9   Attachment C - Methodology to Assess Available Transfer Capability

The ISO shall calculate Firm and Non-Firm Available Transfer Capability ("ATC") according to the

procedures set forth in this Attachment C.

9.1   Overview

The ISO shall calculate and post ATC values for its Internal and External Interfaces and for Scheduled Lines. The ISO's Interfaces represent a defined set of transmission facilities that separate Locational Based Marginal Pricing (LBMP) Load Zones within the New York Control Area and that separate the New York Control Area from adjacent Control Areas. External Interfaces may be represented by one or more Proxy Generator Buses for scheduling and dispatching purposes. Each Proxy Generator Bus may be associated with distinct, posted ATC values. Scheduled Lines represent a transmission facility or set of transmission facilities that provide a separate scheduling path interconnecting the ISO to an adjacent Control Area. Each Scheduled Line is associated with a distinct Proxy Generator bus for which the ISO separately posts ATC.

ATC shall be calculated and posted after the close of the ISO's Day-Ahead Market and Real-Time Market for all Internal and External Interfaces and for Scheduled Lines. ATC is also posted two days to eighteen months in advance of the Dispatch Day to accommodate Pre-Scheduled Transaction Requests at External Interfaces.

The ISO shall calculate ATC values using a methodology that reflects its provision of transmission service under an LBMP system and the schedules produced by its Day-Ahead Market and Real-Time Market software (except with respect to Pre-Scheduled Transactions). The ISO shall not limit Transmission Customers' ability to schedule Firm Transmission Service across Internal Interfaces based on ATC values. If the posted ATC value for an Interface is zero that is an indication that the Interface is congested. The ISO may, however, still be able to provide additional Firm Transmission Service over Internal Interfaces for Transmission Customers that are willing to pay congestion charges by redispatching New York State Power System.

9.2   Methodology for Computing Firm and Non-Firm ATC

The ISO shall calculate and post Firm ATC and Non-Firm ATC from two days to eighteen months in advance of the Dispatch Day based on accepted Pre-scheduled Transaction Requests across External Interfaces.

The ISO also calculates Firm ATC based on the market schedules determined using its Security Constrained Unit Commitment ("SCUC") process for the Day-Ahead Market and its Real-Time Commitment ("RTC") and Real-Time Dispatch ("RTD") (together, "Real-Time Scheduling" ("RTS")) process for the Real-Time Market. These Firm ATC values shall be posted after the close of the Day-Ahead Market and Real-Time Market for all Interfaces and Scheduled Lines.

For all purposes and for all time periods, the ISO calculates and posts Firm ATC by first determining Total Transfer Capability ("TTC") and then subtracting Firm Transmission Flow Utilization and Transmission Reserve Margin ("TRM"). Thus:

$$ATC_{Firm} = TTC - Transmission\ Flow\ Utilization_{Firm} - (TRM)$$

For all purposes and for all time periods, the ISO calculates and posts Non-Firm ATC by first calculating the amount of Firm ATC and then subtracting Non-Firm Transmission Flow Utilization:

$$ATC_{Non\text{-}Firm} = ATC_{Firm} - Transmission\ Flow\ Utilization_{Non\text{-}Firm}$$

The ISO's ATC calculation algorithms are posted at the "ATC Detailed Algorithms" link at: http://www.nyiso.com/public/market_data/power_grid_data/dam_outages.jsp.

9.3 Process Flow Diagram

The following diagram illustrates the process that the ISO follows when computing and posting ATC.
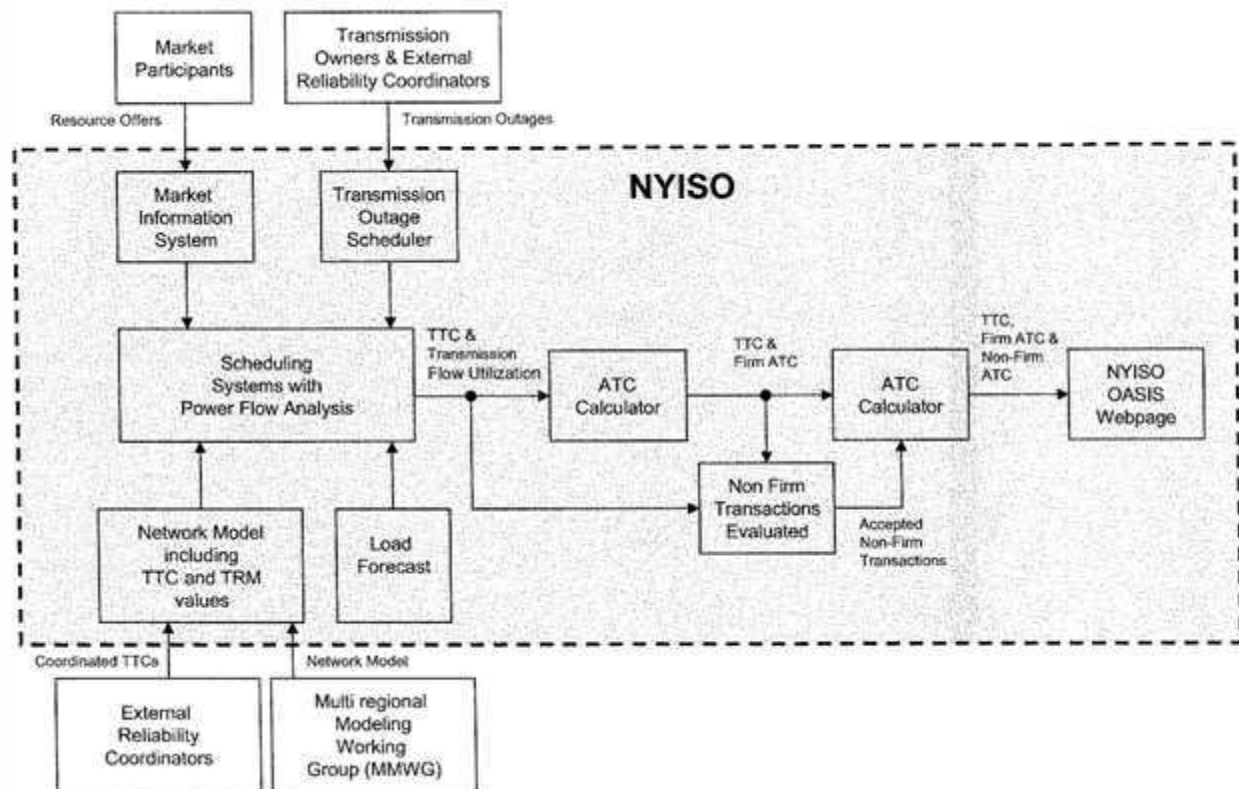
9.4   Total Transfer Capability ("TTC")

The ISO shall develop TTC values for each Interface and Scheduled Line. External Interfaces may be represented by one or more Proxy Generator Buses for scheduling and dispatching purposes. Each Proxy Generator Bus associated with an External Interface may be associated with distinct, posted TTC values. Each Scheduled Line is associated with a distinct Proxy Bus for which the ISO separately posts a TCC value.

The TTC value for each Interface and Scheduled Line shall be the maximum amount of electric power that can be reliably transferred over the New York State Transmission System. The ISO shall use studies that it performs, joint studies conducted with neighboring Control Areas, and real-time system monitoring to determine the appropriate TTC values. The TTC values are periodically reviewed and may be updated as warranted to ensure that accurate values are posted.

Databases used in the determination of the TTC values include MultiRegional Modeling Working Group system representations, and the ISO's Day-Ahead Market and Real-Time Market system representations.

The normal maximum Interface and Scheduled Line TTC values correspond to TTC assessments that assume: (1) all significant Bulk Power System transmission facilities are in service, (2) Capability Period forecast peak-load conditions, (3) no significant generation outages with generation output levels consistent with typical operation for Capability Period forecast peak-load conditions, and (4) coordination with neighboring Control Area transfer capability assessments.

Interface or Scheduled Line TTC values may be modified in response to identified transmission facility or generation outage conditions. TTC values may also be modified to account for neighboring Control Area transfer capability assessments for identified transmission facility or generation outage

conditions, assuming the NYISO receives timely notification of such conditions, or to account for

operating conditions affecting the New York State Transmission System.

9.5   Transmission Flow Utilization

With respect to the ATC calculations relating to Pre-Scheduled Transactions that are conducted

for External Interfaces from eighteen months until two days before the Dispatch Day:

Transmission Flow Utilization$_{Firm}$ associated with Pre-Scheduled Transactions Requests shall be the
algebraic sum of all Pre-Scheduled Transactions scheduled.

Transmission Flow Utilization$_{Non\text{-}Firm}$ associated with Pre-Scheduled Transactions Requests is not
permitted and its value is assumed to be zero.

With respect to the ATC calculation that the ISO performs after the closing of the Day-Ahead

Market and the Real-Time Market, the ISO shall use the SCUC and RTS market software to determine

market schedules. The Day-Ahead Market and Real-Time Market schedules established by the market

software are security constrained network powerflow solutions that are used to determine the

Transmission Flow Utilization value for the ISO's Interfaces and Scheduled Lines. Thus:

Transmission Flow Utilization$_{Firm}$ for each Internal and External Interface is determined by the
corresponding security constrained network powerflow solutions of SCUC or RTS, as applicable.

Transmission Flow Utilization$_{Non\text{-}Firm}$ for each Internal and External Interface is the sum of Non-Firm
Transactions scheduled.

Transmission Flow Utilization$_{Firm}$ for Scheduled Lines is determined by the corresponding security
constrained network powerflow solutions of SCUC or RTS, as applicable.

Transmission Flow Utilization$_{Non\text{-}Firm}$ for Scheduled Lines is the sum of Non-Firm Transactions scheduled.

9.6   Transmission Reliability Margin ("TRM")

TRM is the amount of transmission transfer capability necessary to ensure that the interconnected transmission network remains secure under a reasonable range of system conditions. TRM accounts for the inherent uncertainty in system conditions and the need for operating flexibility to ensure reliable system operation as system conditions change.

Databases used in the determination of the TRM values include the MultiRegional Modeling Working Group system representations and the ISO's Day-Ahead Market and Real-Time Market system representations.

The TRM used to calculate ATC at External Interfaces in connection with Pre-Scheduled Transactions up to eighteen months before the Dispatch Day will normally be significantly greater than the TRM used to calculate ATC for External Interfaces for the Day-Ahead Market and the Real-Time Market due to the greater uncertainty regarding long range External Interface transmission facility availability.

TRM equal to the sum of the following components shall be applied to calculations conducted up to eighteen months before the Dispatch Day to address unexpected system conditions including: (1) unscheduled loop or parallel flows ranging in value from zero (0) MW to five hundred (500) MW based on the average of the last three months of historical parallel flows observed for each External Interface, (2) load forecast uncertainty (normally this value is set to zero (0) MW), (3) uncertainty in external system conditions (normally this value is set to zero (0) MW), and (4) External Interface transmission facility availability ranging in value from zero (0) MW to one thousand (1000) MW reflecting the uncertainty of transfer capability resulting from the most significant single transmission facility outage for each External Interface.

The TRM used for purposes of ATC calculations conducted for External Interfaces for the Day-Ahead Market and the Real-Time Market shall be used to address unexpected system conditions equal to the sum of the following components: (1) unscheduled loop or parallel flows ranging in value from zero (0) to five hundred (500) MW based on the average of the last three months of historical parallel flows observed for each External Interface, (2) load forecast uncertainty, normally of value zero (0) MW, and (3) uncertainty in external system conditions, normally of value zero (0) MW.

The TRM used for purposes of the ATC calculations conducted for Internal Interfaces for the Day-Ahead Market and the Real-Time Market shall normally be equal to the sum of the following components or a value of one hundred (100) MW, although the ISO may increase it above that level if necessary. TRM is applied to these ATC calculations to address unexpected system conditions including: (1) unscheduled loop or parallel flows normally of value zero (0) MW, (2) load forecast uncertainty normally of value zero (0) MW, (3) uncertainty in external and internal system conditions normally of value one hundred (100) MW, and (4) ISO Balancing Authority requirements normally of value zero (0) MW.

The TRM used for purposes of the ATC calculations conducted for Scheduled Lines for the Day-Ahead Market and the Real-Time Market shall normally be equal to the sum of the following components, which will ordinarily be expected to have a combined value of zero (0) MW, although the ISO may increase it above that level if necessary: (1) unscheduled loop or parallel flows ranging based on the average of the last three months of historical parallel flows observed for each associated External Proxy Generator Bus, normally of value zero (0) MW, (2) load forecast uncertainty, normally of value zero (o) MW, and (3) uncertainty in external system conditions, normally of value zero (0) MW.

TRM is used to decrement TTC from External and Internal Interfaces and from Scheduled Lines when calculating ATC, and thus is not available when requesting Non-Firm transmission service. The ISO

may, however, still be able to provide additional Firm Transmission Service over Internal Interfaces for Transmission Customers that are willing to pay congestion charges by redispatching New York State Power System.

The specific values of TRM used on each Internal and External Interface and Scheduled Line are posted on the ISO's website. The TRM values are periodically reviewed by the ISO and may be updated as warranted.

9.7   Existing Transmission Commitments ("ETC")

The ISO shall not set aside transmission capacity as ETC when calculating ATC or otherwise in

developing SCUC and RTS market schedules.

9.8   Capacity Benefit Margin

The ISO shall not set aside transmission capacity as CBM when calculating ATC or otherwise in

developing SCUC and RTS market schedules.

9.9   Coordinated ATC Postings

The ISO's practice is to make joint TTC/ATC postings along with neighboring system operators on the website of the Northeast Power Coordinating Council. The ISO does not coordinate its ATC calculations with neighboring system operators because they do not incorporate the Transmission Flow Utilization information produced by the ISO's market software into their ATC calculations.