

Summary of Questions

Raised regarding use of NYISO calculated Transmission Security Limits (TSLs)
In the IRM study

Summary of Questions

Members of the ICS have asked for a list of questions that should be considered in determining whether the NYSRC should adopt NYISO TSLs in establishing the Statewide IRM. The first eight questions are culled from the background information given below the summary. Other questions may need to be addressed in the white paper currently being constructed.

Q1; Since a presentation on why the TSLs are appropriate was not given to the ICS in March, has this delayed the white paper due to the ICS in May?

Q2; Are TSLs set using normal or emergency ratings for the transmission interfaces?

Q3; Should the IRM be set with all interfaces being based on normal limits?

Q4; Should IRM interface ratings be set assuming there is no external emergency assistance?

Q5; Why is the term TSL used differently in different documents?

Q6; Is there a definition of TSL.

Q7; Does the RNA use TSLs in its assessment of resource adequacy or transmission security?

Q8; What other studies (other than the LCR report) or reports use TSLs?

Two additional questions were supplied by separate review

Can the TSL paper address how the Reserve Margin is calculated in PJM and NEISO; are they using a TSL or equivalent at any point in their process, what method do they use for transmission security, does it consider emergency assistance, how do they account for TSL equivalent in their pool requirements?

Also, a TSL paper would need to resolve compatibility of TSL normal/continuous ratings basis with use in Loss of Load Expectation context which relies on short term emergency operating procedures (e.g. 15 minute short term emergency post contingency).

Background

My understanding (GSD) of the current position of the NYSRC is that it is entirely appropriate and within NYISO's purview to establish locational capacity requirements for the NYISO markets that are more conservative (higher) than the initial or preliminary LCRs¹ found in the IRM study.

¹ The terms 'initial' and 'preliminary' have been used interchangeably in several documents

Recent NYISO LCR calculations have led to higher values than those of the initial or preliminary LCRs observed in the IRM study. The indicated driver in these higher results has been the adoption of Transmission Security Limits (TSLs) in setting the NYISO LCRs.

There has been a request(s) for the ICS to determine if TSLs are appropriate for the IRM and what the methodology might be for incorporating them into the IRM study.

The ICS has initiated a white paper analysis in 2021 for the 2022 Capability Year IRM Study.

Before the ICS meeting on March 30th, the NYISO sent a presentation to be posted on the NYSRC website describing the work to date. In this presentation, the aspects of how to implement a TSL were discussed and the idea of why was absent.

The below excerpt was from a February ICAP W/G presentation about enhancements to setting the capacity market requirements².

Schedule

1. Incorporating TSLs into the IRM study

- The NYSRC has prioritized evaluating whether it is appropriate to incorporate TSLs into the IRM study and if so, how to incorporate TSLs
- The NYSRC will discuss this evaluation in May 2021 at the NYSRC Installed Capacity Subcommittee
- The NYISO will also provide additional materials to the NYSRC and NYISO stakeholders, in March, to describe the basis of, and need for, TSLs in the LCR study

2. More closely aligning the IRM study and LCR study inputs

- The NYISO will bring a companion presentation to this ICAPWG discussing these proposals
- The NYISO anticipates returning in April to further discuss proposals

3. Providing additional analysis of the factors driving LCR changes when the NYISO provides preliminary (“indicative”) LCRs to stakeholders

- The NYISO will bring a companion presentation to this ICAPWG discussing this proposal
- The NYISO anticipates returning in April with a detailed proposal, including updates to the NYISO procedure that governs the LCR study process



The slide shows a target date for delivery of materials to the ICS of March.

Q1; Since a presentation on why the TSLs are appropriate was not given to the ICS in March, has this delayed the white paper due to the ICS in May? The following slides are from a TSL presentation³ given to the ICAPW/G on March 25th. The first bullet indicates that there is an

² Establishing ICAP Market Requirements: 2021 Potential Enhancements, Joshua Boles, Senior Manager, Market Operations ICAPWG, February 25, 2021

³ Transmission Security Limits in NYISO Capacity Markets, Aaron Markham Director, Grid Operations ICAP WG March 25, 2021

operating objective of being in the Normal state when establishing TSLs. This leads to the questions:

Q2; Are TSLs set using normal or emergency ratings for the transmission interfaces?

Q3; Should the IRM be set with all interfaces being based on normal limits?

A premise of the IRM study is that the interface limits are set using emergency limits.

Of Note is that “Normal(operating) Rating Capacity in amperes which may be carried through consecutive twenty-four-hour load cycles without exceeding agreed upon conductor or hottest spot equipment temperatures for this mode of operation”.⁴

Transmission Security Limit

- **Determined each year through a study that is reviewed by stakeholders.**
 - Developed consistent with New York State Reliability Council planning criteria for N-1-1 into the G-K and K localities
 - Respects the more stringent NYS Reliability Council Local Reliability Rule G.1-R1. N-2-0 Con Ed requirement
 - Consistent with the NYISO Operating Objective to operate in the “normal” operating state following the worst first contingency.
 - Rules allow Operations to go into Emergency Transfer Criteria (ETC) to avoid load shedding.
 - The RPP and Short-Term Reliability Process use generator DMNC values and Firm Purchases/ Sales when conducting transmission security assessments.
- **The most recent TSL report is posted at the following link**
 - <https://www.nyiso.com/documents/20142/17462310/Summer2021-N-1-1-1-Analysis.pdf/ed9b287a-a484-4460-37c8-a923be6354e1>

Slide 8 of the same presentation below, shows the differences between the calculation of interfaces used in the setting of the IRM and LCRs. Emergency Assistance is available for the IRM, but not the TSL. A basic premise of setting the IRM is to allow help to come from our neighbors.

Q4; Should IRM interface ratings be set assuming there is no external emergency assistance?

⁴ New York Transmission Owners Task Force on Tie-Line Ratings Final Report for 2019, PRESENTED TO NYISO TRANSMISSION PLANNING ADVISORY SUBCOMMITTEE February 3, 2020 PRESENTED TO NYISO SYSTEM OPERATIONS ADVISORY SUBCOMMITTEE January 9, 2020, Definitions -page 5

Side by Side Comparison of Treatment

Assumption Criteria/Considerations	Resource Adequacy Market Operations Treatment	Transmission Security Market Operations Treatment
Methodology	Sequential Monte Carlo Probabilistic	Deterministic
Demand Level	Forecast Load w/LFU	Forecast Load
NYSRC IRM /LCR Setting Process *	Tan 45	N/A
Transmission Operating Criteria	Emergency Transfer Criteria	Normal Transfer Criteria
Transmission Contingency Ratings	STE or 15-minute ratings	LTE or 4-hour ratings, STE with Operating Exception
Thermal Contingency Depth	N-1	N-1-1 or N-2-0
Thermal Contingency Definition	only Single	Single, Towers and Stuck Circuit Breakers
Stability/VC Contingency Depth	N-1	N-1-1
Stability/VC Contingency Definition	Single, Towers and Stuck Circuit Breakers	Single, Towers and Stuck Circuit Breakers
Generator Forced Outage Rates	Yes (EFORD)	Yes (EFORD)
Wind Renewable Resources	Yes (ICAP value)	Yes (ICAP value)
External Emergency Assistance	Yes	No
External UDR Supply Resource	Yes	Yes
Special Case Resources	Yes	Yes
Voltage Reduction	Yes	No
Voluntary Curtailment / Public Appeals	Yes	No
Operating Reserves to Zero	Yes	Yes

Color Code Definition
More Conservative Relative Treatment
Similarly Conservative across all Treatments
Less Conservative Relative Treatment

The below table shows the determination of the TSL from the LCR procedure as a % value⁵.

2.3.4. Transmission Security Limits are determined using the equations and inputs specified in the table below

Transmission Security Limit Calculation	Units	Formula	G-J Locality	NYC	LI
Load forecast for the LCR Study	MW	[A] = User Input			
Bulk Power Transmission Capability	MW	[B] = User Input			
UCAP Requirement (MW)	MW	[C] = [A]-[B]			
UCAP Requirement Percent	(%)	[D] = [C]/[A]			
Locality derating factor	(%)	[E] = User Input			
ICAP Requirement (MW)	MW	[F] = [C]/(1-[E])			
Transmission Security Limit	%	[G] = ROUND([F]/[A], to 0.1% increments)			

⁵ Locational Minimum Installed Capacity Requirements Determination Process, A NYISO procedure located at: <https://www.nyiso.com/documents/20142/1408199/LCR-determination-process.pdf/2854dc25-301e-c506-1d88-2b13e0284ca1>

While the below excerpts from the TSL report show calculation of TSLs as limits on interface ratings⁶:

TABLE 1 – Zone K Locality Limit Limit N-1 Outage applied (Sprain Brook – East Garden City (Y49) 345 kV) **350 MW** (1) LIMITING ELEMENT RATING LIMITING CONTINGENCY (1) Dunwoodie – Shore Road (Y50) 345 kV @NORM 690 MVA1 Pre-Contingency Loading Note: 1: LIPA rating for Y50 circuit is based on 70 % loss factor and rapid oil circulation.

TABLE 2 – G-J Locality Limit Limit N-1 Outage applied (Athens – Pleasant Valley (91) 345 kV) **3400 MW** (1) LIMITING ELEMENT RATING LIMITING CONTINGENCY (1) Leeds – Pleasant Valley (92) 345 kV @LTE 1538 MVA L/O Leeds – Hurley Ave. (301) 345 kV

Q5; Why is the term TSL used differently in different documents?

Q6; Is there a definition of TSL.

Although the 2020 RNA report lists the Transmission Security Base Case Assessments⁷, the terms ‘Transmission Security Limit’ or ‘TSL’ do not appear in the report.

Q7; Does the RNA use TSLs in its assessment of resource adequacy or transmission security?

Q8; What other studies (other than the LCR report) or reports use TSLs?

⁶ 2021 Transmission Security Limit (TSL) Report For Use in Identifying the TSLs for LCRs, A Report by the New York Independent System Operator, no date given at: <https://www.nyiso.com/documents/20142/17462310/Summer2021-N-1-1-Analysis.pdf/ed9b287a-a484-4460-37c8-a923be6354e1>

⁷ NYISO 2020 RNA Report, Reliability Needs Assessment, A Report by the New York Independent System Operator, November 2020