Long Island Offshore Wind Export PPTN: Cost Caps, Top-Tier Projects, and Draft Public Policy Transmission Planning Report

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April 03, 2023

Agenda

- Evaluation Metrics Overview
- Voluntary Cost Caps
- Top-Tier Projects
- Draft Public Policy Transmission Planning Report
- Next Steps

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Evaluation Metrics Overview

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Long Island Offshore Wind Export PPTN

- **PSC Order for Public Policy Transmission Need (PPTN):**
  - CLCPA constitutes a Public Policy Requirement driving the need for transmission to increase the export capability from Long Island to the rest of New York State to ensure full output of at least 3,000 MW of offshore wind interconnected to Long Island
  - Add at least one bulk transmission intertie cable connecting between Long Island and the rest of the New York Control Area and additional transmission expansion or upgrades, as necessary
- **To pass the Viability & Sufficiency Assessment, each project must provide full output of at least 3,000 MW of offshore wind connected to Long Island under line outage conditions**
  - Also, assuming 6,000 MW of offshore wind connected to New York City to achieve the CLCPA goal of 9,000 MW by 2035

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Evaluation Metrics

- Transfer Analysis & Cost per MW
- Expandability – Electrical & Physical
- Operability
- Production Cost
- Performance
- Capacity Benefits
- Capital Cost Estimate
- Voluntary Cost Caps
- Property Rights & Routing
- Potential Construction Delays
- Other Considerations: Metrics prescribed in PSC Order, Interconnection Studies, Consequences for Other Regions, Impact on Wholesale Electricity Markets, Integration with Local Transmission Owner Plans

*Results for metrics in red will be discussed today

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Voluntary Cost Caps

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Cost Caps – Evaluation Overview

- **Cost and voluntary submitted Cost Caps are one aspect of the numerous metrics that the NYISO considers in evaluating and selecting the more efficient or cost-effective solution to a Public Policy Transmission Need.**
- **A Developer may propose a voluntary Cost Cap, which serves as a commitment by the Developer to contain the Included Capital Costs of its proposed Public Policy Transmission Project.**
- **The NYISO will consider and evaluate voluntary submitted Cost Caps in both a quantitative and qualitative manner.**
  - Quantitative Evaluation of Cost Caps: Depending on several factors, the NYISO will use the proposed Cost Cap for contained capital cost elements (Included Capital Costs) to estimate the total capital cost of the project that is used in existing quantitative cost metrics.
  - Qualitative Evaluation of Cost Caps: The NYISO will assess a proposed Cost Cap qualitatively as described in Section 31.4.8.2.2 of the OATT.

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Included vs Excluded Capital Costs

- **"Included Capital Costs" are those capital costs necessary to design, construct, and place a facility into service except Excluded Capital Costs.**
  - Only Included Capital Costs are subject to a Developer's voluntary Cost Cap.
  - Included Capital Costs include:
    - contract work, labor, materials and supplies, transportation, special machine services, shop services, protection, injuries and damages, privileges and permits, engineering services, reasonably expected environmental site remediation and environmental mitigation costs, general administration services and legal services, real estate and land rights and rents, studies, training, asset retirement, and taxes, real estate costs for existing rights-of-way owned by a third party that the developer elects to include.
- **"Excluded Capital Costs" encompass the types of capital costs that cannot reasonably be estimated or foreseen by Developers within the sixty-day project proposal window with sufficient certainty to be subjected to a Cost Cap. They include:**
  - upgrade facilities included in the project,
  - Network Upgrade Facilities,
  - debt costs, Allowance for Funds Used During Construction ("AFUDC"), and other costs of financing during the construction timeframe,
  - unforeseen environmental remediation and mitigation costs, and
  - real estate costs for existing rights-of-way owned by a third party that the developer elects to exclude.

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Overview of Hard Cost Caps

- A hard Cost Cap is defined by the tariff as a dollar amount for the costs above which the Developer commits in its proposed Public Policy Transmission Project not to recover from ratepayers.
- For the total capital cost of a project, the NYISO uses the hard Cost Cap as the estimate for Included Capital Costs plus the independent cost estimate for the Excluded Capital Costs.
- The NYISO uses the total capital cost to assess the performance of the proposed Public Policy Transmission Projects under the cost-based selection metrics, including capital cost and cost per MW.

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Overview of Soft Cost Caps

- **A soft Cost Cap is defined as a dollar amount for the costs above which the Included Capital Costs are shared between the Developer and ratepayers based on a defined percentage.**
  - Under the NYISO's tariff, the Developer's cost sharing under a soft Cost Cap must be at least 20 percent.
- **The relation of the soft Cost Cap and the Included Capital Costs depends on whether it is above or below the independent cost estimate.**
  - If the soft Cost Cap is above the Included Capital Costs amount estimated by the NYISO's independent consultant, the NYISO will rely on the Developer's amount for the Included Capital Costs to calculate the total capital cost of the Developer's Public Policy Transmission Project.
  - If the Developer's soft Cost Cap is below the Included Capital Costs amount estimated by the NYISO's independent consultant, the NYISO will calculate an adjusted estimate for the Included Capital Costs for use in the quantitative cost metrics.
    - The adjusted estimate will be based upon the amount of financial risk that the Developer proposes to assume.
    - The adjusted estimate for contained capital costs will be calculated by multiplying the difference between the Developer's Cost Cap and the independent consultant estimate (for the same facilities) by the risk percentage assumed by ratepayers.
    - For the total capital cost for use in the quantitative evaluation metrics, the NYISO will add the ratepayer risk exposure amount to the Developer's Cost Cap plus the independent cost estimate for the Excluded Capital Costs.

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Calculation of Total Cost Estimates ($M)

- The following table is only intended to show how total capital costs were calculated for each Developer based on one of their proposed Public Policy Transmission Projects.

	Formula	T035 - LS Power	T036 - NextEra Core 1	T051 - Propel Alt 5
Cost Cap Type		Hard Cap	Soft	Soft
Ratepayer Risk Share	**A**	0%	50%	80%
Developer Submitted Cost Cap ($M)	**B**	$3,074	$5,882	$2,554
Independent Estimate of Included Costs ($M)	**C**	$5,920	$3,230	$2,902
Estimated Overruns ($M)	**D = greater of (C - B) or zero**	$2,846	$0	$348
Effective Estimate of Included Costs ($M)	**E = B + (A * D)**	$3,074	$5,882	$2,832
Independent Estimate of Excluded Costs ($M)	**F**	$78	$1,137	$430
Total Cost Estimate ($M)	**E + F**	$3,152	$7,019	$3,262

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Quantitative Evaluation – Total Cost Estimates

	Cost Cap	Developer Cost Cap ($M)	Independent Estimate of Included Costs ($M)	Independent Estimate of Excluded Costs ($M)	Total Cost Estimates ($M)
T035 - LSPower	Hard Cap	$3,074	$5,920	$78	$3,152
T036 - NextEra Core 1	50/50 Soft	$5,882	$3,230	$1,137	$7,019
T037 - NextEra Core 2	50/50 Soft	$6,867	$3,627	$1,259	$8,126
T038 - NextEra Core 3	50/50 Soft	$7,444	$4,252	$1,209	$8,653
T039 - NextEra Core 4	50/50 Soft	$7,211	$4,457	$1,272	$8,483
T040 - NextEra Core 5	50/50 Soft	$5,898	$3,610	$1,086	$6,984
T041 - NextEra Core 6	50/50 Soft	$6,774	$4,448	$1,138	$7,912
T042 - NextEra Core 7	50/50 Soft	$10,373	$13,750	$1,131	$13,193
T043 - NextEra Enh 1	50/50 Soft	$11,471	$8,753	$1,298	$12,769
T044 - NextEra Enh 2	50/50 Soft	$14,991	$16,128	$1,338	$16,898
T047 - Propel Base 1	20/80 Soft	$1,877	$2,269	$289	$2,480
T048 - Propel Base 2	20/80 Soft	$1,687	$1,966	$211	$2,121
T049 - Propel Base 3	20/80 Soft	$2,131	$2,642	$295	$2,835
T051 - Propel Alt 5	20/80 Soft	$2,554	$2,902	$430	$3,262
T052 - Propel Alt 6	20/80 Soft	$3,953	$4,071	$658	$4,705
T053 - Propel Alt 7	20/80 Soft	$5,118	$5,113	$458	$5,576

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Tiered Ranking

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Purpose of Tiered Ranking

- All proposed Public Policy Transmission Projects are evaluated based on the metrics set forth the Tariff and PSC Order.
- Identifying a top tier of projects allows the NYISO to focus on analyses will effectively distinguish between the higher performing projects.
  - The NYISO employed a similar approach in its evaluation of projects for the Western NY and AC Transmission PPTNs.
- The final Public Policy Transmission Planning Report will rank all proposed projects.

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Factors for Top-Tier Projects

- **The most distinguishing factors for identifying the top-tier projects include:**
  - Construction cost and schedule risks, such as construction delay and property rights
  - Estimated total project cost
  - Operability and integration with existing system
- **In identifying top-tier projects, the NYISO considered whether the performance in other metrics justified the higher costs or risks than comparable projects.**

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Summary of Results

Project+B3:R21	Routing, Permitting, Construction		Capital Cost Estimates	Expandability		Operability: Two Outages			Cost per MW: Two Outages			Performance: 20-year OSW Unbottling		Production Cost 20-year Savings		Capacity Savings
	Severity of Risk	Probability of Risk	Total Cost (2022 $M)	OSW Capability - Light Load (MW)	Additional POIs	Import (MW)	Export (MW)	Range (MW)	Import ($M/MW)	Export ($M/MW)	Range ($M/MW)	Policy Case (TWh)	B-VS Sensitivity (TWh)	Policy Case ($M)	B-VS Sensitivity ($M)	Annual ICAP Savings ($M)
T035 - LS Power	Low	Low	$3,152	4,350	3	2,540	865	3,405	$ 1.24	$ 3.64	$ 0.93	27.4	55.4	$ 340	$ 906	$ 65.85
T036 - NextEra Core 1	Med	Med	$7,019	4,450	13	2,400	1,230	3,630	$ 2.92	$ 5.71	$ 1.93	29.0	20.2	$ 303	$ 291	$ 54.98
T037 - NextEra Core 2	High	Med	$8,126	4,150	13	2,535	1,335	3,870	$ 3.21	$ 6.09	$ 2.10	28.8	21.4	$ 364	$ 378	$ 97.25
T038 - NextEra Core 3	High	Med	$8,653	4,600	16	3,035	1,615	4,650	$ 2.85	$ 5.36	$ 1.86	30.5	23.6	$ 380	$ 402	$ 116.35
T039 - NextEra Core 4	High	High	$8,483	4,400	16	3,060	1,185	4,245	$ 2.77	$ 7.16	$ 2.00	30.3	22.1	$ 305	$ 307	$ 29.28
T040 - NextEra Core 5	Med	Med	$6,984	4,375	17	3,035	1,215	4,250	$ 2.30	$ 5.75	$ 1.64	30.1	21.8	$ 339	$ 332	$ 29.28
T041 - NextEra Core 6	Med	High	$7,912	4,475	15	3,000	1,530	4,530	$ 2.64	$ 5.17	$ 1.75	30.5	23.3	$ 291	$ 308	$ 34.80
T042 - NextEra Core 7	High	High	$13,193	4,500	17	3,005	1,535	4,540	$ 4.39	$ 8.59	$ 2.91	30.5	23.3	$ 291	$ 308	$ 34.80
T043 - NextEra Enhanced 1	Very High	Very High	$12,769	5,400	8	3,280	1,900	5,180	$ 3.89	$ 6.72	$ 2.47	31.5	41.4	$ 458	$ 745	$ 120.40
T044 - NextEra Enhanced 2	Very High	Very High	$16,898	4,900	13	3,275	1,945	5,220	$ 5.16	$ 8.69	$ 3.24	31.5	34.0	$ 441	$ 582	$ 105.90
T047 - Propel Base 1	Low	Low	$2,480	3,750	1	1,635	615	2,250	$ 1.52	$ 4.03	$ 1.10	29.2	34.7	$ 337	$ 568	$ 112.85
T048 - Propel Base 2	Low	Low	$2,121	3,725	1	1,660	285	1,945	$ 1.28	$ 7.44	$ 1.09	25.4	31.3	$ 313	$ 513	$ 113.35
T049 - Propel Base 3	Low	Low	$2,835	3,750	0	1,610	635	2,245	$ 1.76	$ 4.46	$ 1.26	29.5	54.3	$ 344	$ 902	$ 112.85
T051 - Propel Alt 5	Low	Low	$3,262	4,300	1	2,320	1,175	3,495	$ 1.41	$ 2.78	$ 0.93	30.6	38.4	$ 341	$ 609	$ 113.73
T052 - Propel Alt 6	Med	Low	$4,705	5,075	0	2,815	1,880	4,695	$ 1.67	$ 2.50	$ 1.00	30.7	38.3	$ 352	$ 618	$ 94.90
T053 - Propel Alt 7	Med	Med	$5,576	4,350	1	3,150	520	3,670	$ 1.77	$ 10.72	$ 1.52	30.3	37.7	$ 360	$ 622	$ 97.03

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Driving Factors for Top-Tier Projects

Projects in Top Tier	Driving Factors for Tiered Ranking
LS Power T035	Performs well across metrics, relatively low constructability risks
NextEra T036 & T040	Strong Long Island connections, high operability and expandability, lower project risks compared to larger projects
Propel T048	Lowest cost solution
Propel T049	Low cost and addresses constraints near Empire Wind II
Propel T051, T052	Lower cost solutions; offer range of cost, performance, and system integration

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Driving Factors for Projects Not in Top Tier

Projects Not in Top Tier	Driving Factors for Tiered Ranking
NextEra T037, T038, T039, T042, T043, T044	High project risks for Farragut substation and submarine cable routing; high cost
NextEra T041	Higher cost for limited performance improvement compared to similar projects
Propel T047	Higher cost for limited performance improvement compared to similar projects
Propel T053	High cost; relies on significant OSW connecting to a single substation

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Additional Evaluation for Top-Tier Projects

Additional Analyses for Top-Tier Projects

- Additional consideration of voluntary Cost Cap
- NYISO Board of Directors' discussion with developers
- Updates to the SECO report incorporating stakeholder comments and recent site visits
- Avoided Cost Assessment
- Production cost sensitivities
- Operability Sensitivity due to Energy Variability discussed in next slides

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Operability Sensitivity – Energy Variability on Long Island

- Increased wind and solar capacity introduces resources that have temporally variable energy production
- In the future Long Island system, net load (load – OSW – solar) is projected to become increasingly variable with large hourly variability and forecast uncertainties
- Increases in Long Island uncertainties must be accounted for because variability that occurs between generation scheduling intervals traverses any AC lines that do not have automated power flow controls (Y49 and Y50 today)

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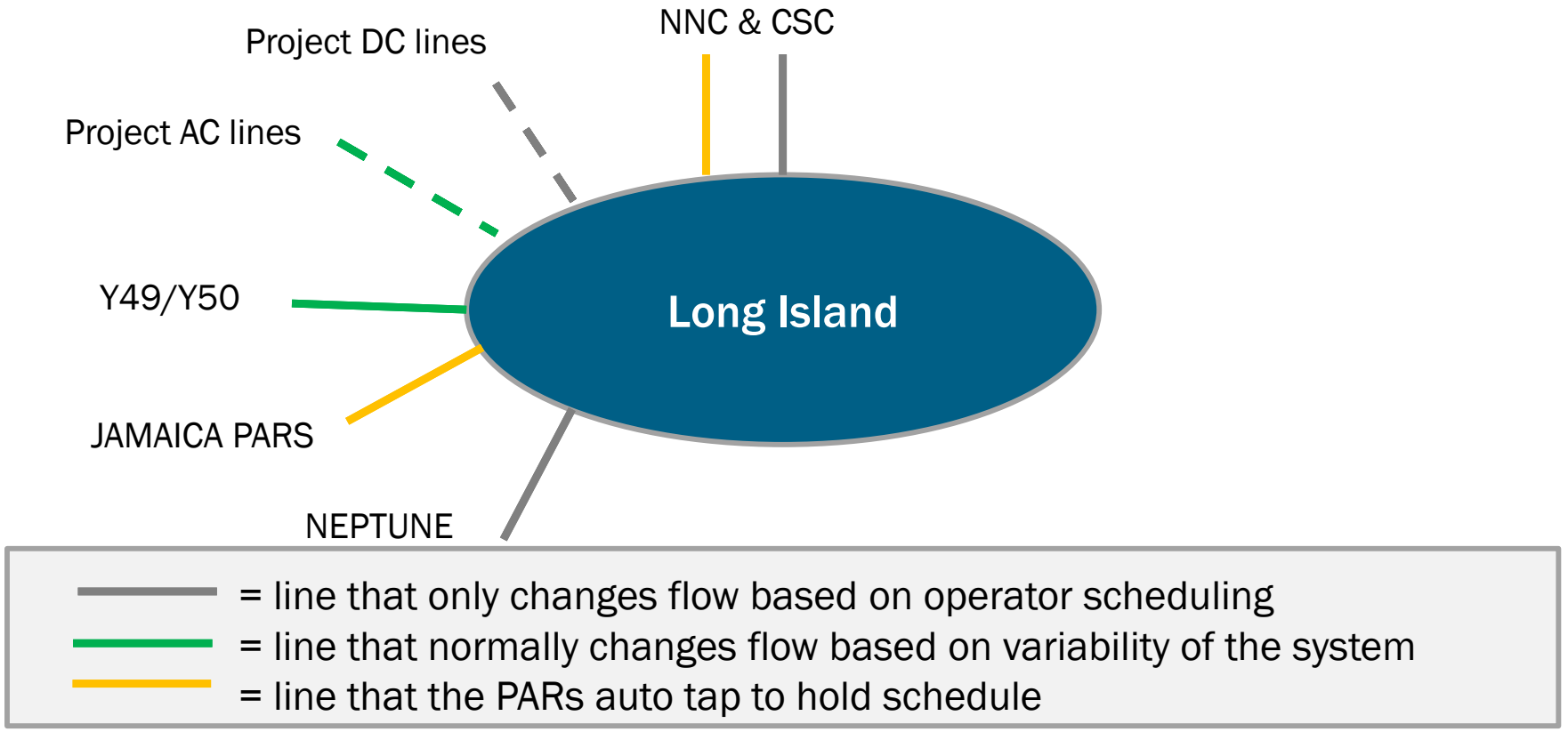
Operability Sensitivity – Long Island Transmission Connections



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Operability Sensitivity – Constraint Reliability Margin (CRM)

- Constraint Reliability Margin (CRM) is NYISO's application of the NERC Transmission Reliability Margin (TRM) concept defined in MOD-008
- In today's energy markets, increased variability on Long Island would result in an increased CRM requirement on existing Long Island AC ties, which effectively reduces the line ratings

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Operability Sensitivity - CRM Calculation

- The CRM was calculated using the net load ramp rate as below:

$$Net\ Load_i = Load_i\ - OSW\ gen_i - PV\ gen_i - BTM\ gen_i$$

$$Net\ Load\ Ramp_i = \ Net\ Load_i - Net\ Load_{i-1}$$

- The CRM was calculated by taking the 95th percentile of the Net Load Ramp for each year in the study period (2030, 2035, 2040 and 2045)

Year	P95 (MW)	P99 (MW)
2030	407	614
2035	544	788
2040	815	1228
2045	864	1289

- The CRM will be equally divided by the number of AC ties to NY zones from Long Island

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Operability Sensitivity - Methodology

- The Policy + Barrett – Valley Stream Scenario will be used to study the impact of an increased CRM on the production cost and operability limit results
- Sensitivity cases will be performed for each top-tier project to analyze the performance with the calculated CRM applied across any Long Island AC tie lines (Y49/Y50 + new proposed AC lines between Zone K and the rest of NYCA), excluding the Jamaica ties

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Draft Public Policy Transmission Planning Report

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Draft Report

- The draft Public Policy Transmission Planning Report is included in today's meeting materials for stakeholder review and includes preliminary results performed to date.
- The draft report is intended to reach a wide audience of readers by using easy-to-understand summaries and explanations of the evaluation metrics assessed.
- For each evaluation metric, the draft report includes:
  - Overview of the purpose of metric,
  - detailed descriptions,
  - analysis conducted,
  - summary of results, and
  - key findings
- Technical details describing the methodologies, evaluations, and results will be included in the approximately 20 appendices posted for future ESPWG meetings.

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Draft Report

- Evaluation results that have been reviewed with stakeholders throughout February and March are included in the draft report
- In addition to the evaluation metrics and results previously discussed with stakeholders, the draft report contains information on the following metrics:
  - Cost Caps
  - Cost per MW
  - Operability with high offshore wind variability

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Draft Report Next Steps

- Add detail on the sensitivities conducted for further consideration
- Include recommended ranking of all proposed projects
- Identify the "Designated Public Policy Projects" for the recommended project, as well as the Required Project In-Service Date and other in-service dates for the Designated Public Policy Projects
- Review process:
  - ESPWG/TPAS review
  - OC review (for information)
  - BIC advisory vote
  - MC advisory vote (including MMU's review and consideration)
  - Board review and action

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Next Steps

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Schedule

- April TPAS/ESPWG: Report updates incorporating stakeholder feedback, and detailed appendices
- May TPAS/ESPWG: Report including project ranking

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Developers' Presentations to the Board of Directors in April

- Purpose: Facilitate communication between the Board of Directors and individual Developers prior to the decision for the Long Island Offshore Wind Export PPTN
- Time: April 17, 2023, starting as early as 1 PM
- Location: Hunton Andrews Kurth LLP

  200 Park Avenue, New York, NY 10166

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Developers' Presentations to the Board of Directors in April (cont.)

- Format: In-person meeting only. Developers will meet individually with the Board
- Group size: Limited to five participants per development team
- Speaking time: 30 minutes per development team

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Stakeholder Presentations to the Board of Directors in June

- Stakeholders will have several opportunities to provide written comments through discussions at the working groups, the BIC, and the MC.
- Written comments made to the BIC and the MC and the results of the advisory votes will be submitted to the Board and posted by the NYISO.
- An advisory vote of the MC is not an action appealable to the Board. However, the NYISO will conduct an appeal-like process for stakeholders to be heard directly by the Board on the afternoon of June 13, 2023.
  - Non-presenting stakeholders will have an opportunity to listen to the oral presentations remotely.
- Additional details on the timing and how interested parties can request to be heard by the Board will be provided in future presentations.

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Comments

- **Further questions and comments regarding these results can be sent to PublicPolicyPlanningMailbox@nyiso.com**
  - Comments are requested as soon as they are available, but no later than April 10, 2023
- **Comments will be posted for stakeholder consideration**

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Questions?

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