



Long Island Offshore Wind Export Public Policy Transmission Need Viability & Sufficiency Assessment

A Report by the
New York Independent System Operator

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Executive Summary

The NYISO's Public Policy Transmission Planning Process implements the Federal Energy Regulatory Commission (FERC) Order No. 1000 directive requiring public utility transmission providers to consider in their planning processes transmission needs driven by Public Policy Requirements. The NYISO conducted this Viability and Sufficiency Assessment for the Long Island Offshore Wind Export Public Policy Transmission Need (LI Offshore Wind Export PPTN) to determine whether each proposal submitted by a Developer is complete, viable, and sufficient to satisfy the Public Policy Transmission Need.

The NYISO initiated its 2021-2022 cycle of the Public Policy Transmission Planning Process by soliciting proposed transmission needs that stakeholders or interested parties believe are driven by Public Policy Requirements. The NYISO filed for consideration by the New York Public Service Commission (NYPSC) the proposed transmission needs, which the NYPSC published the proposed needs for public comment pursuant to the State Administrative Procedure Act. Upon considering the various comments submitted, the NYPSC issued an order that identified the Climate Leadership and Community Protection Act (CLCPA) as a Public Policy Requirement driving transmission needs associated with the delivery of offshore wind energy from Long Island to the rest of the state.

The NYISO established sufficiency criteria in accordance with the criteria set forth by the NYPSC order. After extensive discussion with stakeholders, the NYISO created the baseline power flow study case and results and used these to conduct its independent analysis of the viability and sufficiency of each proposed project.

The NYISO issued a solicitation for projects to address the LI Offshore Wind Export PPTN and received 19 proposals from four developers. The NYISO conducted a comparable analysis for each project in the same manner as it conducted the baseline analysis. Out of the 19 proposed projects, the NYISO identifies 16 viable and sufficient Public Policy Transmission Projects and one viable and sufficient Other Public Policy Project.

1. Introduction

The NYISO’s regional planning process, known as the Comprehensive System Planning Process (CSPP), is comprised of four components: (1) the Local Transmission Owner Planning Process, (2) the Reliability Planning Process, (3) the Economic Planning Process, and (4) the Public Policy Transmission Planning Process (PPTPP).¹ The NYISO also conducts interregional planning with its neighboring control areas under the Northeast Coordinated System Planning Protocol. The PPTPP supports the FERC Order No. 1000 directive requiring public utility transmission providers to consider in their planning processes transmission needs driven by Public Policy Requirements (“Public Policy Transmission Needs”). Section 31.4 of Attachment Y of the NYISO Open Access Transmission Tariff (OATT, or the Tariff) describes the planning process that the NYISO, and all interested parties, shall follow to consider Public Policy Requirements² that drive the need for expansions or upgrades to Bulk Power Transmission Facilities (BPTFs).

The PPTPP consists of four main steps: (1) the identification of Public Policy Transmission Needs, (2) the proposal of solutions to identified Public Policy Transmission Needs, (3) the evaluation of the viability and sufficiency of proposed transmission and non-transmission solutions to a Public Policy Transmission Need, and (4) the evaluation and selection of the more efficient or cost-effective Public Policy Transmission Project to satisfy a Public Policy Transmission Need.

For each two-year CSPP cycle, the NYISO initiates the first step of the PPTPP after the draft Reliability Needs Assessment (RNA) results are released in the Reliability Planning Process. In the identification step, the NYISO solicits proposals for transmission needs driven by Public Policy Requirements, and the NYPSC, or Long Island Power Authority (LIPA), as applicable, considers the proposals in order to identify Public Policy Transmission Needs, and the NYPSC determines for which of those the NYISO should solicit solutions. Subsequent to the identification of Public Policy Transmission Needs, the NYISO solicits proposed solutions, and Developers submit Public Policy Transmission Projects and Other Public Policy Projects to satisfy the identified Public Policy Transmission Needs. All submissions, regardless of project type, are evaluated for their viability and sufficiency to meet the Public Policy Transmission Needs. Pursuant to the Tariff, the NYISO conducted this Viability & Sufficiency Assessment for the Long Island

¹ See OATT Attachment Y.

² A “Public Policy Requirement” is a federal or New York State statute or regulation, including a New York State Public Service Commission (NYPSC) order adopting a rule or regulation subject to and in accordance with the State Administrative Procedure Act, any successor statute, or any duly enacted law or regulation passed by a local governmental entity in New York State, that may relate to transmission planning on the BPTFs.

Offshore Wind Export Public Policy Transmission Need (LI Offshore Wind Export PPTN) to determine whether each Developer-submitted proposal is complete, viable, and sufficient to satisfy the identified need.

A Public Policy Transmission Project is a transmission project or a portfolio of transmission projects proposed by Developer(s) to satisfy an identified Public Policy Transmission Need and for which the Developer(s) seek to be selected by the NYISO for purposes of allocating and recovering the project's costs under the NYISO OATT.³ An Other Public Policy Project is a non-transmission project or a portfolio of transmission and non-transmission projects proposed by a Developer to satisfy an identified Public Policy Transmission Need. An Other Public Policy Project may consist of transmission, generation, and/or demand-side projects, and is not eligible for selection for purposes of cost allocation and cost recovery under the NYISO's tariffs.⁴

Following the NYISO's presentation of the Viability & Sufficiency Assessment, the NYISO evaluates the proposed Public Policy Transmission Projects that have satisfied the viability and sufficiency requirements and ranks them based on the quality of their satisfaction of numerous metrics. Based on this evaluation, the NYISO may select the more efficient or cost-effective Public Policy Transmission Project to satisfy the Public Policy Transmission Need, if any. The NYISO's Board of Directors will weigh the draft Public Policy Transmission Report from NYISO staff, input from stakeholders, and the views of the NYISO's Market Monitoring Unit on the impacts of the proposed transmission projects on the NYISO's competitive wholesale electricity markets, in determining whether and which project to select.⁵ A Public Policy Transmission Project selected as the more efficient or cost-effective solution is eligible for cost allocation and cost recovery under the NYISO OATT.⁶ The assumptions, inputs, methodologies, and results of the NYISO's analysis are published in the Public Policy Transmission Planning Report.

If at any time prior to the NYISO's selection of the more efficient or cost-effective solution, the NYPSC determines: (i) there is no longer a transmission need driven by a Public Policy Requirement that requires the NYISO's evaluation of potential transmission solutions, or (ii) the transmission need should be modified, the NYISO will not perform an evaluation, or make a selection of, a more efficient or cost-effective transmission solution initially identified by the NYPSC for that planning cycle. If the NYPSC

³ See OATT § 31.1.

⁴ See OATT § 31.1.

⁵ See OATT § 31.4.

⁶ See OATT §§ 6.10, 31.5. An Other Public Policy Project is not eligible for selection for purposes of cost allocation and cost recovery under the NYISO's tariffs. *Id.*

modifies the transmission need driven by a Public Policy Requirement, the NYISO will restart its Public Policy Transmission Planning Process as an out-of-cycle process. This out-of-cycle process will begin with the NYISO's solicitation of Public Policy Transmission Projects to address the modified Public Policy Transmission Need. The NYISO will evaluate the viability and sufficiency of the proposed Public Policy Transmission Projects. The NYISO will then proceed to evaluate the viable and sufficient Public Policy Transmission Projects for purposes of selecting the more efficient or cost-effective transmission solution to the modified Public Policy Transmission Need.

2. Summary of the Public Policy Transmission Need

On August 3, 2020, the NYISO issued a letter inviting stakeholders and interested parties to submit proposed transmission needs driven by Public Policy Requirements to the NYISO on or before October 2, 2020.⁷ On October 9, 2020, the NYISO filed at the NYPSC proposals for transmission needs driven by Public Policy Requirements submitted by 15 entities.⁸ On that date, the NYISO also submitted to LIPA 10 proposals for transmission needs that, as proposed, would require a physical modification to transmission facilities in the Long Island Transmission District. Previously, on July 30, 2020, LIPA referred to the PSC a Public Policy Transmission Need for the delivery of offshore wind output on Long Island and from Long Island into New York City.⁹ On November 18, 2020, the PSC published the proposed needs in the State Register for comments in accordance with the State Administrative Procedure Act.¹⁰

Following the public comment period, the PSC issued an order on March 19, 2021 stating that:

Based on LIPA's referral letter, the studies outlined in the letter, the several proposals recommending the identification of a transmission need along the Long Island-New York City interface, and the NYISO's similar recommendation made in its comments, we find the CLCPA constitutes a Public Policy Requirement driving the need for:

- 1) Adding at least one bulk transmission intertie cable to increase the export capability of the LIPA-Con Edison interface, that connects NYISO's Zone K to Zones I and J to ensure the full output from at least 3,000 MW of offshore wind is deliverable from Long Island to the rest of the State; and
- 2) Upgrading associated local transmission facilities to accompany the expansion of the proposed offshore export capability.¹¹

The Commission referred the Public Policy Transmission Need to the NYISO to consider solutions for

⁷ The requirements for the Public Policy Transmission Planning Process are set forth in Attachment Y of the OATT and the NYISO Public Policy Transmission Planning Process Manual.

⁸ The NYISO posted these submittals on its Planning Studies website under "Proposed Needs" contained within the "Public Policy Documents" folder on the NYISO's Planning Studies website, which can be accessed at: <https://www.nyiso.com/cspp>.

⁹ Case No. 8-E-0623, *In the Matter of New York Independent System Operator, Inc.'s Proposed Public Policy Transmission Needs for Consideration for 2018, Letter of Rick Shansky to Chair John Rhodes* (July 30, 2020).

¹⁰ Case No. 20-E-0497, *In the Matter of New York Independent System Operator, Inc.'s Proposed Public Policy Transmission Needs for Consideration for 2020*, Notice of Proposed Rulemaking, New York State Register I.D. No. PSC-46-20-00009-P (November 18, 2020), at 17.

¹¹ Case No. 20-E-0497 and Case No. 18-E-0623, *Order Addressing Public Policy Requirements for Transmission Planning Purposes* (March 19, 2021), at 23, available at <https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={8C8F3D7A-4FEB-4B18-88F5-82CF587895C9}>.

increasing transmission capability from Long Island into Southeastern New York.¹² The order further stated:

In accordance with the NYISO OATT, we also prescribe criteria to assist that NYISO in its solicitation and evaluation of proposed solutions to the identified Public Policy Transmission Needs. The NYISO's analysis should ensure no transmission security violations, thermal, voltage or stability, would result under normal and emergency operating conditions. The analysis should also ensure the system would be maintained in a reliable manner.¹³

2.1 – Sufficiency Criteria

The NYISO established sufficiency criteria in accordance with the criteria set forth by the NYPSC Order, and developed baseline models and associated power flow results to aid interested parties in developing project proposals.

The NYISO made presentations at combined meetings of the Transmission Planning Advisory Subcommittee (TPAS) and the Electric System Planning Working Group (ESPWG)¹⁴ to review the PSC's determination of the Public Policy Requirement and the nature of the resulting LI Offshore Wind Export PPTN.¹⁵ The NYISO held a technical conference on July 8, 2021 with Developers and interested parties to obtain their input on the NYISO's application of the selection metrics set forth in Section 31.4.8.1 of the OATT for purposes of soliciting solutions to the Public Policy Transmission Need.¹⁶

In order to address the LI Offshore Wind Export PPTN, as identified by the NYPSC, a sufficient Public Policy Transmission Project or Other Public Policy Project shall meet, at a minimum, the following criteria:

- Ensure full output of at least 3,000 MW of offshore wind connected to Long Island (Zone K) while maintaining reliability under all lines-in-service (N-0 and N-1) and prior-outage (N-1-1) conditions per North American Electric Reliability Corporation (NERC), Northeast Power Coordinating Council (NPCC) and New York State Reliability Council (NYSRC) transmission security criteria, and local Transmission Owner planning criteria. A sufficient project must resolve constraints on Bulk Electric System facilities that are significantly impacted by Long Island offshore wind under summer peak and light load conditions.
- Add at least one bulk transmission intertie cable connecting between Zone K and the rest of the New York Control Area.
- Additional transmission expansion or upgrades, as necessary, to facilitate the full output of at

¹² *Id.* at 23-24.

¹³ *Id.*

¹⁴ The meetings were held on March 23, 2021, March 26, 2021, April 7, 2021, April 23, 2021, May 3, 2021, May 20, 2021, June 1, 2021, June 22, 2021, July 1, 2021, July 23, 2021, and August 2, 2021.

¹⁵ The NYISO's presentations are posted on its website under meeting materials at the following link: <https://www.nyiso.com/espwg>.

¹⁶ OATT § 31.4.4.3.1; Public Policy Transmission Planning Process Manual (“PPP Manual”) § 3.2.

least 3,000 MW of Long Island offshore wind under summer peak and light load conditions.

Appendix A provides the details of the sufficiency criteria that the NYISO applied to determine the sufficiency of each proposed Public Policy Transmission Project and Other Public Policy Project to satisfy the LI Offshore Wind Export PPTN.

2.2 – Sufficiency Assessment Methodology

The process for developing the study cases for the Viability & Sufficiency Assessment is described in Section 4 of the NYISO Public Policy Transmission Planning Process Manual. Based on the sufficiency criteria set forth by the NYPSC Order, the NYISO determined that a power flow model should be applied to evaluate the LI Offshore Wind Export PPTN. The baseline and project study cases are based on the NYISO 2021 FERC 715 filing with the following major modifications:

- Offshore wind generation modeled at full output:
 - ~3,000 MW connected to Zone K (Long Island): 139 MW @ East Hampton 69 kV, 880 MW @ Holbrook 138 kV, 1,260 MW @ Barrett 138 kV, 800 MW @ Ruland Rd 138 kV;
 - ~6,000 MW connected to Zone J (New York City): 816 MW @ Gowanus 345 kV, 1,230 MW @ Astoria 138 kV, 1,310 MW @ Farragut East 345 kV, 1,310 MW Farragut West 345 kV, and 1,310 MW West 49th St. 345 kV.
- Load levels:
 - Zone K: 4,423 MW (including 499 MW behind-the-meter solar) in the Summer Peak case and 1,107 MW (including 1,108 MW behind-the-meter solar) in the Light Load case;
 - Zone J: 11,195 MW (including 290 MW behind-the-meter solar) in the Summer Peak case and 4,524 MW in the Light Load case (including 644 MW behind-the-meter solar).
- Imports:
 - Summer Peak: Norwalk – Northport = 0 MW, Cross Sound Cable = 0 MW, Neptune = 660 MW, Zone J Generic HVDC @ Rainey 345 kV = 1,310 MW;
 - Light Load: Norwalk – Northport = 0 MW, Cross Sound Cable = 0 MW, Neptune = 0 MW, Zone J Generic HVDC @ Rainey 345 kV = 0 MW.
- Dispatch of existing generators:
 - Following recommendations of the Transmission Owners Con Edison and LIPA, certain existing generators are kept dispatched on to maintain local reliability. The details can be found in the power flow cases.

The NYISO utilized these modified cases to conduct transmission security analysis of the Southeastern New York system. Transmission security is the ability of the power system to withstand disturbances such as short circuits or unanticipated loss of system elements and continue to supply and deliver electricity. Security is assessed deterministically, with potential disturbances being applied without

concern for the likelihood of the disturbance in the assessment. These disturbances (single-element and multiple-element contingencies) are categorized as the design criteria contingencies, explicitly defined in the NYSRC Reliability Rules. The impacts when applying these design criteria contingencies are assessed to ensure no thermal loading or voltage driven by the export of Long Island offshore wind power.

The NYISO conducts transmission security analysis of the BPTFs and non-BPTFs (100 kV and above) in accordance with applicable NERC Reliability Standards, NPCC Transmission Design Criteria, NYSRC Reliability Rules, and local Transmission Owner planning criteria. AC contingency analysis is performed to evaluate thermal and voltage performance under design contingency conditions using the Siemens PTI PSS®E and PowerGEM TARA programs. Generation is dispatched to match load plus system losses, while respecting transmission security, subject to the sufficiency criteria constraints described in Appendix A. Scheduled inter-area transfers modeled in the base case between the New York Control Area (NYCA) and neighboring systems are held constant.

To evaluate the impact of a single event from the normal system condition (N-1), all design criteria contingencies are evaluated, including: single element, common structure, stuck breaker, generator, bus, and HVDC facilities contingencies. An N-1 violation occurs when the power flow on the monitored facility is greater than the applicable post-contingency rating. N-1-0 and N-1-1 analysis evaluates the ability of the system to meet design criteria after a critical element has already been lost. The process of N-1-0 and N-1-1 testing allows for corrective actions including generator redispatch, phase angle regulator (PAR) adjustments, and HVDC adjustments between the first and second contingency. However, reducing the output of renewables is not allowed under the Sufficiency Criteria. These corrective actions prepare the system for the next contingency by reducing the flow to normal rating after the first contingency. An N-1-0 violation occurs when the flow cannot be reduced to below the normal rating following the first contingency. An N-1-1 violation occurs when the facility loading is reduced to below the normal rating following the first contingency, but the power flow following the second contingency is greater than the applicable post-contingency rating.

2.3 – Baseline Results

The Long Island transmission system (NYISO Zone K) is primarily comprised of a 138 kV backbone running in a predominantly east-to-west axis and an underlying 69 kV system. Long Island is connected to the rest of the NYCA with two (2) 345 kV tie lines connecting to Westchester County (Zone I) and two (2) 138 kV tie lines connecting to New York City (Zone J). Long Island is further connected to external control areas with controllable external ties connecting to Connecticut and New Jersey. The baseline assessment

results¹⁷ show that the existing Long Island transmission system and tie lines are not capable of exporting offshore wind power to the rest of New York State that exceeds the native Long Island load. Table 1 through Table 3 and Figure 1 through Figure 3 summarize some of the significant constraints found in baseline assessment. These results in these tables and figures are not an exhaustive list, but are representative of the extent and severity of the constraints.

¹⁷ Baseline results can be found at <https://www.nyiso.com/documents/20142/22968753/LI-PPTN-BaselineResults.xlsx> and https://www.nyiso.com/documents/20142/22792555/08_LI_OSW_Export_ESPWG_7-01-2021.pdf

Table 1: Significant N-0 Constraints

Monitored Facility	Light Load		Summer Peak	
	Rate (MVA)	Loading (%)	Rate (MVA)	Loading (%)
Long Island				
Valley Stream - East Garden City 138 kV	194	217	214	100
East Garden City - New Bridge Rd 138 kV	194	207	-	-
Carle Place - East Garden City 138 kV	320	184	-	-
New Bridge Rd - Ruland Rd 138 kV	259	108	-	-
Long Island Tie Lines				
Y50: Dunwoodie - Shore Rd 345 kV	780	167	-	-
Y49: Sprainbrook - East Garden City 345 kV	770	126	-	-

Table 2: Significant N-1 Constraints

Monitored Facility	Light Load			Summer Peak		
	Rate (MVA)	Loading (%)	Contingency	Rate (MVA)	Loading (%)	Contingency
Long Island						
East Garden City - New Bridge Rd 138 kV	284	216	VS Bus Con			
Carle Place - East Garden City 138 kV	352	255	EGC Bus Con	303	102	EGC Bus Con
Valley Stream - East Garden City 138 kV	284	230	Valley Stream - EGC	298	124	Valley Stream - EGC
New Bridge Rd - Ruland Rd 138 kV	388	135	Ruland - NB	-	-	-
Hauppauge - C. Islip 138 kV ¹⁸	288	118	Holbrook - Ruland	-	-	-
Long Island Tie Lines						
Jamaica - Valley Stream 138 KV	375	231	EGC Bus Con	365	102	EGC Bus Con

¹⁸ Following the solicitation for solutions, LIPA provided corrected ratings for this line that would increase the winter LTE rating to 387 MVA. This rating correction resolves the Hauppauge – C. Islip 138 kV overloads found in the baseline analysis as well as the VSA analysis for each project.

Jamaica - Lake Success 138 KV	368	193	Y50	-	-	-
Y50: Dunwoodie - Shore Rd 345 kV	1,028	170	Y49	-	-	-
Y49: Sprainbrook - East Garden City 345 kV	990	142	ShoreRd Bus Con	-	-	-

Table 3: Significant N-1-1 Constraints

Monitored Facility	Light Load				Summer Peak			
	Rate (MVA)	Loading (%)	1st Contingency	2nd Contingency	Rate (MVA)	Loading (%)	1st Contingency	2nd Contingency
Long Island								
East Garden City - New Bridge Rd 138 kV	284	287	EGC - NewBridge	EGC - NewBridge	287	127	EGC - NewBridge	Barrett - VS
Glenwood - Shore Road 138 kV	388	365	Y49	Glenwood Bus Con	324	133	Y49	EGC - Roslyn
Valley Stream - East Garden City 138 kV	284	346	Valley Stream - EGC	Ruland OSW	298	173	EGC - Roslyn	Barrett Bus Con
New Bridge Rd - Ruland Rd 138 kV	331	167	NewBridge - Ruland	NewBridge - Ruland	-	-	-	-
Syosset - Greenlawn 138 kV	368	120	Carle - EGC	Elwood Bus Con	-	-	-	-
Haupague - C. Islip 138 kV	288	120	Holbrook - Ruland	Pilgrim xfmr	-	-	-	-
Long Island Tie Lines								
Jamaica - Lake Success 138 KV	368	295	Y49	Y50	345	113	901	Astoria OSW
Jamaica - Valley Stream 138 KV	375	250	Y50	Y49	-	-	-	-
Y50: Dunwoodie - Shore Rd 345 kV	1,028	206	Y49	901	-	-	-	-
Y49: Sprainbrook - East Garden City 345 kV	990	169	Y50	NNC	-	-	-	-
Norwalk - Northport 138 kV	210	152	Y49	Y50	-	-	-	-
New York City								
Farragut West 345/138 kV xfmr	177	174	Y49	Y50	-	-	-	-
Corona - Jamaica 138 kV	250	162	Y49	Y50	-	-	-	-
Hudson Ave - Jamaica 138 kV	363	144	Y49	Y50	-	-	-	-

Figure 1: Significant N-0 Constraints. Red shading indicates constraints that occur in the light load conditions.

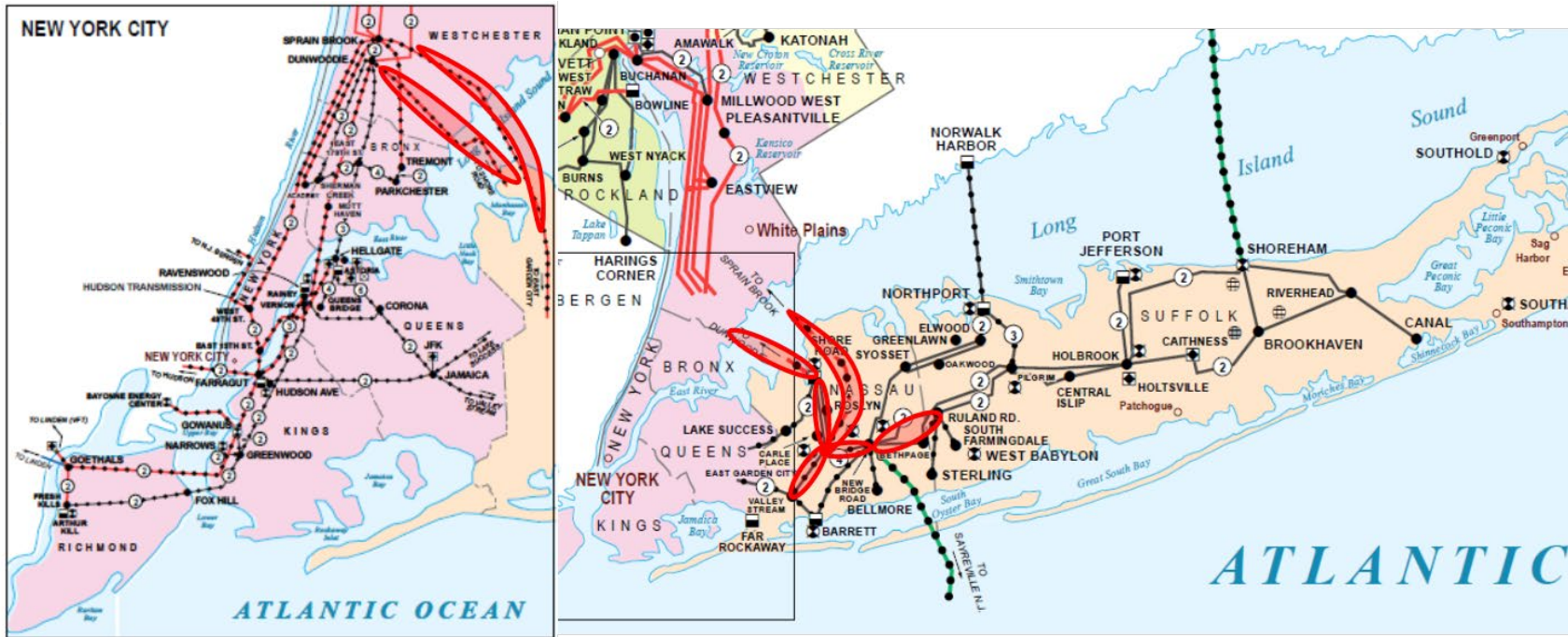


Figure 2: Significant N-1 Constraints. Red shading indicates constraints that occur in the light load conditions only and blue shading indicates constraints in both summer peak and light load conditions.

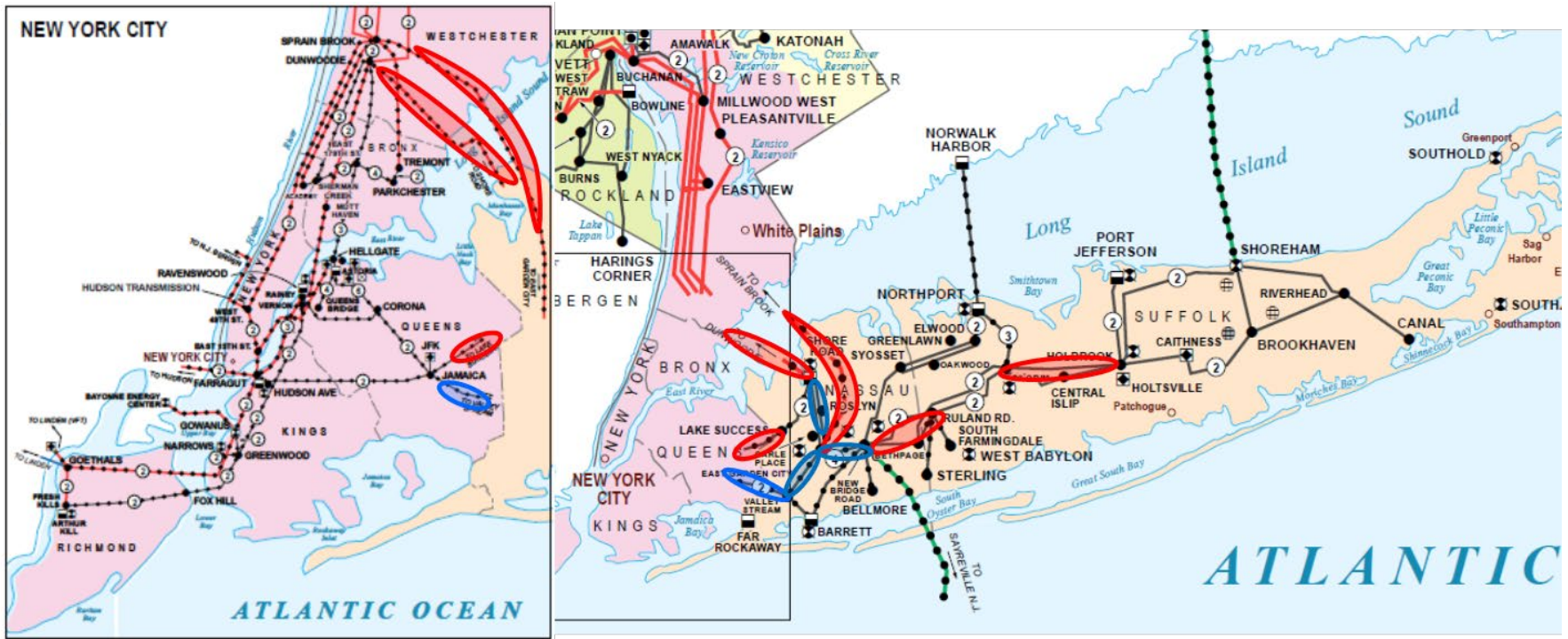
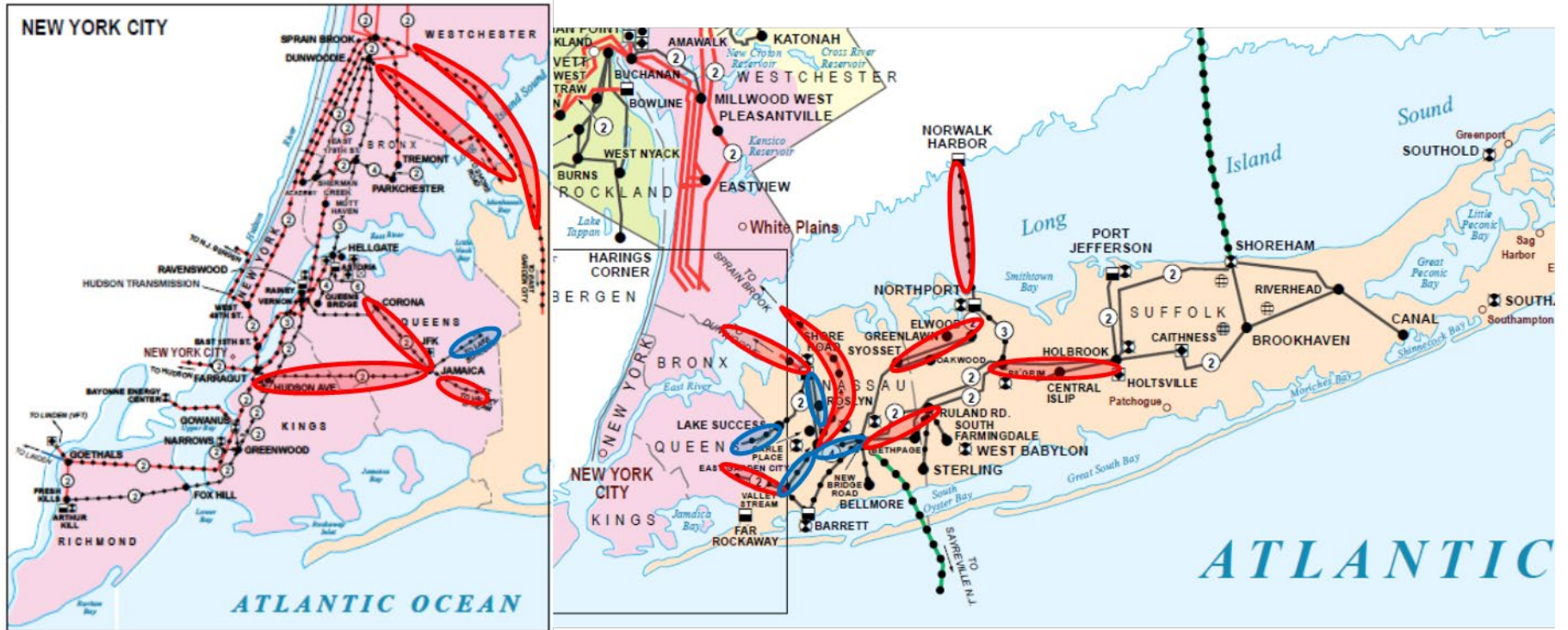


Figure 3: Significant N-1-1 Constraints. Red shading indicates constraints that occur in the light load conditions only and blue shading indicates constraints in both summer peak and light load conditions.



3. Proposed Projects and Findings

On August 12, 2021, the NYISO issued a solicitation for Public Policy Transmission Projects and Other Public Policy Projects to address the Long Island Offshore Wind Export Public Policy Transmission Need. Project proposals were due on or before October 11, 2021.¹⁹ Following a July 8, 2021 Technical Conference that preceded the solicitation, the NYISO received numerous questions from interested Developers seeking clarification on the process and the LI Offshore Wind Export PPTN Sufficiency Criteria. The NYISO summarized the questions and provided responses in three (3) public Frequently Asked Questions (FAQ) documents.²⁰ The NYISO received 18 Public Policy Transmission Projects and one Other Public Policy Project.

The NYISO conducted a comparable transmission security analysis of each project in the same manner as the baseline analysis. The objective of this analysis is to identify if the Long Island-connected offshore wind power can securely be delivered to the NYCA load following the addition of each project to the baseline case. As described in the August 12, 2021 solicitation notice and subsequent FAQ documents, constraints do not need to be resolved for the purpose of determining Sufficiency on certain facilities, if they are:

- operated at a voltage below 100 kV,
- not significantly impacted by the injection of power from Long Island offshore wind projects; or
- anticipated to be upgraded by offshore wind developers per NYSERDA's Offshore Wind Renewable Energy Credit Purchase and Sale Agreements - specifically, the 138 kV circuits between Barrett and New Bridge Rd, and between Barrett and Valley Stream.

The NYISO evaluated the viability and sufficiency of all 19 projects. Table 4 lists the findings for each proposed solution. Table 5 summarizes the significant constraints for two projects that resulted in those projects not meeting the Sufficiency Criteria.

¹⁹ The LI Offshore Wind Export PPTN Solicitation is posted at:

<https://www.nyiso.com/documents/20142/22968753/Long-Island-Offshore-Wind-Export-Public-Policy-Transmission-Need-Project-Solicitation.pdf>

²⁰ The LI Offshore Wind Export PPTN FAQ documents are posted on the NYISO website at <https://www.nyiso.com/cspp> under the Long Island Offshore Wind Export PPTN folder.

Table 4: Viability & Sufficiency Findings

Developer	Project Name	Project #	Category	Viable ?	Sufficient ?
LS Power Grid New York Corporation I	Atlantic Gateway	T035	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Core 1	T036	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Core 2	T037	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Core 3	T038	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Core 4	T039	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Core 5	T040	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Core 6	T041	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Core 7	T042	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Enhanced 1	T043	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Enhanced 2	T044	PPTP	Yes	Yes
NextEra Energy Transmission New York, Inc	New York Renewable Connect - Plus 3	OPP45	OPPP	Yes	Yes
Anbaric Development Partners, LLC	Downstate Clean Powerlink	T046	PPTP	Yes	No
New York Power Authority/New York Transco LLC	Propel NY Energy - Base Solution 1	T047	PPTP	Yes	Yes
New York Power Authority/New York Transco LLC	Propel NY Energy - Base Solution 2	T048	PPTP	Yes	Yes
New York Power Authority/New York Transco LLC	Propel NY Energy - Base Solution 3	T049	PPTP	Yes	Yes
New York Power Authority/New York Transco LLC	Propel NY Energy - Base Solution 4	T050	PPTP	Yes	No
New York Power Authority/New York Transco LLC	Propel NY Energy - Alternate Solution 5	T051	PPTP	Yes	Yes
New York Power Authority/New York Transco LLC	Propel NY Energy - Alternate Solution 6	T052	PPTP	Yes	Yes
New York Power Authority/New York Transco LLC	Propel NY Energy - Alternate Solution 7	T053	PPTP	Yes	Yes

Table 5: Summary of Significant Results for T046 & T050

Monitored Facility	Light Load			
	Rate (MVA)	Loading (%)	1st Contingency	2nd Contingency
T046				
Sprain Brook - Shore Rd	1,028	114	EGC-Mott Haven	T:W89&W90
T050²¹				
Barrett - Tremont 345 kV	1,069	125	Y50	Y49
Y50: Dunwoodie - Shore Rd 345 kV	1,028	121	Y49	Barrett-Tremont
Y49: Sprain Brook - EGC 345 kV	770	104	903	Base Case

²¹ Additional constraints were found for the T050 project beyond those that are shown in the table.

4. Conclusions

The NYISO performed a comparable analysis of each proposed Public Policy Transmission Project and Other Public Policy Project to determine whether the proposed solution satisfies the Long Island Offshore Wind Export Public Policy Transmission Need. The NYISO determined that the following projects meet the sufficiency criteria:

- LS Power Grid New York Corporation I - Atlantic Gateway
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Core 1
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Core 2
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Core 3
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Core 4
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Core 5
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Core 6
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Core 7
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Enhanced 1
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Enhanced 2
- NextEra Energy Transmission New York, Inc - New York Renewable Connect - Plus3²²
- New York Power Authority/New York Transco LLC - Propel NY Energy – Base Solution 1
- New York Power Authority/New York Transco LLC - Propel NY Energy – Base Solution 2
- New York Power Authority/New York Transco LLC - Propel NY Energy – Base Solution 3
- New York Power Authority/New York Transco LLC - Propel NY Energy – Alternate Solution 5
- New York Power Authority/New York Transco LLC - Propel NY Energy – Alternate Solution 6
- New York Power Authority/New York Transco LLC - Propel NY Energy – Alternate Solution 7

For each sufficient project, the Developer of the project is a Qualified Developer, the solution is technically practicable, and the Developer has provided an approach for acquiring any necessary rights-of-way, property, and facilities. Therefore, each sufficient project is also viable.

²² As an Other Public Policy Project, this project's viability and sufficiency was assessed for information purposes, but it is not eligible to be evaluated and selected in the PPTPP for purposes of cost allocation and cost recovery.

5. Next Steps

The NYISO presented these results at the joint Electric System Planning Working Group (ESPWG) and Transmission Planning Advisory Subcommittee (TPAS) meeting on March 1, 2022. The NYISO received comments on the results from several interested parties, which it posted on its website and addressed at a joint ESPWG/TPAS meeting on April 1, 2022²³. After the issuance and posting of the final Viability & Sufficiency Assessment, the NYISO will file the final Viability & Sufficiency Assessment to the NYPSC. The NYISO will evaluate the viable and sufficient Public Policy Transmission Projects that elect²⁴ to proceed for purposes of selecting the more efficient or cost-effective Public Policy Transmission Project that is eligible for cost allocation and cost recovery under the NYISO's tariffs. The NYISO will rank these Public Policy Transmission Projects based on their satisfaction of the metrics set forth in the tariffs and in the NYPSC Order and document its findings in the Long Island Offshore Wind Export Public Policy Transmission Planning Report. Based upon the Public Policy Transmission Report, input from stakeholders and interested parties, and from the NYISO's Market Monitoring Unit, the NYISO Board of Directors may select the more efficient or cost-effective Public Policy Transmission Project to meet the Long Island Public Policy Transmission Need, if any.

²³ https://www.nyiso.com/documents/20142/29635167/06_LI_OSW_Export_ESPWG_04-01-2022.pdf

²⁴ Within 15 Calendar Days of the NYISO filing the VSA results with the NYPSC, unless extended by the NYISO pursuant to Sections 31.1.8.7 and 31.4.6.6 of the Open Access Transmission Tariff, the Developer of a proposed Public Policy Transmission Project that the NYISO has determined is viable and sufficient must notify the NYISO whether it intends for its project to proceed to be evaluated for purposes of the NYISO's selection of the more efficient or cost-effective Public Policy Transmission Project to satisfy the LI Offshore Wind Export PPTN.

Appendix A. Sufficiency Criteria

Long Island Offshore Wind Export Public Policy Transmission Need

Sufficiency Criteria and Additional Information

Sufficiency Criteria (Minimum Criteria)

In order to address the Long Island Offshore Wind Export Public Policy Transmission Need (LI PPTN) as identified by the NYPSC, a sufficient Public Policy Transmission Project or Other Public Policy Project shall meet, at a minimum, the following criteria:

- Ensure full output of at least 3,000 MW of offshore wind connected to Long Island (Zone K) while maintaining reliability under all lines-in-service (N-0 and N-1) and prior-outage (N-1-1) conditions per North American Electric Reliability Corporation (NERC), Northeast Power Coordinating Council (NPCC) and New York State Reliability Council (NYSRC) transmission security criteria, and local Transmission Owner planning criteria. A sufficient project must resolve constraints on Bulk Electric System facilities that are significantly impacted by Long Island offshore wind under summer peak and light load conditions.
- Add at least one bulk transmission intertie cable connecting between Zone K and the rest of the New York Control Area.
- Additional transmission expansion or upgrades, as necessary, to facilitate the full output of at least 3,000 MW of Long Island offshore wind under summer peak and light load conditions.

Evaluation and Selection Criteria for the Public Policy Transmission Project

For the purposes of evaluation and selection of the more efficient or cost effective Public Policy Transmission Project to address the LI PPTN, the following criteria will be applied:

- Per Section 31.4.8.1 of Attachment Y to the NYISO OATT, NYISO will consider the following criteria and metrics: capital cost estimate, voluntary cost cap, cost per MW ratio, expandability, operability, performance, production cost, property rights and routing, potential construction delays, and other metrics applicable to of the Public Policy Requirement to achieve the Climate Leadership and Community Protection Act (CLCPA) targets.
- The ability of a Public Policy Transmission Project to enable greater levels of offshore wind energy delivery from Long Island to the rest of New York will be valued in the evaluation process. Scenarios representing Long Island offshore wind in excess of 3,000 MW will be used to evaluate project performance with respect to the expandability and other metrics. The evaluation will include, among other potential scenarios, an “Alternate Scenario” which models 6,000 MW of offshore wind connected to New York City and 6,000 MW connected to Long Island.
- The following additional criteria was identified in the NYPSC Order:
 - The NYISO’s analysis should ensure no transmission security violations, thermal, voltage or stability, would result under normal and emergency operating conditions.

- The analysis should also ensure the system would be maintained in a reliable manner.
- The NYISO shall also consider other metrics in its evaluation of this Public Policy Requirement, including: changes in production costs; Load-Based Marginal Prices; transmission losses; emissions; Installed Capacity costs; Transmission Congestion Contract revenues; transmission congestion; impacts on transfer limits; and, resource deliverability.¹

PPTN-specific Project Information

- For the purpose of determining Sufficiency, constraints do not need to be resolved for facilities that are:
 - operated at a voltage below 100 kV;
 - not significantly impacted by the injection of power from Long Island offshore wind projects; or
 - anticipated to be upgraded by offshore wind developers per NYSERDA's Offshore Wind Renewable Energy Credit Purchase and Sale Agreement's - specifically, the 138 kV circuits between Barrett and New Bridge Rd, and between Barrett and Valley Stream.
- Developers shall identify which Project components are new facilities, upgrades², or Network Upgrade Facilities³, as described in the Public Policy Transmission Planning Process Manual Attachments B and C. NYISO will review the classification of Project components and, if necessary, ask the Developer for clarification or correction.

Baseline Study Cases

The study cases used in the baseline analysis (Baseline Scenario) for the LI PPTN are based on the NYISO 2021 FERC 715 filing with the following major modifications:

- Offshore wind generation modeled at full output:
 - ~3,000 MW connected to Zone K (Long Island): 139 MW @ East Hampton 69 kV, 880 MW @ Holbrook 138 kV, 1,260 MW @ Barrett 138 kV, 800 MW @ Ruland Rd 138 kV
 - ~6,000 MW connected to Zone J (New York City): 816 MW @ Gowanus 345 kV, 1,230 MW @ Astoria 138 kV, 1,310 MW @ Farragut East 345 kV, 1,310 MW Farragut West 345 kV, and 1,310 MW West 49th St. 345 kV
- Load levels:
 - Zone K: 4,423 MW (including 499 MW behind-the-meter solar) in the Summer Peak case and 1,107 MW (including 1,108 MW behind-the-meter solar) in the Light Load case
 - Zone J: 11,195 MW (including 290 MW behind-the-meter solar) in the Summer Peak case and 4,524 MW in the Light Load case (including 644 MW behind-the-meter solar)
- Imports:
 - Summer Peak: Norwalk – Northport = 0 MW, Cross Sound Cable = 0 MW, Neptune = 660 MW, Zone J Generic HVDC @ Rainey 345 kV = 1,310 MW

¹ PSC Order, at 24.

² OATT Attachment Y 31.6.4

³ OATT Attachment P 22.1

- Light Load: Norwalk – Northport = 0 MW, Cross Sound Cable = 0 MW, Neptune = 0 MW, Zone J Generic HVDC @ Rainey 345 kV = 0 MW
- Dispatch of existing generators:
 - Following recommendations of the Transmission Owners ConEdison and LIPA, certain existing generators are kept dispatched on to maintain local reliability. The details can be found in the power flow cases.

In addition to the Baseline Scenario, an Alternate Scenario is available with the following distinction:

- Offshore wind generation modeled at full output:
 - ~6,000 MW connected to Zone J: 816 MW @ Gowanus 345 kV, 1,230 MW @ Astoria 138 kV, 1,310 MW @ Farragut East 345 kV, 1,310 MW Farragut West 345 kV, and 1,310 MW West 49th St. 345 kV
 - ~6,000 MW connected to Zone K: 139 MW @ East Hampton 69 kV, 1,050 MW @ Holbrook 138 kV, 1,350 MW @ Barrett 138 kV, 1,150 MW @ Ruland Rd. 138 kV, 1,150 MW @ East Garden City 345 kV, and 1,150 MW @ Northport 138 kV

The Baseline Scenario cases will be used in the Viability & Sufficiency Assessment to determine sufficiency, while the Alternate Scenario will be used to assess the transmission solutions' performance in the expandability metric and other metrics in the evaluation and selection of the more effective or cost efficient solution. Other scenarios, including scenarios representing achievement of the CLCPA Public Policy Requirement, may also be utilized in the evaluation and selection phase.

The Baseline and Alternate Scenario study cases are available, subject to a Critical Energy Infrastructure Information (CEII) request:

<https://nyiso.tfaforms.net/187>

Baseline Study Results

Baseline and Alternate Scenario study results are publicly available on the NYISO website under Public Policy Documents at

<https://www.nyiso.com/documents/20142/22968753/LI-PPTN-BaselineResults.xlsx/c91543ab-c542-3139-64a8-46357f886362>