by the Day-Ahead schedule. From the start of the posturing event through the end of the calendar day, PAG is set to the Day-Ahead schedule for as long as available energy would have supported the operation. For generating Resources responding to DDP's in Real-Time or operating under Real-Time Self-Schedule changes prior to the posturing event, PAG will be set assuming economic operation would have occurred during posturing and throughout the day for as long as the available energy would have supported the operation;

**AG** equals the actual output of the generating Resource;

**ULMP** equals the Real-Time LMP associated with the generating Resource;

**UB** equals the Generator Supply Offer price (increment energy price only);  
and

**GRC** is the value calculated under Section 4 of the ISO New England Manual for Market Rule 1 Accounting, M-28.

**III.F.2.6.3 Real Time NCPC Credits.** The Real-Time NCPC Credits for posturing for the Operating Day are equal to the sum of the non-VAR related Real-Time posturing Credits associated with reduced or suspended generating Resources for the Operating Day.

**III.F.2.6.4 Real Time VAR Credits.** The Real-Time VAR Credits for posturing for the Operating Day are equal to the sum of the VAR related Real-Time posturing Credits associated with reduced or suspended generating Resources for the Operating Day.

**III.F.2.6.5 Credits for Resources Providing Operating Reserve During Reserve Shortage Condition Pricing Events.** Generating Resources in the Real-Time Energy Market that, during periods when a Reserve Shortage Condition Pricing Event has been declared, meet the eligibility requirements described in ISO New England Manual 11 - Market Operations, are eligible to receive credits for Reserve Shortage Opportunity Costs. These payments are

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calculated in accordance with the provisions of Section III.3 of Market Rule 1 and ISO New England Manual 11.

#### **III.F.2.6.5.1 ISO Actions**

- (1) The ISO retrieves the following information:
  - (a) list of hours for which Reserve Shortage Condition Pricing Events occurred
  - (b) list of generating Resources to receive Reserve Shortage Opportunity Cost credits in each hour
  - (c) Reserve Shortage Opportunity Cost credit amounts by generating Resource
- (2) The ISO credits Market Participants for each eligible generating Resource for each hour in which a Reserve Shortage Condition Pricing Event occurs.

#### **III.F.3. Charges for NCPC**

**III.F.3.1 Allocation.** The sum of Day-Ahead NCPC Credits for the Day-Ahead Energy Market is allocated and charged to Market Participants in proportion to the daily sum of their Day-Ahead Load Obligations. The sum of Real-Time NCPC

Reserved for future use.

Reserved for future use.

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Credits (including posturing credits) including those associated with Synchronous Condensers for the Real-Time Energy Market is allocated and charged to Market Participants in proportion to their daily sum of their Real-Time Load Obligation Deviations (excluding any difference between Dispatchable Load Demand Bids that are cleared in the Day-Ahead Energy Market and revenue quality meter readings for Dispatchable Load pumps for the Operating Day that result from operation in accordance with the ISO 's instructions), generation deviations from Day-Ahead amounts and the daily sum of the generation deviations from the greater of the hourly aggregate Desired Dispatch Point or the Resource's Economic Minimum Limit.

The sum of Day-Ahead Local Second Contingency Protection Resource NCPC Credits associated with generating units identified as Local Second Contingency Protection Resources for the Day-Ahead Energy Market is allocated and charged

to Market Participants within the affected Reliability Region in proportion to the daily sum of their Day-Ahead Load Obligations within the affected Reliability Region. The sum of Real-Time Local Second Contingency Protection Resource NCPC Credits associated with generating units identified as Local Second Contingency Protection Resources for the Real-Time Energy Market is allocated and charged to Market Participants within the affected Reliability Region and, under certain circumstances, to any adjacent Control Area purchasing Emergency energy from the ISO. Charges are allocated in proportion to the daily sum of Real-Time Load Obligations plus applicable Emergency energy sales within the affected Reliability Region.

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The sum of Day-Ahead and Real-Time NCPC Credits paid to Market Participants associated with Resources other than SCRs (including Synchronous Condensers and Postured Resources) that have been identified by the ISO as being required to provide voltage support or VAR support are collected from Market Participants in accordance with Schedule 2 of Section II of the Transmission, Markets and Services Tariff.

The hourly sum of Real-Time Reserve Shortage Opportunity Cost credits paid to Market Participants with generators that have provided Operating Reserve during Reserve Shortage Condition Pricing Events are collected from Market Participants in proportion to their ratio shares of hourly Real-Time Load Obligations.

Each Market Participant's Minimum Generation Emergency Charge is calculated as follows:

- (1) For each generating Resource of the Market Participant for which a Minimum Generation Emergency Credit is calculated, subtract the Resource's Economic Minimum Limit from its Real-Time Generation Obligation and then multiply the result by the Market Participant's Ownership Share in the Resource. The sum of the results of such calculations shall be that Market Participant's Exempt Real-Time Generation Obligation.
- (2) Subtract the sum of the Exempt Real-Time Generation Obligations for all Market Participants from the total Real-Time Generation Obligation of all Market Participants at Locations within the Reliability Region(s) for which a Minimum Generation Emergency was declared.

- (3) Subtract the Market Participant's Exempt Real-Time Generation Obligation, as calculated in step (1) above, from its total Real-Time Generation Obligation within the Reliability Region(s) for which a Minimum Generation Emergency was declared, and then divide that result by the result in step (2).
- (4) Multiply the total Minimum Generation Emergency Credit by the result in step (3). This result is the Market Participant's Minimum Generation Emergency Charge.

### **III.F.3.2 Calculations**

**III.F.3.2.1 Day-Ahead NCPC Cost, Day-Ahead Energy Market.** The ISO calculates for each Operating Day the total Day-Ahead NCPC cost associated with the Day-Ahead Energy Market by summing all Market Participant's Day-Ahead NCPC Credits, as previously calculated, for generating Resources, Pool-Scheduled External Transaction Purchases, Postured Generators (non-VAR) and Pool-Scheduled External Transaction Sales and Dispatchable Load Pumps.

**III.F.3.2.2 Local Second Contingency Protection Resource NCPC Cost, Day-Ahead Energy Market.** The ISO calculates for each Operating Day the Local Second Contingency Protection Resource NCPC cost associated with the Day-Ahead Energy Market by summing all Market Participants' Day-Ahead Local Second Contingency Protection Resource NCPC Credits.

**III.F.3.2.3 VAR related NCPC Cost, Day-Ahead Energy Market.** The ISO calculates for each Operating Day the total VAR related NCPC

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cost associated with the Day-Ahead Energy Market by summing all Market Participant's Day-Ahead VAR Credits.

**III.F.3.2.4 NCPC Charges, Day-Ahead Energy Market.** The ISO calculates for each Operating Day the NCPC Charges for the Day-Ahead Energy Market by allocating the total economic NCPC cost for the Day-Ahead Energy Market to each Market Participant based on the Market Participant's pro-rata daily share of the sum of Day-Ahead Load Obligations over all Locations (including the Hub).

**III.F.3.2.5 Local Second Contingency Protection Resource NCPC Charges, Day-Ahead Energy Market.** The ISO calculates for each Operating Day the Local Second Contingency Protection Resource NCPC Charges for the Day-Ahead Energy Market for each affected Reliability Region by allocating the total Local Second Contingency Protection Resource NCPC cost for the Day-Ahead Energy Market for each affected Reliability Region to each Market Participant within the affected Reliability Region based on the Market Participant's pro-rata daily share of the sum of Day-Ahead Load Obligations over all Locations within the affected Reliability Region (not including the Hub).

#### **III.F.3.2.6 VAR Charges, Day-Ahead Energy Market, Day-Ahead Energy**

**Market.** The ISO calculates for each Operating Day the VAR Charges for the Day-Ahead Energy Market by allocating the sum of the total VAR related NCPC cost for the Day-Ahead Energy Market to each Market Participant based on Schedule 2 of Section II of the Transmission, Markets and Services Tariff.

#### **III.F.3.2.7 Non-Synchronous Condenser related Economic NCPC Cost,**

**Real-Time Energy Market.** The ISO calculates for each Operating Day the total non-Synchronous Condenser related economic NCPC cost associated with the Real-Time Energy Market by summing all Market Participant's Real-Time NCPC Credits not related to Synchronous Condensers, as previously calculated, and the total Synchronous Condenser related NCPC cost (non-VAR related) associated with the Real-Time Energy Market by summing all Market Participants' non-VAR related Real-Time Synchronous Condenser related NCPC Credits for generating Resources, pool scheduled External Transaction Purchases, pool-

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scheduled External Transaction Sales and Dispatchable Load Pumps, Cancelled Pool-Scheduled Resources and Resources postured for reliability.

**III.F.3.2.8 Local Second Contingency Protection Resource NCPC Cost, Real-Time Energy Market.** The ISO calculates for each Operating Day the total Local Second Contingency Protection Resource NCPC cost associated with the Real-Time Energy Market by summing all Market Participants' Real-Time Local Second Contingency Protection Resource NCPC Credits.

**III.F.3.2.9 SCR NCPC Cost, Real-Time Energy Market.** The ISO calculates for each Operating Day the total SCR NCPC cost associated with the Real-Time Energy Market by summing all Market Participants' Real-Time SCR NCPC Credits.

**III.F.3.2.10 VAR NCPC Cost, Real-Time Energy Market.** The ISO calculates for each Operating Day the total VAR NCPC cost associated with the Real-Time Energy Market by summing all Market Participants' Real-Time VAR Credits

including VAR Credits associated with Synchronous Condensers and postured generating Resources.

**III.F.3.2.11 Reserved.**

**III.F.3.2.12 Real-Time Load Obligation Deviation.** The ISO calculates for each hour of the Operating Day each Market Participant's Real-Time Load Obligation Deviation (as adjusted in accordance with Section III.F.3.1) by summing the difference between the Market Participant's Real-Time Load Obligation and Day-Ahead Load Obligation over all Locations (including the Hub).

**III.F.3.2.13 Real-Time Load Obligation Deviation within each Reliability Region.** The ISO calculates for each hour of the Operating Day each Market Participant's Real-Time Load Obligation Deviation (as adjusted in accordance with Section III.F.3.1) within each

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Reliability Region by summing the difference between the Market Participant's Real-Time Load Obligation and Day-Ahead Load Obligation over all Locations within the Reliability Region (not including the Hub).

**III.F.3.2.14 Real-Time Generation Obligation Deviation at External Nodes.**

The ISO calculates for each hour of the Operating Day each Market Participant's Real-Time Generation Obligation Deviation at External Nodes by summing the difference between the Market Participant's Real-Time Generation Obligation and Day-Ahead Generation Obligation over all External Nodes.

**III.F.3.2.15 Other.** The ISO calculates for each Operating Day the non-Synchronous Condenser related, Synchronous Condenser related, non-Local Second Contingency Protection Resource related, non-Regulation and non-SCR related economic NCPC Charges for the Real-Time Energy Market for each Market Participant by allocating the total Real-Time non-Synchronous Condenser related, Synchronous Condenser related, non-Local Second Contingency Protection Resource related

and non-SCR related NCPC cost to each Market Participant based on their daily pro-rata share of the daily sum of the following hourly Real-Time deviations:

(a) If the Day-Ahead Economic Minimum Limit is equal to the Real-Time Economic Minimum Limit and the Real-Time Economic Minimum Limit is greater than or equal to the Resources Desired Dispatch Point: Real-Time generation deviation is the greater of the absolute value of (actual metered output – cleared DA MWh) or (actual metered output – Real-Time Economic Minimum Limit) for each generating Resource.

If the deviation calculated above is less than or equal to 5% of cleared DA MWh or less than or equal to 5 MWh, then deviation = 0.

(b) If the Day-Ahead Economic Minimum Limit is not equal to Real-Time Economic Minimum Limit and the Real-Time Economic Minimum Limit is greater than or equal to the Resource's Desired Dispatch Point: Real-Time generation deviation is the greatest of the absolute value of (actual metered output – cleared DA MWh) or (actual metered output – Real-Time Economic Minimum Limit) or (Real-Time Economic Minimum Limit – Day-Ahead Scheduled Economic Minimum Limit) for each generating Resource.

If the deviation calculated above is less than or equal to 5% of cleared DA MWh or less than or equal to 5 MWh, then deviation = 0.

(c) If the Resource's Desired Dispatch Point is greater than the Resource's Real-Time Economic Minimum Limit and the Resource is not following ISO Dispatch Instructions: Real-Time generation deviation is the absolute value of (actual metered output - Desired Dispatch Point).

If the deviation calculated above is less than or equal to 5% of Desired Dispatch Point or less than or equal to 5 MWh, then deviation = 0.

**plus**

(d) for each Pool Scheduled generating Resource:

(i) If the Resource is not following ISO Dispatch Instructions and has cleared Day-Ahead and has an actual metered output greater than zero and has not been ordered off-line by the ISO for reliability purposes: Real-Time generation deviation is the absolute value of (actual metered output – Desired Dispatch Point) for each generating Resource.

If the deviation calculated above is less than or equal to 5% of Desired Dispatch Point or less than or equal to 5 MWh, then deviation = 0.

(ii) If the Resource is not following ISO Dispatch Instructions, has cleared Day-Ahead, that has an actual metered output equal to zero and has not been ordered off-line by the ISO for reliability purposes: Real-Time generation deviation is the absolute value of (actual metered output – Cleared DA MWh) for each generating Resource.

If the deviation calculated above is less than or equal to 5% of Cleared DA MWh or less than or equal to 5 MWh, then deviation = 0.

**plus,**

(e) the sum of the hourly absolute values for the Operating Day of the Participant's Real-Time Load Obligation Deviation (as adjusted in accordance with Section III.F.3.1)

[NOTE: External Transaction sales curtailed by the ISO are omitted from this calculation],

**plus,**

(f) the sum of the hourly absolute values for the Operating Day of the Participant's Real-Time Generation Obligation Deviation at External Nodes.

[Note: External Transaction purchases curtailed by the ISO are omitted from this calculation],

**plus,**

(g) the absolute value of the total over all Locations of the Participant's Increment Offers.

[Please note that for purposes of this calculation an Increment Offer that clears in the Day-Ahead Market always creates a Real-Time generation deviation.]

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**III.F.3.2.16 Local Second Contingency Protection Resource NCPC**

**Charges, Real-Time Energy Market.** The ISO calculates for each Operating Day the Local Second Contingency Protection Resource NCPC Charges for the Real-Time Energy Market for each Market Participant within each affected Reliability Region by allocating the total Real-Time Local Second Contingency Protection Resource NCPC cost to each Market Participant within each affected Reliability Region based on its daily pro-rata share of the daily sum of the hourly Real-Time Load Obligations for the affected Reliability Region.

For purposes of the calculation of Local Second Contingency Protection Resource NCPC Charges, for hours in which there is a Local Second Contingency Protection Resource NCPC cost (as calculated in Section III.F.3.2.8) and ISO is selling Emergency energy to an adjacent Control Area, the scheduled amount of Emergency energy at the applicable External Node will be included in the calculation of proportional shares of Real-

Time Load Obligations as if the Emergency energy sale were a Real-Time Load Obligation within the affected Reliability Region(s). The proportionate share calculated for the Emergency Energy Transaction shall be included in the charges under an agreement for purchase and sale of Emergency energy with the applicable adjacent Control Area.

For purposes of the calculation of Local Second Contingency Protection Resource NCPC Charges, Emergency energy sales by the New England Control Area to an adjacent Control Area at the External Nodes (see ISO New England Manual 11 for further discussion of the External Nodes) listed below shall be associated with the Reliability Region(s) indicated in the table:

<b>External Node Common Name</b>	<b>Associated Transmission Facilities</b>	<b>Reliability Region(s)</b>	<b>Allocator</b>
NB-NE External Node	Keswick-Orrington (396 Line)	Maine	100% to Maine
HQ Phase I/II External Node	HQ-Comerford 451& 452 Lines HQ-Sandy Pond 3512 & 3521 Lines	New Hampshire West Central Massachusetts	When Phase 1 operates, 100% to New Hampshire When Phase 2 operates, 100% to West Central

<b>External Node Common Name</b>	<b>Associated Transmission Facilities</b>	<b>Reliability Region(s)</b>	<b>Allocator</b>
			Massachusetts
Highgate External Node	Bedford-Highgate (1429 Line)	Vermont	100% to Vermont
NY-NE AC External Node	Plattsburg – Sandbar Line (PV-20 Line) Whitehall – Blissville Line (K-37 Line) Hoosick- Bennington Line (K-6 Line) Rotterdam – Bearswamp Line (E205W Line) Alps – Berkshire Line (393Line) Pleasant Valley – Long Mountain Line (398 Line) Northport – Norwalk Harbor (1385 Line)	Vermont, Vermont Vermont West Central Massachusetts West Central Massachusetts Connecticut Connecticut	Allocated proportionally to the Vermont, West Central Massachusetts and Connecticut Reliability Regions based on the Normal Limits as described in Appendix 1 to OP-16 of the transmission facilities connecting these Reliability Regions to the New York Control Area.
Cross Sound Cable External Node	Shoreham-Halvarsson Converter (481 Line)	Connecticut	100% to Connecticut

**III.F.3.2.17 VAR Charges, Real-Time Energy Market.** The ISO calculates for each Operating Day the VAR Charges (including Synchronous Condensers) associated with the Real-Time Energy Market by allocating the total Real-Time VAR cost to each Market Participant based on Schedule 2 of Section II of the Transmission, Markets and Services Tariff.

**III.F.3.2.18 SCR Charges, Real-Time Energy Market.** The ISO calculates for each Operating Day the SCR Charges associated with the Real-Time Energy Market by charging the total Real-Time SCR cost to the appropriate Entities based on Schedule 19 of Section II of the Transmission, Markets and Services Tariff.

**III.F.3.2.19 Reserve Shortage Opportunity Cost Credits.** The ISO calculates for each hour the total costs associated with Real-Time Energy Market Reserve Shortage Opportunity Cost credits during Reserve Shortage Condition Pricing Events by summing the Reserve Shortage Opportunity Cost payments made to generators in that hour.

**III.F.3.2.20 Reserve Shortage Opportunity Cost Charges.** The ISO calculates for each hour the Reserve Shortage Opportunity Cost charges associated with the

Real-Time Energy Market by allocating the total Real-Time Reserve Shortage Opportunity Costs to each Market Participant based on the Market Participant's hourly ratio share of the aggregate Real-Time Load Obligation (Market Participant's Real-Time Load Obligation at all Locations/ Total of all Market Participants' Real-Time Load Obligations at all Locations).

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