March 9, 2023

Via Electronic Mail

PublicPolicyPlanningMailbox@nyiso.com
New York Independent System Operator, Inc.

Re: Propel NY Energy Comments Regarding NYISO LI OSW Export PPTN SECO Evaluation Report released for March 2, 2023 ESPWG Meeting

Introduction
Propel NY Energy (Propel) offers the following preliminary comments on the draft evaluation report prepared by NYISO, with assistance from its independent consultant, Substation Engineering Company (SECO), dated February 27, 2023 (the Draft Report) and the follow-up ESPWG meeting presentation by NYISO on March 2, 2023. Given the very limited time Propel has been provided to review the Draft Report, we have attempted to address the most significant issues identified at this point and Propel reserves the right to provide additional comments as the process continues. Propel's comments are provided in two sections: section 1 discusses the issues associated with Propel solutions and the second section comments issues with other proposed solutions.

Section 1: Related to Propel Solutions

1. Project Schedule:

    a. The Draft Report states the Schedule criterion for Propel solutions is based on Propel's "relaxed" schedule (Draft Report, p.27). Propel assumes this is a typo and it appears that SECO's analysis was based on Propel's "base" schedule, which is 72 months.

2. Risk Analysis:

    a. The Draft Report indicates that Propel Solutions T052 and T053 have a high-risk item identified related to the acquisition of property for the Eastern Queens substation (Draft Report, p.47). Propel has identified multiple potential alternative locations within the proximity of the original site that would require minimum design changes on transmission lines connecting to Eastern Queens. In addition, Propel allocated a sufficient amount of Real Estate costs for this site. Therefore, any potential risk impact on cost is minimized.

    b. Propel Solution T053 had a high-risk item identified related to potential contamination at Northport (Draft Report, p.48). The Propel team confirmed with site staff at Northport that there are monitoring wells around the tanks that none of

which have identified any signs of contamination. Therefore, the probability of site contamination should not be High as stated in the Draft Report.

3. Resiliency:

   a. The Draft Report states that: "*All new transmission lines being proposed for all projects are underground or submarine cables. Therefore, these would not be subject to damage during a major ice storm or high winds.*" (Draft Report, p.49). Though it is true that the underground transmission lines are not susceptible to ice storm or high winds like the overhead lines, other applicable risks of underground and submarine transmission lines, such as anchor strikes, that could impact system resiliency should be evaluated.

      As compared to other solutions, Propel intentionally designed the tie-lines with separate pathways (i.e., Ruland Road to Shore Road to New Rochelle then to Sprain Brook, versus EGC/Barrett to Tremont), to accommodate loss of a singular path, thus enhancing system resiliency. Propel requests that SECO consider the benefit of such design which we feel greatly improves resiliency of the system by having separate routing for these tie lines.

   b. Propel in all of its proposals included submarine crossings with circuits that include two 3-core submarine cables. Each cable has isolating equipment on the north and south shore of the Long Island Sound. This has the benefit of preventing complete loss of the circuit for a forced outage of one cable or maintenance activities on a single cable. Propel does not believe that this design feature was appropriately considered in terms of robustness and system resiliency benefits of the design. For detailed submarine design, please see Propel proposed breaker one-line diagrams and related documents provided in response to RFI 04.

   c. In section 4.4.1.3 of the Draft Report, SECO identifies substations that are located within or adjacent to a 100-year flood zone. Both the Barrett and New Rochelle substations are included in Propel solutions. Propel has incorporated the fact that these stations are within or adjacent to flood plains into design considerations per FEMA Mapping and guidance. It does not appear that SECO has recognized this fact in the Draft Report. For details on determining design flood elevation of all Propel substations, please see Section 5.5.5 of submitted Substation Design Basis Manual (DBM).

4. Expandability:

a. Propel believes SECO's evaluation of "substation expandability" was not done accurately for the Propel proposals and questions the counting methodology of Future Expandable POIs related to our proposals. Propel's designs use appropriate technology and design considerations to minimize overall environmental impact and land use while interfacing with existing facilities, or in the creation of greenfield facilities. This was done in accordance with the PPTN request for solutions. Propel's designs are expandable, if and when needed. Propel's solutions were developed modularly and have the ability to expand within the same footprint from base solutions to alternate solutions. Propel strongly believes that SECO may not have accurately evaluated the expandability of Propel POIs, and we have segregated these into three different categories:

- Category A - Miscounted "Created POIs": due to what appears to be an oversight. This includes both Created POIs and Expandable POIs as included in Table 1 below:

Table 1

Projects	Category A Miscounted POIs	Total # of Miscounted POIs
T047-Propel Base 1	• EGC: CB-8 & CB-9 (345kV)	1
T051-Propel Alt 5	• EGC CB-8 & CB-9 (345kV)	1
T052-Propel Alt 6	• SECO miscounted 2 dashed breakers that are already incorporated in the design.	2

- Category B - Miscounted "Created POIs": open positions on back-to-back breaker configurations. The installation of back-to-back breakers, using a PASS breaker, were utilized to avoid breaker contingencies which would result in losing two major feeders/outlets/parallel paths. However, this does not apply to the combinations of a feeder and a generation injection source. It is quite common to alternate generating sources and transmission feeders in substation design. An OSW resource or any other generation source can be interconnected in the available position between these back-to-back breakers. A summary of these Category B Created POIs is included in Table 2 below:

Table 2

Projects	Category B: Miscounted Created POIs	Total # of Miscounted Created POIs
T047-Propel Base 1	• Tremont CB-A & CB-F and CB-E & CB-D • Ruland CB-5 & CB-6 (138kV) • Ruland CB-2 & CB-3 (345kV)	4
T048-Propel Base 2	• Tremont CB-A & CB-F and CB-E & CB-D	2
T049-Propel Base 3	• Tremont CB-A & CB-F and CB-E & CB-D • Ruland CB-5 & CB-6 (138kV) • Ruland CB-2 & CB-3 (345kV)	4
T051-Propel Alt 5	• Tremont CB-A & CB-F and CB-E & CB-D • Ruland CB-5 & CB-6 (138kV) • Ruland CB-2 & CB-3 (345kV) • Sprain Brook CB-B & CB-C	5
T052-Propel Alt 6	• Tremont CB-A & CB-F and CB-E & CB-D • Sprain Brook CB-B & CB-C	3
T053-Propel Alt 7	• Tremont CB-A & CB-F and CB-E & CB-D • Sprain Brook CB-B & CB-C	3

- Category C - Miscounted "Expandable POIs": though not shown as dashed line breakers, multiple substations (Ruland Road, Barrett, etc.) can be expanded within the same substation footprint, which in fact already has been demonstrated via Propel's modular design across various Propel solutions. Table 3 below shows the maximum number of breakers/bays that can be accommodated at these substations and the corresponding solution where it had been proposed. Then Table 4 below shows the total count of the missing expandable POIs for each of the Propel solutions.

Table 3

Substation	Max # of bays or breakers	In Solution
New 345kV Shore Road Substation	6- GIS breaker ring	T051 and T052
New 345kV Ruland Road Substation	6- PASS breaker ring	T047, T049, T051
New 345 Barrett Substation	8- PASS breaker ring	T053
Existing 345kV Tremont Substation	6-GIS breaker ring	T047 - T053
Existing 138kV Ruland Road Substation	6- PASS breaker ring	T047, T049, T051
Existing 138kV Shore Road Substation	3- PASS breaker ring	T049, T051, T052
Eastern Queens 345kV	8-GIS breaker ring	T053

Table 4

Projects	Expandable POIs	Total # of Miscounted Expandable POIs
T047-Propel Base 1	• Barrett: 2-breaker bus to 8-breaker ring => 6 • Shore Rd 138kV: 2 to 3 => 1 • Shore Rd 345kV: 4 to 6 => 2	9
T048-Propel Base 2	• Barrett: 4 to 8 => 4 • Ruland 138kV 5 to 6 => 1 • Ruland 345kV 4 to 6 => 2 • Shore 138kV 2 to 3 => 1 • Shore 345kV 1 to 6 => 5	13
T049-Propel Base 3	• Barrett: 5 to 8 => 3 • Shore Rd 345kV: 4 to 6 => 2	5
T051-Propel Alt 5	• Barrett: 2-breaker bus to 8-breaker ring => 6	6
T052-Propel Alt 6	• Barrett: 2-breaker bus to 8-breaker ring => 6 • Eastern Queens 345kV 6 to 8 => 2 • Ruland 138kV 5 to 6=>1	9
T053-Propel Alt 7	• Shore 138kV 2 to 3 => 1 • Ruland 138kV 5 to 6 => 1 • Ruland 345kV 4 to 6 => 2	4

In summary, Propel recommends that NYISO update its Physical Expandability table on slide 28 of its presentation "Long Island Offshore Wind Export PTN: Property Rights, Routing, and Potential Construction Delays" at the March 2 ESPWG/TPAS meeting for the Propel solutions as shown in Table 5 below:

Table 5

Projects	Created POIs	Expandable POIs
T047-Propel Base 1	6	10
T048-Propel Base 2	3	14
T049-Propel Base 3	4	6
T051-Propel Alt 5	7	7
T052-Propel Alt 6	3	15
T053-Propel Alt 7	4	5

5. Site Control and Real Estate:

   a. Propel would like to have a better understanding of how SECO determined the number of private parcels and incumbent utility parcels that were identified for the Propel solutions in the "Transmission Line Corridor Real Estate Summary" table of the Draft Report (Draft Report, p.55).

   b. It does not appear that SECO appropriately acknowledged the fact or considered the benefits that Propel submitted two MOUs related to site control as part of its proposals: one from National Grid for the Barrett site and one from Keyspan Gas for the Shore Road site. The MOUs commit National Grid and Keyspan Gas to negotiate in good faith a purchase and sale agreement, lease or other similar real estate interest for the parcels required for the Propel projects.

6. Environmental:

   a. Propel questions information included in Section 4.10.1.2 (Draft Report, p.61) of the Draft Report which listed a table of federal navigation and anchorage area crossing for all projects. It is unclear to us how the numbers of navigation channel crossings were counted for Propel's solutions, and we would like to have a better understanding of how SECO determined the number of navigation channel crossings for all Propel solutions.

   b. Section 4.10.2.3 of the Draft Report indicates the Northport site selected for Propel Solution T053 would very likely have subsurface contamination issues due to a large above-ground storage tank shown on aerial image (Draft Report, p.64). As

mentioned in section 2.b. above, Propel recently confirmed with site staff that the monitoring wells around the tank have not identified any contamination. Therefore, Propel contends SECO should re-evaluate the potential environmental impact on this topic.

7. Design Verifications - Substations:

    a. Section 4.12.3 of the Draft Report states that in regard to the Dunwoodie Substation design "*Expanding the ring bus to 7 lines and 7 lines breakers along with 2 transformers on 2 lines may not be a reliable arrangement with these many components in one ring bus.*" (Draft Report, p.68). Concerning Propel Solution T052 and T053, all transmission criteria for both solutions have been met as determined by studies conducted by Propel planning team, and there is no valid concern with system reliability under normal and contingency conditions. Indeed, there are a number of existing substations with ring buses having more than 8 bus sections in Zone J currently. Therefore, Propel's Dunwoodie design should not be considered unreliable or otherwise problematic.

8. Design Verifications - Transmission:

    a. Section 4.13.4 EMF analysis of the Draft Report states "*Calculations provided by the developers are preliminary in nature and will have to be confirmed during detailed engineering design.*" (Draft Report, p.82). While this is partially true, Propel conducted detailed EMF calculations, which were included in our response to RFI04, for various configurations of underground circuits included in its proposals. Our analysis was intended to identify the "extreme case" scenarios. This exercise provided Propel confidence that its design will meet PSC EMF requirements for all Propel solutions. Thus, SECO should acknowledge that Propel has already performed these detailed calculations when it evaluates Propel's solutions. For Propel's detailed EMF report, please see "PNYE_RFI04.1.6_EMF Memo" submitted during the RFI process.

    b. Section 4.13.5 of the Draft Report states: *"In all, cases, the respective developers did not appear to perform a thorough detailed design of cable routes."* (Draft Report, p.83). The report also indicates "*In most cases, the developers only provided generalized information about their cable designs and based on nominal trench conditions, but not detailed manufacturer's catalog cut sheets. We used representative data and industry-accepted calculation methods for the respective cable types consistent with industry specifications and standards such as Association of Edison Illuminating Companies (AEIC), IEEE, ICEA, IEC, CIGRE and others.".* The Draft Report further states: "*Given that only nominal or example installation configurations are described by the developers, it is conceivable that*

each developer's proposed route(s) will include sections that will have more severe limitations than the nominal conditions described in each developer's proposal."

Propel does not agree with the above statements as they relate to its proposals. Propel performed detailed ampacity calculations for various scenarios across all Propel solutions to confirm that its proposals will meet its required ratings. This detailed analysis anticipated burial depths that would likely be encountered during project construction and was not just performed for a typical trench cross section. Cable sizes, trenchless cross sections, and duct bank cross sections were calculated under "extreme" conditions, not "nominal" conditions. Propel performed these ampacity calculations under varying depths, ratings, soil temperatures, soil resistivities and installations in order to give a realistic and attainable depiction of what the design could be from a desktop level of design. Please see sub-attachment B of Design Basis Manual of each solution for detailed ampacity calculations. It does not appear that SECO appropriately factored in its report this additional detailed analysis that has been performed by Propel.

c. Section 4.13.6.2 of the Draft Report states that "*for transmission cables, conduits are almost exclusively installed with engineered concrete that has good thermal properties and ease of compaction, thus SECO universally assumed that all conduits were encased with thermal concrete backfill.*" (Draft Report, p.85). Propel proposes direct buried conduits with native sand backfill for portions of the project on Long Island based on three recently completed projects including, (western Nassau Transmission, Riverhead to Canal Second 138kV, and Flowerfield to Terryville 69kV). None of these projects were required to use concrete encased duct banks. The sands of Long Island are sufficient to be used as backfill for a majority of the routes in that area. Propel has proposed thermal backfill only when necessary pursuant to applicable requirements. Propel requests that SECO reconsider Propel's proposed design and not burden Propel's competitive response with this unsupported assumption.

Section 2: Comments Related to Proposal T035

1. Project Schedule:

    a. The Draft Report indicates that Proposal T035 can be completed in 71 months, including permitting, procurement, and construction.

    Currently, converter stations are custom designed for each installation, and the feedback that Propel received from our industry contacts is that the minimum procurement time is at least five years for a single unit, let alone six units. It is Propel's understanding that in connection with the Sunrise Wind and RISE projects, the DPS staff has not waived the Article VII requirement to provide issued for construction (IFC) detailed engineering drawings for the EM&CP, including the converter stations. It is our understanding that no exception been made to this requirement to accelerate the EM&CP approval for either project. Both are currently progressing in the normal fashion of Article VII process. Once the Article VII certification is complete, then the formal EM&CP review by DPS begins. It is not simultaneous. The assumption of EM&CP approval to be obtained within the window of Article VII certificate issuance is not realistic in this specific case. DPS typically does not like developers procuring major and costly equipment before Article VII approval. Based on the lead times for converter equipment, with five years of procurement period, and minimum of 12 to 18-month of onsite installation and testing, completing this project in 71 months seem highly aggressive. What also doesn't seem to be considered in the SECO analysis is the fact that any export capability off Long Island for this proposal is linked to having the HVDC in service. Any delays in converter equipment would result in delays in achieving the goals of the PPTN.

2. Risk Analysis:

    a. Due to long lead time of the six-converter stations and the impacts those delays would have on this proposal achieving the goals of the PPTN, we believe that the associated potential schedule and cost risk impact should be re-evaluated in SECO's risk register and heat map.

    b. The associated risks of a very wide DC duct bank design being proposed by the developer is not accurately reflected in the risk analysis of the Draft Report. Both proposed options (7.2ft and 9.2ft) have a high probability of requiring the shutdown of entire roadways for excavation and installation. The chance of encountering existing utility conflicts due to the size of these duct banks is high and therefore the potential for significant utility relocation costs should be considered in SECO's evaluation. With such a large excavation effort, the assumed 20-40ft per day

production rate seems to be unrealistically optimistic. Additionally, the proposed alignment of manholes for the three circuits will likely encounter installation challenges with the crisscrossing of the ducts and cables in and out of each manhole.

c. The associated schedule risk due to high possibility of public opposition to large DC converter station complexes at the Southgate and Northgate sites should be evaluated.

For Southgate at Ruland, not only is there a potential that a portion of the proposed site will be utilized by LIPA, as indicates in the risk analysis, but the layout of the proposed site also shows major equipment being very close to residential homes, making the site visible to the public. It is recommended that related laws as to whether the project meets set-back requirements should be investigated.

For Northgate station at Millwood, the proposed site is located on top of a hilltop adjacent to the existing Millwood Substation which is elevated approximately two hundred feet and will likely be visible to public (i.e., the highways nearby). Based on the sensitivity of infrastructure projects in this area of Westchester it is recommended that the associated risk on schedule delay and cost impact should be factored into the SECO evaluation.

3. Resiliency:

As previously mentioned, applicable risks of underground/submarine transmission lines, such as anchor strikes, that could impact system resiliency should be evaluated. Having three DC circuits in the crossing of the Long Island Sound in close proximity to each other poses high risk and reduces system resiliency. The chance of losing three DC lines due to a single incident may be low, however the impact can be severe to the grid system. This is not clearly reflected in either the risk assessment or the resiliency assessment of SECO's evaluation.

4. Design Verifications - Substations:

a. Propel's SME performed a preliminary assessment of the project layout proposed design on DC converter stations, and identified the following potential issues:

i. The HVDC solution appears to be intended to be 400kV but the layout indicates that the cables are rated at 320kV. If a 320kV layout has been utilized for a 400kV solution, then there may not be adequate space for the converter stations in the allocated land area.
ii. Since the detailed designs have not yet been completed, there might not be enough room to accommodate additional equipment which might be

required such as a star-point reactor and a pre-insertion resistors which are typically utilized to limit the inrush current during energization.

5. Design Verifications - Transmission:

   a. Propel's SME, which has first-hand design experience working around Long Island Sound, performed a preliminary assessment of the T035 proposed design and identified the following potential issues on the DC transmission lines crossing the Long Island Sound.

      i. The space within the roadways on both the north and south shore landings selected by the developer do not appear to be sufficient for the proposed three duct banks, three transition joint bays and six HDD bores to allow for adequate separation to meet the thermal design.

      ii. The selected submarine route passes rocky shoreline and potential shallow rockhead on the north shore landing. Slow rates of progress for HDD should be accounted for.

   b. Propel performed a preliminary ampacity calculation to evaluate the feasibility of the proposed T035 design. Our assessment indicates the AC duct bank may not meet design rating with 3-ft of cover and the HVDC bank may not meet design ratings with 5-ft of cover. Propel recommends that SECO perform additional analysis on proposed designs of T035 to ensure that even at these minimum depths the proposed designs will meet the required ratings.

Conclusion

Propel appreciates the opportunity to share its views with NYISO and looks forward to reviewing NYISO's further project evaluations. If NYISO wishes to discuss these comments, please do not hesitate to contact either of the signatories below.

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