New York ISO
Independent System Operator

2024-25 Locality Bulk Power Transmission Capability Report

For Use in Establishing the Transmission Security Limit (TSL) for NYISO Locational Capacity Requirements (LCRs)

A Report by the
New York Independent System Operator

Table of Contents

Introduction

In support of the NYISO's administration of its Installed Capacity (ICAP) market and pursuant to Section 5.11.4 of the Market Services Tariff, the NYISO annually determines Transmission Security Limit Floors (TSL Floor) that are used to establish Locational Minimum Installed Capacity Requirements (LCRs). The TSL Floor are used in the determination of the Capability Year LCRs for the ICAP Localities (*i.e.,* G-J Locality, Zone J, and Zone K).[1] They act as hard limits when establishing the LCRs for each Locality. This report documents the bulk power transmission capability inputs that the NYISO will use to determine the TSL Floor.

The transmission interfaces for each of the three Localities are defined for the purposes of determining the bulk power transmission capabilities. Each transmission interface is represented by specific transmission elements as shown in Appendix A.

The bulk power transmission capability determinations for the G-J and Zone K Locality interfaces utilize NYS Reliability Council Planning Criteria. For the interfaces for each of these Localities, generation and phase angle regulator schedules for the N-1 outage case are developed to maximize the respective Locality import capabilities while maintaining all bulk power system transmission element power flows related to the respective interfaces within Normal ratings (*i.e.,* N-1-0). The NYISO then evaluated NPCC criteria contingencies for the N-1 outage case so that all bulk power system transmission element power flows related to the respective interfaces are within applicable Long Term Emergency (LTE) ratings (*i.e.,* N-1-1).

For the Zone J Locality limit, the bulk power transmission capability determination uses NYS Reliability Council Local Reliability Rule G.1-R1. The G.1-R1 Rule states that "Certain areas of the Con Edison system are designed and operated for the occurrence of a second contingency." Consistent with the G.1-R1 Rule, generation and phase angle regulator schedules for the N-2 outage cases are developed to maximize the Locality import capability while maintaining all bulk power system transmission element power flows related to the Zone J interface within Normal ratings (*i.e.,* N-2-0).

[1] On October 5, 2018, FERC issued an Order accepting revisions to the NYISO's Market Services Tariff that became effective October 9, 2018. These changes establish the methodology used to determine LCRs. This method is based upon an economic optimization algorithm to minimize the total cost of capacity for the NYCA at the capacity markets design condition, *New York Independent System Operator, Inc.*, 154 FERC ¶ 61,001 (2018).

SYSTEM REPRESENTATION AND BASE STUDY ASSUMPTIONS

The following section discusses evaluations preformed to identify the transmission capability inputs for the G-J, Zone J, and Zone K Locality interfaces.

The bulk power transmission capabilities provided in this report are based on the forecasted load and generation and phase angle regulator schedule assumptions.

Analysis Tool and System Representation

The Siemens PTI PSS®E and PowerGEM's Transmission Adequacy and Reliability Assessment "TARA" software packages were used to calculate the bulk power transmission capability thermal limits based on Normal Transfer Criteria defined in the "NYSRC Reliability Rules for Planning and Operating the New York State Power System."

The NYISO developed the system representation from the modified 2023 Summer Operating Study base case. The primary differences between the system representation in the 2023 Summer Operating Study base case and the 2024-25 Bulk Power Transmission Capability base case employed in this analysis relate to planned or forced power system outages. The 2023 Summer Operating Study base case included transmission equipment outages that were expected through the Summer 2023 Capability Period. The Bulk Power Transmission Capability base case employed in this analysis restored all transmission and generation elements to service, creating an all-equipment-in-service base case. Significant transmission facility changes compared to the 2023 Summer Operating Study base case include:

- Portions of the Segment A Double Circuit Project
- Portions of the Segment B project

The Segment A Double Circuit Project modifications that will be in-service for the 2024-25 Capability Period were modeled in-service. These modifications consist of the addition of the Edic-Princetown 351 & 352 345 kV circuits.

The Segment B modifications include the addition of the Knickerbocker-Pleasant Valley Y57 345 kV circuit. The base case also includes the modeling of series compensation on Knickerbocker – Pleasant Valley Y57 345 kV line, but modeled at 0% Compensation. The Y57 line is included in the definition of Zone G-J locality accounting for the increment in the limit. Delay of the construction of Dover PAR, as part of the Segment B project is reflected in the base case set up.

Base Case Study Modeling Assumptions

There are two transmission facilities that are included in the ICAP Locality interface definitions controlled by phase angle regulators. For both the Zone J and Zone K Localities, the Jamaica-Lake Success and the Jamaica- Valley Stream 138kV transmission facilities assume a net flow of 300 MW from the Zone K Locality to the Zone J Locality. Therefore, the Locality Limit for Zone K represents the MW flow from G-J, but this portion will not contribute to the G-J Locality Limit. As a result, for the purposes of establishing the Locational Capacity Requirements, the Zone K Locality Limit from this Bulk Power Transmission Capability Study will need to be accounted for in the G-J Locality in the TSL Floor calculation.

The phase angle regulator schedules used in the base case power flow for this analysis assumed a net flow of 0 MW from Public Service Electric & Gas (PSE&G) to Con Edison via the PAR transformer controlling the Linden – Goethals interconnection and 0 MW on the South Mahwah – Waldwick circuits from Consolidated Edison to PSE&G, controlled by the PARs at Waldwick. For the 2024–25 Capability Period used in the base case, the NYISO included a 360 MW schedule for the Hopatcong – Ramapo 500 kV (5018) tie from PJM to New York.

The four Ontario – Michigan PARs are modeled in-service and scheduled to a 0 MW transfer. These phase angle regulator schedules are consistent with the scenarios developed in the RFC-NPCC Inter-Regional Reliability Assessment for Summer 2021, and the MMWG Summer 2020 power flow base cases.

The series reactors on the Dunwoodie – Mott Haven (71 and 72), the Sprain Brook – W. 49th St. (M51 and M52) 345 kV cables, are in-service in the base case. The series reactors on the Sprain Brook – East Garden City (Y49) 345 kV and the Farragut – Gowanus (41 and 42) 345 kV cables are by-passed. The Packard – Sawyer (77 and 78) 230 kV cables, as well as the E. 179th St. – Hell Gate (15055) 138 kV feeder are in-service. The series capacitors on the Marcy – Coopers Corners (UCC2-41) 345 kV, the Edic – Fraser (EF24-40) 345 kV and the Fraser – Coopers Corners (33) 345 kV cables are in-service in the base case. The Leeds – Hurley Ave. 345 kV static synchronous series compensator is modeled in-service in the base case.

Consistent with NYS Reliability Council Transmission Planning criteria, the TSL base case model utilizes MVA ratings for the transmission elements identified in Appendix A.

SUMMARY OF RESULTS – THERMAL TRANSFER LIMIT ANALYSIS

- **Table 1 – Zone K Locality Limit**
- **Table 2 – G-J Locality Limit**
- **Table 3 – Zone J Locality Limit**
- **Table 4 – Comparison of 2024-25 & 2023-24 Locality Limits**

TABLE 1 – Zone K Locality Limit

					Locality Limit
N-1 Outage applied (Neptune HVDC (660MW))					275 MW (1)(2)
	LIMITING ELEMENT	**RATING**		**LIMITING CONTINGENCY**	
(1)	Dunwoodie – Shore Road (Y50) 345 kV	@LTE	964 MVA[1]	L/O	Sprain Brook – East Garden City (Y49) 345 kV

Note:

1: LIPA rating for Y50 circuit is based on 70 % loss factor and rapid oil circulation.
2: The true N-1-1 Transmission Security Limit is 940 in this scenario, the Bulk Transfer Limit accounts for the loss-of-source of 660 MW.

TABLE 2 – G-J Locality Limit

					Locality Limit
N-1 Outage applied (Athens – Van Wagner (91) 345 kV)					4350 MW (1)
	LIMITING ELEMENT	**RATING**		**LIMITING CONTINGENCY**	
(1)	Leeds – Van Wagner(92) 345 kV	@LTE	1538 MVA	L/O	(T:34&44) Dolson – Rock Tavern (DART44) 345 kV Coopers Corners – Middletown TAP (CCRT34) 345 kV Middletown TAP – Rock Tavern (CCRT34) 345 kV Middletown TAP 345/138 kV Transformer

TABLE 3 – Zone J Locality Limit

					Locality Limit
N-2 Outages applied (Dunwoodie - Mott Haven (72) 345 kV & Ravenswood 3(980MW))					2875 MW (1)
	LIMITING ELEMENT	**RATING**		**LIMITING CONTINGENCY**	
(1)	Dunwoodie – Mott Haven (71) 345 kV	@NORM	785 MVA		Pre-Contingency Loading

TABLE 4 – Comparison of 2024-25 & 2023-24 Locality Limits

Locality	2024-25 Limit	2023-24 Limit	Difference
Zone K Locality	275 MW	325 MW	-50 MW
G-J Locality	4350 MW	3425 MW	+925 MW
Zone J Locality	2875 MW	2875 MW	0 MW

Discussion

The change in the Zone K Locality is due to a change in methodology of this study in order to be consistent with the Zone J methodology. Previous studies only considered the true N-1-1 transmission limit. The 2024-25 study considers the whole Locality Bulk Transfer Limits, which takes into account the reduction of local resources due to a loss-of-source contingency.

The change in the G-J locality limit is due to the addition of the Knickerbocker-Pleasant Valley Y57 345 kV circuit that was added as part of the Segment B project.

Appendix A – TSL INTERFACE DEFINITIONS

G-J Locality		
Mohawk (Zone E) – Hudson Valley (Zone G)		
Name	**Line ID**	**Voltage (kV)**
Coopers Corners-Dolson Ave*	CCDA42	345
Middletown-Rock Tavern*	CCRT34	345
Middletown 345/138	BK 114	345/138
West Woodbourne 115/69	T152	115/69
Capital (Zone F) – Hudson Valley (Zone G)		
*Athens-Van Wagner	91	345
*Leeds-Van Wagner	92	345
*Leeds-Hurley Ave.	301	345
Blue Stores E-Milan*	T7	115
*Churchtown-North Catskill	5	115
*Feura Bush/Flint Mine-North Catskill	2	115
*Knickerbocker-Pleasant Valley	Y57	345

Zone J Locality		
Dunwoodie (Zone I) – NYC (Zone J)		
Name	**Line ID**	**Voltage (kV)**
*Dunwoodie-Mott Haven	71	345
*Dunwoodie-Mott Haven	72	345
Sprain Brook-Tremont*	X28	345
*Sprain Brook-West 49th Street	M51	345
*Sprain Brook-West 49th Street	M52	345
*Sprain Brook-Academy	M29	345
*Dunwoodie-Sherman Creek	99031	138
*Dunwoodie-Sherman Creek	99032	138
*Dunwoodie-East 179th Street	99153	138
Long Island (Zone K) – NYC (Zone J)		
*Lake Success-Jamaica	903	138
*Valley Stream-Jamaica	901L_M	138

Zone K Locality		
Dunwoodie (Zone I) – Long Island (Zone K)		
Name	**Line ID**	**Voltage (kV)**
*Dunwoodie-Shore Road	Y50	345
*Sprain Brook-East Garden City	Y49	345
NYC (Zone J) – Long Island (Zone K)		
Jamaica-Valley Stream*	901L_M	138
Jamaica-Lake Success*	903	138

* indicates the metered end of the circuit