

Transmission Reliability Margin Implementation Document

TRM ID

MOD-008-1

Introduction:

The ISO calculates and posts Available Transfer Capability in the manner described in Attachment C to its Open Access Transmission Tariff. This TRMID provides information describing the Transmission Reliability Margin (TRM) portion of the process. This document was developed to comply with NERC Reliability Standard MOD-008-1.

Overview:

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 Multi Regional Modeling Working Group system representations and the ISO's Day-Ahead Market (DAM) and Real-Time Market (RTM) system representations.

The TRM used to calculate ATC at External Interfaces up to thirteen 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 Component Determination [MOD-008 R1.1]

The ISO does not use all of the components of uncertainty referenced in MOD-008, R1.1 in its determination of TRM. These components are not used in any time period and are assumed to be set to zero (0) MW. The components that are not used are:

- Allowances for simultaneous path interactions
- Variations in generation dispatch
- Short-term System Operator response
- Reserve sharing requirements
- Inertial response and frequency bias
- Load distribution uncertainty

Two Days to Thirteen Months – All Interfaces

TRM equal to the sum of the following components shall be applied to calculations conducted up to thirteen months before the Dispatch Day to address unexpected system conditions including: (1) uncertainty in unscheduled loop or parallel flows ranging in value from zero (0) MW to five hundred (500) MW based on the greater of the average of the last three months of historical parallel flows observed for each External Interface or the average of the deviation in parallel flows observed over the last three months for each External Interface, (2) load forecast uncertainty (normally this value is set to zero (0) MW), (3) uncertainty in external system

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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 six hundred (1600) MW reflecting the uncertainty of transfer capability resulting from the most significant single transmission facility outage for each External Interface.

DAM & RTM – External Interfaces

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) uncertainty in unscheduled loop or parallel flows ranging in value from zero (0) MW to five hundred (500) MW based on the greater of the average of the last three months of historical parallel flows observed for each External Interface or the average of the deviation in parallel flows observed over the last three months for each External Interface, (2) load forecast uncertainty, normally of value zero (0) MW, and (3) uncertainty in external system conditions, normally of value two hundred (200) MW.

DAM & RTM – Internal NYCA Interfaces

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.

DAM & RTM – Scheduled Lines

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 (0) MW, and (3) uncertainty in external system conditions, normally of value zero (0) MW.

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TRM Allocation [MOD-008 R1.2]

TRM is used to decrement TTC from External and Internal Interfaces and from Scheduled Lines when calculating ATC. The ISO will, 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. There is no allocation of TRM across ATC Paths.

TRM Review Process

The specific values of TRM used on each Internal and External Interface and Scheduled Line are posted on the ISO's website and can be found at

<https://www.nyiso.com/power-grid-data> *[select TRM/CBM under Power Grid Info from the documents at bottom of the webpage]*

The TRM values are reviewed by the ISO in conjunction with its Seasonal Operating Studies that are developed and coordinated with the neighboring Control Areas. The ISO shall review the TRM values at least every thirteen months in compliance with MOD-008-1 requirement 4.

Current TRM Development [MOD-008 R1.3]

The TRMs used by the ISO in the scheduling systems are determined based on the type of facility and the location in the power system. The interfaces are evaluated as to whether they are controllable and whether they are subject to circulation effects.

Several interfaces are associated with Scheduled Lines. These facilities are controllable and can be directed to the desired interchange. Due to this controllability, these interfaces are not subject to uncertainty like parallel flow or load forecasting deviations. All the components of TRM on these facilities is therefore set to zero (0) MWs in all scheduling time frames. While the ISO calculates and posts ATC for these Scheduled Lines, the ISO is not the Transmission Service Provider, except for the 1385 NNC line. These facilities are included in the ISO's website listed above.

The remaining external interfaces are associated with free flowing transmission lines.

The interface between HQ and the ISO has an HVdc facility and radially connected generation. To this effect, the parallel flow and load forecast uncertainty components are unaffected and are set to zero (0) for all time frames. The system conditions for the Day Ahead and Real Time Market are fairly well known and therefore this TRM component is also set to zero (0) for this time frame.

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The system conditions in time frames further out than the Day Ahead are set to reflect the uncertainty in facility outages and limitations.

The interface between ISONE and the ISO is comprised of free flowing facilities however the ISONE interconnection as a whole is radial to the ISO. To this effect, the parallel flow and load forecast uncertainty components are unaffected and are set to zero (0) for all time frames. The uncertainty in the system conditions component of TRM for the Day Ahead and Real Time Market on these facilities is set to 200 MWs. The system conditions in time frames further out than the Day Ahead can be affected by facility outages and limitations and are set larger to reflect this uncertainty.

The interfaces between PJM and the ISO and IESO and the ISO are comprised of free flowing facilities and these Control Areas are also connected to other adjacent Control Areas. The load forecast uncertainty component is set to zero (0) for all time frames. The uncertainty in the system conditions component of TRM for the Day Ahead and Real Time Market on these facilities is set to 200 MWs. The parallel flow uncertainty component is determined by evaluating the standard deviation observed in Real Time operation over a three month period in each direction separately. The parallel flow observed in the clockwise direction is 100 MWs (which affects IESO-NYISO and NYISO-PJM) and the parallel flow in the counter-clockwise direction is 100 MWs (which affects NYISO-IESO and PJM-NYISO). These two components are summed to get the total TRM. The system conditions in time frames further out than the Day Ahead are set to reflect the facility outages. These facilities are included in the ISO's website listed above.

The interfaces that are internal to the New York Control Area are evaluated and secured through the ISO's commitment and dispatch processes which are performed in the Day Ahead and Real Time Markets. The uncertainty in system conditions component of TRM on these facilities is therefore set to 100 MWs while all other components are set to zero (0). This TRM applies to the Day Ahead and Real Time Market scheduling time frames. The time frames further out than the Day Ahead are exempt from the posting process. These facilities are included in the ISO's website listed above.