Attachment G
Exhibit No. TRANSCO-200
Testimony of Paul Haering

Exhibit No. TRANSCO-200

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

NEW YORK TRANSCO LLC	**)**	**DOCKET NO. ER24-____-000**

PREPARED DIRECT TESTIMONY OF
PAUL HAERING

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DIRECT TESTIMONY OF
PAUL HAERING

I. Introduction

Q 1. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A 1. My name is Paul Haering. My business address is 1 Hudson City Center, Hudson, NY 12534.

Q 2. IN WHAT CAPACITY ARE YOU EMPLOYED?

A 2. I am currently the Vice President of Capital Investment of New York Transco LLC ("Transco").

Q 3. WHAT ARE YOUR AREAS OF RESPONSIBILITY IN YOUR CURRENT POSITION?

A 3. As Vice President of Capital Investment, I have responsibility for Engineering, Reliability Compliance, Operations and Business Development.

Q 4. WHAT IS YOUR EDUCATIONAL BACKGROUND AND EMPLOYMENT EXPERIECE?

A 4. I graduated from Manhattan College in 1986 with a Bachelors of Engineering in Electrical Engineering. In 1992, I received a Masters of Electrical Engineering from Polytechnic University. In 2007, I received a Master of Business Administration from Rensselaer Polytechnic Institute.

Following my graduation from Manhattan College, in 1986 I joined Central Hudson Gas and Electric Corporation ("Central Hudson") as a Junior Engineer in the Substation Design Section. In 1989, I was transferred to work as a staff engineer in the Operations Services Division, which has responsibility for the operation, maintenance, and construction of the Company's substation facilities. In 1994, I was promoted to the position of Operations Supervisor in the Operations Services Division. In 2000, I was transferred to the position of Engineer in the Electric System Protection Section. In 2001, I became Section Engineer for the Distribution Engineering Section. In 2003, I was promoted to the position of Manager of Electric Transmission and Distribution. In 2004, I was promoted to the position of Manager of Electric Engineering Services, In May 2007, I was named the Assistant Vice President of Engineering and Environmental Services. In December 2007, I became the Vice President of Engineering and Operations Services. In March 2020, I joined Transco in my current role.

Q 5. HAVE YOU SPONSORED COMMENTS OR TESTIMONY BEFORE REGULATORY COMMISSIONS?

A 5. Yes. I filed prepared Direct Testimony in Transco's initial rate filing in Docket No. ER15-572-000. I have also filed prepared testimony in several rate cases for Central Hudson at the New York State Public Service Commission ("NYPSC").

II. Purpose and Scope of Testimony

Q 6. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A 6. The purpose of my testimony is to describe the specific components of the Propel New York Energy Project ("Propel NY Energy Project" or "Project") and the unique development challenges Transco will need to address in order to develop a complex project

of this size and scope. I will also summarize the significant benefits that New York Independent System Operator, Inc. ("NYISO") has determined the Project will provide to the New York transmission system and how the Project meets the Public Policy Transmission Need ("PPTN") identified by the NYPSC in a March 19, 2021 order. Finally, I will provide support for the 150 basis point return on equity ("ROE") adder to account for the risks and challenges of the Project ("Risks and Challenges Adder") that is being sought in this application by describing the particular development and regulatory risks that the Project will face and explaining why the requested Risks and Challenges Adder is justified.

III. Identification of Exhibits

Q 7. ARE YOU SPONSORING ANY EXHIBITS IN CONNECTION WITH YOUR TESTIMONY?

A 7. Yes, the following exhibits are included with my testimony:

TRANSCO-201:	Schematic of Project
TRANSCO-202:	Preliminary Permitting Matrix
TRANSCO-203:	Long Island Offshore Wind Export Public Policy Transmission Need Viability & Sufficiency Assessment

IV. Overview of the Project

Q 8. PLEASE DESCRIBE THE CIRCUMSTANCES UNDER WHICH TRANSCO FIRST CONCEIVED THE PROJECT.

A 8. Mr. Mullin describes the NYISO planning process that resulted in the NYPSC's determination that the New York Climate Leadership and Community Protection Act ("CLCPA") constitutes a Public Policy Requirement ("PPR") driving the need for:

- Adding at least one bulk transmission intertie cable to increase the export capability of the Long Island Power Authority ("LIPA")-Consolidated

Edison Company of New York, Inc. ("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

- Upgrading associated local transmission facilities to accompany the expansion of the proposed offshore export capability.

Immediately following the NYPSC determination, Transco began considering potential transmission project solutions to address the need. As described in Mr. Mullin's testimony, Transco and New York Power Authority ("NYPA") leveraged their expertise and knowledge of New York's bulk electric transmission system and combined efforts in the creation of project proposals. Transco and NYPA set about studying various solutions and ultimately fully developed seven different project solutions that we identified as Propel NY Energy Base Solutions 1-4 and Alternate Solutions 5-7.

Q 9. DID TRANSCO SUBMIT THE PROJECT FOR CONSIDERATION IN THE NYISO COMPETITIVE SOLICITATION PROCESS?

A 9. Yes. With NYPA as a co-developer, we submitted all seven of the project solution proposals for consideration in the NYISO competitive solicitation process.

Q 10. WAS THE PROJECT SELECTED AS THE MORE EFFICIENT OR COST EFFECTIVE SOLUTION TO MEET THE PPTN?

A 10. Yes. The NYISO Board of Directors ultimately selected the Project, known in the solicitation process as Propel NY Energy Alternate Solution 5, as the more efficient or cost effective solution to the Long Island PPTN.

Q 11. PLEASE DESCRIBE THE MAJOR CHARACTERISTICS AND COMPONENTS OF THE PROJECT.

A 11. The Propel NY Energy Project is a complex, multi-component underground and submarine electric transmission project consisting of new, high-voltage electric transmission cable

and several new transmission substations located in some of the most dense urban and suburban areas of the country – New York City, Long Island, and Westchester County. The Project also requires upgrades to existing facilities that the incumbent New York transmission owners have a right-of-first refusal to develop as a designated entity. For purposes of my testimony, I focus on the development aspects of the Propel NY Energy Project that Transco will have the contractual rights to develop.[1]

The Project will establish a continuous 345 kV underground electrical connection from the modified East Garden City substation on Long Island to the existing Consolidated Edison Company of New York, Inc. ("Con Edison") Tremont substation in New York City, greatly expanding the deliverability of renewable offshore wind generation to New York load centers. This line, along with two new lines from a proposed new Shore Road 345 kV substation to the existing Con Edison Sprain Brook substation; a 345 kV line from the proposed Shore Road 345 kV substation to the to-be-modified East Garden City substation; a 345 kV line from the proposed Ruland Road 345 kV substation to the proposed Shore Road substation; a 345 kV line from the East Garden City substation to the proposed Barrett 345 kV substation; and a 138 kV line from the existing LIPA Syosset substation to the new Shore Road substation all reduce anticipated congestion and provide additional reliability and resiliency benefits.

[1] On August 24, 2023, NYISO released the Long Island Offshore Wind Export PPTN Designated Public Policy Projects, which listed the Designated Entities that haven taken responsibility for certain upgrades proposed as part of the Project. *See* https://www.nyiso.com/documents/20142/22968753/Long-Island-Offshore-Wind-Export-PPTN-Designated-Public-Policy-Projects.pdf/ba8554af-e4d7-310e-1b25-e5987db9f308.

In total, the Project consists of 4 new electric transmission substations and approximately 230 circuit miles of new underground 345 kV transmission cable, 34 circuit miles of new underground 138 kV transmission cable and 40 circuit miles of new submarine 345 kV transmission cable, all within heavily congested areas of New York City, Long Island, and Westchester County. I have included a schematic of the Project as Exhibit No. TRANSCO-201.

Specifically, the major Project components include:

- An underground 345 kV tie line with a phase angle regulator ("PAR") from the existing NYPA East Garden City 345 kV substation interconnected to the existing Con Edison Tremont 345 kV substation. The existing Tremont 345 kV substation is to be expanded to accommodate the interconnection of the new circuit.

- A new Shore Road 345 kV substation with a 345/138 kV transformer in series with a 138 kV PAR to connect to the existing LIPA Shore Road 138 kV substation.

- Two single underground and submarine 345 kV tie lines, each with a PAR, from the new Shore Road 345 kV substation interconnected to the existing Con Edison Sprain Brook 345 kV substation with a new transition station at New Rochelle. The existing Sprain Brook 345 kV substation is to be expanded to accommodate the interconnection of new circuits.

- An underground 345 kV line from the new Shore Road 345 kV substation to the to-be-modified NYPA East Garden City 345 kV substation.

- A new Ruland Road 345 kV substation with three 345/138 kV transformers to connect to the existing LIPA Ruland Road 138 kV substation.

- An underground 345 kV line from the new Ruland Road 345 kV substation to the new Shore Road 345 kV substation.

- An underground 345 kV line from the NYPA East Garden City 345 kV substation to the proposed Barrett 345 kV substation.

- An underground 138 kV line with a PAR from the existing LIPA Syosset 138 kV substation to the existing Shore Road 138 kV substation.

Q 12. WHAT IS THE COST ESTIMATE OF THE PROJECT?

A 12. The cost estimate for the Project that Transco and NYPA included in the project submission, which includes the estimated costs of interconnection facilities that will be identified through the transmission interconnection process in Attachment P of the OATT, is $2.7 billion. This estimate does not include the costs of upgrades to be implemented by the incumbent transmission owners.

V. Project Risks and Challenges

Q 13. WHAT ARE THE RISKS AND CHALLENGES ASSOCIATED WITH THE PROJECT?

A 13. The Project development area is one of the most densely populated areas in the country. The Project area includes two counties in New York City (Queens and the Bronx), densely populated residential and commercial areas in Nassau and Suffolk Counties on Long Island and in Westchester County, north of New York City. The Project requires roughly 88 miles of excavation work necessary to install a total of nearly 304 circuit miles of three-phase transmission cable, and substation work in one of the most highly congested areas in the country. To get a sense of the scale of the Project, according to the NYISO Gold Book, there are currently 241 circuit miles of underground 345 kV electric transmission cable in the state of New York.[2] With the Propel NY Energy Project, Transco seeks to construct nearly 230 circuit miles of new 345 kV electric transmission, almost doubling the amount of underground transmission facilities in the State. Construction of underground transmission in dense urban areas, in addition to submarine transmission, is far more

[2] NYISO Gold Book, Table VI-2, p. 138. Available at: https://www.nyiso.com/documents/20142/2226333/2022-Gold-Book-Final-Public.pdf.

complicated than installing overhead transmission in any setting. First of all, obtaining all the necessary permits and approvals will be very challenging, as I describe below. More than just the permitting challenges, however, the size and scope of the Project and its location in dense urban areas involves many additional development challenges involving staging of project equipment and materials, skilled labor needs, daily street closures throughout the estimated four-year construction period, existing utility interference and potential relocation, and other complicated logistical items. The location of the Project, as well as its complexity being almost completely underground and submarine (other than the new substation work), differentiates this Project from many other recent transmission development projects. Mr. Cole-Hatchard, Jr. provides greater detail on the pure construction risks associated with the Project development in his testimony. I will focus on other significant development risks and challenges associated with the Project.

Q 14. PLEASE ELABORATE ON THE DEVELOPMENT RISKS AND CHALLENGES.

A 14. The Project involves roughly 88 miles of excavation to install new underground and submarine transmission cables, all within a highly congested commercial and residential areas in New York City and its surrounding suburbs. While the study area has been defined, the actual Project route has not yet been finalized. That is in part because the Project location is in such a highly congested area and will require further evaluation from stakeholders and communities and the NYPSC through its Public Service Law ("PSL") Article VII siting process to determine which streets are the most suitable to route the transmission cable given the timeframe under which Transco can actually perform the work, the need for potential utility outages, limitations on heavy equipment clearances,

currently unknown subterranean obstacles, and other complicated route considerations. As part of this evaluation and process, Transco may need to determine alternative routes for the Project, which could result in the need to identify new staging areas, passable access roads, utility crossings, etc. The risk for delays in settling on the final routing is heightened for this Project, and even a small delay threatens Project completion by the required in-service date and could certainly result in an increase in Project costs.

In addition, the Project requires two major water crossings, one will cross the Long Island Sound in Glenwood Landing, near Hempstead, to connect in New Rochelle, and the other will cross the East River from Queens into the Bronx. It is anticipated that coordination, review, and approvals for the water crossings will be required from at least the U.S. Army Corps of Engineers and the United States Coast Guard.

The Project will also require certain parkland alienation, which requires State legislative and gubernatorial approval and is described further below, to site portions of the Project.

Transco's development schedule is extremely tight with a May 2030 required in-service date. Delays in obtaining the above permits and approvals or any other deviation to the Project schedule jeopardizes Transco's ability to meet that date and construct the Project within the estimated costs.

Q 15. WHAT REGULATORY APPROVALS AND PERMITS ARE NEEDED TO PROCEED WITH PROJECT DEVELOPMENT?

A 15. Because the Project route is not finalized, Transco is still determining the regulatory requirements and required permits and approvals that will be necessary, but the following agencies will likely have a certain level of involvement in reviewing the Project. The

number of agencies and type of review identified below plainly demonstrates the permitting risk anticipated for the Project:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- New York State Office of Parks, Recreation & Historic Preservation
- U.S. Environmental Protection Agency
- U.S. Coast Guard
- National Park Service
- Federal Aviation Administration
- New York State Public Service Commission
- New York State Department of Transportation
- New York State Department of Environmental Conservation
- New York State Department of State
- Long Island Rail Road
- Metro North Railroad

A preliminary breakdown of the permits required for the Project is included as Exhibit No. TRANSCO-202.

Q 16. WHAT ARE THE OBSTACLES TO ACQUIRE THESE PERMITS AND APPROVALS?

A 16. There are many obstacles to obtain those permits and approvals. Because of where the Project is located, Transco anticipates significant stakeholder participation in each of its permit application proceedings, including the NYPSC Article VII siting proceeding. I am

aware that certain offshore wind ("OSW") developers have experienced significant opposition in their permitting efforts on Long Island. While the Project is separate from those OSW proposals, that opposition may see an opportunity to try to thwart the OSW development by delaying the Project.

Further, and as a fundamental matter, the number of permits and reviewing agencies complicates the process and the timing for Project development. Transco and NYPA will have to coordinate with multiple state, local, and federal agencies and apply for several permits at the same time in order to meet the tight development time frames set for the Project. While Transco may be able to manage short permitting delays through construction sequencing, the fact is that Transco will need all necessary permits and approvals at effectively the same time to facilitate procurement, timely delivery of materials, and hiring of work crews to complete the Project as planned.

Q 17. ARE THERE ADDITIONAL OBSTACLES TO OBTAINING THESE PERMITS AND APPROVALS?

A 17. Yes. The preferred project route will touch, in some fashion, eight different parkland areas controlled by a variety of different local governments. It would be extremely difficult to find an alternative to the parkland areas as land acquisition would be nearly impossible because of the commercial development in the area and shoreline limitations. In order to utilize the parkland, the Project must secure local approval and enactment of a series of bills known as parkland alienation legislation into law. The fact is, if Transco is unable to obtain the use of all eight parkland areas in a timely fashion, Transco will not be able to meet the required in-service date and may not be able to go forward with the Project at all.

Q 18. WHAT IS PARKLAND ALIENATION?

A 18. In New York, parkland alienation occurs whenever a local government wishes to grant easements upon, sell, lease or discontinue the use of municipal parkland. Parkland alienation applies to every park in New York State. In order to convey parkland to a non-public entity, the municipality must receive prior authorization from the State of New York in the form of legislation approved by both houses of the State Legislature and enacted into law by the Governor.

Q 19. WHY DOES NEW YORK PLACE THESE RESTRICTIONS ON PARKLAND?

A 19. State law considers public parkland to be held in trust for the benefit of the people of the State of New York. Local governments may view parkland to be a tempting resource to sell or lease or raise money. That is why so many levels of approvals must be secured to ensure that the interests of the citizenry and residents to enjoy green space and recreational opportunities is not sacrificed for private gain, and to require use to be returned to the public to the maximum extent possible after construction.

Q 20. DO YOU KNOW WHICH PARKS WILL REQUIRE ALIENATION LEGISLATION?

A 20. Yes, certain parkland known as Alley Pond Park, Francis Lewis Park, and Ferry Point Park, all located in the City of New York; the City of New Rochelle's Hudson Park & Beach; as well as Chester Heights Park and Parkway Oval (including Malcolm Wilson County Park), both located in the Town of Eastchester; and the Bronx River Parkway Reservation owned by the County of Westchester are anticipated to be necessary in connection with the Project.

Q 21. PLEASE ELABORATE ON THE PARKLAND ALIENATION PROCESS.

A 21. The alienation of each such parkland requires approval from, at a minimum, the local legislative authority with jurisdiction over the parkland and the New York State Legislature. The foregoing process is summarized at a high-level as follows:

1. The effected local government determines if State or Federal funding has been allocated to the effected parkland.
2. The effected local government completes and submits the requisite Parkland Alienation Municipal Information Form.
3. The effected local government undertakes an environmental impact review prior to voting on a Municipal Home Rule request for a State Legislature alienation bill.
4. The legislature of the effected local government approves a Municipal Home Rule sponsored by the local legislator/councilperson requesting that the State Legislature adopt legislation authorizing the proposed alienation.
5. The State Legislature processes the Municipal Home Rule request from the legislature of the effected local government.
6. The State Legislature passes the alienation bill sponsored by the Assembly and Senate representatives for each respective parkland affected.
7. Bill is enacted into law by executive (Gubernatorial) action, allowing the local government to convey, sell, or lease municipal parkland by local legislative action.

Q 22. ARE THERE ANY OTHER COMPONENTS TO PARKLAND ALIENATION TO CONSIDER?

A 22. Yes. In certain circumstances, a federal parkland conversion process is also required where the parkland has previously received federal funding assistance for either its establishment or for the construction and installment of improvements within the parkland, which appears to be the case for, at least, Alley Pond Park. Such process requires the following additional steps:

1. Completing an environmental impact assessment review and submitting the necessary documentation to the U.S. National Park Service ("NPS") pursuant to National Environmental Policy Act of 1969, 42 USC § 4321 et seq.
2. Determining the effect of the conversion on historic resources pursuant to the National Historic Preservation Act coordinated by the effected local government with the New York State Historic Preservation Office.
3. Selecting replacement lands and submitting appraisals of that replacement land.
4. Ensuring the replacement land and remaining land meet eligibility requirements.
5. Coordinating review with other federal agencies per 36 CFR § 59.3 (b) (6).
6. Preparing survey maps.
7. Submitting package to the New York State Office of Parks, Recreation and Historic Preservation ("OPRHP").
8. OPRHP submitting the package to the NPS.
9. NPS reviewing the documentation and issuing a final decision.

Q 23. CAN THIS PROCESS BE CONSIDERED RISKY?

A 23. Yes, the process is risky for a number of reasons. First, it takes a significant amount of time to accomplish. At an expedited rate, the processes detailed earlier in my testimony will take at least 18 - 24 months to accomplish. The State Legislature generally meets between January and June of each year. If you miss that cycle, you must wait until the following year to seek approval. This delay is exacerbated by the fact that the local approvals that Transco expects to receive may expire and must be re-secured if the Legislature does not act on Transco's requested legislation within their session year. This prolonged timeframe provides a multitude of opportunities for Project opponents to challenge the process through litigation or public pressure campaigns.

Second, in New York, local and state elected officials stand for election every two to four years, with some positions being term limited. An official that supports the Project may be replaced by an opponent who does not support the Project in the same way. Because there are eight locations, there are multiple legislators whose support must be secured. Importantly, there are environmental reviews and other discretionary actions that may be challenged through the courts that may delay or jeopardize the success of the Project.

Further, the Governor of New York could ultimately veto any legislation passed by the Legislature. This risk is more than just theoretical – just recently, Governor Hochul vetoed a bill that included language that would authorize the alienation of parkland in Long Beach, Nassau County for the development of an offshore wind facility. While the Governor vetoed the bill primarily for reasons related to the potential confusion with existing Accelerated Renewable Energy Growth and Community Benefit Act requirements

that would result if the proposed amendments to the Public Authorities Law were enacted, Governor Hochul specifically identified the parkland alienation provisions included in the bill and the local community's opposition as a justification for the veto. Governor Hochul stated that "it is incumbent on renewable energy developers to cultivate and maintain strong ties to their host communities throughout the planning, siting, and operation of all large-scale projects."[3] Transco and NYPA began the process of community outreach well before the Project was selected in June 2023 and, as discussed below, plan to engage all affected communities throughout the development process to minimize this risk as much as possible.

Q 24. DOES THE FACT THAT THERE ARE EIGHT PARKLAND LOCATIONS MAKE THIS PROCESS PARTICULARLY DIFFICULT?

A 24. Yes. We expect to need seven individual legislative approvals for the eight parkland locations. The failure to secure one approval in the necessary timeframe could delay the entire Project. Moreover, the Project could secure alienation approval for all necessary parcels, but then fail to secure approval for the federal conversion. An enormous number of resources such as surveys, appraisals, environmental reports, lease fees, counsel fees, and professional planning support must be retained to establish the record necessary to secure these approvals. Any delay in obtaining these approvals can be expected to increase costs in the development of the Project.

Q 25. DOES TRANSCO ANTICIPATE SIGNIFICANT STAKEHOLDER INVOLVEMENT IN ITS EFFORT TO DEVELOP THE PROJECT?

[3] *See*, Veto #37, Letter to the Senate, (October 20, 2023).

A 25. Transco certainly expects significant stakeholder involvement in siting the Project because the proposed route includes both commercial and residential areas that may unavoidably affect current daily routines and access during construction and restoration. Given the Project's geographic scope, Transco anticipates a wide variety of stakeholder groups actively participating in siting efforts in different segments of the Project.

Q 26. WILL THE PROJECT TRAVERSE ENVIRONMENTAL JUSTICE COMMUNITIES?

A 26. The Project will traverse four identified disadvantaged communities,[4] including New Rochelle in Westchester County, Hempstead and Rockville Center in Nassau County, and Bronx County in New York City. In determining the best route for the Project, Transco and NYPA reviewed maps of environmental justice ("EJ") communities in the area and reduced impacts the Project would have on EJ communities to the greatest extent possible. Although Transco sought to reduce impact on these communities, given the Project's linear nature, certain development within certain EJ communities is unavoidable. This Project element could also result in siting delays.

While other state agencies will be reviewing the Project's environmental impacts, Transco and NYPA are committed to early, frequent, and inclusive communication with stakeholders, including EJ communities. Transco expects to leverage NYPA's Environmental Justice team, through which we have begun engaging labor, advocates, organizations, and elected officials who represent all of the neighborhoods along the route.

[4] *See* https://www.nyserda.ny.gov/ny/Disadvantaged-Communities

Transco's goal is full engagement and involvement of communities that will build trust and address environmental, economic, and social impacts and opportunities.

Q 27. HOW LONG WILL PROJECT CONSTRUCTION TAKE?

A 27. The Project has a required in-service date of May 2030. Construction is expected to take four years, from April 2026 through May 2030. Of course, construction will not happen everywhere at once, but we do expect multiple instances of simultaneous construction activity.

Q 28. WHAT ARE THE RISKS ASSOCIATED WITH CONSTRUCTING A LARGE TRANSMISSION PROJECT OVER THIS PERIOD OF TIME?

A 28. Mr. Cole-Hatchard, Jr. describes the specific construction risks associated with the Project in his testimony. However, the long development time for Project completion and the potential for delays in the development schedule introduces additional complexities. The procurement of necessary materials is expected to take several years to manufacture and deliver. If the material is not delivered when Transco is ready to install, the entire Project could be delayed. Conversely, if the material is delivered before Transco is ready, there is very limited space to store the material. While we are currently planning for the need to store equipment and material if manufacturing limitations result in delivery before installation, the uncertainty adds risk and cost to the Project.

Q 29. ARE THERE ADDITIONAL RISKS THAT TRANSCO WILL FACE IN CONSTRUCTING THE PROJECT?

A 29. Yes. Current economic conditions and inflationary risks are real risks in the development of the Project. Mr. Tsoukalis provides a description of additional risks that Transco will encounter in his expert testimony.

Q 30. HAS TRANSCO TAKEN ANY STEPS BEYOND REQUESTING RISK-REDUCING INCENTIVES TO MINIMIZE THE VARIOUS RISKS ASSOCIATED WITH THE PROPEL NY ENERGY PROJECT?

A 30. Yes. Transco has begun to engage with local stakeholder and community groups to explain the Project, the need for the Project, and to develop construction plans that will result in the least amount of disruption. In addition, Transco has started the process of obtaining material procurement contracts and plans to enter into multiple contracts to manage risk by relying on multiple suppliers. Mr. Cole-Hatchard, Jr. describes the supplier risk and the fact that there are very limited viable suppliers for the necessary equipment and transport options in his testimony.

Further, as I describe more fully below, in the development of the Project proposal itself, Transco and NYPA attempted to identify aspects of the Project that would mitigate, as much as possible, risks that both developers knew would be present no matter what solution any developer proposed given the PPTN scope and construction area. The NYISO recognized this effort in its comparative analysis of project proposals and in the selection report.

VI. Overview of Project Benefits

Q 31. WHAT SYSTEM CONDITIONS IS THE PROJECT DESIGNED TO ADDRESS?

A 31. Earlier in my testimony, I discussed the NYPSC's identified PPTN, which formed the basis of the "need" for the transmission solutions Transco created. As part of its ensuing Public Policy Transmission Planning Process ("PPTPP"), the NYISO performs a Viability & Sufficiency Assessment ("VSA") for each project proposal submitted in response to the NYISO project solicitation to satisfy the NYPSC-identified need. In advance of project

submissions, the NYISO establishes sufficiency criteria and develops baseline models and associated power flow results to aid interested developers in the development of project proposals. Transco formulated its project proposals to meet, at a minimum, the following sufficiency criteria that the NYISO established:

- Ensure full output of at least 3,000 MW of OSW 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 OSW 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 ("NYCA").

- Additional transmission expansion or upgrades, as necessary, to facilitate the full output of at least 3,000 MW of Long Island OSW under summer peak and light load conditions.

The Project was specifically designed to address these sufficiency criteria and maintain reliability of the NYCA system and reduce the instances of congestion that were expected to occur when the OSW facilities were built.

Q 32. DID NYISO DETERMINE THAT THE PROJECT WAS VIABLE AND SUFFICIENT TO MEET THE PPTN?

A 32. Yes. NYISO determined that 16 of the original 19 project proposals were viable and sufficient to meet the PPTN. I have included the Long Island Offshore Wind Export Public Policy Transmission Need Viability & Sufficiency Assessment as Exhibit No. TRANSCO-203.

Q 33. HOW DID THE NYISO DETERMINE THE MORE EFFICIENT OR COST EFFECTIVE SOLUTION?

A 33. Once the NYISO completed the VSA, it evaluated the remaining project proposals for purposes of selecting the more efficient or cost effective solution eligible for cost allocation and cost recovery under the NYISO OATT. This selection process is designed to rank the project proposals based on their satisfaction of the selection criteria, or metrics, included in the NYISO OATT and the NYPSC PPTN Order. As outlined in Appendix A of the Long Island Offshore Wind Export Public Policy Transmission Need Viability & Sufficiency Assessment (Exh. No. TRANSCO-203), the NYISO applied the following criteria for selection:

- Per Section 31.4.8.1 of Attachment Y to the NYISO OATT, NYISO considered 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 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-Marginal Prices; transmission losses; emissions; Installed Capacity costs; Transmission Congestion Contract revenues; transmission congestion; impacts on transfer limits; and, resource deliverability.

Q 34. WHAT WAS THE RESULT OF THE NYISO EVALUATION?

A 34. NYISO determined that the Project was the more efficient or cost effective solution to the PPTN.

Q 35. ON WHAT DID NYISO BASE THIS DETERMINATION?

A 35. The NYISO determined that the Project is the more efficient or cost effective solution that offers transfer capability, expandability, and operability benefits from three new AC tie lines from Long Island to the rest of the state. The Project adds a strong 345 kV backbone to the Long Island transmission system that not only allows the transfer of OSW power but also will help serve Long Island load with the future generation changes needed to meet the CLCPA. The NYISO determined that the Project will help reduce congestion and serve Long Island load as the generation mix continues to change in response to public policies identified by New York State, all in an efficient and cost-effective manner. Specifically, in terms of benefits, NYISO reviewed the transfer capability and cost per megawatt ratios, the expandability, the operability and resiliency, the production cost benefits and performance, and the capacity benefits of the proposed projects. In the Long Island Offshore Wind Export Public Policy Transmission Planning Report (Exh. No. TRANSCO-104 sponsored by Mr. Mullin), the NYISO ranked the Project first, stating that it "adds three new AC tie lines and additional facilities across Long Island that create significant transfer capability for imports and exports between Long Island and the rest of the [New York Control Area]. The additional facilities within Long Island will effectuate the efficient transfer of power in the future, providing optionality for resource planning and expansion. With the new facilities, the project provides 1) effective operability under a variety of outage conditions, 2) low cost per MW for transfer capability, expandability, and

operating range, and 3) lower project cost and risks than larger projects. The project also provides consistent economic benefits across various future scenarios." The Long Island Offshore Wind Export Public Policy Transmission Plan describes in detail the Project benefits.

Q 36. DID NYISO ALSO UNDERTAKE A RISK ANALYSIS AS PART OF ITS SELECTION CRITERIA?

A 36. Yes, the NYISO conducted a comparative risk assessment that focused on each project proposal's design, constructability, schedule, property rights and land requirements, resiliency of the proposed substations, as well as potential environmental issues and associated delays in obtaining permits for construction and potential construction delays due to design and permitting requirements.

Q 37. WHAT DID NYISO DETERMINE?

A 37. The NYISO determined that, as compared to the other proposed solutions, the Project had relatively low procurement, permitting, and construction risks, reducing the potential for increases to project cost and schedule.

Q 38. DOES THAT MEAN THAT THE PROJECT HAS LITTLE RISK?

A 38. No. Far from it. I have outlined the significant risks and challenges Transco anticipates encountering in developing the Project, and Mr. Cole-Hatchard, Jr. outlines the significant construction risks. The NYISO's assessment was simply relative to the other proposed solutions. The fact is that there is no "easy" or low-risk solution to the PPTN. Indeed, the project submissions bear this out – the estimated project cost ranged from over $2 billion on the low end to nearly $17 billion on the high end, averaging $7.1 billion. The Project itself has a $2.7 billion estimate (including interconnection cost estimates), new substation

construction, and 88 miles of excavation to install 304 circuit miles of new underground and submarine electric transmission cable within one of the most densely populated areas of the country. The relevance NYISO's risk determination has to this subject is that the Project was designed to mitigate substantial development risks as best as can be expected given the complexities of the development requirements. In fact, even the NYISO recognized that "submarine landing and transition locations are a higher risk" and "[g]iven the complexity of the proposed projects, detailed design and permitting processes may identify additional risks and issues impacting cost and schedule of the projects." Exh. No. TRANSCO-104 at 79.

VII. Support for ROE Risk Adder

Q 39. IS TRANSCO REQUESTING INCENTIVE RATE TREATMENTS FOR ITS INVESTMENT IN THE PROJECT?

A 39. Yes, Transco is requesting inclusion of 100% of construction work in progress ("CWIP") in rate base during the development and construction phase of the Project, the right to recover prudently-incurred investment in the Project in the event the Project must be abandoned for reasons outside Transco's reasonable control, a 50 basis point adder to its base ROE value for regional transmission organization ("RTO") participation, and a 150 basis point adder to its base ROE value to compensate for the significant risks and challenges associated with the development of the Project and in recognition of its significant benefits.

Q 40. DOES TRANSCO QUALIFY FOR THE TRANSMISSION RATE INCENTIVES REQUESTED HERE?

A 40. Yes. Mr. Mullin fully addresses this question in his testimony. In its evaluation of the project submissions, NYISO considered and evaluated the Project for both reliability and its anticipated reduction in congestion on the NYCA system.

Q 41. HAS TRANSCO NARROWLY TAILORED ITS REQUEST TO ADDRESS THE DEMONSTRABLE RISKS AND CHALLENGES DISCUSSED BY YOU ABOVE?

A 41. Yes. As I mentioned, Transco attempted to reduce the risks and challenges associated with such a complex project as much as possible in the development of the solution (*i.e.*, the Project). The incentive rate treatments Transco is requesting here are necessary to further mitigate the demonstrable risks and challenges described by me and the other witnesses. While the other witnesses address each of the incentive rate treatments Transco is requesting, I would add that the Risks and Challenges Adder is appropriate given the Project's size and scope and the significant risks and challenges Transco will face in developing the Project.

Q 42. HOW WILL THE RISKS AND CHALLENGES ADDER REDUCE THE RISKS AND CHALLENGES ASSOCIATED WITH THE PROJECT?

A 42. The Risks and Challenges Adder provides financial security for the risks and challenges that are not accounted for in the base ROE and cannot be addressed by other incentives. As an initial matter, the need determination by the NYPSC is tailored to unlock location-constrained offshore wind generation resources and alleviate the expected congestion on Long Island if that generation interconnects to the grid without upgrades. In addition, the project creates a 345 kV transmission backbone on Long Island, and the three additional 345 kV transmission ties from Long Island to New York City and Westchester County greatly improve the transfer capability onto Long Island. This additional transfer capability

provides greater resiliency and reliability to Long Island by reducing the amount of generation needed to be sited there.

Further, as explained by Mr. Mullin, Transco's financial responsibility for the Project will be no less than 70% of the $2.7 billion cost estimate, in accordance with the development arrangement with NYPA. For current planning purposes, Transco assumes its capital contribution will be $2.2 billion. Transco currently has roughly $800,000,000 in current transmission assets – the Project capital expenditure is twice, and could be up to nearly three times Transco's current asset structure, placing significant risk on Transco's ability to obtain adequate financing for the Project. Moreover, Transco and NYPA agreed to a cost containment mechanism that would result in both having to forego cost recovery of their respective share of 20% of any cost overruns for NYISO-defined Included Capital Costs above the estimate included with the Project proposal (plus a 2% escalation factor). The risks and challenges described here and in the accompanying testimonies may result in project development delays and increasing costs. Without an ROE reflective of these challenges, Transco may face financial difficulties such as cash flow interruptions, lower credit ratings, or other financial implications that could diminish Transco's ability to invest in this Project and future projects.

Q 43. DOES THIS CONCLUDE YOUR TESTIMONY?

A 43. Yes.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

New York Transco, LLC	**)**	**Docket No. ER24-____-000**

AFFIDAVIT OF PAUL HAERING

Pursuant to 28 U.S.C. § 1746, I, Paul Haering, under penalty of perjury, state under oath that the information contained in the foregoing "Prepared Direct Testimony of Paul Haering" on behalf of New York Transco, LLC is true, correct, accurate, and complete to the best of my knowledge and belief.

Executed this 16th day of October 2023

Paul Haering

Paul Haering

Exhibit No. TRANSCO-201

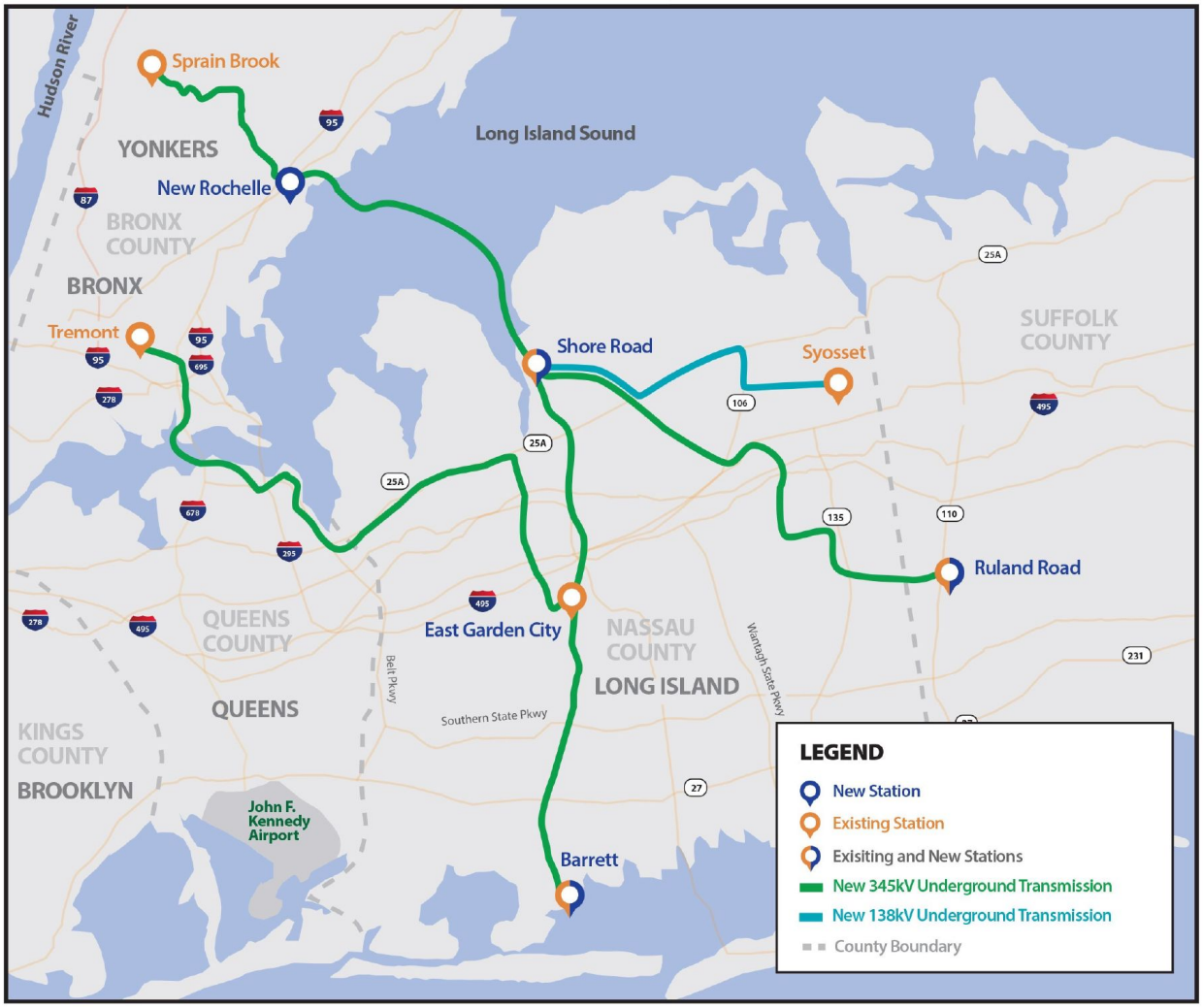

Hudson River
Sprain Brook
YONKERS
New Rochelle
Long Island Sound
BRONX COUNTY
BRONX
Tremont
Shore Road
Syosset
SUFFOLK COUNTY
Ruland Road
East Garden City
NASSAU COUNTY
LONG ISLAND
QUEENS COUNTY
QUEENS
KINGS COUNTY
BROOKLYN
John F. Kennedy Airport
Barrett
Belt Pkwy
Southern State Pkwy
Wantagh State Pkwy
LEGEND
New Station
Existing Station
Exisiting and New Stations
New 345kV Underground Transmission
New 138kV Underground Transmission
County Boundary

Exhibit No. TRANSCO-202

Long Island Offshore Wind Export PPTN

Long Island Offshore Wind Export PPTN

Propel New York Energy Solution

Appendix D PNYE Preliminary Permit Matrix

May 31, 2023

Item #	Permit/Clearance	Agency	Contact	Purpose	Requirements	Typical Approval Time Frame	Comments
Federal							
1	Jurisdictional Determination	U.S. Army Corps of Engineers (USACE)	US Army Corps of Engineers, NY District Attn: Regulatory Branch, Room 1937 26 Federal Plaza New York, NY 10278-0090 Tel. (917) 790-8511	Required to determine boundary and jurisdiction of wetlands in project area	A wetland delineation must be completed in accordance with the 1987 Corps of Engineers Wetland Delineation Manual and supplemental guidance.	60 to 120 days	
2	Nationwide Permit #57 or an Individual Permit	U.S. Army Corps of Engineers (USACE)	US Army Corps of Engineers, NY District Attn: Regulatory Branch, Room 1937 26 Federal Plaza New York, NY 10278-0090 Tel. (917) 790-8511	Required for the construction, maintenance, repair and removal of utility lines and associated facilities in waters of the U.S., provided the activity does not result in the loss of more than one-half acre of waters of the U.S., including wetlands.	Applicant must complete the Joint Application Form, including a detailed description of the proposed project. Other submittal requirements include a USGS location map, a sketch plan view or project cross-section or engineering drawings, and project photographs showing delineated wetlands.	60 to 90 days OR 12 to 18 months	As part of their review of a permit application, the USACE is required to comply with the Endangered Species Act and Section 106 of the National Historical Preservation Act, which requires consultation with the USFWS and SHPO. It is likely an individual permit will be required.
3	Section 106 - National Historic Preservation Act Compliance	NY State Office of Parks, Recreation & Historic Preservation (OPRHP)	NYS Division for Historic Preservation NYS Office of Parks, Recreation & Historic Preservation Peebles Island State Park P.O. Box 189 Waterford, NY 12188-0189	Required when an activity could affect cultural and historic properties or if the project requires the issuance of a federal or NYSDEC permit	The applicant must complete a Phase IA literature review and file search to determine the presence of known historic architectural and archaeological resources within one mile of the proposed project corridor and substation sites. Depending on the presence of historic sites, the OPRHP may recommend a Phase IB archaeological field survey. If requested by OPRHP: Archaeological Survey Historic Resources Survey If effect determined, then: Mitigation Plan Memorandum of Agreement (MOA)	The OPRHP typically provides comments within 30 days of each submittal. 6-12 months, depending on SHPO review and any subsequent requests for additional information or studies. Work plan and impact avoidance measures to be integrated in the EM&CP.	
4	Native American Tribal Groups Consultation	To be confirmed by SHPO	To be confirmed by SHPO	National Historic Preservation Act of 1966, 16 U.S.C. et seq., § 106	Varies	Varies	

Item #	Permit/Clearance	Agency	Contact	Purpose	Requirements	Typical Approval Time Frame	Comments
5	Section 7 T&E Species Consultation	U.S. Fish and Wildlife Service (USFWS) NOAA Fisheries	New York Field Office 3817 Luker Road Cortland, NY 13045 Phone: (607) 753-9334 Fax: (607) 753-9699 Email: FW5ES_NYFO@fws.gov National Oceanic and Atmospheric Administration (NOAA Fisheries) – National Marine Fisheries Service (NMFS) Greater Atlantic Regional Fisheries Office National Marine Fisheries Service 55 Great Republic Drive Gloucester, MA 01930 Phone: (978) 281-9300	Federal agencies must consult with the U.S. Fish and Wildlife Service (Service) when any action the agency carries out, funds, or authorizes (such as through a permit) may affect a listed endangered or threatened species.	This process usually begins as informal consultation. Additional surveys may be required as determined through formal consultation with the agencies. Consultation regarding endangered and protected species under NMFS jurisdiction, development of an Essential Fish Habitat Assessment. If species-specific survey identifies that the project is likely to adversely affect T&E species, project may require submission of an application for an Incidental Take Permit (ITP). If so, requires preparation of a Habitat Conservation Plan (HCP).	Varies. Work plan and impact avoidance measures to be integrated in the EM&CP, if necessary.	Occurs during USACE NWP 57 or Individual Permit process
6	Migratory Bird Treaty Act (MBTA) and Bald and Golden Eagle Protection Act (BGEPA) Compliance	U.S. Fish and Wildlife Service (USFWS), Branch of Migratory Bird Surveys	Northeast Region 300 Westgate Center Dr. Hadley, MA 01035	Required for any activity which may impact migratory birds, their nests, and especially threatened or endangered species	The USFWS will determine the level of effort needed for the project to proceed (e.g., stick nest survey, Phase I or II avian studies, etc.).	Typically 30 to 45 days for initial consultation; additional 30 to 45 days for the USFWS to review and comment on the field investigation report	
7	National Pollutant Discharge Elimination System	United States Environmental Protection Agency (USEPA)		Controls water pollution by regulating point sources that discharge pollutants into waters of the United States	See application submittal requirements for Item 13.	See Item #13	New York State is an authorized state to administer NPDES permits.
8	Notice to Mariners	United States Coast Guard (USCG)	First Coast Guard District 408 Atlantic Avenue Boston, MA 02110-3350 Phone: (617) 223-8356 Email:D1LNM@USCG.mil	Reports changes to and deficiencies in aids to navigation that are established or maintained and operated by or under the authority of the Coast Guard, and any other information pertaining to the waterways within each Coast Guard district that is of interest to the mariner. Also, intended to advise mariners of new hydrographic discoveries, changes in channels and navigational aids, and information concerning the safety of navigation.	Requests for a Local Notice to Mariners should be emailed to the appropriate USCG District Office. The Local Notice to Mariners is available by selecting the "LNMs" tab at https://www.navcen.uscg.gov	Submit 30-35 days before applicable activities in navigable waters.	

Item #	Permit/Clearance	Agency	Contact	Purpose	Requirements	Typical Approval Time Frame	Comments
9	National Park Service Right-of-Way Permit and Temporary Construction Permit	National Park Service (NPS)	NPS Supervisor who has responsibility for the NPS land	A ROW permit is necessary any time you want to build or install a utility on NPS lands.	Complete the permit application and submit application fee. A pre-application meeting with a park superintendent will need to be held.	Minimum of 6 months	Do not anticipate this permit will be applicable to The Solution.
10	Federal Aviation Administration (FAA) Hazard Determination	Federal Aviation Administration	Federal Aviation Administration Southwest Regional Office Obstruction Evaluation Group 10101 Hillwood Parkway Fort Worth, TX 76177 Fax: (817) 222-5920	Required if structures or construction equipment including cranes will exceed 200 feet in height or if proposed structures are located within the FAA specified distance to height ratio from an FAA regulated airport runway	The applicant must submit a Notice of Proposed Construction or Alteration that includes the heights and coordinates of each transmission line tower located within 200,000 feet of the airport runway, site elevations at each transmission line tower, and height of construction equipment and approximate construction start and end dates.	3 months	
State							
11	Revocable Consent	NYSDOT	NYSDOT Regional Permit Office Region 10 Veteran's Highway Hauppauge, NY 11787-5518 Tel. (631) 952-6020	Grants the right to construct and maintain certain structure on, over, or under New York City streets and sidewalks	Petition for consent to design, install, construct, maintain, use, operate, repair, replace, inspect, access, excavate, protect breakthrough, deactivate, alter or remove the underground portion of the PNYE solution under NYC city streets. Annual payment will be determined at the time the consent is granted for 10 years.	Varies	
12	Article VII Approval (NY State Public Service Law)	NY State Public Service Commission	NY State Public Service Commission Office of Electric, Gas and Water Agency Bldg. 3, Empire State Plaza Albany, NY 12223	Required for major electric transmission facilities, including transmission lines with a design capacity of 100 kV or more extending for at least 10 miles, or 125 kV and over, extending a distance of one mile or more.	The Article VII application must include project site information, an environmental impact analysis, project need, and a description of reasonable alternate route(s).	30 days to determine completeness; 60 to 90 days for public hearings; Issuance of CECPN ~12 months	When an Article VII review is undertaken, the PSC oversees the SEQRA review process.
13	Environmental Management and Construction Plan	NY State Public Service Commission	NY State Public Service Commission Office of Electric, Gas and Water Agency Bldg. 3, Empire State Plaza Albany, NY 12223	Required for approval prior to construction	Narrative description, plan and profile drawings and any other pertinent environmental information (such as SWPPP and traffic control plans) packaged in one comprehensive document	6 months	
14	Section 401 Water Quality Certification (WQC)	NYSDEC	NYSDEC Division of Environmental Permits625 Broadway Albany, NY 12233-1750 Tel. (518) 402-9167	Required prior to undertaking activities that will result in a discharge to waters of the United States	The Article VII application satisfies the application need.	WQC request is submitted with Article VII application and will be issued by the PSC in parallel with the CECPN	

Item #	Permit/Clearance	Agency	Contact	Purpose	Requirements	Typical Approval Time Frame	Comments
15	Freshwater Wetlands Permit Tidal Wetland Permit Article 15 Protection of waters Permit	NYSDEC Division of Environmental Permits, and the Bureau of Energy Policy Management	NYSDEC Division of Environmental Permits 625 Broadway Albany, NY 12233-1750 Tel. (518) 402-9167	Required prior to the placement of fill, excavation, or grading in a designated NYSDEC freshwater or tidal wetland or its adjacent area. Required prior to construction within regulated waterways and streams.	The Article VII application satisfies the application need.	Approvals will be issued by the PSC in parallel with the CECPN. Work plan and impact avoidance measures to be integrated in the EM&CP.	A public utility project that will require clearing in a new right-of-way will likely be classified as a major project.
16	Coastal Zone Consistency Review Local Waterfront Revitalization Plans	NYSDOS - New York State Department of State	NYSDOS One Commerce Plaza, 99 Washington Ave., Albany NY 12231	The "consistency" of a proposed activity with the NYS CMP and any Local Waterfront Revitalization Plans is determined through a set of coastal policies and procedures designed to enable appropriate economic development while advancing the protection and preservation of ecological, cultural, historic, recreational, and esthetic values.	A copy of all federal application materials should be submitted to the Department of State at the same time they are sent to the federal permitting agency. The applicant certifies to the federal agency and the Department of State that the project complies and is consistent with the New York State Coastal Management Program and any Local Waterfront Programs. No federal agency can issue a permit for a project affecting New York's coastal area until the Department concurs with the consistency certification.	30 to 60 days	
17	NYS Agriculture & Markets Law, § 305(4) NYS Soil and Water Conservation/Soil and Water Districts		NYS Department of Agriculture & Markets (NYSDAM) 10B Airline Drive Albany, NY 12235	Proposed construction of non-agricultural structures within a designated agricultural district requires that a Notice of Intent be filed with NYS Department of Agriculture & Markets.	To be coordinated with the Article VII process.	To be coordinated with the Article VII process.	Do not anticipate extensive consultations as there are no Agricultural resources within The Solution
18	Coastal Erosion Management Permit	NYSDEC, Division of Water Bureau of Flood Protection and Dam Safety	NYSDEC Division of Water Bureau of Flood Protection and Dam Safety 625 Broadway Albany, NY 12233-3504	Required prior to undertaking a regulated activity within a designated coastal erosion hazard area	The Article VII application satisfies the application need.	Approvals will be issued by the PSC in parallel with the CECPN.	
19	Threatened and Endangered Species Clearance	NYSDEC - NY Natural Heritage Program	NYSDEC NY Natural Heritage Program 625 Broadway, 5th Floor Albany, NY 12233-4757 Tel. (518) 402-8935	Required for any activity which may affect threatened, endangered, or rare species or their respective habitat or if the project requires the issuance of a federal or NYSDEC permit	Data requests for potential impacts to threatened and endangered species should include a USGS topographic map of the project area.	NYPA has direct access to this data (proprietary). Usually one week for obtainment. Field reviews may be necessary. Work plan and impact avoidance measures to be integrated in the EM&CP.	

Item #	Permit/Clearance	Agency	Contact	Purpose	Requirements	Typical Approval Time Frame	Comments
20	Preservation Law, § 14.09	NYS Office of Parks, Recreation, & Historic Preservation (NYSOPRHP)/State Historic Preservation Office (SHPO)	Mailing Address: Peebles Island State Park P.O. Box 189 Waterford, NY 12188-0189	Required for any activity to review a project's potential effect on historic and archaeological resource for any projects requiring state funding to a state agency approval. NYS OPRHP consultation is required for any project that received federal funding or requires federal approvals	Initiate Project Review in online Cultural Resources Information System (CRIS)	6-12 months, depending on SHPO review and any subsequent requests for additional information or studies. Work plan and impact avoidance measures to be integrated in the EM&CP.	
21	SPDES Stormwater Permit for Construction Activity	NYSDEC	NYSDEC Division of Water Permits 625 Broadway Albany, NY 12233-3508	Required for any construction activity that will involve soil disturbance of one or more acres. SWPPPs will be likely for ROW, substation, and possible laydown yards.	The project owner or operator must develop a Stormwater Pollution Prevention Plan (SWPPP) and submit a completed Notice of Intent (NOI). Key elements of the SWPPP should include construction drawings and site location map, soil(s) description, construction phasing plan and sequence of operations, a soil stabilization plan, and a description of proposed pollution prevention measures. MS4 communities will need to be identified, and SWPPP documentation presented for review.	Construction may commence 5 business days from the date the NYSDEC receives a completed NOI if the project is outside a municipality and has prepared a SWPPP in conformance with NY State's technical standards.	The SWPPP is developed as part of the Environmental Management & Construction Plan. Letter of Acknowledgement might need to be included in EM&CP prior to approval if stated in Certificate Conditions
22	Railroad Crossing Permit	Long Island Railroad	Metropolitan Transit Authority Real Estate Department 347 Madison Avenue New York, NY 10017	Required to cross a railroad corridor	Permit requirements typically include a completed application form, an exhibit representing the location of the proposed access of property, project plans and specifications, a general location map, and documentation showing compliance with insurance requirements.	90 days	
23	Undertaking (Public Utilities) in Connection with Highway Work Permits (PERM 2(09/050)	NYSDOT	NYSDOT Regional Permit Office Region 10 Veteran's Highway Hauppauge, NY 11787-5518 Tel. (631) 952-6020	Applicants for a Highway Work Permit need to show proof of the proper type of insurance.	Applicant or public utility company must complete the NYSDOT Undertaking agreement.	TBD	This scope should be included in specific contractor's bid package but oversight by EPM contractor, the Engineer. This note applies to Item 23, 24, 26 and 27.
24	New York State Highway Work Permit for Utility Work (PERM 32m (2/00))	NYSDOT	NYSDOT Regional Permit Office Region 10 Veteran's Highway Hauppauge, NY 11787-5518 Tel. (631) 952-6020	Any utility work in State highway right of way requires a highway work permit for the NYSDOT, whether it is construction and installation facilities, or for repairs and maintenance.	The applicant must complete the appropriate application form, submit and Undertaking agreement or Certificate of Insurance permit, submit project work plans, and traffic control plans.	TBD	
25	New York State Office of General Services (NYSOGS) Easement to Use New York State Lands Under Water	NYSOGS	Bureau of Land Management 39th Floor Corning Tower Albany, NY 12242	An easement is required to install utilities above or below lands now or formerly under the waters of state-owned waterbodies	Complete the Joint Application Form and include plans, pictures and other associated materials including permit fees.	3-6 months	Permit fee will be $12.74 per lineal foot of submarine cable.

Item #	Permit/Clearance	Agency	Contact	Purpose	Requirements	Typical Approval Time Frame	Comments
County							
26	Road Opening/Right of Way or Curb Permit	Applicable County		Required for any work performed within a County Road or Highway.		TBD	
Local							
27	Tree Permit	Applicable Municipality		Required for removal of any tree		TBD	
28	Right of Way Permit	Applicable Municipality		Required for any work or excavations with any town rights-of-way.		TBD	
29	Host Community Agreements	Applicable Municipality		Required for any work or excavations with any town rights-of-way.		TBD	

Exhibit No. TRANSCO-203

New York ISO
Independent System Operator

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

A Report by the
New York Independent System Operator

April 5, 2022

Table of Contents

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 Requirements[2] 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

results[17] 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.

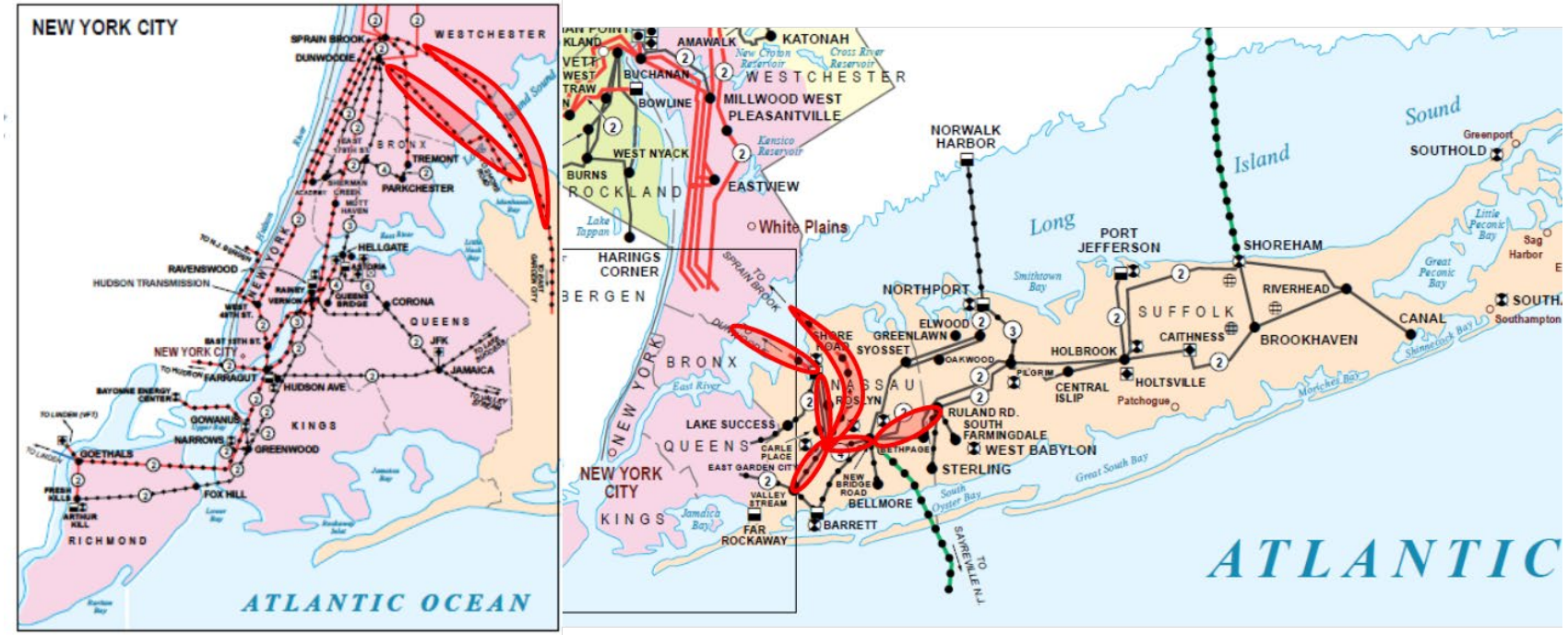


Figure 2: Significant N-1 Constraints. Red shading indicates constraints that occur in the light load conditions only and blue shading indicates constraints in both summer peak and light load conditions.

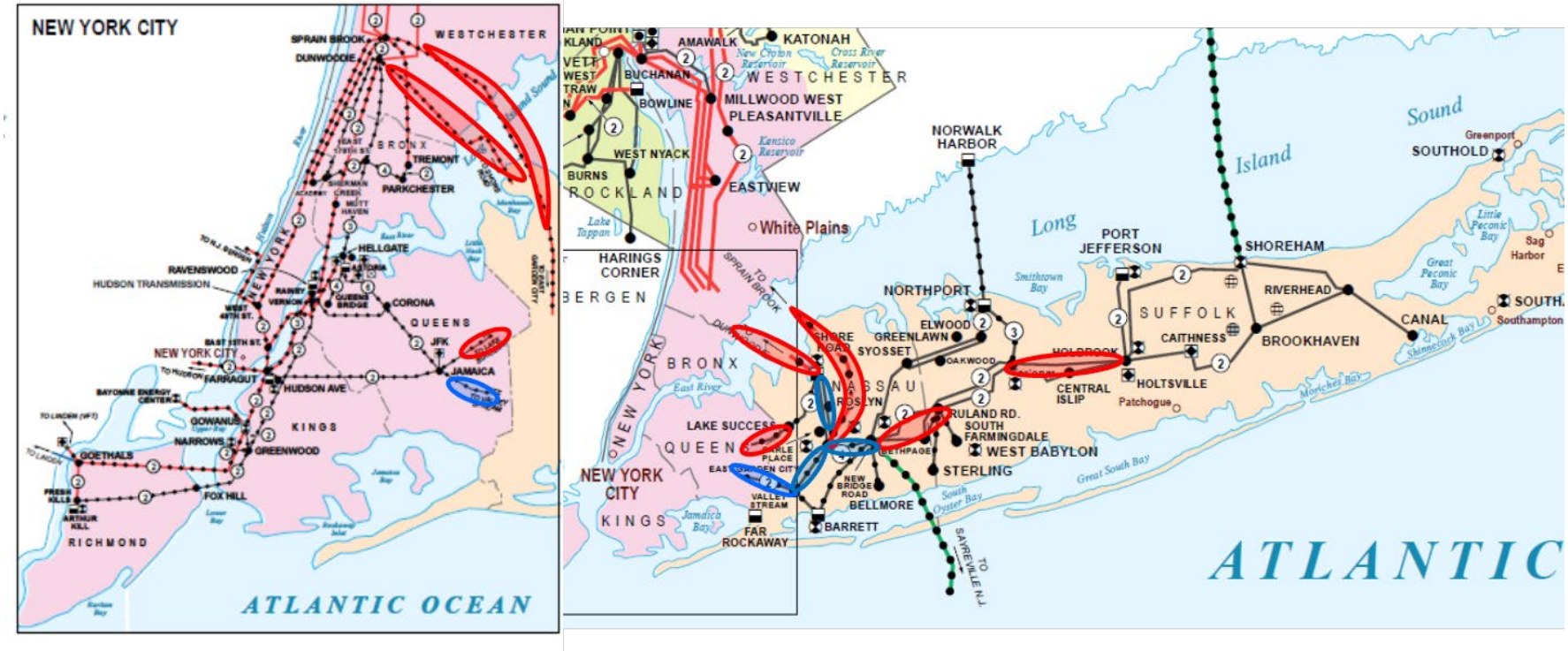
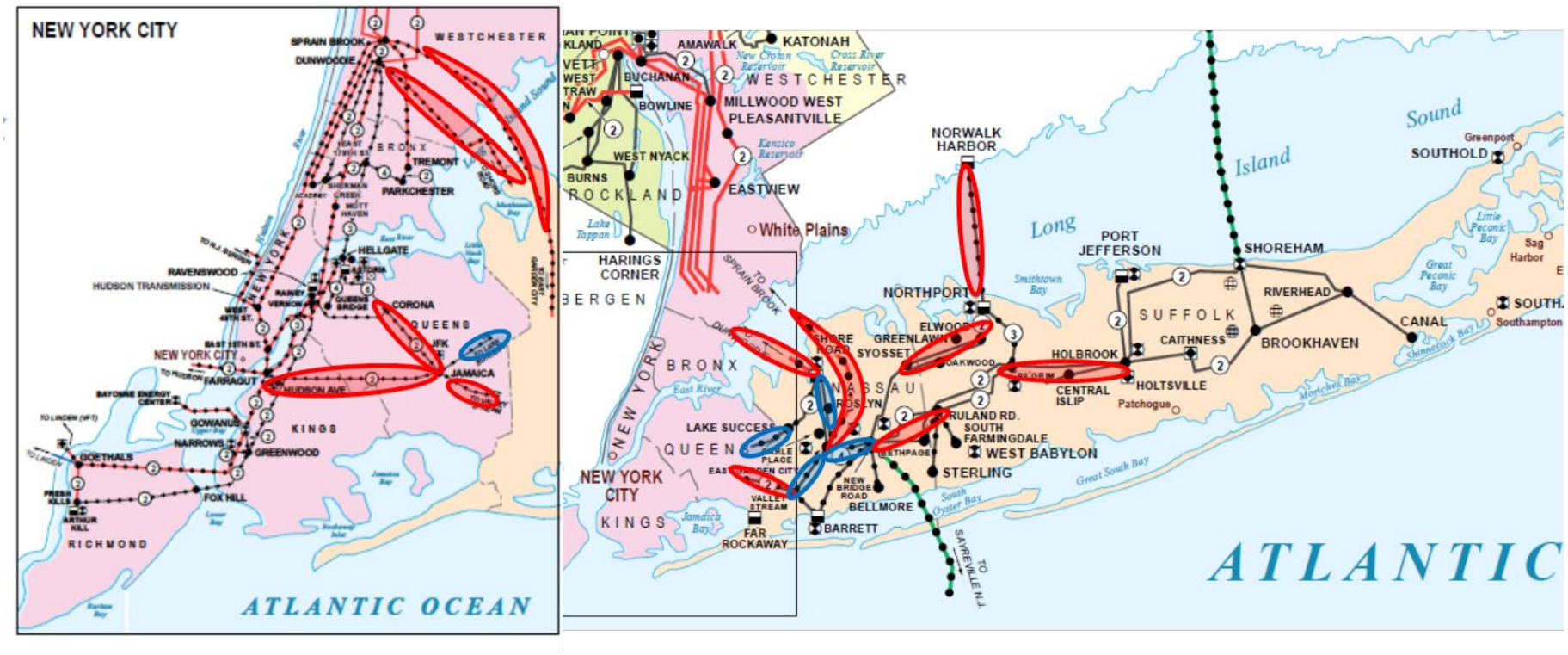


Figure 3: Significant N-1-1 Constraints. Red shading indicates constraints that occur in the light load conditions only and blue shading indicates constraints in both summer peak and light load conditions.



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
T050[21]				
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 - Plus3[22]
- 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, 2022[23]. 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 elect[24] 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, upgrades[2], or Network Upgrade Facilities[3], 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