Available Transfer Capability Implementation Document
ATC ID
MOD-001-1a

Introduction:
The ISO calculates and posts Available Transfer Capability in the manner described in Attachment C to its Open Access Transmission Tariff. This ATCID provides information describing the process specifically on the ATC calculation portion. This document was developed to comply with NERC Reliability Standard MOD-001-1a.

Overview:

Methodology

The ISO shall calculate Firm Available Transfer Capability ("ATC") according to the procedures set forth in its Attachment C which adopts the “Rated System Path Methodology” established by the North American Electric Reliability Corporation’s Reliability (“NERC”) Standard MOD-029-1a, or its successor. The ISO employs a “financial reservation” transmission model that has been approved by the Federal Energy Regulatory Commission (“Commission”) and that differs significantly from the “physical reservation” model envisioned by the Commission’s *pro forma* Open Access Transmission Tariff. Certain services and concepts that exist in the *pro forma* model, and that are accounted for in the MOD-029-1a methodology, do not exist in the NYISO model. Certain variables in the MOD-029-1a algorithm will therefore normally have zero values in the NYISO’s calculations. Additional information concerning these differences is set forth in this ATCID.

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.

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. When calculating Firm ATC (“ATCF”) for an Interface for a specified period, the ISO shall use the algorithm established under Requirement 7 of MOD-029-1a. Specifically:

\[
ATCF = TTC - ETC - CBM - TRM + PostbacksF + \text{counterflowsF}
\]
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Where:

\( \text{ATC}_f \) is the firm Available Transfer Capability for the Interface for that period.
\( \text{TTC} \) is the Total Transfer Capability of the Interface for that period.
\( \text{ETC}_f \) is the sum of existing firm commitments for the Interface during that period (including Firm Transmission Flow Utilization).
\( \text{CBM} \) is the Capacity Benefit Margin for the Interface during that period.
\( \text{TRM} \) is the Transmission Reliability Margin for the Interface during that period.
\( \text{Postbacks}_f \) are changes to firm Available Transfer Capability due to a change in the use of Transmission Service for that period, as defined in Business Practices.
\( \text{counterflows}_f \) are the adjustments to \( \text{ATC}_f \) as determined by the ISO.

The ISO shall calculate ETC for firm Existing Transmission Commitments (\( \text{ETC}_f \)) for a specified period for an Interface, using the formula established under Requirement 5 of MOD-029-1a. Specifically:

\[
\text{ETC}_f = \text{NLF}_f + \text{NITSF}_f + \text{GF}_f + \text{PTPF}_f + \text{RORF}_f + \text{OSF}_f
\]

Where:

\( \text{NLF}_f \) is the firm capacity set aside to serve peak Native Load forecast commitments for the time period being calculated, to include losses, and Native Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.
\( \text{NITSF}_f \) is the firm capacity reserved for Network Integration Transmission Service serving Load, to include losses, and Load growth, not otherwise included in Transmission Reliability Margin or Capacity Benefit Margin.
\( \text{GF}_f \) is the firm capacity set aside for grandfathered Transmission Service and contracts for energy and/or Transmission Service, where executed prior to the effective date of a Transmission Service Provider’s Open Access Transmission Tariff or “safe harbor tariff.”
\( \text{PTPF}_f \) is the firm capacity reserved for confirmed Point-to-Point Transmission Service.
\( \text{RORF}_f \) is the firm capacity reserved for Roll-over rights for contracts granting Transmission Customers the right of first refusal to take or continue to take Transmission Service when the Transmission Customer’s Transmission Service contract expires or is eligible for renewal.
\( \text{OSF}_f \) is the firm capacity reserved for any other service(s), contract(s), or agreement(s) not specified above using Firm Transmission Service.

\( \text{OSF}_f \) shall include a Transmission Flow Utilization value which shall be based on the market schedules determined using the SCUC and RTS market software, consistent with NERC’s interpretation of MOD-029-1a (See Appendix 1 to that Reliability Standard). 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\textsubscript{Firm} for each Scheduled Line, Internal and External Interface is determined by the corresponding security constrained network powerflow solutions of SCUC or RTS, as applicable.*

**Additional Modeling Details**

*Counterflows [MOD-001 R3.2]*

The value for the \textit{counterflows} variables will be zero in the ISO’s firm ATC calculations. The rationale for this accounting is that the SCUC and RTS evaluations consider the impact of counterflows in the determination of *Transmission Flow Utilization\textsubscript{Firm} which is the OS\textsubscript{i} term in the ETC*).

*Postbacks*

The ISO’s financial reservation based transmission system does not provide for “redirects” of physical transmission reservations in the manner contemplated by the Commission’s pro forma Open Access Transmission Tariff. It therefore does not support “postbacks” of such “redirects.” For that reason, the ISO has previously obtained waivers of North American Energy Standard Board standards governing both redirects and postbacks. The ISO therefore does not have postbacks of redirected services to incorporate into its ATC calculations. Accordingly the \textit{postbacks} variables will normally have zero values in the ISO’s ATC calculations.

*Native Load*

The SCUC and RTS consider the impact of transmission service for all load in the New York Control Area. The ISO is not an LSE. It therefore does not serve Native Load as that term is defined in the NERC Glossary and does not distinguish between Native Load and other loads in calculating ATC.

*Network Integration Transmission Service*

A financial reservation based form of Network Integration Transmission Service is available under the ISO’s Open Access Transmission Tariff. Nevertheless, given the nature of the ISO’s financial reservation based transmission model service, no market participant has ever requested Network Integration Transmission Service. The ISO does not anticipate receiving requests for the service in the future.

*Grandfathered Transmission Service*

The ISO assigns zero values to the \textit{GF} variables in the firm ATC calculations.
Point-to-Point Transmission Service
The ISO’s financial reservation transmission model does not have physical point-to-point transmission service reservations.

Rollover Rights
The ISO’s Commission-approved Open Access Transmission Tariff (“OATT”) does not include a rollover rights provision. Accordingly the ISO does not track ROR.

Entities Providing Data for ATC Calculations [MOD-001 R3.3]
The ISO is registered as both the Transmission Operator and the Transmission Service Provider for the New York Control Area. The ISO also receives data from other TOPs and TSPs which include PJM Interconnection, LLC, ISO-NE, Hydro-Quebec TransEnergie, Ontario IESO, and Niagara Mohawk Power Corporation.

Entities Receiving Data from ATC Calculations [MOD-001 R3.4]
The ISO is registered as both the Transmission Operator and the Transmission Service Provider for the New York Control Area. The ISO also provides data from other TOPs and TSPs which include PJM Interconnection, LLC, ISO-NE, Hydro-Quebec TransEnergie, Ontario IESO, and Niagara Mohawk Power Corporation.

Allocation process [MOD-001 R3.5]
The interfaces in the New York Control Area that are calculated and posted are not multiple paths and do not have multiple owners. There is no allocation of the transfers.

PAR Modeling [MOD-029 R1.1.4]
The ISO models PARs as regulating to a desired flow. For PARs that are internal to the New York State Power System, the PARs would regulate to a flow that helps relieve congestion. For PARs that are on tie lines between the ISO and other Control Areas, the PARs are set to regulate to schedule.

DAM & RTM – ATC Posting
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. The ATCs calculated for the DAM and RTM are posted at [select desired date]
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Two Day to Thirteen Months – ATC Posting

ATC is also posted two days to thirteen months in advance of the Dispatch Day at External Interfaces. The ATCs calculated for two days to thirteen months in advance of the Dispatch Day are posted at http://mis.nyiso.com/public/P-8Alist.htm [select desired date]

The ISO’s calculation of ATC shall reflect its provision of transmission service under an LBMP system and the schedules produced by its Day-Ahead Market and Real-Time Market software. 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 the New York State Power System.

Current TTC Development

The TTCs used by the ISO in the scheduling systems are determined based on the type of facility and its location in the power system. The interface TTCs are determined based on facility capabilities, stability and voltage limitations and thermal limitations.

For TTC interfaces that are scheduled by controllable facilities, the capabilities of these facilities typically determine the limitations. Since these TTCs are a function of physical facility capabilities, these TTC are not expected to be reevaluated unless a change is made to the controlling device. The table below contains a list of these facilities and their associated limitations. While the ISO calculates and posts ATC on these ATC paths, the ISO is not the Transmission Service Provider for them.

<table>
<thead>
<tr>
<th>ISO Posted Interfaces</th>
<th>Facility Limits (TTC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPX-CSC</td>
<td>330 MWs</td>
</tr>
<tr>
<td>CSC-NPX</td>
<td>330 MWs</td>
</tr>
<tr>
<td>PJM-NEPTUNE</td>
<td>660 MWs</td>
</tr>
<tr>
<td>PJM-VFT</td>
<td>315 MWs</td>
</tr>
<tr>
<td>VFT-PJM</td>
<td>315 MWs</td>
</tr>
<tr>
<td>PJM-HTP</td>
<td>660 MWs</td>
</tr>
</tbody>
</table>

Some TTC interfaces are scheduled by controllable facilities but still have thermal limitations due to their location and connections in the power system. These interconnections have a relatively small region of the power system that would affect the transfer levels and are therefore the limits are static. The table below contains a list of these facilities and their associated limitations.

11/15/2018
The remaining external TTC interfaces used by the ISO scheduling systems are determined based on the analysis performed as part of the NYISO Operating Study for Winter 2018-19 and Summer 2018. The limits on the interfaces are obtained from the study. The table below contains a list of these facilities and their associated limitations.

<table>
<thead>
<tr>
<th>ISO Posted Interfaces</th>
<th>Interface Limits (TTC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HQ-NYISO</td>
<td>1500 MWs</td>
</tr>
<tr>
<td>NYISO-HQ</td>
<td>1000 MWs</td>
</tr>
<tr>
<td>NPX-1385</td>
<td>200 MWs</td>
</tr>
<tr>
<td>1385-NPX</td>
<td>200 MWs</td>
</tr>
<tr>
<td>HQ-CEDARS</td>
<td>199 MWs Winter / 190 MWs Summer</td>
</tr>
<tr>
<td>CEDARS-HQ</td>
<td>100 MWs (Export permit limited)</td>
</tr>
</tbody>
</table>

The internal TTC interfaces used by the ISO scheduling systems are determined based on stability and voltage collapse analysis. The table below contains a list of these facilities and their associated limitations.

<table>
<thead>
<tr>
<th>ISO Posted Interfaces</th>
<th>Interface Limits (TTC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CENT EAST</td>
<td>3085 MWs</td>
</tr>
<tr>
<td>DYSINGER EAST</td>
<td>3150 MWs</td>
</tr>
<tr>
<td>MOSES SOUTH</td>
<td>3150 MWs</td>
</tr>
<tr>
<td>NYPP EAST</td>
<td>6800 MWs</td>
</tr>
<tr>
<td>SPRAINBROOK/DUNWOODIE SOUTH</td>
<td>4600 MWs</td>
</tr>
<tr>
<td>UPNY CONED</td>
<td>5700 MWs</td>
</tr>
</tbody>
</table>

*Generation and Transmission outages [MOD-001 R3.6]*

Generation and Transmission outages that create significant reductions in transfer capability are modeled as reductions in the TTC limits referenced above. The TTC being a term in the ATC calculation will directly affect the resulting ATCF.

If the generation or transmission outage is only in effect for part of the hour, that hourly TTC will be reduced. Similarly if an outage is only in effect for part of the day, that daily TTC will be reduced and if an outage is only in effect for part of the month, that monthly TTC will be reduced.
The outages of other Transmission Service Providers that cannot be mapped to the Transmission model would include outages from the neighboring Control Areas. Outages that are supplied to the ISO that affect the TTCs are received along with the outage coordination information and modeled in the ISO system. These TTCs affected by the external outages are used in the ATC calculations.