Annual Report on Transmission and Distribution Operations

Presented by: Billy Raley, Senior Vice President of Transmission & Distribution

November 13, 2024

Discussion Topics

- Board Policy on Transmission and Distribution Operations
- Policy Compliance and Overall Assessment
- Risk Management

Board Policy on Transmission and Distribution Operations

It is LIPA's **Board Policy on Transmission and Distribution Operations** to:

- Provide **top decile reliability** among peer utilities as measured by system average duration, excluding major events.
- Improve circuit conditions that cause a customer to experience four or more sustained outages or six or momentary outages in any 12-month period.
- Utilize modern system design and technology to anticipate and minimize outages, monitor system condition, provide for preventative and predictive system maintenance, and facilitate the efficient and timely interconnection of renewable and distributed resources.
- Safeguard people and protect facilities and functions that support operations from unauthorized access or disruption through vulnerability assessments and risk mitigation.
- Mitigate the effects of climate change through multi-year programs that reduce the number and duration of outages after significant system disruptions.
- Assure timely and accurate communication to customers about outages and restoration times.
- Independently verify that emergency restoration plans are complete and tested.

Policy Compliance & Overall Assessment

Meeting the Board's Expectations for Reliability & Resiliency

✓ Provide Top Decile Reliability to Our Customers

- The 2023 System Average Interruption Duration Index (SAIDI) performance of 56.3 minutes falls within the top decile industry peer standard of 57.2 minutes.
- Performance for other major reliability indices falls within top decile (CAIDI) and top quartile (SAIFI).
- The 2024 reliability performance is slightly lagging 2023 performance due primarily to increased storm activity during the first half of the year. At present, the 2024 OSA targets for SAIDI, SAIFI and MAIFI are at risk of not being met.
- System average sustained and momentary frequency performance translates to a customer experiencing one sustained outage approximately every 18 months and one momentary outage every 8 months.

✓ Improve circuit conditions that cause a customer to experience four or more sustained outages or six or more momentary outages in any 12-month period

- Our focus on customers experiencing far more sustained outages than the system average has led to creating a metric that focuses on the customer outage experience; tracked in tiers of ≥6, ≥8, ≥10 and ≥12 outages within a single year. Currently, we have almost completely eliminated occurrences of customers experiencing ≥10 sustained outages in a year, while also reducing those with ≥6 to under 2,500 (0.2%) of all our customers.
- In 2023, approximately 4.4% of our customers experienced six or more momentary outages, a significant improvement from a level of nearly 10% when this became a Board policy objective and metric several years ago.

Meeting the Board's Expectations for Reliability and Resiliency

✓ Utilize Modern System Design and Technology to Anticipate and Minimize Outages, Monitor System Condition, Provide for Preventative and Predictive System Maintenance, and Facilitate the Efficient and Timely Interconnection of Renewable and Distributed Resources

- LIPA has required the development of a roadmap for an Enterprise Asset Management System (EAMS), including compliance with ISO 55001 asset management standards, to anticipate and minimize outages and provide the analytic tools and processes for modern preventative and predictive maintenance.
- This effort includes a complete inventory of Transmission and Distribution assets beginning in June 2022 that continues at present. These initiatives, which include asset inventory, governance, and system implementation, were incorporated into the 2022, 2023, and 2024 performance metrics as part of a multi-year implementation effort.

✓ Safeguarding Our Critical Assets

- As of year-end 2023, there was successful completion of all metric deliverables emanating from an independent third-party consultant Physical Security assessment completed in Q4 2022.
- In Q4 2023, a multi-disciplinary working group consisting of LIPA and PSEG Long Island senior leadership and staff was created. The primary objective is to develop and execute a multi-year integrated plan to enhance physical security technology and measures at our facilities, prioritizing those facilities that are most critical to operations.

Meeting the Board's Expectations for Reliability and Resiliency

✓ Mitigate the Effects of Climate Change through Multi-Year Programs that Reduce the Number and Duration of Outages After Significant System Interruptions

- In 2024, there are two storm hardening performance metrics that require the development and execution of a plan to automate switches that will minimize customer outages during a storm.
- There are three performance metrics in 2024 that target improved vegetation management, including improved cycle trim, utilizing an improved trimming technique of "circuit trim to sky" and preemptive hazardous tree identification and removal of hazard trees. PSEG Long Island partially met the 2023 performance target for hazard tree removal.
- Leveraging our public power status, since 2023 LIPA has been awarded $472 million in mitigation grants to harden the system, allowing us to significantly increase and accelerate our storm hardening investments at low cost to our customers. Highlights of some pending and approved applications include grants totaling $38.5 million to storm harden transmission road crossings, and two separate grants of $5 million each to mitigate poles in disadvantaged communities in Nassau/Queens and Suffolk counties.

✓ Enhance Estimated Time of Restoration (ETRs) Accuracy and Communications

- The ETR process is being enhanced to provide more accuracy, allowing for customers to better plan for the outage duration. In 2023, efforts conducted through the ETR metric led to the selection and operationalization of three factors as drivers of ETR differentiation: device type, seasonality/month, and hour/shift that had the objective of improving ETR accuracy and the related customer outage and ETR experience. Since the time of operationalization in Q4 2023, overall ETR accuracy performance has improved by over 10% for our customers.

Meeting the Board's Expectations for Reliability and Resiliency

✓ Independently Verify that Emergency Restoration Plans are Complete and Tested

- LIPA independently verified and validated PSEG Long Island's remediation of its outage management system implementation (see June 2023 report to the Board).
- Between December 2022 and May 2023, LIPA observed and made over 330 recommendations/comments to enhance PSEG Long Island's functional exercises related to emergency response in the event of a critical system failure. PSEG Long Island incorporated the recommendations/comments in Division scaled functional exercises in 2024 that were observed by LIPA and DPS.
- The 2022 Performance Metric IT-3 related to System Resiliency required PSEG Long Island to update and successfully exercise its disaster recovery and business continuity plans for all critical systems and processes. PSEG Long Island did not achieve this metric in 2022, and 2023. In 2024, the IT-3 metric is divided into IT-03 for business continuity and IT-10 for disaster recovery and LIPA hired an independent third-party consultant to conduct an overall assessment of the business continuity and disaster recovery program. The assessment report was provided to PSEG Long Island in the 3rd quarter of 2024 and provides recommendations and actions to be completed in 2024 and beyond.

Risk Management

Enterprise Risk Management

There are two highly rated risks related to the T&D Operations Board Policy:

- A major event such as a severe storm damages infrastructure and results in widespread, long duration outages, equipment damages and safety issues
    - This is the most significant risk in the portfolio and is being mitigated through the execution of numerous reliability, vegetation management and storm hardening initiatives.
- Protection of critical assets such as substations and the control centers are compromised and could result in outages, equipment damages and safety issues
    - There is significant focus on safeguarding critical assets and managing this risk effectively, primarily through the creation of a multi-disciplinary working group that is focused on the execution of a multi-year integrated physical security plan.

Enterprise Risk Management

There are several risks related to asset management rated between medium and high that are related to the T&D Operations Board Policy. These three risks are being monitored and opportunities for enhanced mitigation actions are being discussed.

- These risks represent the increasing number of aging assets with minimal inventory, and a continuing lack of accurate, historical data. This results in decision-making that may not support lifecycle optimization and appropriate scheduling of aging substation equipment.
- There is also an increasing risk that climate change may impact T&D facilities and a lack of a substantive cathodic program for underground transmission cables and fluid tanks.
- These risks are being mitigated by reviewing the scope of existing substation transformer and switchgear replacement programs, expanding the spare equipment program to account for aging assets, drafting detailed asset management plans for all T&D equipment classes, and reviewing the critical spares program to address increasing supply chain constraints for long lead time equipment.

Questions?

Billy Raley

Senior Vice President
Transmission & Distribution

lipower.org

FOR CONSIDERATION
November 13, 2024

TO: The Board of Trustees

FROM: John Rhodes

REQUEST: Approval of the Annual Report on the Board's Policy on Transmission and Distribution Operations

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Requested Action

The Board of Trustees (the "Board") of the Long Island Power Authority ("LIPA") is requested to adopt a resolution: (i) approving the annual report on the Board's Policy on Transmission and Distribution ("T&D") Operations (the "Policy"); and (ii) finding that LIPA has complied with the Policy, which resolution is attached hereto as **Exhibit "A."**

Background

By Resolution No. 1371, dated July 26, 2017, the Board originally adopted the Policy. The last annual review of the Policy was completed in June 2023, and the Board last amended the Policy in November 2021. The amendments to the Policy in November 2021 changed the name of the Policy from T&D System Reliability to T&D Operations.

The Policy now provides that: "LIPA's vision for our transmission and distribution system is to achieve industry-leading reliability, improve resiliency by minimizing outages and reducing restoration times after significant system disruptions, and leverage modern system design and technology to provide value to all customers. The Policy also provides for an annual reporting requirement that "[t]he Chief Executive Officer, or his or her designee, will report annually to the Board on the key provisions of this Policy."

Compliance with the Policy

LIPA Staff recommends that for the reasons set forth below, the Board find that LIPA has complied with the Policy since the last annual review. Compliance with each element of the Policy is discussed in detail below.

As set forth in the Policy, "[t]o achieve our vision for reliability, LIPA will":

"provide top decile reliability (i.e., top 10% of peer utilities) as measured by system average outage duration, excluding major events."

- LIPA has taken steps to improve reliability (as further discussed below) with the objective of maintaining the Board's policy objective of top 10% reliability among peer utilities as measured by system average outage duration (i.e., the average outage minutes per customer

per year, excluding major weather events).

- PSEG Long Island's 2023 performance for system average outage duration per customer was 56.3 minutes. Top decile was 57.2 minutes therefore, performance was within the top decile versus peer utilities.
- The 2024 PSEG Long Island performance metrics, which were the product of input from LIPA, PSEG Long Island, and the New York State Department of Public Service, set a system average outage duration target of 56.5 minutes (T&D-07), which is slightly more stringent than the top decile benchmark. The 2024 year-to-date performance is tracking approximately 2 minutes behind the 2023 year-end result due primarily to elevated storm activity over the first half of the year and is at risk to meet the year-end performance target.

"improve circuit conditions that cause a customer to experience four or more sustained outages or six or more momentary outages in any 12-month period."

- The 2024 performance metrics include metrics for sustained multiple customer outages ("MCO") (T&D-10) and multiple momentary customer outages (T&D-12). The metric for sustained MCOs was refined for 2024 to address four discrete levels of customer outages ranging from six to twelve or more outages, as measured over a rolling 12-month period. In 2023, PSEG Long Island successfully met the momentary MCO metric, but failed to meet the sustained MCO metric. In 2024, the sustained MCO metric is partially being met, however, the momentary MCO metric is behind target. While both metrics are at risk, they can still be successfully achieved by year-end.
- LIPA will continue to focus on improving MCO customer experience for those smaller groups of customers that have experienced outlier performance that is far worse than the overall system average. This will be addressed by focusing on improving performance for those customers that have experienced more than five sustained outages in a year. Similarly, LIPA will continue to focus on improving performance for those customers that have experienced six or more momentary outages in a year.
- Annual reliability programs are designed to improve circuit performance, including the Circuit Improvement Program ("CIP"), the Multiple Customer Outage Program ("MCO"), and the Multiple Device Operation Program ("MDO").

"utilize modern system design and technology to anticipate and minimize outages, monitor system conditions, provide for preventative and predictive system maintenance, and facilitate the efficient and timely interconnection of renewable and distributed resources."

- LIPA has required the development of a roadmap for an Enterprise Asset Management System ("EAMS"), including compliance with ISO 55001 asset management standards, to anticipate and minimize outages and provide the analytic tools and processes for modern preventative and predictive maintenance. This effort includes a complete inventory of Transmission and Distribution assets beginning in June 2022 that continues at present. These initiatives, which include asset inventory, governance, and system implementation, were incorporated into the 2022 and 2023, 2024 performance metrics as part of a multi-year implementation.

"safeguard people and protect facilities and functions that support operations from unauthorized

access or disruption through vulnerability assessments and risk mitigation."

- LIPA engaged an independent third-party consultant to perform a security evaluation of its physical assets, with the objective of identifying vulnerabilities, determining risk, and developing findings and recommendations. That assessment was completed in November 2022. The findings from the assessment were developed into actionable deliverables under a Project Implementation Plan contained in a 2023 physical security performance metric (T&D-45). Those deliverables were successfully completed by the end of 2023.
- In late 2023, a multi-disciplinary working group consisting of LIPA and PSEG Long Island senior leadership and staff was created. The primary objective is to develop and execute on a multi-year integrated plan to enhance physical security measures at our facilities, prioritizing those facilities that are most critical to operations.

The Policy further provides that "[t]o achieve our vision for resiliency, LIPA will:"

"mitigate the effects of climate change through multi-year programs that reduce the number and duration of outages after significant system disruptions."

- The 2024 performance metrics include two metrics (T&D-30 and T&D-31) related to storm hardening. The storm hardening metrics require the development and execution of a plan to automate switches that will minimize customer outages during a storm. There are two performance metrics (T&D-24 and T&D-26) that target improved vegetation management, including improved cycle trim, utilizing an improved trimming technique of "circuit trim to sky" and preemptive hazardous tree identification and removal of hazard trees. PSEG Long Island partially met the 2023 performance target for hazard tree removal.
- LIPA was awarded a storm hardening/mitigation grant in the 2nd quarter of 2023 for $3.5 million to harden transmission road crossings. The New York State Division of Homeland Security and Emergency Services recommended that LIPA modify that application and in 2024, LIPA submitted its revision seeking an additional $35 million. That application is in final review and LIPA expects approval prior to year-end 2024. A second application was awarded in 2023 for $5 million to mitigate poles in disadvantaged communities in Nassau/Queens. In 2024, LIPA was awarded a separate award for $5 million to mitigate poles in disadvantaged communities in Suffolk County and was also awarded $430 million to harden 166 overhead circuits. Since late 2023, LIPA was awarded mitigation grants totaling $472 to harden our system. These grants will allow LIPA to accelerate several hundred million dollars of storm hardening investment at low cost to customers and is a benefit of LIPA's public power status. In 2024, LIPA submitted three grant applications under the United States Department of Energy's Grid Resilience and Innovation Partnerships Program (GRIP). However, LIPA was recently notified that it was not selected for an award. LIPA will continue to pursue these competitive grant opportunities as they are made available.

"assure timely and accurate communication to customers about outages and restoration times."

- LIPA is enhancing the Estimated Time of Restoration ("ETR") process to provide more accuracy, allowing for customers to better plan for the outage duration. In 2023, efforts

conducted through the ETR metric (T&D-42) led to the selection and operationalization of three factors (device type, seasonality/month, and hour/shift) that had the objective of improving ETR accuracy and the related customer outage experience. Since the time of operationalization in the fourth quarter of 2023, overall ETR accuracy performance has improved by over 10% for our customers.

"independently verify that emergency restoration plans are complete and tested."

- LIPA independently verified and validated PSEG Long Island's remediation of its outage management system implementation (see June 2023 report to the Board).
- Between December 2022 and May 2023, LIPA observed and made over 330 recommendations/comments to enhance PSEG Long Island's functional exercises related to emergency response in the event of a critical system failure. PSEG Long Island incorporated the recommendations/comments in Division scaled functional exercises in 2024 that were observed by LIPA and DPS. The 2022 Performance Metric IT-3 related to System Resiliency required PSEG Long Island to update and successfully exercise its disaster recovery and business continuity plans for all critical systems and processes. PSEG Long Island did not achieve this metric in 2022, and 2023. In 2024, the IT-3 Metric is divided into IT-03 for business continuity and IT-10 for disaster recovery and LIPA hired an external third-party consultant to conduct an overall assessment of the business continuity and disaster recovery program. The assessment report was provided to PSEG Long Island in the 3rd quarter of 2024 and provides recommendations and actions to be completed in 2024 and beyond.

Enterprise Risk Management Discussion

The Board has adopted a policy on Enterprise Risk Management ("ERM"). Enterprise risks are brought to the Board's attention throughout the year. There are three risks related to this Policy:

- a major event such as a severe storm damages the infrastructure and results in widespread, long duration outages, and negative public perception;
- protection of critical assets such as substations and the control centers are compromised and could result in outages, equipment damages and safety issues; and
- asset management risks including the increasing number of aging assets with minimal inventory, and a lack of accurate, historical data. This results in decision making that may not support lifecycle optimization and appropriate scheduling of aging substation equipment. There is also an increasing risk that climate change may impact T&D facilities and a lack of a substantive cathodic program for underground transmission cables and fluid tanks.

The major event risk is the highest rated risk in the PSEG Long Island portfolio. To mitigate this risk, LIPA and PSEG Long Island have implemented numerous reliability, vegetation management, and storm hardening initiatives, as further described above. LIPA has concerns about PSEG Long Island's failure to previously meet certain metrics including vegetation management. This remains a risk that is not mitigated to the standards set in the performance metrics.

The protection of critical assets risk is also a highly rated risk. To mitigate this risk, there are

several substation security upgrade projects which are funded and underway. As mentioned above, a multi-disciplinary working group was created to develop and execute on a multi-year integrated plan to enhance physical security measures at our facilities, prioritizing facilities that are most critical to operations. While there are not any 2024 metrics for physical security, there is significant focus on safeguarding critical assets and managing this risk effectively.

The asset management risks are rated between medium and high. These risks are being mitigated through reviewing the scope of the existing substation transformer and switchgear replacement programs, expanding the spare equipment program to account for aging assets, drafting detailed asset management plans for all T&D equipment classes, and reviewing the critical spares program to address increasing supply chain constraints for long lead time equipment. There is one metric related to this risk, T&D-01 Asset Management Program Implementation. While progress is being made, there is concern this metric may not be achieved and is being monitored closely.

Annual Review of the Policy

The Policy was last updated in November 2021, to reflect the Board's strategic direction in this area. LIPA Staff has reviewed the Policy and proposes no changes at this time.

Recommendation

Based upon the foregoing, I recommend approval of the above requested action by adoption of a resolution in the form attached hereto.

Attachments

Exhibit "A" Resolution

Exhibit "A"

RESOLUTION APPROVING THE REPORT TO THE BOARD OF TRUSTEES ON THE BOARD POLICY ON TRANSMISSION & DISTRIBUTION OPERATIONS

WHEREAS, the Board Policy on Transmission and Distribution ("T&D") System Reliability was originally approved by the Board of Trustees by Resolution No. 1371, dated July 26, 2017; and

WHEREAS, the last annual review of the Policy was completed in June 2023; and

WHEREAS, the Board has conducted an annual review of the Policy and affirms that the Policy has been complied with.

NOW, THEREFORE, BE IT RESOLVED, that consistent with the accompanying memorandum, the Board hereby finds that the LIPA has complied with the T&D Operations Policy for the period since the last annual review and approves the annual report to the Board.

Dated: November 13, 2024