

**ISO New England Calculation of  
TTC for External Interfaces  
and  
ATC for PTF Interfaces**

**Version 3.1**

**Issued on: March 27, 2009**

**ISO New England Calculation of TTC for External Interfaces  
and ATC for PTF Interfaces**

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Table of Contents

1.	Introduction.....	3
1.1.	Scope of Document.....	5
1.2.	Applicability to other Transmission Service Providers .....	5
2.	Transmission Service in the New England Markets .....	6
3.	ISO Area Total Transfer Capability (TTC) .....	6
3.1.	Definition of TTC and General Description of TTC Process .....	6
3.2.	Establishing TTCs.....	7
3.3.	Posting TTCs .....	8
3.4.	Providing TTCs to Third Parties.....	8
4.	ISO Area Capacity Benefit Market (CBM) .....	9
5.	ISO Area Transmission Reliability Margin (TRM).....	9
5.1.	Definition of TRM; Calculation of TRM on PTF ties .....	9
5.2.	Calculation of TRM on MTF and OTF ties .....	9
6.	Calculation of ISO Area ATC.....	10
6.1.	Definition of ATC and General Description of Calculation Process.....	10
6.2.	Firm versus Non-Firm ATC.....	11
6.3.	Coordinating ATC calculations .....	11
7.	Posting of ATC Related Information.....	11
7.1.	ATC Values .....	11
7.2.	Transmission Reservations .....	12
7.3.	Load Forecast.....	12
8.	Aspects of ATC in FERC Order 890 not Applicable to the ISO Area .....	12

Appendix A - Listing of PTF POR/POD Paths

Appendix B - Current TRM Values for MTF and OTF Interfaces

Record of Revisions

<b>Version</b>	<b>Date</b>	<b>Reason</b>
1.0	July 13, 2007	Baseline document
2.0	December 15, 2007	<ul style="list-style-type: none"> <li>• Update MEPCO TRM values;</li> <li>• Editorial changes to be consistent with OATT Attachment C</li> </ul>
3.0	December 1, 2008	<ul style="list-style-type: none"> <li>• Update to reflect roll in of MEPCO facilities</li> </ul>
3.1	March 27, 2009	<ul style="list-style-type: none"> <li>• General cleanup</li> <li>• Recognition of 1385/NNC naming convention</li> <li>• Elimination of a MEPCO footnote</li> <li>• Elimination of TRM on MEPCO and NB Interface</li> </ul>

# ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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## 1. Introduction

ISO New England (“ISO”) is a regional transmission organization (“RTO”), serving the New England states through reliable minute to minute operation of the New England Bulk Power System; development, oversight, and fair administration of New England’s wholesale market; and management of comprehensive bulk electric power system and wholesale markets’ planning processes. The ISO serves as the Balancing Authority for the New England Area (“ISO Area”). The ISO Area is interconnected to three neighboring Balancing Authority Areas: New Brunswick System Operator Area (“NBSO Area”), New York Independent System Operator Area (“NYISO Area”), and Hydro-Quebec TransEnergie Area (“HQTE Area”). As the RTO for New England, the ISO performs the reliability functions related to the calculation of Total Transfer Capability (“TTC”) for all of the external interfaces between the ISO Area and its neighboring Balancing Authority Areas<sup>1</sup> and for the internal interfaces between the Pool Transmission Facilities (“PTF”) and the Merchant Transmission Facilities (“MTF”)<sup>2</sup> and Other Transmission Facilities (“OTF”).<sup>3</sup> Figure 1 provides a graphical depiction of these responsibilities. The ISO is also responsible for the calculation of Available Transfer Capability (“ATC”) for the PTF/MTF and PTF/OTF internal interfaces, and the PTF external interfaces with the NYISO Area, the HQTE Area and the NBSO Area.<sup>4</sup> The split of responsibility to calculate TTC and ATC for the above interfaces is defined under the transmission operating agreements that the ISO has with the other Transmission Service Providers (“TSP” or “TSPs”) within the ISO Area.

While the ISO is the TSP for regional transmission service (“Regional Transmission Service”)<sup>5</sup> associated with Pool Transmission Facilities, there are additional TSPs within the RTO footprint that also calculate ATC associated with transmission services offered over the non-PTF external tielines<sup>6</sup> and that calculate TTC and ATC associated with Local Transmission Service.<sup>7</sup> The ISO is not responsible for the calculation of these values. The additional TSPs have developed an ATC Methodology document associated with their respective transmission facilities.

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<sup>1</sup> External interfaces between ISO and its neighboring areas are: New England/New Brunswick, New England/New York-CSC, New England/New York-1385/NNC, New England/New York-AC, New England/Hydro Quebec-Highgate, New England/Hydro Quebec-Phase II.

<sup>2</sup> MTF is the Cross Sound Cable (CSC), which connects Connecticut and Long Island

<sup>3</sup> OTF is the Phase I/II HVDC Transmission Facility, which connects Massachusetts and Quebec.

<sup>4</sup> The PTF external interfaces with New York, Quebec and New Brunswick include the NE/NY-1385/NNC external interface, the NE/NY-AC external interface, the NE/HQ-Highgate external interface and the NE/NB external interface

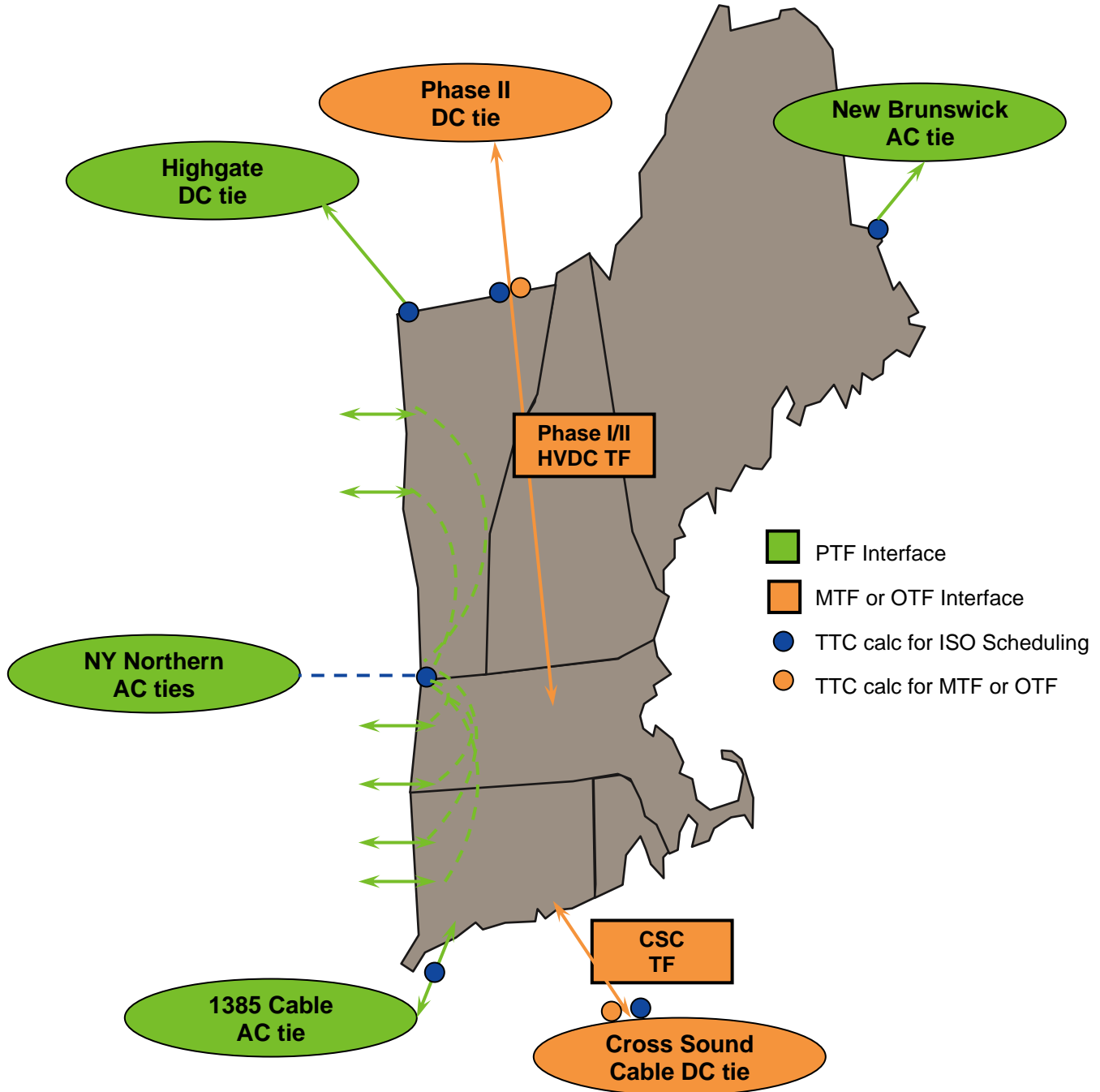
<sup>5</sup> Regional Transmission Service is comprised of Through or Out Service (Schedule 8) and Regional Network Service (Schedule 9).

<sup>6</sup> The ISO is not responsible for the calculation of ATC for any transmission service provided under the following ISO OATT Schedules: Schedule 18 - Cross Sound Cable (an external HVDC tie with New York) and Schedule 20A - Phase I/II HVDC-TF (an external HVDC tie with Hydro Quebec). It is expected that the TSPs will create and maintain a Schedule 18-and 20A -specific ATC Methodology Document.

<sup>7</sup> The ISO is not responsible for the calculation of TTC or ATC for any transmission service provided associated with Schedule 21 - Local Service. It is expected that these TSPs will create and maintain a Schedule 21-specific ATC Methodology Document, as required..

# ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

Figure 1. Graphical representation of TTC responsibilities



## ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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### **1.1. *Scope of Document***

The scope of this document is limited to those functions performed by the ISO as the TSP of Regional Transmission Service over the Pool Transmission Facilities pursuant to the various Transmission Operating Agreements and the ISO Open Access Transmission Tariff (“OATT”), which is Section II of the Transmission, Markets & Services Tariff (“Tariff”).

This document addresses the following items with respect to the provision of Regional Transmission Service by ISO New England:

- Total Transfer Capability (“TTC”) definition and calculation methodology for:
  - all PTF, MTF and OTF external interfaces between ISO and its neighboring Balancing Authorities; and
  - all PTF/MTF and PTF/OTF internal interfaces.
- Available Transfer Capability (“ATC”) definition and calculation methodology for:
  - all PTF external interfaces between ISO and its neighboring Balancing Authorities; and
  - all PTF/MTF and PTF/OTF internal interfaces.
- Transmission Reliability Margin (“TRM”) methodology for:
  - all PTF, MTF and OTF external interfaces between ISO and its neighboring Balancing Authorities; and
  - all PTF/MTF and PTF/OTF internal interfaces.

For the reasons explained herein, Capacity Benefit Market (“CBM”) is set to zero in New England.

### **1.2. *Applicability to other Transmission Service Providers***

In addition, this document applies, as defined below, to other TSPs within the ISO:

- The ISO provides TTCs to TSPs providing service within the RTO that calculate ATC on OTF and MTF ties with the neighboring areas. Therefore, the TTC methodology described here is applicable to those TSPs under Schedule 18 and Schedule 20A.
- The CBM methodology defined herein is applicable to all TSPs under the RTO footprint.
- The TRM methodology defined herein is applicable to all TSPs under the RTO footprint. To the extent that an individual TSP modifies the ISO-calculated TRM, then they are expected to justify and define that modification within their own ATC Methodology document.

## **2. Transmission Service in the New England Markets**

Since the inception of the OATT for New England, the process by which generation located inside New England supplies energy to bulk electric system has differed from the pro forma OATT. The fundamental difference is that internal generation is dispatched in an economic, security constrained manner by the ISO rather than utilizing a system of physical rights, advance reservations and point-to-point transmission service. Through this process, internal generation provides supply offers to the New England energy market that are utilized by the ISO in the Real-Time Energy Market dispatch software. This process provides the least-cost dispatch to satisfy Real-Time load on the system.

In addition to offers from generation within New England, market participants may submit energy transactions to move energy into the ISO Area, out of the ISO Area or through the ISO Area. The New England Real-Time Energy Market clears these energy transactions based on forecast Locational Marginal Pricing (“LMP”) and the availability of the external interfaces. With those external energy transactions in place, the Real-Time Energy Market dispatches internal generation in an economic, security constrained manner to meet Real-Time load within the region.

This process for submitting energy transactions into the New England Real-Time energy market does not require an advance physical reservation for use of the PTF. In the event that the net of economic energy transactions is greater than the capability of an external interface, the energy transactions selected to flow are selected based on the rules specified in Sections II and III of the Tariff. For any energy transactions that are scheduled to flow in Real-Time based on the economics of the system, a transmission reservation is created after-the-fact to satisfy the transparency needs of the market.

The process described above is applicable to the PTF within the ISO Area. There are several external interfaces that are not comprised of PTF (i.e., of MTF or OTF) and that require an advance transmission service reservation. On those interfaces, the market participant must obtain a transmission service reservation from the respective TSP(s) prior to offering energy into the Real-Time Energy Market.<sup>8</sup> This document addresses the calculation of ATC for the PTF internal and external interfaces and the calculation of TTC for all external interfaces. The market participant must refer to the respective TSP’s tariff sheets for information regarding the calculation of ATC on those external interfaces that are comprised of OTF or MTF (see Schedules 18 and 20A ) and the calculation of ATC on the Local Network (see Schedule 21).

## **3. ISO Area Total Transfer Capability (“TTC”)**

### ***3.1. Definition of TTC and General Description of TTC Methodology***

The TTC on all of the ISO Area’s external interfaces are calculated using the Area Interchange Methodology, as defined in the North American Electric Reliability Corporation (“NERC”) Standard MOD-028-1, and are relatively static values. The ISO defines the TTC as the amount of energy that is expected to be able to be transferred between the ISO Area and its neighboring Balancing Authorities Areas based on the ISO’s

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<sup>8</sup> See footnotes 2, 3 and 6, supra.

## ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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forecast of best-case, yet realistic, system conditions. The ISO's planning processes establish default TTCs for a range of system conditions that are documented in transmission operating guides. These transmission operating guides are updated when there is a change in system topology such as new or retired transmission or generation assets.

In the shorter term, outages of transmission or generation assets can impact the TTC. During the outage approval process, any transmission or generation outages that may influence the TTC on the external interfaces are noted and studies are performed to evaluate the impact of the outage on the TTC. On a daily basis, the expected system conditions for the following day are evaluated to determine any reduction in the hourly and daily TTC for the coming day.

### **3.2. *The TTC Algorithm: Process for Calculating TTC***

#### Description of Base Case Model:

The ISO Area is electrically interconnected to three other Balancing Areas: the HQTE Area, the NBSO Area, and the NYISO Area. The two interfaces between the ISO Area and the HQTE Area are comprised of HVDC transmission lines. Therefore, each tieline to the HQTE Area in the ISO model is represented as a load/generator. There is only a single interface with the NBSO, which is comprised of two A/C transmission lines. The model contains an equivalent representation of the NBSO Area. New England has a more complex interconnection with the NYISO Area, where there are three interfaces that are comprised of nine transmission lines connecting the two areas. (There are nine lines. Eight AC ties from north to south include the PV-20, K37, K6, E205W, 393, 690, 398 and 1385, and the HVDC Cross Sound Cable ("CSC").) The CSC is represented as a load/generator in the ISO model. All other lines are A/C lines and are directly modeled. The ISO base cases contain a level of modeling for each of the neighboring Balancing Authority Areas that allows for an accurate determination of transmission or generation outage impacts upon the New England Transmission System (including TTC values).

#### Studies for Operating Guides:

The studies used to produce input to the operating guides establish a set of base case models that account for different load levels such as seasonal peak and low load conditions. All base cases assume all lines in and assume all external generation available for dispatch. These studies will determine and utilize the topology and generation dispatch that will produce the maximum transfer capability for the external interface being studied. The ISO does not use industry-wide databases in the calculation of TTC; instead, it utilizes market databases that are necessarily non-public.

TTCs for the external interfaces are studied by the ISO based on thermal, voltage, and/or stability limitations of the ties that comprise the interface. Power flow and transient stability analysis are used to ensure that physical limits will not be violated for credible system contingencies per the Northeast Power Coordinating Council ("NPCC") and ISO New England reliability criteria.

## ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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### Studies for Known Outages:

The NPCC region maintains, on a confidential basis, a list of facilities that, if removed from service, may have a significant direct or indirect impact on a neighboring Balancing Authority Area.<sup>9</sup> If any transmission or generation on that list has a planned outage, those outages are communicated between the neighboring Balancing Authority Areas.

If an ISO Area element on this list is submitted for an outage, a study is completed to evaluate the impact on the TTC of the affected interface. The base case models established for the operating guides are the starting point for these studies. The forecast load for the timeframe is applied to the case and the generation dispatch applied in the studies to produce an optimistic TTC for the given condition.

### Studies for Daily Review of TTC:

For each operating day, the ISO develops TTCs for the external interface limits that reflect expected loads and known transmission and generation outages using load flow and contingency analyses. Transmission and generation outages on the neighboring systems will also be considered in these studies. With these base assumptions, the generation dispatch is applied in the studies to produce an optimistic TTC. If there are significant topology changes over the operating day, the hourly values will reflect any resulting impact on the TTCs.

### **3.3. Posting TTCs**

The ISO will calculate and post TTC for all PTF external interfaces and for all PTF/MTF and PTF/OTF internal interfaces. As a result of approved transmission and generation outages the following TTCs are posted representing the latest known system conditions. The posting of the TTCs is performed in accordance with NERC and NAESB standards such that:

- Hourly TTC values for the current day plus the next 7 days; where the Hourly TTC is the maximum TTC for that hour.
- Daily TTC values for the current day plus the next 39 days; where the Daily TTC is the maximum Hourly TTC for the day.
- Weekly TTC values for the current week plus the next 12 weeks for each interface; where the Weekly TTC is the maximum Daily TTC for the 7-day week.
- Monthly TTC for the current month and the next 12 months for a total of 13 calendar months; where the Monthly TTC is the minimum Daily TTC for the month.
- Yearly TTC values for 2 years beyond the current year; where the Yearly TTC is the minimum value between the summer and winter seasonal studies.

### **3.4. Providing TTCs to Third Parties**

The ISO will provide the TTCs calculated on the MTF and OTF external interface to

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<sup>9</sup> NPCC Document C-13 Operational Planning Coordination



## ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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those TSPs that offer service on facilities associated with the corresponding external interfaces.

### **4. ISO Area Capacity Benefit Market (“CBM”)**

The irrelevance of CBM within the ISO Area stems from the overall ISO approach to capacity planning requirements. Load Serving Entities (“LSEs”) operating within the ISO Area are required to arrange their Installed Capability requirements prior to the beginning of any given month in accordance with Section III of the Tariff. Accordingly, Load Serving Entities do not utilize CBM to ensure their capacity needs are met and CBM is, therefore, not relevant within the New England market design, and for the purposes of ATC calculation is set to zero.

### **5. ISO Area Transmission Reliability Margin (“TRM”)**

#### ***5.1. Definition of TRM; Calculation of TRM on PTF ties***

TRM is defined as the portion of the TTC that cannot be used for the reservation of firm transmission service because of uncertainties in system operation. Since the New England market design does not involve reserving transmission service in advance of physical flow, there is no need to calculate a TRM for those ties because the resulting value would have not impact on the service available to the market participant in real-time. As long as this market design is in place the TRM on the external interfaces for which the ISO calculates ATC is set to zero.

#### ***5.2. Calculation of TRM on MTF and OTF ties***

The ISO, acting as a Transmission Planner and Transmission Operator, is responsible for calculating the TRM on the MTF and OTF interfaces. The TRM on those interfaces represents the TTC that cannot be used for the reservation of firm transmission service because of uncertainties in system operation. These calculated TRM values are not applicable to non-firm transmission service. These calculated TRM values for the MTF and OTF interfaces may be utilized for all timeframes for which firm transmission service is offered. Refer to Appendix B - Current TRM Values for MTF and OTF Interfaces (“Appendix B”) for a listing of the current TRM Values for MTF and OTF interfaces.

The general process for determining TRM for the MTF and OTF is to perform total transfer capability under optimistic conditions to establish the TTC, then to perform total transfer capability studies under pessimistic conditions. The variation between the results of those studies is used to establish the TRM. The ISO does not use industry-wide databases to perform these studies. Instead, it uses internal databases consisting of physical models that are non-public.

Regarding forecast error assumptions, the base case model for these studies will consider all lines in and typically consider the forecasted peak load level for the ISO Area for the year. However, if an interface or contingency is load level sensitive, then various loads would be considered to determine the limiting condition. Changes in generation dispatch

## ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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between the optimistic and pessimistic conditions are the most likely items to impact the results of these studies.

Regarding loop flow assumptions, allowances for loop flow and simultaneous path interactions are considered through the n-1 contingencies that are used to determine the TTC for each study performed. Topology changes are not considered in the studies.

Other considerations in determining TRM are limitations enforced on the ISO Area due to the response of loss of that tieline on other regions. The inertial response on those other systems will be dependent on simultaneous path interactions and the generation dispatch on those systems.

### 6. Calculation of Available Transfer Capability (ATC)

#### 6.1. *ATC Algorithm: Process for Calculating ATC*

This section describes the process for the ATC calculations performed by the ISO, using the Area Interchange Methodology, for the PTF external interfaces and the PTF/MTF and PTF/OTF internal interfaces. The Point-of-Delivery (“POD”) and Point-of-Receipt (“POR”) associated these PTF paths are listed in Appendix A - Listing of PTF POR/POD Paths (“Appendix A”). The equation for Available Transfer Capability is:  $ATC = (TTC - CBM - TRM - ETC)$ .<sup>10</sup> As discussed above, the TRM and CBM for the PTF are zero. The purpose of the ETC component of the ATC equation is for the TSP to define all elements that are reducing the amount of ATC available to the market participant. As described in Section 2, there is not a requirement to purchase transmission service over the PTF in advance of flowing energy in Real-Time, therefore there are no existing transmission commitments to be applied to the ATC equation for the ISO Area; hence, ETC equals zero. Market participants will submit their bids and offers to move energy into, out of and through the ISO energy market through energy transactions.

As Real-Time approaches, the ISO utilizes the Real-Time energy market rules to determine which of the submitted energy transactions will be scheduled in the coming hour. Basically, the ATC of the external interfaces in the New England market is equal to the TTC for all time horizons. The ATC is equal to the amount of net energy transactions that the ISO will schedule on an interface for the designated hour. With this simplified version of ATC, the mathematical algorithm is simply: “ATC equals TTC”.

The scheduling of external transactions will consider the net of all economic energy transactions. For example, if the transfer limit on the interface is 1000 MW import, there could be 1300 MW of import transactions and 300 MW of export transactions scheduled for a given hour such that the net flow on the interface is 1000 MW.

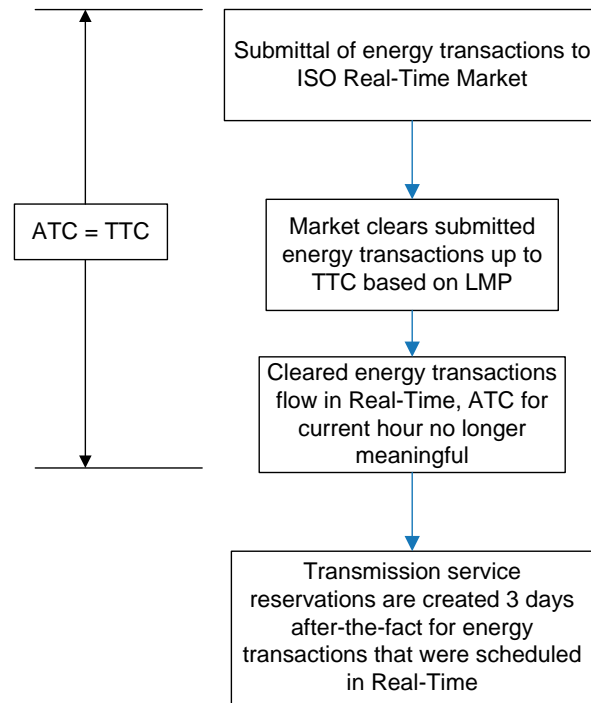
Below is a diagram that describes how energy transactions are processed in the Real-Time Energy Markets. The timing of the submittal of the energy transactions is governed by the market rules specified in Section III of the Tariff.

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<sup>10</sup> Existing Transmission Commitments (“ETC”)

## ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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### 6.2. *Firm versus Non-Firm ATC*

As described in the preceding sections the transmission service granted on the PTF after-the-fact is a firm transmission service. Therefore, the ATC calculation process described above results in a firm ATC value and there is no non-firm ATC calculated for the PTF within the ISO Area.

### 6.3. *Coordinating ATC calculations*

As described in the process above, the ATC calculations performed by the ISO are dependent solely on the TTC values. As such, there is no value in coordinating ATC values with the neighboring Balancing Authority Areas. There are, however, established procedures for coordinating outages that with neighboring Balancing Authority Areas that could impact the resulting TTC on the interface with that neighbor. This process also involves the communication of the resulting TTCs.

## 7. Posting of ATC Related Information

### 7.1. *ATC Values*

As described above, the firm ATC values for the ISO Area external interfaces that are comprised of PTF are always equal to the TTC. The firm ATC values for these external interfaces are posted in accordance with NAESB standards on the New England OASIS website

## ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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### **7.2. Transmission Reservations**

To satisfy the transparency requirements associated with the FERC Order Nos. 888, 889 and 890, the ISO produces transmission reservations for all Real-Time energy transactions that are scheduled to flow on PTF external interfaces and PTF/MTF and PTF/OTF internal interfaces. These transmission reservations are created after-the-fact based on the amount of Real-Time energy transactions scheduled to flow at the top of hour and are posted on OASIS. ISO also posts schedules and curtailments against these reservations.

Because the transmission reservation is based on the actual Real-Time scheduled energy, the schedule posted on OASIS against that reservation will match the transmission reservation for every hour. However, any reduction to the energy transaction that occurs after it has begun to flow at the top of the hour will be posted on OASIS as a curtailment against that transmission reservation.

### **7.3. Load Forecast**

There is a requirement in the FERC Order No. 890 that states “We therefore direct ISOs and RTOs to post load data for the entire ISO/RTO footprint and for each LSE or control area footprint within the ISO/RTO” (P. 416). The purpose of this requirement is understood to be to provide transparency on information used in the determination of ATC values. While the load forecast does not have a direct impact on ATC, the ISO is responsible for calculating the load forecast for the region and posts a link to the load forecast data on OASIS.

## **8. Aspects of ATC in FERC Order 890 not Applicable to the ISO Area**

There are numerous aspects of the FERC Order No. 890 that do not apply to the process by which the ISO Area offers transmission service to market participants. Because of the New England market design described in Section 2, the following aspects and requirements of the FERC Order No. 890 do not apply to the ISO Area and therefore are not addressed in the ISO business practice documents. Order No. 890 was issued by FERC on February 16, 2007, in Docket Nos. RM05-17-000 and RM05-25-000, and is available on ISO-NE’s website at: [http://www.iso-ne.com/regulatory/ferc/orders/2007/feb/rm05-17-000\\_rm05-25-000\\_2-16-07\\_order\\_890.pdf](http://www.iso-ne.com/regulatory/ferc/orders/2007/feb/rm05-17-000_rm05-25-000_2-16-07_order_890.pdf)).

- Posting of system impact studies (Order No. 890 at P 349)

No system impact studies associated with the use of the external ties would be initiated because such transmission service requests that would initiate such a study are not required in the New England market design; where requests for transmission service in advance of physical flow is not required and transmission service is issued based on the amount of energy that actually flows during the hour.

- Release and posting of unused capacity (Order No. 890 at P 389)

Since there is no requirement to purchase transmission service over the PTF in advance of physical Real-Time flow of energy, all transfer capability is available to the market until Real-Time scheduling occurs; hence, the ISO does not release and post non-firm service over the PTF.

## ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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- Posting of denial of service (Order No. 890 at PP 376, 377, 413, 416)

Since the New England market design does not include the requests for transmission service over the PTF in advance of physical flow and all economic transactions that can flow across the external interface will be scheduled and transmission service will be issued based on those values; hence, there is no ‘denial’ of such requests to record or post.

- Metrics related to affiliate versus non-affiliate requests (Order No. 890 at P 413)

Since the New England market design does not include the requests for transmission service over the PTF in advance of physical flow, there are no affiliate or non-affiliate requests for which metrics can be reported. In addition, the ISO has neither affiliated network resources nor affiliated transmission customers.

- Elimination of cap on reassignment of point-to-point service (Order No. 890 at P 85, 808, 815, 816)

Since the New England market design does not include the requests for transmission service over the PTF in advance of physical flow and all economic transactions that can flow across the external interface will be scheduled and transmission service will be issued based on those values, reassignment (or resales) are not required over the PTF. As such, a cap on reassignment of point-to-point service is also not required.

- Aspects of FERC Order relating to reservation priorities (Order No. 890 at PP 1401, 1403, 1404, 1407, 1418, 1419, 1422, 1431)

Since the New England market design does not include the requests for transmission service over the PTF in advance of physical flow, the FERC defined processing of transmission requests based on the priority of those reservations is not relevant to the New England market design or the utilization of the PTF.

- Additional posting of transmission curtailments (Order No. 890 at P 1627)

While energy scheduled at the beginning of an hour is subject to in-hour curtailment, and will be posted on OASIS as such if an in-hour curtailment of flow occurs, this is a fundamentally different curtailment than those addressed in Order No. 890. This curtailment posted by the ISO is not against a transmission service reservation that was purchased in advance of the energy flowing in Real-Time; the posted curtailment merely indicates that an event occurred on the bulk electric system in-hour, after energy was scheduled to flow for that given hour which reduced the interface capability.

**ISO New England Calculation of TTC for External Interfaces  
and ATC for PTF Interfaces**

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**Appendix A**

**Listing of PTF POR/POD Paths**

**Imports**

<u>Common Interface Name</u>	<u>POR</u>	<u>POD</u>
New Brunswick	NBNEBORDER	ISNE PTF
Phase II	HQ_PHI_OR_II	ISNE PTF
Highgate	VTHVDCBORDER	ISNE PTF
NY Northern AC	NY NE BORDER	ISNE PTF
1385/Northport-Norwalk Harbor Cable (“NNC”)	LI CT 1385	ISNE PTF
Cross Sound Cable	LI CT CSC	ISNE PTF

**Exports**

<u>Common Interface Name</u>	<u>POR</u>	<u>POD</u>
New Brunswick	ISNE PTF	NBNEBORDER
Phase II	ISNE PTF	HQ_PHI_OR_II
Highgate	ISNE PTF	VTHVDCBORDER
NY Northern AC	ISNE PTF	NY NE BORDER
1385/Northport-Norwalk Harbor Cable (“NNC”)	ISNE PTF	LI CT 1385
Cross Sound Cable	ISNE PTF	LI CT CSC

**Wheel-Through**

A wheel through energy transaction may be submitted from-to any combination of the POR-PODs identified above.

# ISO New England Calculation of TTC for External Interfaces and ATC for PTF Interfaces

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## Appendix B

### Current TRM Values for MTF and OTF Ties

The ISO, acting as a Transmission Planner and Transmission Operator, is responsible for calculating the TRM on the MTF and OTF interfaces. The TRM on those interfaces represents the TTC that cannot be used for the reservation of firm transmission service because of uncertainties in system operation. These calculated TRM values shall not be applied to non-firm transmission service. The values calculated for TRM for the MTF and OTF interfaces may be utilized for all timeframes for which firm transmission service is offered.

#### 1. Cross Sound Cable Interface (MTF)

The Cross Sound Cable is a single HVDC tie between New York and New England on which all firm service has been sold through an open season offering and a subsequent auction. As such, the ISO does calculate a TRM on this interface and the value is designated as zero.

CSC Import TRM (i.e., NY to NE) = 0 MW

CSC Export TRM (i.e., NE to NY) = 0 MW

#### 2. Phase II Interface (OTF)

The Phase II Import TRM is directly related to the operational import limit on the Phase II tie due to this interface being the largest contingency in the NYISO, PJM and New England regions. This import limit can be enforced on New England by New York or PJM at any time. The Phase II Import TRM is established such that firm transmission service is not sold above this operational limit.

The Phase II Export TRM is established based on the methodology to account for operational uncertainties as described in the body of this document.

Phase II Import TRM (i.e., HQ to NE) = TTC MW – 1200 MW

Phase II Export TRM (i.e., NE to HQ) = TTC MW – 700 MW