

## NSTAR Electric Company

### Available Transfer Capacity Implementation Document (ATCID)

#### 1. Introduction

ISO is the regional transmission organization (“RTO”), serving the New England Control Area. ISO is responsible for development, oversight, and fair administration of New England’s wholesale market and management of bulk electric power system and wholesale markets’ planning processes. The ISO serves as the Balancing Authority for the New England Control Area. The New England Control 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-Québec TransÉnergie Area (“HQTÉ Area”).

As part of its RTO responsibilities, the ISO is registered with the North American Electric Reliability Corporation (“NERC”) as several functional model entities that have responsibilities related to the calculation of ATC as defined in the following NERC Standards: MOD-001 – Available Transmission System Capability (“MOD-001”), MOD-004 – Capacity Benefit Margin (“MOD-004”), and MOD-008 – Transmission Reliability Margin Calculation Methodology (“MOD-008”). The extent of those responsibilities is based on various Commission-approved transmission operating agreements and the provisions of the ISO New England Operating Documents.

While the ISO is the transmission provider for transmission service associated with PTF, the Participating Transmission Owners (PTOs) under the Transmission Operating Agreement, such as NSTAR, provide local transmission service over Non-Pool Transmission Facilities within the RTO footprint and are responsible for calculating TTC and ATC associated with Local Service provided under Schedule 21. Pursuant to CFR § 37.6(b)<sup>1</sup> of the Commission’s regulations, NSTAR as a Transmission Provider is obligated to calculate and post ATC and TTC for certain local facilities over which Point-to-Point transmission service is provided under Schedule 21-NSTAR. These are primarily radial paths that provide transmission service to directly interconnected generators.

Posted Path is defined as any control area-to-control area interconnection; any path for which service is

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<sup>1</sup> §37.6(b) Posting transfer capability. The available transfer capability (ATC) on the Transmission Provider’s system and the total transfer capability (TTC) of that system shall be calculated and posted for each Posted Path as set forth in this section.

denied, curtailed or interrupted for more than 24 hours in the past 12 months; and any path for which a customer requests to have ATC or TTC posted. For this last category, the posting must continue for 180 days and thereafter until 180 days have elapsed from the most recent request for service over the requested path. For purposes of this definition, an hour includes any part of any hour during which serviced was denied, curtailed or interrupted.<sup>2</sup>

NSTAR does not currently have any Posted Paths based on the above definition. However, to the extent that NSTAR does in the future have any Posted Path(s), NSTAR will calculate ATC and TTC using NERC Standard MOD-029-1 Rated System Path Methodology as outlined below.

### 1.1 Scope of Document

The scope of this document is limited to the following functions which are performed or utilized by NSTAR in order to provide Local Point-to Point Service under Schedule 21-NSTAR: Total Transfer Capability (TTC) methodology; Available Transfer Capability (ATC) methodology; Existing Transmission Commitment (ETC); Use of Transmission Reliability Margin (TRM); Use of Capacity Benefit Margin (CBM); and Use of Rollover Rights (ROR) in the calculation of ETC.

TTC and ATC are required to be calculated only for certain non-PTF internal paths over which Local Point-to-Point Service is provided under Schedule 21-NSTAR. TTC and ATC are not calculated by NSTAR for Local Network Service because ISO employs a market model for economic, security constrained dispatch of generation, and NSTAR does not require advance reservation for such network service.

## 2. Transmission Service in the New England Markets

Since the inception of the open access transmission tariff for New England, the process by which generation located inside New England supplies energy and/or capacity to the bulk electric system has differed from the Commission's pro forma open access transmission tariff. 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 offers that are utilized by the ISO in the Real-Time

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<sup>2</sup> §37.6(b)(1)(i).

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, entities may submit energy transactions that move into the New England Control Area, out of the New England Control Area or through the New England Control Area. The Real-Time Energy Market clears these External Transactions based on forecast LMPs and the transfer capability of the associated external interfaces. With those External 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.

The process for submitting External Transactions into the Real-Time Energy Market does not require an advance physical reservation for use of the PTF. In the event that the net of economic External Transactions is greater than the transfer capability of the associated external interface, the External Transactions selected to flow are selected based on the rules specified in the Tariff. For any External Transactions that are confirmed to flow in Real-Time based on the economics of the system, a transmission reservation for RNS and Through-or-Out Service is created after-the-fact to satisfy the transparency needs of the market.

The process described above is applicable to the PTF within the New England Control Area, and non-PTF where utilized for Local Network Service by generation or load. However, NSTAR owns local transmission facilities over which an advance transmission service reservation for firm or non-firm transmission service may be required. On those facilities, Market Participants may obtain a transmission service reservation from NSTAR under Schedule 21-NSTAR prior to delivery of energy and/or capacity into the New England markets pursuant to Schedule 18, 20A or 20B of the Tariff. This document addresses the calculation of ATC and TTC for these non-PTF internal paths.

### 3. NSTAR Total Transfer Capability (TTC)

TTC is the amount of electric power that can be moved or transferred reliably from one area to another area of the interconnected transmission systems by way of all transmission lines (or paths) between those areas under specified system conditions. TTC for Schedule 21-NSTAR is calculated using NERC Standard MOD-029-1 Rated System Path Methodology and posted on the NSTAR OASIS site.

The TTC on NSTAR's Non-PTF that requires Local Point-to-Point Service reservations are relatively static values. NSTAR calculates the TTC for Posted Paths as the rating of the particular radial

transmission path. NSTAR will calculate and post TTC on its OASIS site for all non-PTF Posted Paths that are eligible for Local Point-to-Point Service reservations. TTC is calculated as the transfer capability rating of the particular radial transmission path less the most limiting element within the Posted Path.

#### 4. Capacity Benefit Margin (CBM)

CBM is defined as the amount of firm transmission transfer capability set aside by a Transmission Provider for use by the Load Serving Entities. The ISO does not set aside any CBM for use by the Load Serving Entities, because of the New England approach to capacity planning requirements in the ISO New England Operating Documents, and in any event, ISO's determination of CBM does not apply directly to the determination of ATC for Local Service. Load Serving Entities operating with the New England Control Area are required to arrange for their Capacity Requirements prior to the beginning of any given month in accordance with the Tariff, Section III.13.7.3.1 (Calculation of Capacity Requirement and Capacity Load Obligation). Load Serving Entities do not utilize CBM to ensure that their capacity needs are met; therefore, CBM is not applicable within the New England market design. Accordingly, for purposes of NSTAR's ATC calculation and because CBM for the New England Control Area is set to zero (0), NSTAR utilizes a zero (0) CBM value.

#### 5. Transmission Reliability Margin (TRM)

TRM is the amount of transmission transfer capability set aside to provide reasonable assurance that the interconnected transmission network will be secure. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change. It is used only for external interfaces under the New England market design. As NSTAR does not have any external interfaces, TRM for its non-PTF facilities is presently set to zero.

#### 6. Existing Transmission Commitments

##### 6.1 Existing Transmission Commitments, Firm (ETC<sub>F</sub>)

ETC<sub>F</sub> are confirmed Firm Local Point-To-Point Transmission Service reservations (PTP<sub>F</sub>) plus any exercised rollover rights for Firm Point-To-Point Transmission Service reservations (ROR<sub>F</sub>). There are no allowances necessary for Native Load forecast commitments (NL<sub>F</sub>), Network Integration Transmission Service (NITS<sub>F</sub>), grandfathered Transmission Service (GF<sub>F</sub>), and other services, contracts or agreements (OS<sub>F</sub>) to be considered in the ETC<sub>F</sub> calculation.

##### 6.2 Existing Transmission Commitments, Non-Firm (ETC<sub>NF</sub>)

ETC<sub>NF</sub> are confirmed Non-Firm transmission reservations (PTP<sub>NF</sub>). There are no allowances necessary

for Non-Firm Network Integration Transmission Service (NITS<sub>NF</sub>), Non-Firm grandfathered Transmission Service (GF<sub>NF</sub>), or other services, contracts or agreements (OS<sub>NF</sub>).

#### 7. Calculation of ATC for NSTAR's Transmission System

NERC Standards MOD-001-1 – Available Transmission System Capability and MOD-029-1 – Rated System Path Methodology define the required items to be identified when describing a Transmission Provider's ATC methodology. As a practical matter, the ratings of the radial transmission paths are always higher than the transmission requirements of the Transmission Customers connected to that path. As such, transmission services over these posted paths are considered to be always available.

Common practice is not to calculate or post firm and non-firm ATC values for the Non-PTF assets, as ATC is positive and listed as 9999. Transmission Customers are not restricted from reserving Firm or Non-Firm Point-to-Point Service on Non-PTF facilities.

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 non-PTF assets in the New England market is almost always positive. The ATC is equal to the amount of net energy and/or capacity transactions that the ISO will schedule on an interface for the designated hour. With this simplified version of ATC, there is no detailed algorithm to be described or posted other than: ATC equals TTC. Thus, for those non-PTF that serve as a path for NSTAR's Transmission Customers taking Local Point-to-Point Service, NSTAR has posted the ATC as 9999, consistent with industry practice. ATC on these paths varies depending on the time of day. However, it is posted with an ATC of "9999" to reflect the fact that there are no restrictions on these paths for commercial transactions.

#### 7.1 Calculation of Schedule 21-NSTAR Firm ATC (ATC<sub>F</sub>)

##### 7.1.1 Calculation of ATC<sub>F</sub> in the Planning Horizon (PH)

For purposes of this Attachment A, PH is any period before the Operating Horizon.

Consistent with the NERC definition, ATC<sub>F</sub> is the capability for Firm transmission reservations that remain after allowing for TRM, CBM, ETC<sub>F</sub>, Postbacks<sub>F</sub> and counterflows<sub>F</sub>. As discussed above, TRM and CBM are zero. Firm Transmission Service under Schedule 21-NSTAR that is available in the PH includes: Yearly, Monthly, Weekly and Daily. Postbacks<sub>F</sub> and counterflows<sub>F</sub> of Schedule 21-NSTAR transmission reservations are not considered in the ATC calculation. Therefore, ATC<sub>F</sub> in the PH is equal to the TTC minus ETC<sub>F</sub>.

### 7.1.2 Calculation of $ATC_F$ in the Operating Horizon (OH)

For purposes of this Attachment A, OH begins noon eastern prevailing time each day. At that time, the OH spans from noon through midnight of the next day for a total of 36 hours. As time progresses, the total hours remaining in the OH decrease until noon the following day when the OH is once again reset to 36 hours.

Consistent with the NERC definition,  $ATC_F$  is the capability for Firm transmission reservations that remain after allowing for  $ETC_F$ , CBM, TRM,  $Postbacks_F$  and  $counterflows_F$ . As discussed above, TRM and CBM are zero. Daily Firm Transmission Service under Schedule 21-NSTAR is the only firm service offered in the OH.  $Postbacks_F$  and  $counterflows_F$  of Schedule 21-NSTAR transmission reservations are not considered in the  $ATC_F$  calculation. Therefore,  $ATC_F$  in the OH is equal to the TTC minus  $ETC_F$ .

### 7.1.3 Calculation of $ATC_F$ in the Scheduling Horizon (SH)

Because Firm Schedule 21-NSTAR transmission service is not offered in the SH,  $ATC_F$  in the SH is zero.

## 7.2 Calculation of Schedule 21-NSTAR Non-Firm ATC ( $ATC_{NF}$ )

### 7.2.1 Calculation of $ATC_{NF}$ in the PH

$ATC_{NF}$  is the capability for Non-Firm transmission reservations that remain after allowing for  $ETC_F$ ,  $ETC_{NF}$ , scheduled CBM ( $CBM_S$ ), unreleased TRM ( $TRM_U$ ), Non-Firm Postbacks ( $Postbacks_{NF}$ ) and Non-Firm counterflows ( $counterflows_{NF}$ ). As discussed above, the TRM and CBM for Schedule 21-NSTAR are zero.  $ATC_{NF}$  available in the PH includes: Monthly, Weekly, Daily and Hourly.  $TRM_U$ ,  $Postbacks_{NF}$  and  $counterflows_{NF}$  of Schedule 21-NSTAR transmission reservations are not considered in this calculation. Therefore,  $ATC_{NF}$  in the PH is equal to the TTC minus  $ETC_F$  and  $ETC_{NF}$ .

### 7.2.2 Calculation of $ATC_{NF}$ in the OH

$ATC_{NF}$  available in the OH includes: Daily and Hourly. As discussed above, the TRM and CBM for Schedule 21-NSTAR are zero.  $TRM_U$ ,  $counterflows_{NF}$  and  $ETC_{NF}$  of Schedule 21-NSTAR transmission reservations are not considered in this calculation. Therefore,  $ATC_{NF}$  in the OH is equal to the TTC minus  $ETC_F$  plus postbacks of  $PTP_F$  in the OH as  $PTP_{NF}$  ( $Postbacks_{NF}$ ).

## 7.3 Negative ATC

As stated above, the ratings of the radial transmission paths are always higher than the transmission requirements of the Transmission Customers connected to that path. As such, transmission services over

these posted paths are considered to be always available. As also stated above, NSTAR's Non-PTF are primarily radial paths that provide transmission service to directly interconnected generators. It is possible that in the future a particular radial path may interconnect more nameplate capacity generation than the path's TTC. For the local facilities modeled by ISO, and consistent with ISO's economic, security-constrained dispatch methodology, the ISO will only dispatch an amount of generation interconnected to such path so as not to incur a reliability or stability violation on the subject path. Therefore, ATC in the PH, OH and SH could become zero, but will never be negative.

## 8. Posting of Schedule 21-NSTAR ATC

### 8.1 Location of ATC Posting

ATC values are posted on the NSTAR OASIS site.

### 8.2 Updates to ATC

When any of the variables in the ATC equations change, the ATC values are recalculated and immediately posted.

### 8.3 Coordination of ATC Calculations

NSTAR's Non-PTF has no external interfaces. Therefore, it is not necessary to coordinate the values.

### 8.4 Mathematical Algorithms

The mathematical algorithms for the calculation of ATC can be found on NSTAR's web site at "[www.nstar.com/business/rates\\_tariffs/open\\_access/](http://www.nstar.com/business/rates_tariffs/open_access/)".

**Non-PTF Transmission Path ATC Process Flow Diagram**

