



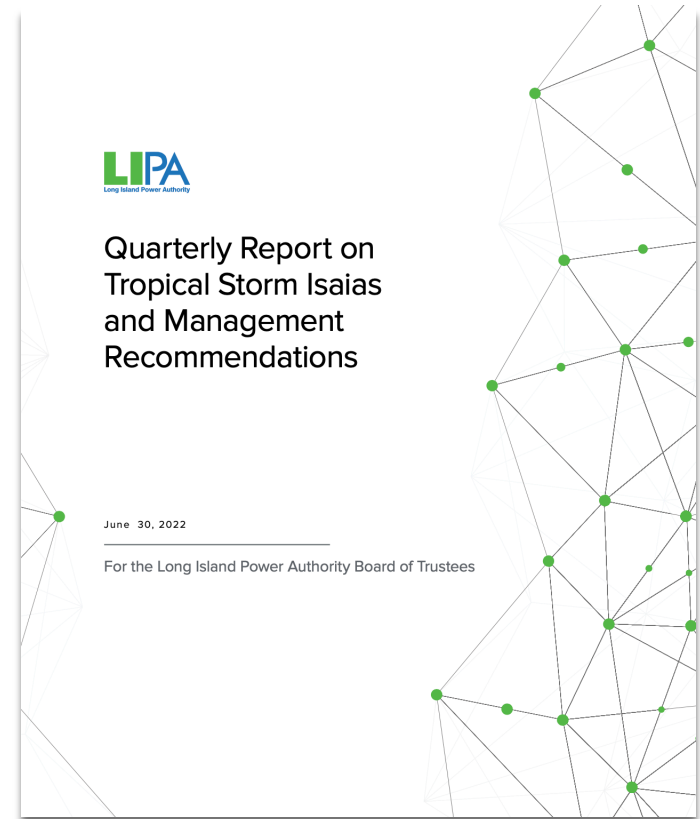
# Briefing on Quarterly Report on Tropical Storm Isaias and Management Recommendations

July 27, 2022

# QUARTERLY REPORT ON BOARD RECOMMENDATIONS

The Board has directed LIPA staff to:

- Monitor PSEG Long Island's execution of Project Implementation Plans (PIPs) to remediate Board recommendations
- Independently Verify and Validate (IV&V) the remediation of each Board recommendation
- Report to the Board quarterly until all PIPs are complete



[ITF Quarterly Report](#)

# TROPICAL STORM ISAIAS OVERVIEW



**650K**  
customers  
lost power



**Critical IT**  
and phone  
**systems**  
**failed**



**1M+ calls**  
received  
busy signals



**300K+ text**  
messages  
bounced  
back



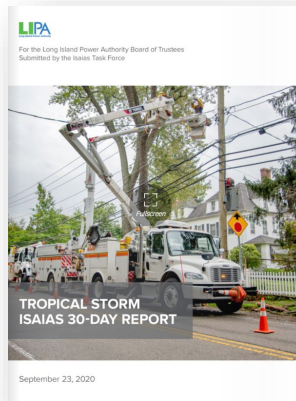
Website,  
mobile app,  
gov't portal  
**failed**

- Failed IT and telecom systems affected communications and restoration efforts
- Some customers received a dozen or more inaccurate restoration times; restoration estimates were extended by as many as seven days

# LIPA'S KEY FINDINGS ON TS ISAIAS

- 1. PSEG Long Island's IT failures during Tropical Storm Isaias were avoidable. The root cause was management rather than technical failures**
  - Inadequate preparedness, planning, and testing of telecom and outage management systems
  - Lack of robust business continuity plans for critical systems
  - Lack of proactive risk management
- 2. Telephone systems lacked capacity and were not tested**
  - Over a million customer calls went unanswered
- 4. Outage Management System was failing before Isaias hit**
  - PSEG Long Island upgraded OMS without sufficient testing
  - Management was slow to respond to known problems with OMS before the storm
- 5. PSEG failed to disclose to LIPA that OMS was failing**
  - PSEG knew OMS was not performing on “blue sky” days before Isaias but did not inform LIPA
  - Even after storm, PSEG was not forthcoming about OMS issues

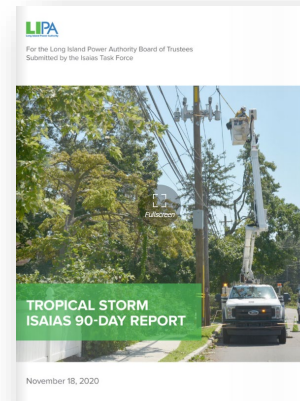
# LIPA TS ISAIAS RECOMMENDATIONS



## 30-Day Report (September 2020)

Number of Recommendations:

**39**



## 90-Day Report (November 2020)

Number of Recommendations:

**47**

**Recommendation Focus Areas:** Technical | Leadership and Management | Emergency Response Planning and Preparation | Storm Resiliency

# 30/90-DAY REPORT RECOMMENDATION STATUS

**PSEG Long Island has made progress with the Isaias recommendations. However, 39% remain incomplete two years after the event**

On Schedule	2022 Metric*	Delayed	Closed by PSEG LI**	Total***
0	10	20	48	78
0%	13%	26%	61%	

- There are delays in completing the milestones called for in the project implementation plans, and some projects are getting further delayed over time
- Deliverable submissions are too often delayed, incomplete, or suffer from quality control issues

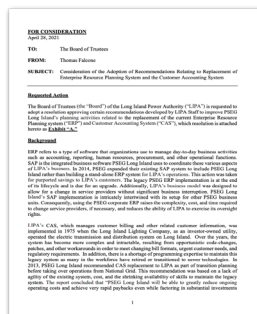
# 30/90-DAY REPORT RECOMMENDATION STATUS

## Examples of Isaias recommendations that are still incomplete\*\*

- 3.2.1.3 - Upgrading the existing infrastructure for handling calls within the call center to a more recent version and **modernizing call center infrastructure** to utilizing newer “SIP Trunking” technology is further delayed, with the projected end date at the beginning of the third quarter.
- 4.03 - PSEG Long Island last reported in March 2022 that the project to **strengthen its voice communications engineering and project management staff** to address long-term needs has not started. The original start date was the second quarter of 2021.
- 5.04 - Create **business continuity plans** for all mission-critical systems and processes reported closed by PSEG Long Island . However, LIPA considers the materials submitted to date insufficient and will keep the project open until LIPA’s concerns have been addressed.
- 5.07 - Expand the **Emergency Assistance Agreement** with National Grid to include generation employees still open with an original start date of December 2020.

# MANAGEMENT RECOMMENDATIONS

In addition to the Isais Task Force reports, the LIPA Board adopted **Management Recommendations addressing deficiencies in 15 non-storm operational areas**



Number of Recommendations:

87

**Recommendation Focus Areas:** Enterprise Risk Management | Operating and Capital Budget | Real Estate Management Inventory Management | Damage Collection Management | Asset Management Affiliate Service | Strategic Planning | IT System Modernization | Work Management | Small Generator Inspection | Data Information Access Geographic Information System | Work Management-Overtime



# MANAGEMENT RECOMMENDATION STATUS

**87 Management Recommendations have resulted in 69 project plans. 43% of the recommendations are closed. An additional 30 of the plans were moved into 2022 PSEG Long Island Metrics and are in various stages of execution**

On Schedule	2022 Metric*	Delayed	Closed by PSEG LI**	Total***
1	30	6	30	69
2%	43%	9%	43%	

# STATUS OF PSEG LONG ISLAND OMS AND TELECOM

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## PSEG Long Island redeployed CGI Outage Management System (OMS) v6.7.8 into production on February 6, 2022 after numerous delays

- OMS v6.7 failed during Tropical Storm Isaias in August 2020
- LIPA has spent over **\$45 million** on OMS and communication system remediation to date\*
- Re-deployment of OMS was delayed at least four times to February 2022
  - *Smart meter integration into OMS was further delayed from March 2022 to June 2022. Without smart meter integration several important storm management / restoration features were not available to customers. **Performance (stress) testing on this integration is still pending and results from some recent preliminary tests have not been positive.***
- PSEG Long Island reports that the system is functioning as expected

# LIPA'S IV&V OF OMS

## **Phase I of LIPA's IV&V of PSEG Long Island's OMS deployment consists of initiation, shakedown, and functional testing of the deployed systems**

- Review of OMS design specifications, configurations, and interface implementations
- Running a sample of PSEG Long Island's functional tests to independently repeat and verify test results
- Reviewing the design of PSEG Long Island's functional tests to ensure the tests are adequate to evaluate whether OMS v 6.7.8 complies with functional requirements
- Development of Phase 2 plans for further functional testing, as needed, and to conduct performance testing under hurricane conditions

# OMS IV&V PHASE I FINDINGS

- **36% of LIPA's IV&V test runs of the PSEG Long Island test scripts have failed to date.** Many of the test failures are the result of inadequate documentation, poorly written test scripts, and scripts that plainly do not work. Under these conditions, it is difficult to tell whether the OMS works as it should

	Test Points	Tests Run	Pass %	*Failed to Run %
Total	535	358	64	36

- LIPA will be working through each of the failed test scripts with PSEG Long Island until all issues are resolved
- Successful functional testing is a pre-requisite to LIPA conducting stress testing (simulating hurricane conditions), which could uncover additional problems
- PSEG Long Island went live with smart meter integration on June 29, 2022, which will require additional functional and stress testing

# OMS IV&V PHASE I FINDINGS

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## **PSEG Long Island did not follow mature IT practices in its functional testing used to certify the OMS v 6.7.8 ready for deployment**

- Many test scripts are not documented accurately or completely. They rely upon the testers' implicit knowledge to execute the tests which risks reliability and repeatability of the tests
- PSEG Long Island does not use version control systems for tracking test cases, test data, or configuration. This causes uncertainty as to what test scripts, test cases, and test data was used for validating the system
- Some test cases did not match the OMS system behavior but were marked as passed by PSEG Long Island based on implicit "understanding" that the functionality works. These practices compromise the integrity of the test plan
- Mistakes in mapping functionality to the test objectives also reduce the effectiveness and reliability of the testing done by PSEG Long Island

# IV&V PHASE I RECOMMENDATIONS

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## LIPA recommendations from Phase I IV&V:

- PSEG Long Island should review all their existing functional test scripts and re-test each script until all the tests pass on a “repeatable” basis
- Focus on improving test management practices, which will involve staff training and appropriate use of Software Development Life Cycle (SDLC) and test management tools
- Ensure that system, integration, and user acceptance testing follows a defined cadence and is organized accordingly
- Develop a Quality Assurance and Quality Review processes around testing and test management

**LIPA’s IV&V of the OMS will continue until all the identified issues are remedied and PSEG Long Island implements the necessary process and organizational changes**

# LIPA TIMELINE AND REPORTS

## Storm, Investigations, Corrective Actions

### August 2020 – LIPA Initiates Comprehensive Review of Tropical Storm Isaias Storm Response

- Tropical Storm Isaias made landfall; Task Force established for review of PSEG Long Island storm performance

### September 2020 – LIPA Issues 30-Day Report

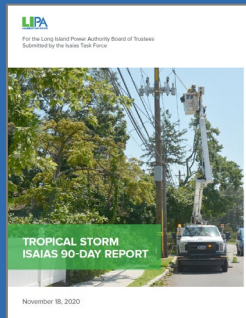
- 39 recommendations covering immediate corrective actions provided to mitigate risk during 2020 storm season

### November 2020 – LIPA Issues 90-Day Report

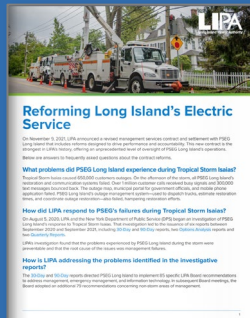
- 47 additional recommendations covering management, emergency management, and information technology shortfalls

### LIPA Issues Quarterly Status Reports (June 2021 – June 2022)

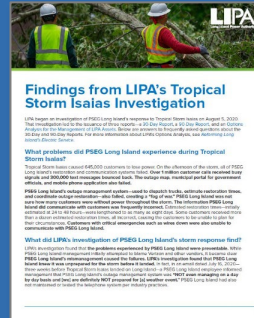
- Quarterly reports to the Board on the remediation of the 86 recommendations in the 30 and 90-Day Reports



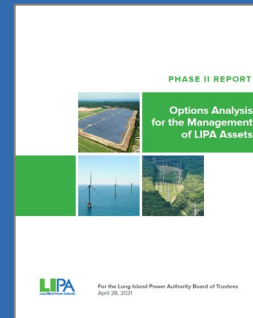
*90-Day Report*



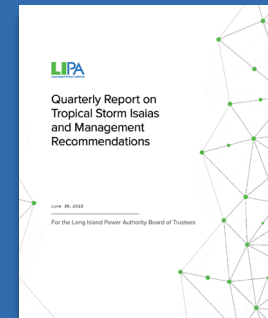
*Fact Sheet*



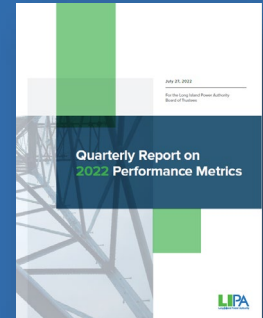
*Fact Sheet*



*Phase II Options Analysis*



*Task Force Quarterly Report*



*Metrics Quarterly Report*



# Quarterly Report on Tropical Storm Isaias and Management Recommendations

June 30, 2022

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For the Long Island Power Authority Board of Trustees



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## EXECUTIVE SUMMARY

The Board of Trustees (Board) of the Long Island Power Authority (LIPA) has directed PSEG Long Island to file Project Implementation Plans (PIPs) to implement 172 recommendations to cure deficiencies in management, emergency management, information technology, and other operational areas. The PIPs define the objectives, deliverables, and scope of the remediation projects as well as the major milestones.

These 172 recommendations have resulted in 147 PIPs, including:

- 78 PIPs to address shortcomings that turned Tropical Storm Isaias into a hardship for Long Island and Rockaways electricity customers (the “Task Force Recommendations”); and
- 69 PIPs to correct other PSEG Long Island management deficiencies and process improvements unrelated to the storm (the “Management Recommendations”).

The Board directed LIPA staff to monitor PSEG Long Island’s execution of the PIPs, to independently verify and validate (IV&V) the remediation of each of the recommendations, as necessary, and to provide a quarterly report to the Board on the status of the PIPs until all such projects are complete. This Quarterly Report is the fifth such report and summarizes the status of each PIP as of monthly reports provided by PSEG Long Island on June 9, 2022, with selected updates for known changes since that time.

The report separately describes the Task Force Recommendations and the Management Recommendations, given the particular emphasis placed on defects that affect emergency response.

Note that some of the PIPs have now been incorporated into [Performance Metrics for 2022](#) under the Second Amended and Restated Operations Services Agreement (OSA) between LIPA and PSEG Long Island that became effective on April 1, 2022. Recommendations that are fully addressed by the Performance Metrics are now being reported in separate Quarterly Reports on 2022 Performance Metrics, and are no longer covered in this report.

### Background on Isaias Task Force Recommendations

On August 5, 2020, the day after Tropical Storm Isaias made landfall on Long Island, LIPA formed an Isaias Task Force to undertake a comprehensive and independent investigation into the failure of PSEG Long Island’s communications and Outage Management System (OMS) during the storm.

The Task Force issued two reports to the LIPA Board of Trustees following the storm - the [30-Day](#) and [90-Day Report](#). The Task Force presented the 30-Day Report to the LIPA Board on September 23, 2020. Because of the urgency of the immediate threat of another significant storm, the 30-Day Report focused on the failures of PSEG Long Island’s information technology and communication systems and their proximate causes. The 90-Day Report, presented to the Board on November 18, 2020, expanded on the findings of the 30-Day Report and concluded that systemic management shortcomings were the root cause of PSEG Long Island’s failures during the storm. All the failures could and should have been prevented by management.

The Isaias Task Force Recommendations contained in the 30-Day and 90-Day Reports were designed to, among other things, (i) change management incentives and accountabilities; (ii) reform information technology and emergency management; and (iii) strengthen LIPA’s oversight.

## Update on Isaias Task Force Recommendations

The 85 Isaias Task Force recommendations resulted in 78<sup>1</sup> PIPs. Table 1 summarizes the status of the 78 PIPs, of which:

- 10 (13%) of the projects have been incorporated into the OSA with negotiated dates and targets (many of which are later than the original PSEG Long Island project plan); and are being reported on in separate Quarterly Reports on 2022 Performance Metrics. These projects are not included in this report.
- 20 projects (25%) are either delayed, no monthly status report was submitted by PSEG Long Island in the quarterly reporting period (April – June), or PSEG Long Island has not yet submitted an acceptable PIP to address the Board’s recommendations.
- 48 projects (62%) are closed by PSEG Long Island (some of which remain subject to LIPA IV&V).

**FIGURE 1:**  
Status of Project Implementation Plans for the Isaias Task Force Recommendations

As of	On Schedule	2022 OSA Metric	Delayed	No Status Reports <sup>2</sup> / No Approved PIP <sup>3</sup> / PIP Deferred	Closed by PSEG LI <sup>4</sup>	Total
<b>Jun 2022</b>	<b>0</b> <b>(0%)</b>	<b>10</b> <b>(13%)</b>	<b>15</b> <b>(19%)</b>	<b>5</b> <b>(6%)</b>	<b>48</b> <b>(62%)</b>	<b>78</b>
<b>Mar 2022</b>	<b>0</b> <b>(0%)</b>	<b>10</b> <b>(13%)</b>	<b>18</b> <b>(23%)</b>	<b>8</b> <b>(10%)</b>	<b>42</b> <b>(54%)</b>	<b>78</b>

**62% of the recommendations have been closed by PSEG Long Island (subject to LIPA IV&V) and 38% remain open (including as part of a 2022 Performance Metric).** PSEG Long Island made some progress with the Task Force recommendations this quarter, closing six PIPs. However, all active projects are delayed in completing the milestones called for in the PIPs, and some projects are getting further delayed over time. It should be noted that delays are relative to the PIPs PSEG Long Island submitted to the Board to address each recommendation.

**Overall, PSEG Long Island is better positioned for storms than it was during Tropical Storm Isaias.** However, remediation efforts appear to be hampered by a lack of mature program management and project oversight processes leading to uneven efforts across the organization and gaps in remediation efforts. Improvement targets in several program management areas have been included in the 2022 Performance Metrics. For example, in December 2021, LIPA provided funding for a PSEG Long Island IT re-organization that establishes several new Director-level management positions, consistent with the new OSA, which requires a dedicated PSEG Long Island Chief Information Officer and a full complement of staffing dedicated to LIPA operations. PSEG Long Island reports that it has begun filling these new positions.

A summary of the status of each of the Task Force PIPs is included in Section I.

<sup>1</sup> The number of projects requiring PIPs may vary over time as recommendations are combined or split into implementation projects.

<sup>2</sup> In some cases, a status report may be absent because a PIP was submitted or accepted after the status report due date.

<sup>3</sup> Two of these PIPs have been submitted and are under review.

<sup>4</sup> Closed projects are subject to IV&V by LIPA staff.



## Status of Remediation of the Communication and Outage Management Systems

**Problems with PSEG Long Island's communications and OMS were at the heart of its failed response to Tropical Storm Isaias.** The systems failed in almost every aspect of delivering a customer outage report to the OMS and communicating accurate information back to customers.

The OMS became dysfunctional due to a combination of system load and unresolved defects. There are a variety of channels by which customers can give and receive outage information. The multiplicity of channels is intended to meet differing customer needs and preferences. However, each channel had underlying and unnecessary interconnections with other communication channels, causing failures in one to cascade into system-wide failures. These systems were not realistically stress tested and there was no provision for the contingency of communication failures.

Proper technical remediation of these systems is a key component of future storm readiness. Success in this area is defined by:

- Deployment of a stable, vendor-supported, industry-standard system that will provide the functionality demanded from an efficient and effective response plan.
- A fully tested system that will perform efficiently and effectively under load scenarios predicted in this new climate-challenged world.
- Well-designed, reliable, and thoroughly exercised Business Continuity Plans (BCPs) that can be put in motion if the primary systems fail.

LIPA's recommendations to PSEG Long Island had the following key requirements:

- Systematically analyze and test the failure modes of the system to identify the true root causes of the observed defects.
- Ensure that test designs comprehensively and completely exercise all end-to-end processes (across each channel) that might be encountered in a future storm scenario like Isaias or worse.
- Focus on fixing OMS v 6.7 or later and not the obsolete and unsupported v 5.5 of the system.
- Build robust BCPs as a contingency measure.

**PSEG Long Island has been at it for two years and spent over \$45 million in remediating the OMS, telephony, and associated systems, and they appear to be in significantly better shape than during Tropical Storm Isaias.**<sup>5</sup> However, remediations of the systems are not yet complete, and we have continued concerns about the pace of activities and the gaps in the implementation of the Task Force Recommendations.

## PSEG Long Island Is Now Operating OMS v 6.7.8

**PSEG Long Island deployed a remediated OMS v 6.7.8 with new hardware on February 6, 2022.** Prior to that, PSEG Long Island was operating OMS v 5.5, an out of date, out-of-general-use version of the OMS running on obsolete infrastructure. PSEG Long Island had initially planned to deploy the remediated re-platformed v 6.7 in June 2021, prior to the 2021 Atlantic Hurricane season; but was unable to complete the project along their original proposed timeline.

PSEG Long Island has reported that the deployment of OMS v 6.7.8, which consists of the latest broadly used version of OMS and related CGI products, is successful, with the system largely functioning as expected. PSEG Long Island has been working with the vendor to obtain and test fixes for non-critical defects; and deployed a release with over two dozen defect fixes on June 27, 2022.

<sup>5</sup> As of most recent report through June 2022.

**Source control and change management continue to be significant concerns, and the Task Force recommends that PSEG Long Island maintain a focus on rigorous regression testing, while working with the vendors and internal teams to improve change management processes.**

## **IV&V of the OMS v 6.7.8 Has Commenced**

With the deployment of OMS v 6.7.8, LIPA kicked off Phase I of the OMS IV&V initiative in March 2022. Phase I consists of initiation, shakedown, and functional checkout of the deployed system. It includes the following:

- Knowledge transfer from PSEG Long Island and third-party contractors.
- Project initiation tasks (planning, project management, securing resources).
- Review of final design specifications, configurations, and interface implementations.
- Standing-up of the test environment and testing infrastructure.
- Reviewing the design of PSEG Long Island's functional tests to ensure the tests are adequate to evaluate whether OMS v 6.7.8 complies with functional requirements.
- Running a sample of PSEG Long Island's functional tests to independently repeat and verify test results.
- Development of Phase 2 plans for further functional testing, as needed, and to conduct performance testing simulating hurricane conditions.

**36% of LIPA's IV&V test runs of PSEG Long Island's test scripts have failed**, as shown in the table below. Many of the test failures are the result of inadequate documentation, poorly written test scripts, and scripts that plainly do not work.

Area	Test Points	Tests Run	Pass %	Fail %*
<b>Total</b>	<b>535</b>	<b>358</b>	<b>64</b>	<b>36</b>

**PSEG Long Island did not follow mature IT practices in its functional testing used to certify the OMS v 6.7.8 as ready for deployment.**

- Many test scripts are not documented accurately or completely. They rely upon the tester's implicit knowledge to execute the tests, which risks the reliability and repeatability of the tests.
- PSEG Long Island does not use version control systems for tracking test cases, test data, or configuration. This causes uncertainty as to what test scripts, test cases, and test data were used for validating the system.
- Some test cases did not match the OMS system behavior but were marked as passed by PSEG Long Island based on implicit "understanding" that the functionality works. These practices compromise the integrity of the test plan.
- Mistakes in mapping OMS functionality to the test objectives reduces the effectiveness and reliability of the testing conducted by PSEG long Island.

**Under these conditions, it is difficult to tell whether the OMS works as it should.** LIPA will be working through each of the failed functional test scripts with PSEG Long Island until all issues are resolved. Successful functional testing is a prerequisite to LIPA conducting stress testing (simulating hurricane conditions), which could uncover additional problems.

\*Fail refers to tests which either did not behave as expected due to difference in system response, due to test script being inconsistent with the system interface, due to missing steps in the test cases or due to mismatch in the expected and the actual user role associated with the tester.

## LIPA's Preliminary Recommendations from Phase I IV&V

LIPA's recommendations from Phase I IV&V to date include:

- PSEG Long Island should review all their existing functional test scripts and re-test each script until all the tests pass on a “repeatable” basis.
- Focus on improving test management practices, which will involve staff training and appropriate use of Software Development Life Cycle (SDLC) and test management tools.
- Ensure that system, integration, and user acceptance testing follows a defined cadence and is organized accordingly.
- Develop Quality Assurance and Quality Review processes around testing and test management.

**LIPA's IV&V of the OMS will continue until all the identified issues are remedied and PSEG Long Island implements the necessary process and organizational changes.**

The reformed OSA requires a full complement of IT staffing dedicated to LIPA operations, and LIPA funded a PSEG Long Island IT re-organization in the 2022 Budget to establish several new Director-level management positions. PSEG Long Island is making progress on filling those positions. We find that PSEG Long Island's newly hired senior IT management is committed to building the maturity and capacity of the organization to improve performance.

## Communication and OMS Remediation Is Not Yet Complete

**PSEG Long Island deployed the AMI integration with OMS on June 27, 2022.** The project, slated for completion by March 31, 2022, per the Performance Metrics, was previously granted an extension until April 29, 2022, but was further delayed. PSEG Long Island's initial reports find the deployment to be successful; however, **performance testing simulating hurricane conditions is not scheduled to be completed until August 2022.**

Additionally, the **deployment of an upgraded call center facility continues to be further delayed**, with the deployment now potentially targeted for July 2022. LIPA has expressed concerns about the risks of a go-live too close to the start of the storm season; a factor that PSEG Long Island has indicated will be reviewed prior to deployment. Note that these projects were incorporated into PSEG Long Island's 2022 contractual performance measures and their status is being reported as part of quarterly OSA 2022 Performance Metrics reporting.

## Status of Business Continuity Plans

The 90-Day Report identified the lack of adequate BCPs as a significant management failure and recommended the development of comprehensive BCPs for all mission-critical systems and processes to enable graceful recovery from technology failures, with rigorous exercise of and training on the well-developed BCPs.

PSEG Long Island's initial responses to Recommendation 5.04, for creation of BCPs for all mission-critical systems and processes, were lacking. A major deficiency of the proposed contingency plan was that it focused on the last incidence of failure (OMS and telephony) and did not take a broader view of the potential failures of many other mission-critical systems. The organization and structural hierarchy of the plan was poorly framed, and LIPA provided specific recommendations to drive improvements.

PSEG Long Island has since made progress, though there is still work to be done. PSEG Long Island has submitted to LIPA a host of BCP “work-around” plans intended to document contingency procedures in case of failure of specific IT systems, as well as limited revisions in response to LIPA feedback. A general shortcoming of the plans has been that they tend to take an overly siloed technology-based approach that addresses failures of specific individual applications, but do not sufficiently consider and address potential real-world failure scenarios

that are likely to see a series of interlinked and possibly cascading system failures. It is also evident that LIPA's prior feedback has not been adequately considered in subsequent revisions of the plans. LIPA is keeping the recommendation open until the concerns that have been communicated to PSEG Long Island are addressed and acceptable BCPs are delivered.

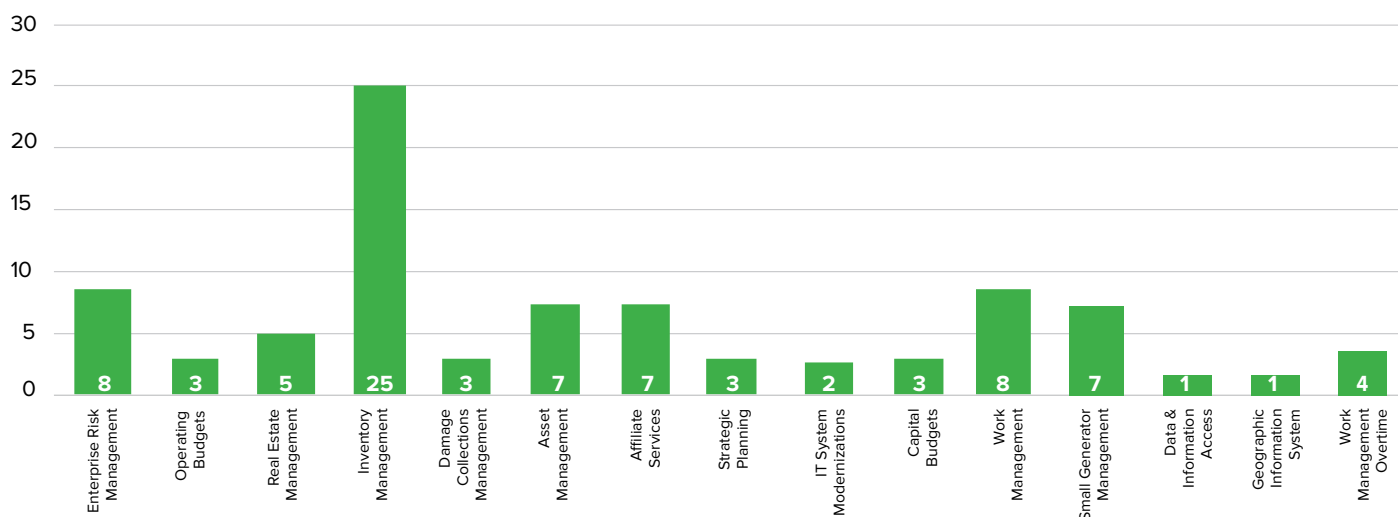
Like Recommendation 5.04, Recommendation 5.02 to develop more rigorous Emergency Response Plan (ERP) training and exercises, including exercise of well-developed BCPs, has been reported closed by PSEG Long Island, but is being kept open by LIPA pending delivery of acceptable artifacts. After reviewing the 2022 Hurricane Tabletop Exercise, LIPA concluded that the exercise was scripted and more of a read-out than a testing of communication or problem solving and did not adequately challenge or test PSEG Long Island personnel's readiness or ability to respond to a major event on Long Island.

Recommendation 5.12, to improve training for Remote Dispatch Authority (RDA), including on BCPs, is closed, and LIPA will conduct independent IV&V on the Remote Dispatch Authority/Remote Command Authority training.

## Status of Management Recommendations

Beyond the Task Force recommendations, the LIPA Board has adopted 87 recommendations addressing deficiencies in 15 non-storm operational areas. These Management Recommendations are summarized in Figure 2.

**FIGURE 2:**  
Management Recommendations By Area



The 87 Management Recommendations resulted in 69 PIPs, with some PIPs covering multiple recommendations.

Figure 3 summarizes the status of the 69 Management PIPs.

- 1 project (1%) is reportedly on schedule.
- 30 of the Management Recommendations (43%) have now been incorporated into the OSA [2022 Performance Metrics](#) with negotiated dates and targets; and are being reported in separate Quarterly Reports on 2022 Performance Metrics. These recommendations are not included in this report.
- 8 projects (12%) are either delayed or PSEG Long Island has not yet submitted an acceptable PIP to address the Board's recommendations.
- 30 projects (43%) were closed by PSEG Long Island (some of which remain subject to LIPA IV&V).

**FIGURE 3:**  
Status of Project Implementation Plans for Management Recommendations

As of	On Schedule	2022 OSA Metric	Delayed	PIP Not Accepted or Submitted / PIP Not Due or Deferred	Closed by PSEG LI <sup>6</sup>	Total <sup>7</sup>
<b>Jun 2022</b>	<b>1 (1%)</b>	<b>30 (43%)</b>	<b>6 (9%)</b>	<b>2 (3%)</b>	<b>30 (43%)</b>	<b>69</b>
<b>Mar 2022</b>	<b>4 (6%)</b>	<b>28 (41%)</b>	<b>4 (6%)</b>	<b>2 (3%)</b>	<b>31 (45%)</b>	<b>69</b>

The Management Recommendations were adopted from December 2020 on, with new recommendations added as needed. **Approximately 43% of the Management Recommendations are closed by PSEG Long Island (subject to LIPA IV&V), while the remainder are in various stages of execution (including 2022 OSA Metrics, which are reported on in a separate Quarterly Report on Metrics).**

A summary of each of the Management PIPs (excluding those in Performance Metrics) is included in Section II.

<sup>6</sup> Subject to IV&V by LIPA staff.

<sup>7</sup> The number of projects requiring PIPs may vary over time as recommendations are added, combined or split into separate implementation projects.



**SECTION 1**

# STATUS OF ISAIAS TASK FORCE RECOMMENDATIONS

Figures 4, 5 and 6 summarize the status of each Isaias Task Force Recommendation, including those that are active, closed, and lack an approved PIP, respectively. Recommendations that have been incorporated into the OSA [2022 Performance Metrics](#) are not listed; these recommendations are being reported in separate Quarterly Reports on 2022 Performance Metrics.

**FIGURE 4:**  
Summary of Active Isaias Task Force Project Implementation Plans

#	Tier	Status	Recommendation	Status Summary	Start Date	Planned End Date	Projected End Date	Status/Schedule Change Since 2022Q1 Report
3.2.1.1	1	Delayed (Reported Closed by PSEG LI, but pending acceptable deliverables)	PSEG Long Island should complete implementing the planned telecommunication design changes and conduct additional capacity testing as soon as possible.	PSEG LI submitted a close-out report with final deliverables in March 2022, which LIPA has deemed insufficient. LIPA will keep the project open until acceptable deliverables are submitted.	11/6/2020	2/12/2021	TBD	None
3.2.1.3	1	Delayed	The existing infrastructure for handling calls within the PSEG Long Island Call Center should be upgraded to a more recent version. PSEG LI should modernize its call center infrastructure to a technology that uses the newer "SIP Trunking" technology.	PSEG LI reports that the project has experienced delays due to increased environmental complexity over initial estimates as well as delays with resource allocations, with current cutover dates projected for the beginning of the third quarter of 2022.	1/18/2021	7/9/2021	7/21/2022	Further schedule delays, with the projected end date now 7/21/2022 instead of the delayed projected end date of 6/30/2022 reported in March.
3.2.4.3	1	Delayed (Reported closed by PSEG LI, but pending deliverables)	Introduce the capability to quickly decouple the web and mobile apps from the OMS, so that when unresponsiveness is detected, alternate messaging can be provided to the customer and the OMS can be relieved of incoming transactional pressure.	PSEG LI last reported in March that the project close-out deliverables were submitted on 12/2/2021. As previously noted, the submitted deliverables are for OMS V5.5. The project will be marked Closed once deliverables are submitted for OMS V6.7 deployment.		4/7/2021	11/12/2021	None
4.03	2	Delayed (No Status Reported)	For the long term, PSEG Long Island needs to strengthen its voice communications engineering and project management staff.	PSEG LI last reported in March that the project start is delayed due to competing priorities that include the Contact Center Upgrade, SIP Migration as well as supporting priority efforts related to the OMS upgrade and Digital Channels deployment.	7/12/2021	9/3/2021	6/30/2022	None
4.04 & 4.05	2	Delayed (No Status Reported)	Explore integrating the high-volume voice communications design into a more powerful all-encompassing call center design.  Develop a more scalable Inbound Contact Center.	PSEG LI last reported in March a projected end date of 1/31/2023.	2/1/2021	4/1/2022	1/31/2023	None

#	Tier	Status	Recommendation	Status Summary	Start Date	Planned End Date	Projected End Date	Status/Schedule Change Since 2022Q1 Report
4.07	2	Delayed (Reported Closed by PSEG LI, but pending completion of work)	Ensure that the Municipal Portal is more resilient and prepare a backup Mode of Operation in case of OMS failure.	PSEG LI reports the recommendation closed based on deployment of a temporary unencrypted solution; however, deployment of the permanent encrypted solution, last projected to be completed by 5/31/2022, is still pending. LIPA will accept the recommendation as closed once the permanent solution is deployed and all deliverables and close-out artifacts have been submitted.	8/31/2020	8/16/2021	5/31/2022	None
4.09	3	Delayed (Reported Closed by PSEG LI, but pending deliverables)	Better prepare social media staff to handle barrage of posts using modern artificial intelligence tools.	PSEG LI reports the project as completed as of 10/05/2021. The project will be marked Closed (pending IV&V) once all deliverables and close-out artifacts have been submitted.	1/19/2021	6/25/2021	10/5/2021	None
4.19	1	Delayed (Reported Closed, but pending deliverables)	As part of storm preparation ensure that all application errors and debug conditions have been cleared and the system is operating normally.	PSEG LI reported the project as completed, with the pre-storm checklist in use for OMS v 5.5 and the close-out artifacts submitted 9/17/2021. However, no artifacts have been submitted for OMS v6.7, and PSEG LI still reports that clean-up for the re-platformed 6.7.8 is pending. The project will be marked Closed once the artifacts and deliverables for OMS v 6.7.8 are submitted.	1/7/2021	5/3/2021	8/3/2021	None
5.02 & 5.03	3	Delayed (Reported Closed, but pending acceptable deliverables)	Develop more rigorous ERP training and exercises to (a) test decision making, decision paths, and how information passes between functions, and (b) exercise well-developed business continuity plans.	PSEG LI reported the project closed as of 12/01/2021. After review and evaluation of the 2022 Hurricane Tabletop Exercise, LIPA concludes that the exercise was scripted and more of a read out than a testing of communication or problem solving and does not adequately challenge or test PSEGLI personnel's readiness or ability to respond to a major event on Long Island.	4/1/2021	6/30/2021	12/1/2021	None

#	Tier	Status	Recommendation	Status Summary	Start Date	Planned End Date	Projected End Date	Status/Schedule Change Since 2022Q1 Report
5.04	3	Delayed (Reported Closed, but pending acceptable deliverables)	Create BCPs for all mission critical systems and processes.	PSEG LI reports the project closed based on the determination that all critical system Repair and Recovery plans were submitted on 10/12/2021. However, LIPA considers the materials submitted to date insufficient, and will keep the project open until the concerns that have been communicated to PSEG LI are addressed.	2/26/2021	7/30/2021	unknown (reported as 6/25/21)	None
5.07	1	Delayed	Expand the Emergency Assistance Agreement with National Grid to include Generation employees.	PSEG LI received confirmation on June 6, 2022 that National Grid is prepared to expand Storm Restoration Involvement to include Damage Assessment, wire watchers, material handling, dispatching, and LSE outreach.	12/31/2020	2/15/2021	9/30/2022	None
5.08	3	Delayed	Institute a program to train National Grid Gas and Generation resources to support damage assessment and materials handling work during major storms.	As part of the June 6, 2022, meeting between National Grid and PSEGLI, training for the various tasks was identified and is being updated by PSEGLI. The training includes “Just in Time” (JIT) which will be given as part of a storm response and 2 days virtual/classroom field training well in advance of any restoration response needs.	Unknown	4/2/2021	9/30/2022	None
5.10 & 5.4.6	3	Delayed (Reported Closed, but pending deliverables/close-out artifacts)	Undertake a thorough review of damage assessment crew management processes and especially performance shortcomings during Isaias. Ensure that the damage assessment protocols are optimized and that they leverage modern field management technology (e.g., mobility app).	PSEG LI has updated the training for Damage Assessment which will include a 2 days virtual/classroom and field training course.	Unknown	7/2/2022	NA	None

#	Tier	Status	Recommendation	Status Summary	Start Date	Planned End Date	Projected End Date	Status/Schedule Change Since 2022Q1 Report
5.13 5.4.3 5.4.4	3	Delayed	Explore using National Grid resources and local electrician resources for emergencies. Work with National Grid and local electrical contractors to train a workforce to make repairs to low-voltage service drops.	LIPA has been able to get commitment from IBEW Local 1049 to train gas contractors to replace or repair secondary services house to pole. The training will be a physical Hands-on training/ classroom combination to be conducted at the 1049 training facility after working hours. Details are currently being discussed between PSEGLI and Local 1049 leadership.	unknown	8/1/2021	9/30/2022	None
5.17	2	Delayed (Reported Closed, but pending completion of work)	Benchmark the PSEG Long Island process to maintain the LSE customer list to the best practices used by other New York utilities. Evaluate the success of the 2020 LSE recertification and implement corrective actions so that 95% or more of LSE customers re-certify their need and update their contact information each year.	PSEG LI reports the project closed; however, PSEG LI has not achieved the 95% recertification target in the PIP. Performance of the field visit activity for nonresponding LSE customers is in progress to further close this gap. Performance will continue to be monitored until the target is achieved and field visit activity is complete.	12/11/2020	10/31/2021	10/31/2021	None
7.06	3	No Status Reported	Appoint a dedicated PSEG Long Island Vice President for Emergency Management. PSEG Long Island staff should actively engage in best practice peer groups on a wide range of important topics, including emergency planning and management. PSEG Long Island staff should not be reliant on their Newark counterparts to share such practices.	The Second A&R OSA effective April 1, 2022 requires a Director of Emergency Management. While filling the positions is now a contractual requirement under the OSA, LIPA will keep the recommendation open until the position is filled. Upon the hiring of the Director of Emergency Services, meetings will be held between LIPA and the new Director to jointly identify peer utilities to interface with and gain insight into best practices to complete the balance of the recommendation regarding best practice peer groups.	9/1/2021	3/31/2022	unknown	Status changed from No Accepted PIP to No Status Reported.

**FIGURE 5:**  
Summary of Closed / Completed Isaias Task Force Project Implementation Plans<sup>8,9</sup>

#	Tier	Status	Recommendation	Status Comments	Start Date	Planned End Date	Actual End Date	Close-Out Artifact Submission Date	Changes This Reporting Period
3.2.1.2	1	Closed	Improve the pre-storm planning process and include specific communication, coordination, and escalation with the communication service carriers and the HVCA provider before and during the storm.	Closed 2021Q3	11/17/2020	12/22/2020	8/13/2021	8/20/2021	None
3.2.1.5	1	Closed	PSEG Long Island should develop appropriate capacity monitoring and management processes to support evidence-based demand forecasting and capacity planning.	Closed 2021Q3	12/4/2020	NA (no approved PIP)	8/13/2021	8/20/2021	None
3.2.1.6	1	Closed	PSEG Long Island should review the service operation process between PSEG Long Island and Verizon to understand how the major issues as identified are handled.	Closed 2021Q3	9/10/2020	1/19/2021	8/6/2021	8/20/2021	None
3.2.2.5	1	Closed	Automate monitoring of the OMS and CAD at the infrastructure level to detect infrastructure failures and give administrators an opportunity to restore normal operating conditions.	PSEG LI reports that the work is complete. The deliverables and close-out artifacts were submitted on 3/17/22 and accepted for IV&V.	11/23/2020	5/3/2021	2/11/2022	3/17/2022	Status changed from Delayed to Closed (pending IV&V)
3.2.2.7	1	Closed	Automate monitoring of inbound outage reports to the OMS, to be able to detect and eliminate erroneous reports that may arrive from any source.	The solution was implemented as part of the OMS v 6.7 deployment. The deliverables and close-out artifacts were submitted on 3/17/22 and accepted for IV&V.	11/2/2020	5/3/2021	2/11/2022	3/17/2022	Status changed from Delayed to Closed (pending IV&V)

<sup>8</sup> Closed projects are subject to IV&V by LIPA staff. Completed projects have been accepted by LIPA as complete.

<sup>9</sup> Table does not include 19 recommendations were reported closed prior to institution of the PIP-based tracking process.

#	Tier	Status	Recommendation	Status Comments	Start Date	Planned End Date	Actual End Date	Close-Out Artifact Submission Date	Changes This Reporting Period
3.2.2.8	1	Closed	Irrespective of whether the failure mode is corrected within the IVR, the OMS should have automated monitoring of data quality arriving from IVR to detect potentially duplicate or otherwise bad information.	The solution was implemented as part of the OMS v 6.7 deployment. The deliverables and close-out artifacts were submitted on 3/17/22 and accepted for IV&V.	11/2/2020	5/3/2021	2/18/2022	3/17/2022	Status changed from Delayed to Closed (pending IV&V)
3.2.2.9	1	Closed	The IVR and OMS communication protocol should be reviewed in detail and redesigned so that all messages between the two components are agreed, understood, verified to be operational and tested against error conditions such as sending duplicate outage reports.	Closed 2022Q1	11/2/2020	5/11/2021	2/6/2022	2/11/2022	None
3.2.3.1	1	Closed	At the beginning of storm planning and throughout the storm, designate a system data administrator dedicated to monitor, on a continuous basis, the timeliness, accuracy, and integrity of the information coming from OMS to Kubra.	Closed 2021Q3	12/1/2020	3/22/2021	9/17/2021	9/17/2021	None
3.2.4.1	3	Closed	Review the storm-oriented customer journey maps implemented within the mobile and web-apps so that customer transactions are directed to the externally hosted infrastructure rapidly.	Closed 2021Q3	1/11/2021	9/2/2021	9/17/2021	9/17/2021	None
3.2.4.4	3	Closed	Model storm scenarios and conduct thorough stress testing on the website for all customer journeys and ensure that the infrastructure has sufficient capacity for high activity periods.	Closed 2022Q1	1/25/2021	3/24/2021	2/6/2022	2/11/2022	None

#	Tier	Status	Recommendation	Status Comments	Start Date	Planned End Date	Actual End Date	Close-Out Artifact Submission Date	Changes This Reporting Period
3.2.5.3	2	Closed	PSEG Long Island should also work to install end-to-end quality control measures for communication of ETRs. Consistency across communications channels is critical in developing confidence in the restoration effort.	Closed 2021Q3	unknown	3/31/2021	3/31/2021	8/20/2021	None
4.08	2	Closed	Execute a communications plan with local emergency and municipal response officials to confirm municipalities' knowledge of the Municipal Portal and describe efforts to fix its operation from what they experienced during Isaias.	Closed 2021Q3	1/4/2021	12/31/2021	7/20/2021	8/20/2021	None
4.10	3	Closed	Implement a solution that allows the OMS to decouple customer reporting from field management activities.	The solution was implemented as part of the OMS v 6.7 deployment. The deliverables and close-out artifacts were submitted on 3/17/22 and accepted for IV&V.	11/13/2020	2/6/2022	unknown		Status changed from No Status Reported to Closed (pending IV&V)
4.12	1	Closed	Systematically test the OMS system to ensure that concrete root causes are identified and remedied. If the errors are due to system defects, then demand accountability from the system vendor for timely fixes. Ensure that root causes, not just symptoms, are addressed.	The solution was implemented as part of the OMS v 6.7 deployment. The deliverables and close-out artifacts were submitted on 5/20/22 and accepted for IV&V.	4/23/2021	2/28/2022	4/13/2022	5/20/2022	Status changed from No Accepted PIP to Closed (pending IV&V)
4.16		Closed	Install standby hardware resources for use during peak demand.	Closed 2021Q3	NA (no approved PIP)	NA (no approved PIP)	8/20/2021	8/20/2021	None



#	Tier	Status	Recommendation	Status Comments	Start Date	Planned End Date	Actual End Date	Close-Out Artifact Submission Date	Changes This Reporting Period
4.17	1	Closed	Re-architect the inter-system message queuing applications for greater dynamic stability under highly demanding workloads.	Closed 2022Q1	11/13/2020	7/9/2021	2/15/2022	3/9/2022	None
5.01	3	Closed	Improve Emergency Planning governance so that utility-wide Emergency Training is under a single Emergency Planning Team and not dispersed among various departments.	Closed 2021Q4	2/19/2021	4/12/2021	6/28/2021	10/25/2021	None
5.06	3	Closed	The Task Force found the general structure of PSEG Long Island's ICS is consistent with the National Incident Management System (NIMS), however, failures of technology were exacerbated by lack of visibility and some adjustments to the ICS may have mitigated the situation. The goal of this plan is to improve visibility within ICS to issues relating to mission critical technology, such that these issues can be more effectively managed during an incident.	Closed 2021Q4  Recent storm incident records indicate that the PSEG-LI Incident Reporting procedures may not have been followed. LIPA will be conducting IV&V of the ICS training.	3/1/2021	4/1/2021	6/30/2021	10/25/2021	None
5.09	3	Closed	Work with off-island sustaining tree contractors to develop consistent work practices, especially for removal of trees from energized lines.	Closed 2021Q4	3/1/2021	5/1/2021	4/30/2021	10/25/2021	None (LIPA IV&V ongoing in safety assessment currently underway.)

#	Tier	Status	Recommendation	Status Comments	Start Date	Planned End Date	Actual End Date	Close-Out Artifact Submission Date	Changes This Reporting Period
5.11	1	Closed	Create criteria to guide implementing circuit sweeps during long outages whenever customers have been out for more than 3-4 days, and enough line resources are available.	Closed 2021Q4	1/19/2021	5/15/2021	5/14/2021	10/25/2021	None
5.12	3	Closed	Improve training for RDAs including on BCPs. Prepare to implement RCA, when advantageous.	Closed 2021Q4 LIPA will IV&V RDA/RCA training.	1/20/2021	5/1/2021	6/30/2021	10/25/2021	None
5.14	2	Closed	Develop a backup plan for tiered restoration in large-scale events. Train and exercise for tiered restoration operations.	Closed 2021Q4 LIPA will IV&V training in 2022 PSEG LI exercises.	unknown	3/5/2021	6/16/2021	10/25/2021	None
5.15	1	Closed	Create an ETR Manager position with staff to monitor OMS systems and ETR quality. The ETR Manager should report to the planning chief within the ICS.	Closed 2021Q3	12/21/2020	2/22/2021	-	-	None
5.16	2	Closed	Review restoration verification protocols under "no-OMS" scenarios and ensure that they function efficiently. Leverage the AMI data in OMS to efficiently identify nested outages (the AMI portion of this recommendation has been addressed in Project Plan 5.4.2)	Closed 2021Q4	unknown	3/1/2021	3/1/2021	10/25/2021	None

#	Tier	Status	Recommendation	Status Comments	Start Date	Planned End Date	Actual End Date	Close-Out Artifact Submission Date	Changes This Reporting Period
5.4.2a	1	Closed	Accelerate the deployment of smart meters and the full integration of smart meters with OMS so that outage reports will be available to OMS more rapidly and embedded outages (i.e., small-scale outages downstream of larger-scale outages) will be more readily identified, thus enhancing the efficiency of job dispatch. (Recommendation was split into 5.4.2a AMI Deployment and 5.4.2b AMI Integration and Operation with OMS).	Closed 2021Q4	1/4/2021	8/30/2021			None
7.01	1	Completed	Appoint a dedicated “turnaround” CIO at PSEG Long Island.	Completed 2022Q1		03/31/2021	5/3/2021	8/20/2021	None
7.02	2	Completed	Appoint a dedicated CISO at PSEG Long Island.	This PIP was previously rejected. A revised PIP has now been accepted, and a new CISO started in July 2022.	10/1/2021	3/31/2022	6/27/2022	NA	Status changed from No Accepted PIP to Completed
7.05	3	Completed	LIPA and PSEG Long Island need to restructure their contract to provide holistic accountability to the LIPA Board of Trustees and Long Island customers. Absent such changes, LIPA should consider termination the contract.	Completed 2022Q1	-	12/15/2021	12/15/2021	NA	None
7.07	3	Completed	The OSA contract between LIPA and PSEG Long Island needs to be restructured to eliminate matrix management structures, ensure accountability to Long Island operations, and provide full and complete transparency to LIPA in its oversight function.	Completed 2022Q1	-	12/15/2021	12/15/2021	NA	None

**FIGURE 6:**  
Isaias Task Force Recommendations Without Approved Project Implementation Plans

#	Tier	Recommendation
5.05 <sup>10</sup>	1	Establish a Crisis Management Team made up of PSEG Long Island and LIPA executives to ensure focus on Long Island operations and sufficient information flow to LIPA to conduct oversight.
6.01 <sup>11</sup>	1	PSEG should review the Isaias Task Force's 90-day Report and issue a CATRR (Causal Analysis Team Review Report) that fully addresses the root causes of its failed storm response, including management shortcomings documented in this Report. PSEG should implement an improved after-action analysis process for future storms that has greater rigor.
7.03a	3	Centralize Long Island IT under one enterprise PSEG Long IT organization.
7.04	3	Initiate programs to develop stronger project management capability in PSEG Long Island's IT practice areas.

<sup>10</sup> PIP submitted and under review.

<sup>11</sup> PIP submitted and under review.

## SECTION 2

## STATUS OF MANAGEMENT RECOMMENDATIONS

**The LIPA Board has adopted 87 recommendations to address known management deficiencies in 15 PSEG Long Island operational areas beyond the scope covered by the Isaias Task Force reports.**

These 87 recommendations have resulted in 69 PIPs to address the operational findings. Each of the recommendations (excluding those in the OSA Performance Metrics) is summarized in the discussion below.

## Risk Management

Since 2015, LIPA and PSEG Long Island have worked collaboratively to develop and implement an effective Enterprise Risk Management (ERM) Program to identify, assess, and manage the most significant risks to LIPA and its customers.

In 2019 and 2020, LIPA saw a notable decline in the level of transparency and collaboration from the management of PSEG Long Island in the ERM Program and inaccurate ratings by PSEG Long Island of certain key risks (i.e., the OMS and other key IT risks). The development, implementation, and monitoring of mitigation strategies and actions was also less than satisfactory. To address these issues, LIPA Staff proposed the following eight recommendations to improve the ERM Program, which were adopted by the LIPA Board in December 2020.

#	Reported Status <sup>12</sup>	Recommendation	Status Summary	Planned End Date
ERM-1	Complete	Include LIPA subject matter experts (SMEs) and ERM team members in all risk discussions	PIP approved 1/27/2021. IT sessions were significantly delayed, review held 7/14/21.	5/30/2021
ERM-2	Complete	Designate management-level owners for each risk mitigation strategy and related management action plan	PIP approved 1/27/2021. All risks have designated mitigation owners. Last review held 7/14/21 with IT.	6/01/2021
ERM-3	Complete	Establish a joint Microsoft SharePoint Extranet site so that risk information, including risk assessment, deep dive analysis, mitigation strategies, current status of implementation plans, and annual reports can be accessed in real-time by LIPA SMEs	PIP approved 1/27/2021. Complete.	12/02/2020
ERM-4	Complete	Produce an annual ERM report, providing a complete aggregation of all risks, effectiveness of mitigation actions for high-priority risks, areas of weakness/need improvement, and general observations, by June 1 of each year	PIP approved 2/24/2021. Risk report was due 6/1/2021, provided June 25 and presented to LIPA senior management on July 19 after significant revision. Annual ERM report included in PSEG LI OSA 2022 Performance Metrics.	6/30/2021
ERM-5	Complete	Perform a deep dive analysis on high-priority risks including what mitigation actions have been implemented, those underway, planned, and areas of deficiency	PIP approved 2/24/2021. Risk reviews were completed in December 2021.	7/30/2021

<sup>12</sup> Closed projects are subject to IV&V by LIPA staff. Completed projects have been accepted by LIPA as complete.

ERM-6	Complete	Develop a risk correlation matrix to better understand end-to-end impacts and the risks that are interrelated (especially for major storms) to better inform needed mitigation strategies	PIP approved 1/27/2021. LIPA ERM Team developed framework and completed proof of concept. In 2022 PSEG LI utilized the framework in a deep dive risk analysis for the T&D Group, additionally, PSEG LI correlated their Tier 1 and 2 risks; this is now closed.	6/30/2022
ERM-7	Complete	Provide risk training to all SMEs participating in the annual risk assessment process so that the expectations and value of the process are better understood by the participants	PIP approved 1/27/2021. Training materials have been reviewed and approved by LIPA ERM and two trainings were held in December 2021.	12/31/2021
ERM-8	Complete	Develop a process so that if a high-risk event or condition is identified by LIPA, PSEG Long Island, or PSEG personnel (i.e., when OMS was failing days before the storm) such event or condition (i) immediately triggers a risk review by the LIPA and PSEG Long Island ERM teams, and (ii) is elevated to both LIPA and PSEG Long Island management.	PIP approved 2/24/2021. Process developed to escalate, perform review, and elevate the discussion to LIPA and PSEG Long Island Management. Concept presented and approved in 3/24/21 Risk Management Committee, Corporate Communication disseminated 5/06 to all PSEG LI employees on importance; 5/12 VP received information for discussion with managers and supervisors and will be ongoing discussion point for RMC meetings. Ongoing monitoring of this recommendation is required to ensure the concept is adopted throughout the organization. Separately, under the Second A&R OSA, a draft of a Contract Administration Manual to implement the Duty of Candor is due by March 2022 that addresses timely disclosure of material issues.	4/30/2021

PSEG Long Island has made considerable progress in addressing many of the deficiencies identified in the eight ERM recommendations. The PSEG Long Island ERM team has completed all 8 of the ERM Recommendations. As a result of ERM-1 and ERM-2, there has been an improvement in the level of detail provided in the risk discussions and increased accountability by PSEG Long Island SMEs in managing their risks.

Related to ERM-2, PSEG Long Island has designated management-level owners for each risk mitigation action and developed a dashboard for Tier 1 and 2 risks that have mitigation actions underway to provide a status of the progress. LIPA will continue to work with PSEG Long Island to identify the appropriate level of detail for risks and to improve the tracking of the effectiveness of mitigation actions. Separately, the PSEG Long Island 2022 Performance Metrics (Business Services #2) includes a pilot to develop Key Risk Indicators, which will assist in monitoring critical risks.

With the completion of ERM-3 access to real time information and the quality of information reported there has been progress, however, quality control remains an issue and LIPA ERM has requested PSEG Long Island review the quality of the content with a closer eye to ensure information is concise and accurate.

For ERM-4, PSEG Long Island ERM presented the annual report to LIPA senior management on July 19, 2021. The annual report and presentation were delayed to address substantive concerns that LIPA expressed

regarding the level of information provided in draft reports. The final product contained useful information and elicited meaningful discussion on the most significant risks identified by PSEG Long Island. LIPA and PSEG Long Island have negotiated a 2022 Performance Metric that will require additional improvements to the annual report, including a discussion of key insights for year-over-year changes and the description and tracking of mitigation activities. Additionally, over the 2021 risk assessment cycle, PSEG Long Island ERM did not follow the timeline developed or the process for risk profile reviews agreed upon in December 2020 before the assessment cycle began. This lack of adherence to the process was discussed multiple times and improvement has been seen related to better planning for the 2022 risk assessment cycle, including proactively planning the facilitated working sessions and sending communications out well in advance to inform those involved of the expectations related to the process. The Annual ERM report is now also included in PSEG LI OSA 2022 Performance Metrics.

Both LIPA and PSEG Long Island share the goal of developing and piloting a risk correlation framework (ERM-6) to identify end-to-end risk impacts to better inform mitigation strategies. LIPA ERM developed the risk correlation framework and presented a proof of concept in July 2021 that was well-received. In the first half of 2022, PSEG Long Island incorporated the concept of risk correlation in its deep dive of the Transmission System Vulnerability risk, additionally they are continuing to use the risk correlation concept for certain additional Tier 1 and 2 risks.

PSEG Long Island ERM included high-level risk training information in the 2021 risk assessment working sessions but no formalized training materials or sessions were developed or presented (ERM-7). PSEG Long Island has since developed a preliminary training deck and held two formal training sessions in December 2021 prior to the commencement of the 2022 risk assessment cycle.

For ERM-8, the risk escalation process has been developed and was distributed to all PSEG Long Island employees in May 2021. Additional information was provided to PSEG Long Island Vice Presidents to communicate with managers and supervisors to increase awareness on the importance of escalating identified issues. LIPA ERM recognizes it will take time to adopt the process across the organization and the effectiveness will be evaluated on an ongoing basis. Separately, under the Second A&R OSA, there is now a Duty of Candor that addresses timely disclosure of material issues.

Overall, PSEG Long Island ERM has made significant improvements to the program since the Board approved the eight recommendations in December 2020. However, there is still additional effort required to improve the program, and LIPA ERM will remain diligent in identifying and overseeing the activities that will ensure the program is in alignment with industry best-practices.



## Operating Budgets

The Board adopted recommendations to improve the Operating Budget Process on December 16, 2020, to ensure that comprehensive information is available to both LIPA and PSEG Long Island in a timely manner to support decision-making. This requires increased transparency, accountability, and documentation. Further improvements are necessary in future budget years to align budget planning with the development and review of operational work plans.

LIPA requested that PSEG Long Island develop PIPs for OBD-2 and 3. LIPA staff developed the PIP for OBD-1. PSEG Long Island submitted the two PIP proposals in January 2021, and LIPA submitted the proposals to the Board at the February 2021 meeting. The three PIPs were approved by the Board on February 24, 2021.

#	Reported Status <sup>13</sup>	Recommendation	Status Summary	Planned End Date
OBD-1	On Schedule	LIPA will develop a new budget system to provide for improved documentation, centralized budget calculations, data analytics and forecasting capabilities, and budget control.	PIP approved 2/24/2021 for implementation of Enterprise Planning and Budgeting System to enable transparent and comprehensive budget planning, development, and management for LIPA and PSEG Long Island. This project is led by the LIPA team. The current phase of the project is on track, including: <ul style="list-style-type: none"> <li>• Acquisition and Project Management Services</li> <li>• Development of Business Requirements and Traceability Matrix (RTM).</li> <li>• Market research on Technology Solutions.</li> <li>• Completing Fit-Gap Analysis</li> <li>• Acquisition of Technology Platform and implementation services.</li> </ul>	Phase 0 – 2022 Q3  Phase 1 – 2023 Q3  Phase 2 – 2024 Q2
OBD-2	Complete	PSEG Long Island will develop Budget Briefing Books as part of the budget development process. The Budget Briefing Books will document and explain work plans and the proposed resource allocation at department levels.	PIP approved 2/24/2021. Budget briefing books for 2022 Budget were provided timely by 7/31/2021.	July 2021
OBD-3	Complete	LIPA is requiring PSEG Long Island to provide explanations on the reallocation of funds within the Operations & Maintenance Budget.	PIP approved 2/24/2021. Reallocation forms have been provided for activities whereby projected year-end variances are expected to be in excess of the agreed upon threshold in the PIP. Changes were also incorporated into the Second A&R OSA.	April 2021

<sup>13</sup> Closed projects are subject to IV&V by LIPA staff. Completed projects have been accepted by LIPA as complete.

To meet the requirements of OBD-2, PSEG Long Island developed Budget Briefing Books to support selected 2021 department budgets in detail, focusing on one department in each PSEG Long Island Vice President area. This effort was expanded to all departments for the 2022 Budget development process. Budget Briefing Books for the 2022 budget were provided to LIPA as required by July 31, 2021. Overall, the Budget Briefing Books provided an improved level of transparency and detail; however, further improvements are necessary in documenting, in particular, new resource requests and aligning operational work plans and budgets. PSEG Long Island plans to further enhance the Budget Briefing Books due at the end of July 2022.

With respect to OBD-3, PSEG Long Island developed a Reallocation Explanation template. The first reallocation explanation was due in April 2021. Reallocation template forms have been provided to LIPA as necessary. The PIP reflected phasing in the threshold for reporting a reallocation over a three-year period to provide PSEG Long Island with additional time to refine internal budget processes and practices:

- Effective 2021 – Actual spending and/or forecasted year-end results that causes a year-end aggregate variance to budget at the Vice President level of the lesser of \$5.0 million or 5 percent of the annual budget
- Effective 2022 – Actual spending and/or forecasted year-end results that causes a year-end aggregate variance to budget at the Director level of 10 percent of the annual budget and greater than \$500k
- Effective 2023 – Actual spending and/or forecasted year-end results that causes a year-end aggregate variance to budget at the Director level of 5 percent of the annual budget and greater than \$500k

These changes were also incorporated into the Second A&R OSA.

## Real Estate Management

PSEG Long Island is responsible for real estate management, easements, leases and agreements, pole attachments, joint use agreements, and telecommunications for the provision of electric service.

Beginning in mid-2019, LIPA, PSEG Long Island, and National Grid discussed the potential reconfiguration of certain properties and facilities that were part of the 1998 merger, when LIPA acquired the Long Island Lighting Company as a wholly-owned subsidiary of the Authority. Both PSEG Long Island and National Grid also expressed interest in separating certain operational facilities. Finally, as a parallel effort, PSEG Long Island has been looking for a location for a new Primary Transmission Control Center (PTCC). All these workstreams are necessary efforts for LIPA's ongoing operations.

These efforts stalled at different stages due to challenges at arriving at valuations for properties that LIPA co-occupies, the piecemeal approach utilized by PSEG Long Island to plan for consolidation of these properties, and lost bids for some properties considered for the PTCC.

These efforts required greater focus and a more organized management approach, including timelines and deliverables, to address LIPA's ongoing concerns in a comprehensive and timely manner, including a comprehensive evaluation of LIPA's real estate needs prior to a year-end 2021 early termination right on certain leased facilities. Specifically, this effort required a comprehensive look at the facilities currently owned and leased by LIPA and the space needs of the employee population at these locations, especially in a post-COVID work environment.

To address these concerns, on January 27, 2021, the Board adopted five recommendations. The Board requested that PSEG Long Island prepare PIPs for these recommendations no later than February 8, 2021. On February 24, 2021, the Board rejected the first iteration of these PIPs and directed PSEG Long Island to revise them consistent with LIPA Staff comments. Based upon LIPA Staff comments, PSEG Long Island resubmitted the PIPs for the Board's consideration at the May 2021 meeting. Two of the recommendations, relating to the National Grid property strategy and the construction of a new PTCC, have been incorporated into the 2022 OSA Performance Metrics and are being reported in the separate Quarterly Reports on 2022 Performance Metrics. Progress on implementing the remaining PIPs is described in the table below.

This effort is critical to ensuring an accurate and comprehensive understanding of LIPA's real property and facility assets and will ensure that LIPA and PSEG Long Island are focusing their efforts on the long-term viability of the LIPA real estate portfolio in a manner that is best suited for the workforce and provides the highest value to our customers. Given that these PIPs relate to long term strategy planning for LIPA's real estate portfolio, LIPA continues to take an active oversight role, and is part of the discussions with PSEG Long Island consultants in progressing these PIPs toward completion.

#	Reported Status <sup>14</sup>	Recommendation	Status Summary	Planned End Date
RE-01 (10.04)	Complete	Develop a long-term strategy for LIPA's real estate and facility assets, including a post-COVID-19 space needs analysis	PIP approved May 19, 2021. PSEG Long Island's project consultant, Colliers Portfolio Strategy Consulting ("Colliers"), presented the final deliverable to LIPA and PSEG Long Island Executive Management on 11/15/2021. Collier's recommendations for specific properties are to be pursued in conjunction with 2022 T&D Metric – 33.	Q4 2021
RE-04 (10.03)	Delayed	Hire an outside consultant to perform a comprehensive review of the existing real property records to confirm accuracy, identify gaps, and make recommendations or process improvements	PIP approved May 19, 2021. The Records Management vendor is in process of scanning and reviewing the real relevant estate records. Phase 1 was completed. PSEG Long Island provided an inventory report to LIPA on May 11, 2022. Phase 2 is of the project is delayed due to the volume of shared records received from National Grid.	Q3 2022
RE-05 (10.05)	Delayed	Develop a succession plan for current long-serving PSEG Long Island real estate professionals to ensure knowledge capture and transfer	PIP approved May 19, 2021. The respective departments completed training documentation of the positions and met with respective Directors and Vice Presidents. While there has been definite improvement based on actions taken under this PIP, LIPA is working with PSEG Long Island to verify whether the deliverables satisfy the objectives or whether additional improvements are still needed.	7/31/2021

<sup>14</sup> Closed projects are subject to IV&V by LIPA staff. Completed projects have been accepted by LIPA as complete.

## Inventory Management

PSEG Long Island is responsible for “Inventory Control,” including (a) maintaining an inventory of equipment, spare parts, materials, and supplies and maintaining and documenting an inventory control program; (b) complying with the inventory policy provided in the Operations Manual; (c) purchasing, maintaining, and storing inventory in a manner consistent with the System Policies and Procedures; and (d) completing, on an agreed-upon cycle count basis, a physical inventory of the equipment, spare parts, materials and supplies, and reconciling the same with the inventory assets carried on the balance sheet and providing the information to LIPA.

In December 2017, LIPA engaged an outside consultant to perform a review of inventory controls during storm events. The review included:

- Evaluation of existing policies, procedures, and guidelines in place for the request and issuance of materials/equipment from storerooms under conditions of high activity (i.e., storms);
- Understanding the systems or tools utilized in the process including tracking, approving and/or reporting mechanisms used for materials/equipment distribution; and
- Assessing the return of materials/equipment to storerooms after the storm event including, but not limited to monitoring processes over the expected return of materials and Key Performance Indicators in place, effectiveness of policies and procedures, and cost recording/record-keeping implications if unused materials/equipment are not returned, but then used in a non-storm event.

The consultant for the December 2017 review presented 11 findings with 14 recommendations.

In 2020, LIPA engaged another consultant to confirm that the 2017 recommendations had been implemented and to conduct a broader assessment of PSEG Long Island’s inventory management practices. The 2020 consultant’s assessment included a review of the efficiency and effectiveness of warehouse and inventory management practices, how the practices benchmark against industry standards, and where there are opportunities to improve performance. The assessment was conducted from November 2020 through January 2021 and included evaluating current inventory operations and processes, identifying current state gaps, assessing the readiness of storm response, and developing recommendations.

The 2020 consultant confirmed that the 2017 recommendations had all been implemented but reported 25 additional findings (collectively, the Inventory Management Recommendations) among the areas of general management, information technology, warehouse management, inventory management, and procurement practices. The findings and remediations are summarized as follows:

- PSEG Long Island struggles with maintaining inventory turn targets and thereby has inflated the working capital required to run the business. PSEG Long Island does not have inventory turn targets aligned with industry practice and that consider the related financial and storm fulfillment considerations.
- PSEG Long Island cannot generate written / system generated, repeatable reports with fundamental supply chain information in a formalized cadence.
- PSEG Long Island currently has a roadmap in “stage 0” to improve IT systems. However, foundational capabilities, such as bar-coding, do not function and managerial reporting capability is marginal and not supportive of transparent communication.
- PSEG Long Island does not utilize common algorithms to set min/max cycle stocking targets. From conversations, min/max stocking targets rarely, if ever, change during the year, though no information is available to quantitatively verify this statement. A formalized consolidated demand forecast is not available.

- There is a storm safety stock concept limited to ~150 of 7,000 part numbers, and PSEG Long Island has been unable to communicate to LIPA the methodology for calculating these stocking levels. Based on the review, it does not appear that inventory levels increase during storm season and decline during the non-storm season. Further, PSEG Long Island has only one vendor with a storm supply clause. PSEG Long Island has not utilized “storm supply” clauses to bring in materials from a supplier.
- PSEG Long Island struggles with demand aggregation from engineering, contractors, and field crews. This, in turn, causes inflated inventory levels to account for demand variability as well as increased manual efforts by supply planners to verify demand prior to the creation and release of Purchase Orders.
- PSEG Long Island has made strides in improving warehouse execution, specifically in the Hicksville location. However, there remain several smaller opportunities for improvement related to signage, location management, and process management.

On February 24, 2021, the Board adopted 25 recommendations to address the findings related to inventory management.

In April and May 2021, the Board adopted 20 PIPs submitted by PSEG Long Island and asked for the remaining five PIPs to be resubmitted with LIPA’s concerns addressed. Those five recommendations have now been incorporated into the 2022 Performance Metrics, with the reporting recommendations rolled up to the Data Access scope and the system improvement recommendations rolled up to the Enterprise Asset Management System (EAMS) scope; and are being reported in the separate Quarterly Reports on 2022 Performance Metrics.

#	Reported Status <sup>15</sup>	Recommendation	Status Summary	Planned End Date
IMR-02 (GMIT2)	Complete	Lack of Visibility & Formalized Communication	PIP accepted 4/28/2021. Reports shared and reviewed at bi-monthly PSEGLI/LIPA inventory management meetings. 2022 meeting calendar has been set.	
IMR-04 (GMIT4)	Complete	Opportunities to Improve and Formalize Training	PIP accepted 4/28/2021. PSEG Long Island indicates an internally developed employee refresher training program has been assigned to all employees for completion by the end of September 2021. LIPA verified that this training is now complete.	
IMR-07 (WM1)	Combined	Barcoding technology is not utilized in material handling	Combined with IMR-01 (GMIT1) and will be part of the IT roadmap.	-
IMR-08 (WM2)	Complete	Exception Reporting	No approved PIP. PSEGLI has been able to demonstrate the ability to produce exception reports using the existing system. These reports were reviewed with LIPA during the November 2021 meeting.	-
IMR-09 (WM3)	Complete	Lack of Formal Location Signage at Service Centers	PIP accepted 4/28/2021. All signage has been installed and verified by LIPA.	

<sup>15</sup> Closed projects are subject to IV&V by LIPA staff. Completed projects have been accepted by LIPA as complete.

IMR-10 (WM4)	Complete	Formalize Quality Hold and Returns Locations are Present	PIP accepted 4/28/2021. A disciplined supplier returns and quality hold process with clearly defined physical and SAP Bin locations is complete. Four SAP Bins have been created. Physical space within the Hicksville warehouse receiving area has been allocated and delineated with yellow floor striping. Four milestones have been completed and were verified at the bi-monthly meeting held 9/1/21.	
IMR-11 (WM5)	Complete	Create Bin location in SAP is not restricted	PIP accepted 4/28/2021. PSEG Long Island reports complete. LIPA verified completion at 6/30/21 bi-monthly meeting.	
IMR-12 (WM6)	Complete	Risk of crew-based pilferage, misuse, mispicks inventory in a self-serve environment	PIP accepted 4/28/2021. Deliverables were reviewed with PSEG Long Island at the 6/30/21 status meeting. LIPA verified all 4 milestones were complete.	
IMR-13 (IM1)	Complete	Formalize and Communicate Storm Inventory Strategy	PIP accepted 4/28/2021. PSEG Long Island departments have collaborated to develop recommended storm inventory levels. The recommended levels were shared and discussed with LIPA and verified complete at the 9/1/21 bi-monthly meeting.	
IMR-14 (IM2)	Complete	Accountable Parties at an Executive Level do not Meet in a Formal and Routine Manner	PIP accepted 4/28/2021. Quarterly D&OP inventory forecast meetings scheduled for 6/30/2021. A draft N+2 to 12 month forecast tool has been developed and is being vetted internally. Verified complete at the 9/1/21 bi-monthly meeting.	
IMR-16 (IM4)	Delayed	Workorder Demand, Requisitions and Maintenance BOMs for Material Order is Considered to be Inaccurate	PIP accepted 4/28/2021. Two (2) analyst positions requested with 1 position filled as of June 2022. Second positions is still open but expected to be filled in the third quarter. It should be noted that the Manager from Hicksville retired and position has been absorbed by Manager in charge of fleet.	6/30/2021
IMR-17 (IM5)	Complete	Demand Forecast is not Consolidated and Reviewable in a Drill Down Manner	PIP accepted 4/28/2021. Creating a historical forecast spreadsheet with 3 years data and project plan input method. Incorporated accuracy measurement analytics and 2020 actual project data in the spreadsheet. This was reviewed at the October 2021 bi-monthly meeting and accepted as complete.	

IMR-18 (IM6)	Complete	Inventory Policies, do not Formally Incorporate the Concept of Safety Stock	PIP accepted 4/28/2021. Determined the Safety Stock calculation scope and methodology and included same in Inventory Reorder and Stocking Strategy Policy MM-001, dated 4-6-2021. Adding the plan to the inventory control reorder desk guide LI-DG-REORDER was completed and shared at the 9/1/21 bi-monthly meeting. PSEGLI presently has 6,691 Material Masters of which 4,743 are active. The others are the older or obsolete items that are ordered on an as needed basis. Of the 4,743 active Material Masters, 374 are considered storm items and are reviewed regularly. The 374 represent every item used during Isaias and includes all items from poles, nuts, bolts, transformers, etc. The 374 storm material masters will be reviewed annually for additions or deletions to the list.	7/15/2021
IMR-19 (IM7)	Closed	Minimum/ Maximum Stocking Levels are Formulated based on Experiential Knowledge	PIP accepted 4/28/2021. Developed methodology for Min/Max creation and validation process. Adding the methodology to desk guide LI-DG-REORDER and capturing the components of min/max changes.  LIPA to verify 2022 min/max levels at July quarterly meeting.	
IMR-20 (IM8)	Combined with SP1 (IMR-24)	Inventory Policies do not Incorporate "Storm" Clauses (which guarantee supply during critical periods) within Supplier Contracts	PIP approved 5/19/2021.	6/30/2022
IMR-21 (IM9)	Complete	Inventory Policies are Reviewed and Potentially Changed 1 x Per Year	PIP accepted 4/28/2021. Inventory Reorder and Stocking Strategy Policy MM-001 was completed 4/6/2021. Outstanding milestones reviewed and accepted by LIPA at 9/1/21 bi-monthly meeting.	



IMR-22 (IM10)	Complete	Limited Stock Rotation Regimen	PIP accepted 4/28/2021. Implemented a FIFO (First In First Out) inventory rotation process where applicable. Revised warehouse mapping and configuration to accommodate inventory rotation. Internal picking orders are directed to the oldest material first. Materials with multiple bin locations are set up with three or more bins. Bins are configured as primary, secondary, and overflow. Picks are directed to primary, when the primary is depleted the material from the secondary is rotated to the primary bin. When the secondary bin is depleted, material is rotated from the overflow bin to the secondary. Newly received material is placed in the overflow bin. Material with one bin location, picking is done from the front and newer material is placed to the rear of the shelf. Larger material is handled the same way within the yard compounds. LIPA has verified completion.	
IMR-23 (IM11)	Complete	Limited ability to Track PPE, Consumables, and Tools Spend	PIP accepted 4/28/2021. A monthly PPE, consumables and tool issuance report has been created and is reviewed by Materials & Logistics management. LIPA has verified completion.	
IMR-24 (SP1)	Delayed	Nearly no usage of “storm” clauses in vendor contracts	PIP approved 5/19/2021. Critical inventory requirements based on historical storm activity and engineering considerations has been developed and is used to maintain current storm stock at Isaias level. Preliminary discussions have been held with vendors to determine costs and ability to store storm inventory. A cost-benefit analysis has begun including a series of internal reviews of onsite non-labor carrying costs. LIPA has verified completion of plan milestones.  PSEGLI reports that vendors have not been receptive to “Storm Clauses.” LIPA will IV&V the efforts made by PSEGLI with vendors on inclusion of storm clauses.	7/20/2022
IMR-25 (SP2)	Complete	No EDI (Electronic Data Interchange) / VMI (Vendor Management Inventory)	PIP approved 5/19/2021. A memo summarizing the potential use of PSEG’s EDI transactions for PSEG Long Island was submitted on 06/01/2021 to LIPA. This memo addressed LIPA’s request following submission of the SP2 plan.	10/31/2022

## Collections Management

In 2017 and 2018, LIPA expressed its concerns to PSEG Long Island's collections department related to issues surrounding non-product billings and miscellaneous receivables. LIPA asked for efforts to address the increasing receivable balances related to billings for damage done to LIPA's system, which is managed by PSEG Long Island through its Damage Tracking System (DTS). At the time, PSEG Long Island accounting recorded a 33 percent reserve for accounting purposes as the collection of these receivables was uncertain. The low realization rate represents a burden on LIPA's customers. Furthermore, reports provided monthly on miscellaneous receivables should be more detailed and streamlined.

On February 24, 2021, the LIPA Board adopted three recommendations related to DTS charges and other non-product billings. DTS-1 and DTS-3 were consolidated into a single PIP, which was approved at the May 19, 2021, meeting. The status of each recommendation is summarized in the table below

#	Reported Status <sup>16</sup>	Recommendation	Status Summary	Planned End Date
DTS-1	Delayed	Materially improve the DTS billing and collections process, including through a review and analysis of the current end-to-end process.	PIP approved on May 19, 2021. Process review & benchmarking completed. Collection & reporting enhancements completed. Initial reporting requirements provided but need to be enhanced. Billing process improvements require results demonstration to close. Need billing backlog cleanup approach to determine if billing changes are adequate.	9/30/2021
DTS-2	Complete	Provide access to the DebtNext platform to one LIPA user, who should be able to view transactions and run all reports.	LIPA personnel have access to PSEG Long Island DebtNext platform	-
DTS-3	Combined with DTS-1	Improve the billing and collections process for miscellaneous non-utility billings, including delivering improved reports to LIPA.	Combined with DTS-1.	-

LIPA and PSEG Long Island meet monthly to review progress and provide information as scheduled in the PIP. PSEG Long Island and LIPA have agreed on key performance metrics and improved reporting for collections. PSEG Long Island has implemented several collection process improvements, including enhanced reporting and onboarding a second outside counsel with 30-day collection reporting. Collection write-off processing has been inconsistent. Billing key performance metrics, and reporting include accounts billed by aging bucket (report in 30-day increments), average cycle days, # of claims open by aging bucket and # closed claims. Billing metrics and reporting need further refinement and demonstration of consistent improvement. A number of process improvements to reduce billing cycle time have also been implemented, such as automating the process to generate accident jobs, identifying completed invoice data for internal jobs, expanding the number of case approvers and claims processors, claims prioritization based on age and collection needs, and claims processor performance expectations. Further improvement in the investigation and decision to bill is required.

<sup>16</sup> Closed projects are subject to IV&V by LIPA staff. Completed projects have been accepted by LIPA as complete.

Examples of improvements to key performance metrics include:

- Bill Cycle Time - The average cycle time to bill a claim was 226 days in 2020, 464 days in 2021 and 323 days through Q1 2022. The cycle time is down to an average of 218 days in May 2022.
- Net Write Off - Net Write Off was at \$35.81 in March 2021, \$20.99 in December 2021, \$16.73 in March 2022 and \$15.99 in May 2022.
- Days Sales Outstanding - Days Sales Outstanding was at 603.98 days in March 2021, 362.45 days in December 2021, 219.92 days in March 2022, and 220.24 days in May 2022.

## Asset Management

PSEG Long Island operates and maintains approximately 15,000 miles of transmission and distribution (T&D) assets owned by LIPA. A well-functioning asset management program reduces cost to customers and increases reliability by guiding investment and maintenance decisions. Modern asset management systems are integrated with work management practices and are a core utility function.

In 2020, LIPA hired the Woodhouse Partnership (TPWL), a firm with international expertise in asset management across many sectors, including the utility sector, to evaluate PSEG Long Island's asset management programs and policies. This review followed findings of significant weaknesses in National Grid's and PSEG Long Island's management, respectively, of LIPA's assets in 2013 and 2018 by the New York State Department of Public Service (DPS) in Management and Operations Audits, which PSEG Long Island was responsible for remedying. TPWL evaluated PSEG Long Island's asset management practices and processes relative to International Standards Organization (ISO) 55001 requirements. On a scale of zero (innocent) to four (beyond ISO), with three being "competent," TPWL rated PSEG Long Island's Asset Management program between zero (innocent) and two (developing) on each of the 27 program components prescribed by ISO.

The systems currently supporting PSEG Long Island's management and maintenance functions are fragmented and siloed and do not lend themselves to a comprehensive enterprise-wide understanding of system assets. Asset data is spread out between various departmental data systems with limited data quality assurance. These fragmented systems impede the effective implementation of data-driven asset management programs. The Computerized Maintenance Management System (CMMS) upgrade that PSEG Long Island is planning to implement is only a partial step and a modern, integrated Enterprise Asset Management System (EAMS) is needed to fully realize the potential benefits of modern asset management techniques.

Additionally, over the past several years, PSEG Long Island has implemented policies and procedures to strengthen Property, Plant and Equipment (PP&E) records, beginning with a project to improve record-keeping related to sub-station assets and a separate project for "outside plant" (i.e., the poles, wires, and associated equipment). While PSEG Long Island has made improvements, a physical survey of select circuits including over 5,000 poles across the service territory indicates that additional work remains. For example, the selected survey found a discrepancy of 35 percent between records and the physical inventory of Third-Party Attachments. With regards to Asset Collection (i.e., capacitors, protective devices, fuses, riser switches, and transformers), the physical inventory in one town found 24 more transformers than the 27 shown in the mapping system. Additionally, with regards to the identification of double wood poles, the physical inventory identified 170 locations while the statewide notification system (i.e., National Joint Utilities Notification System) had 73. These discrepancies indicated the need for a comprehensive inventory of PP&E records.

On February 24, 2021, the Board adopted five recommendations to address the findings related to PSEG Long Island's asset management program (AM-01 through AM-05). On March 29, 2021, the Board adopted two additional recommendations (AM-06 and AM-07). On May 19, 2021, the Board adopted a consolidated PIP from PSEG Long Island to address AM-01 through AM-05. AM-01 (consolidated), AM-06 and AM-07 have now been incorporated into the 2022 OSA Performance Metrics and are being reported in the separate Quarterly Reports on 2022 Performance Metrics.

After the Board's adoption of the asset management recommendations, LIPA retained PA Consulting to review the end-to-end process for maintaining accurate property records. PA Consulting's June 2022 report concluded that there are several areas for improvement in the existing process. The most critical flaw noted was the

underutilization of the PowerPlan property records accounting system as well as a lack of sufficient procedures, policies, and appropriate governance to ensure asset data is accurate. PA Consulting recommended that PSEG Long Island:

- Implement a requirement for crew leaders to affirmatively sign-off that a job is done as designed or document and sign off on as-built changes.
- Establish and implement the following PowerPlan Metrics:
  - o Measure that field users provide an accurate unit estimate and project estimate dates at project creation
  - o Measure the length of time a work order is in the Completed Construction Not Classified (CCNC) phase
  - o Utilize PowerPlan alerts and material reconciliation functionality
- Establish and implement the following EGIS (Mapping) metrics:
  - o The percentage accuracy of EGIS records to field review
  - o The accuracy of OMS
- Upgrade the EGIS design tool.
- Implement additional key controls such as:
  - o The percentage of accuracy of jobs per work coordinator
  - o The number of folders reviewed per month
  - o Ensure randomness of folders selected for review

LIPA has asked PSEG Long Island to prepare a management action plan to implement these recommendations.

## Affiliate Services

The use of PSEG subsidiaries as “affiliates” to perform services for PSEG Long Island is permitted under the terms of the Amended and Restated Operations Services Agreement. Affiliate costs are charged to PSEG Long Island and therefore paid by LIPA. The services that PSEG Long Island typically uses affiliates to perform include IT system support, IT project support, Human Resources, Procurement, Treasury, and Legal Services.

The historic procedures relating to the use of affiliates did not provide LIPA with sufficient detail to determine whether the use of such affiliates was the most economic approach and in the best interest of LIPA’s customers.

LIPA reimbursed PSEG Long Island a total of \$23.7 million for affiliate-related services in 2021. Furthermore, \$18 million, or almost 80 percent of the total affiliate costs, were allocated based on a formula that assigns Long Island a percentage of PSEG’s aggregated “pooled” costs across its operating companies. As a result, LIPA has minimal detail on affiliate costs and the actual services provided to support LIPA operations.

Lastly, affiliate costs typically come with a premium due to facility, support, and administrative overhead costs being added to direct labor costs. A “fully-loaded” affiliate cost is typically higher than the cost of PSEG Long Island in-house personnel.

To improve oversight of PSEG Services Corporation affiliate charges and services funded by LIPA, and gain a better understanding of transactional charges, the Board adopted the below three recommendations on March 29, 2021. PIPs for the recommendations were adopted by the Board at the May and June 2021 meetings.

Improvements in LIPA’s oversight rights for affiliate charges have been incorporated into the Second Amended and Restated OSA. AS-01 has now been incorporated into the 2022 OSA Performance Metrics and is being reported in the separate Quarterly Reports on 2022 Performance Metrics.

#	Reported Status <sup>17</sup>	Recommendation	Status Summary	Planned End Date
AS-02	Closed	<b>Enhanced Affiliate Actual Cost Transparency.</b> PSEG must provide LIPA with a quarterly affiliate report detailing actual use of affiliates as compared to budget, including variance explanations. PSEG should provide detailed support for affiliate positions billed at a level equivalent to one full-time position.	Board adopted PIP at June 23, 2021 meeting. LIPA and PSEG have been meeting regularly to discuss format and additional data to meet this PIP. First quarterly report was completed and provided to LIPA for 9/30/2021, and continuing quarterly on schedule since.	3/1/2023
AS-03	Delayed	LIPA requires PSEG Long Island immediately request approval for hiring ServCo employees, pursuant to its contractual obligations.	Board adopted PIP at May 19, 2021 meeting. LIPA and PSEG Long Island need to implement a “contract administration manual” to formalize the approval process. Clarifications were made in the Second Amended and Restated OSA with regard to LIPA’s approval rights. Negotiations of the required contract administration manual remain ongoing.	5/15/2021

<sup>17</sup> Closed projects are subject to IV&V by LIPA staff. Completed projects have been accepted by LIPA as complete.

## Strategic Planning

Long-term strategic planning is an essential element of utility governance and management. Strategic planning provides for proper setting of objectives, prioritization of projects, alignment among stakeholders, and accountability for promised results. Good strategic planning requires long-range plans for each key area of the business and a process for coordinating long-range plans with shorter-term work plans and associated budgets.

LIPA has tried in the past, most recently in the summer of 2019, to collaborate with PSEG Long Island on strategic planning initiatives, but those efforts were unsuccessful. Although PSEG Long Island leaders participated in several meetings with LIPA to discuss strategic planning issues, those meetings were ultimately not productive because of a lack of support by PSEG Long Island leadership.

On April 29, 2021, the LIPA Board adopted a recommendation to develop five-year roadmaps as a tool to improve PSEG Long Island's strategic planning processes, encourage more long-term thinking about the management of LIPA's assets, and align PSEG Long Island's budget submissions with long-range plans and short-term work plans. This process will result in greater alignment of management and budgets with the LIPA Board's objectives, better value to LIPA's customers, and accountability of PSEG Long Island management for promised results.

PSEG Long Island submitted a PIP to address the Board's recommendation to LIPA staff on June 3, 2021. In July, LIPA suggested significant revisions to meet the intent of the Board and clarify timelines and deliverables. PSEG Long Island has not yet provided a revised draft that substantively addresses LIPA's revisions or the Board's recommendations.

However, in the course of contract negotiations, LIPA and PSEG Long Island agreed to develop five-year strategic roadmaps in each of the five scope functions of the amended contract that will evaluate the current state of the function, articulate an end state vision, and identify specific projects to close the gap, in accordance with LIPA and the LIPA Board's vision and strategic directions. The requirements outlined in the amended contract are substantially similar to the requirements LIPA had requested in its revised PIP and address the substance of the Board's recommendations.

The LIPA Board has begun reviewing LIPA's strategic direction and LIPA management has begun the planning process to compile LIPA's views of the strategic priorities and projects that should be included in the roadmaps. A PIP is still required to establish the timeline for this effort to be completed. While the PIP is pending, LIPA in conjunction with PSEG Long Island has commenced work in development of the long-term roadmaps, and the schedule has been integrated as part of the budget schedule.

#	Reported Status	Recommendation	Status Summary	Planned End Date
SP-1	PIP Not Accepted	<p>Initiate development of five-year roadmaps for the transmission and distribution (T&amp;D), information technology (IT), and customer service functions, in a format mutually agreed to by LIPA and PSEG Long Island, to be completed by March 31, 2022, and used as guidance for the 2023 Budget. The five-year roadmaps should evaluate the current state, which includes consideration of their top enterprise operations risks, and articulates an end state vision, and identify the projects necessary to close the gap. The end state vision for the functions should take into account industry trends and customer needs and should align with the strategic direction articulated in the policies adopted for the utility by the LIPA Board.</p> <p>The roadmap should also include (i) a cost-benefit analysis for each project; (ii) identify the schedule for and sequencing of projects; (iii) dependency on or interaction with projects initiated by other departments; and (iv) budget requirements for project implementation and operations. The roadmap should include Project Implementation Plans (PIPs) with greater detail for each of the projects.</p> <p>Beginning in April 2022, commence development of five-year roadmaps for PSEG Long Island's remaining seven key functions (i.e., power supply, clean energy programs, business services, human resources, procurement, external affairs, communications, and legal) to be completed by March 31, 2023. Thereafter, the five-year departmental roadmaps should be updated on a biennial cycle.</p> <p>Roadmaps will be reviewed with, and approved by, the Board as guidance documents for future budget requests. Projects identified on the roadmaps with budgetary implications will be included in the Budget Plan for each year.</p>	<p>PSEG Long Island submitted a draft PIP in June 2021. LIPA provided significant revisions in July 2021. PSEG Long Island has yet to provide a revised draft to establish the project timeline. LIPA in conjunction with PSEG Long Island has commenced work in development of 5-year roadmaps.</p>	3/31/2023



## Information Technology System Modernization

Modern IT systems are crucial to improving operational efficiency, reliability, and customer satisfaction to support the Board's vision of a clean, reliable, and customer-first utility. IT is the soft infrastructure in utilities, providing connectivity and harnessing data-derived intelligence to benefit customers.

IT investments should be approached in a similar manner as investments in physical infrastructure. The Board's Strategic Planning recommendations address the importance and need for long-term IT plans, which will identify opportunities for technology investments to support strategic objectives. LIPA has additionally identified two critical IT system priorities where planning should begin prior to the completion of the medium-term Strategic Planning process: the Enterprise Resource Planning (ERP) system and the Customer Accounting System (CAS).

ERP refers to a type of software that organizations use to manage day-to-day business activities such as accounting, reporting, human resources, procurement, and other operational functions. SAP is the integrated business software PSEG Long Island uses to coordinate these various aspects of LIPA's business. In 2014, PSEG expanded its existing SAP system to include PSEG Long Island rather than building a stand-alone ERP system for LIPA's operations. This action was taken for purported savings to LIPA's customers (limited or no savings was realized). The legacy PSEG ERP implementation is at the end of its lifecycle and is due for an upgrade.

Additionally, LIPA's business model was designed to change service providers without significant business interruption. PSEG Long Island's SAP implementation is intricately intertwined with its setup for other PSEG business units. Consequently, using the PSEG corporate ERP raises the complexity, cost, and time required to change service providers, if necessary, and reduces the ability of LIPA to exercise its oversight rights, as PSEG Long Island limits LIPA's oversight of its corporate systems.

LIPA's CAS, which manages customer billing and other related customer information, was implemented in 1975 when the Long Island Lighting Company, as an investor-owned utility, operated the electric transmission and distribution system. Over the years, the system has become more complex and intractable, requiring workarounds to meet changing bill formats, urgent customer needs, and regulatory requirements. The utility industry has already moved away from outdated Cobalt-based systems due to the shortage of programming expertise in this antiquated language and the lack of flexibility and agility to respond to customers' ever-changing needs. Because the current system is unable to retain key data attributes and program functions required to meet customer needs, PSEG Long Island is forced to add new interfaces or manual workarounds that increase complexity and put system stability at risk.

In 2013, PSEG Long Island concurred that the CAS replacement was in LIPA customers' best interest and recommended this initiative to LIPA as part of the transition from National Grid. This recommendation was based on a lack of agility of the existing CAS, cost, and the shrinking availability of skills to maintain the legacy system. Their evaluation report concluded that "PSEG Long Island will be able to greatly reduce ongoing operating costs and achieve very rapid paybacks even while factoring in substantial investments of time and expense in the migration process." In 2016, PSEG Long Island declined to proceed with the CAS replacement without offering a detailed analysis. LIPA believes that further delays in CAS replacement will result in higher costs, system errors, slower delivery, and lower functionality, as articulated in PSEG Long Island's 2013 analysis.

Both the ERP and CAS systems need upgrades to modern versions that provide all the functions needed to best serve LIPA's customers and avoid the inherent risks of running antiquated IT systems. Replacement of such critical systems comes with significant costs and operational risks. Therefore, it requires thorough planning and testing to ensure a successful implementation and minimize disruptions to utility operations and service to customers.

This effort is critical to ensure that LIPA's customer information and financial systems are robust and reliable, effectively and efficiently respond to changes in customer needs and the regulatory environment, and provide the greatest value for money to Long Island electric customers.

These systems do not operate in a vacuum, and replacement is a multi-year project. The planning process needs to identify all related systems impacted by the replacements, the proper sequencing of activities, required resources, potential roadblocks, and other operational considerations, including financial impacts, cost-control measures, and enterprise risk management.

On April 28, 2021, the Board adopted a recommendation asking for PIPs for the replacement of the ERP and CAS. PSEG Long Island should immediately initiate planning to modernize the existing ERP and CAS systems with a clear delivery timeline. Any replacement effort should recognize that LIPA's business model is designed to change service providers without significant business interruption and ensure that new systems are separate and independently operable from PSEG's enterprise systems.

The revised PSEG Long Island contract requires that all systems be segregated from PSEG corporate systems and puts in place a four-month planning effort to conclude at the end of July 2022. ITSM-01 and ITSM-02 have now been incorporated as 2022 OSA Performance Metrics and are being reported in the separate Quarterly Reports on 2022 Performance Metrics.

## Capital Budgets

LIPA and PSEG Long Island have made progress on improving the Operating Budget development and oversight process in accordance with the recommendations adopted by the Board on December 16, 2020. However, the Operating Budget only captures half the financial picture. In 2022, PSEG Long Island is budgeted to spend \$715 million on capital projects. This spending targets critical investments in system reliability, technology, infrastructure upgrades, and load growth requirements. The existing Capital Budget development and project oversight process shares many of the same weaknesses as the Operating Budget process.

The main result of these weaknesses is that PSEG Long Island's requests for Capital Budgets are routinely more than the funds expended. In addition, there is a high level of variance between the funds requested for the year by project and category as compared to those expended, with the result of large shifts between projects and categories of spending from those planned and approved by the Board. This leads to a loss of accountability for project delivery and controls, as well as can result in higher borrowing costs for customers. As an example, the table below shows the original Board-approved Capital Budget for each year since 2014 as compared to the funds spent.

Year	Budget (\$M)	Actual (\$M)	Variance (\$M)
2015	\$577	\$375	\$202
2016	\$644	\$524	\$120
2017	\$670	\$658	\$12
2018	\$695	\$591	\$104
2019	\$815	\$690	\$125
2020	\$785	\$753	\$32
2021	\$737	\$658	\$79

Note: Does not reflect Capital Budget amendments, which are principally to roll over unspent funds.

Prior Department of Public Service Management and Operations Audits have pointed to needed reforms in capital project optimization, capital project estimating, risk and contingency management, project management performance reporting, the definition and quantification of work standards, and other areas that contribute to the development and management of capital projects and the Capital Budget. PSEG Long Island has implemented improvements in many of these areas, while some require greater effort. An improved process governing capital project and Capital Budget review and approval, including managing changes during the year, will enhance transparency and accountability of customer funds and ensure adequate information flow to LIPA to conduct oversight on behalf of our customers.

On May 19, 2021, LIPA's Board adopted a resolution approving three recommendations developed by LIPA to improve the Capital Budget development and monitoring process. PSEG Long Island is to implement the Capital Project and Budget Development and Monitoring Process Improvement Recommendations effective with the 2022 Budget.

The recommendations are intended to increase the transparency and oversight of the Capital Budget and capital projects by requiring PSEG Long Island to submit to LIPA a complete Project Justification Description form outlining the project scope, schedule, cost information, and benefits. Further, the recommendations would

establish a process for addressing projects that were in a preliminary stage of development as well as providing for updates to LIPA on project and Capital Budget changes.

The LIPA Board adopted a PIP at its August 11, 2021, meeting to address the recommendations. The PIP was substantively incorporated into the Second A&R OSA. LIPA and PSEG Long Island continue to hold joint meetings to begin the work required on deliverables for the Capital Budgeting PIP, including reviewing working examples to ensure all scenarios are captured for LIPA analysis and review.

#	Reported Status <sup>18</sup>	Recommendation	Status Summary	Planned End Date
CB-01	Closed	<p><b>Capital Project and Budget Review and Approval Process</b></p> <p><b>Complete Project Justification Descriptions:</b> For a project to be considered by the Board for inclusion in the LIPA Board-Adopted Consolidated Budget, which includes the PSEG Long Island Capital Budget as well as the balance of the 8-Year Capital Plan, LIPA's Chief Executive Officer or their designee ("CEO"), must first have reviewed and approved a Project Justification Description ("PJD") containing the project level information detailed in Section 4.13 (A) of the OSA.</p> <p><b>Preliminary Project Justification Descriptions:</b> If PSEG Long Island is unable to provide a full and complete PJD prior to consideration of the PSEG Long Island Capital Budget by the LIPA Board, PSEG Long Island may submit a preliminary PJD as part of its Capital Budget request. Based on its sole judgment regarding the completeness of the PJD, LIPA's CEO may recommend to the Board that the project be included in the LIPA Consolidated Capital Budget on a contingent basis, therefore outside of the PSEG Long Island Capital Budget.</p> <p><b>New Projects or Changes in Project Scopes Between Capital Budgets:</b> In the event PSEG Long Island proposes to add a new project to the PSEG Long Island Capital Budget portion of the Board-approved LIPA Consolidated Budget, or in the event of a material change in project scope from that was previously reviewed and approved, PSEG Long Island will need to submit a new PJD to LIPA's CEO for review in accordance with the process outlined above regarding the consideration of a project for inclusion in the current year LIPA approved Consolidated Budget and 8-year Plan.</p>	<p>Board adopted PIP at August 11, 2021 meeting.</p> <p>PSEG Long Island substantially provided PJDs for the 2022 Budget cycle and in accordance with the PIP will continue to provide PJDs in future periods. The changes were incorporated into the Second A&amp;R OSA.</p>	4/1/2022

<sup>18</sup> Closed projects are subject to IV&V by LIPA staff. Completed projects have been accepted by LIPA as complete.

CB-02	Combined with CB-01	<p><b>Capital Budget Changes and Reallocations</b></p> <p><b>Annual Project Justification Description</b>  <b>Updates:</b> PSEG Long Island should provide LIPA with annual updates to PJDs highlighting changes from the prior PJD and reflecting the current cost estimates, including R&amp;C, schedule, and scope details as part of the annual budget process. For multi-year projects that have progressed through more advanced project design stages since the prior budget (e.g. order of magnitude, conceptual estimate, design estimate, definitive estimate), the PJD and budget request should reflect an updated R&amp;C estimate.</p> <p><b>Capital Budget Reallocation Explanations:</b> To fulfill PSEG Long Island's obligation to consult with LIPA prior to reallocating budgeted funds, PSEG Long Island must submit to LIPA's CEO a Capital Budget Reallocation Explanation form, in a format requested by LIPA, when proposing to reallocate funds within the adopted Capital Budget when projected year-end spending at the project level is forecasted to result in a variance to the Annual Budget for that project equal to or greater than 10% and \$0.5 million.</p>	PIP combined with CB-01	-
CB-03	Combined with CB-01	<p><b>Carryover Projects:</b> If a Capital Project funded within the Adopted LIPA Consolidated Capital Budget is delayed into the subsequent year's Capital Budget, PSEG Long Island must identify the change in the project schedule and propose to carryover the approved Capital Budget funds from the current adopted Capital Budget to the proposed Capital Budget as part of the next year's Capital Budget adoption process. LIPA CEO shall not recommend to the Board the re-funding of a project scope that was re-scheduled from a prior budget year if the funding was not carried over from the prior year.</p>	PIP combined with CB-01	-

## Work Management

The Department of Public Service and its consultant, NorthStar Consulting Group (NorthStar), submitted Management and Operations audits of LIPA and its service providers in 2013 and 2018 that included recommendations to improve work management.

In 2020, PSEG Long Island engaged a third-party consultant to assess work management operations and progress toward addressing the findings in the NorthStar reports. Upon extensive review, the third-party consultant recommended ten initiatives to strengthen business capabilities and address the NorthStar recommendations. The ten initiatives were intended to benefit LIPA customers by progressing in seven key outcome areas:

- Productivity improvement in work execution
- More efficient deployment of capital
- Reduced compliance backlog
- Improved safety
- Higher customer satisfaction
- Improved stakeholder management/relations
- Execution of higher priority work

Certain of the third-party consultant recommendations complement recommendations already adopted by LIPA's Board, such as those related to Asset Management.

At the Board's June 23, 2021, meeting, LIPA staff recommended the Board adopt Work Management Recommendations based on the third-party consultant findings and LIPA Staff observations. On December 8, 2021, LIPA's Internal Audit department completed a work management audit with additional material findings in this area. These findings are mainly reflected in 2022 OSA metrics and are being reported in the separate Quarterly Reports on 2022 Performance Metrics.

On March 30, 2022, there were four additional work management recommendations presented to and accepted by the Board; these are detailed in the Work Management – Overtime section.

## Small Generator Interconnection Procedures

In April 2021, LIPA engaged a third-party consultant to assess PSEG Long Island's Smart Grid Small Generator Interconnection Procedure (SGIP) management practices, benchmark those practices against industry standards and identify opportunities to improve performance. The SGIP affects interconnection requests of up to 10 megawatts (i.e., primarily solar). The assessment examined the strengths and weaknesses of the interconnection process and how easy it is to do business with PSEG Long Island.

In August 2021, the Board adopted seven recommendations to strengthen the SGIP business practices and benefit LIPA customers based on the findings of the assessment. The Board requested PIPs from PSEG Long Island for each recommendation for the Board's consideration. The PIP submission combined all seven recommendations into one plan and was largely incorporated into 2022 Performance Metrics, and is being reported in the separate Quarterly Reports on 2022 Performance Metrics.

## Data and Information Access

During the past several years, LIPA has had the ability to access PSEG Long Island systems on an as-requested basis. However, the usefulness of such access provisions has been limited by the complexity of the access procedures, availability of user training, and organization of system data.

The A&R OSA contract between LIPA and PSEG Long Island stipulates that “Service Provider shall establish and maintain an information system to record, provide and, to the extent practicable, provide real time retrieval for LIPA’s review and copying of T&D System operating and financial data, including all information necessary to verify calculations made pursuant to this Agreement. Such information shall include information about the T&D System (including information in physical formats such as diagrams, flow charts, and schematics related to the T&D System), reports (and all supporting data) regarding the performance of the T&D System, and information regarding management (including planning, design, engineering, operation, maintenance, and customer contact) of the T&D System (collectively, ‘System Information’)”.

Furthermore, the Second A&R OSA with PSEG Long Island provides, among other things, that: “Prior to the separation of the IT systems, the Service Provider will provide LIPA and its representatives and consultants with the same access, including the same real-time access, where applicable, as the Service Provider and its Affiliates have to all information technology systems and processes that are utilized in whole or in part to serve LIPA, as well as to all of the financial-, customer-, and T&D system-related data, information and reports residing therein and accessible there through.”

Modern data warehouse systems serving enterprise data are characterized by an enterprise-wide data dictionary, a central repository of enterprise data, and meaningful organization of enterprise data suitable for decision-making and performance monitoring. Additionally, data lakes facilitate access to semi-structured and unstructured data as well as raw data from structured databases for in-depth analysis.

A standardized Data Access Platform consisting of a data warehouse and a data lake would provide effective centralized access to organization-wide data that would facilitate PSEG Long Island’s management decision-making capability as well as LIPA and Department of Public Service oversight.

In August 2022, the Board directed PSEG Long Island to develop a PIP with the objective of deploying a Standardized Data Access Platform consisting of an enterprise-wide data warehouse, a broader data lake, and provisioning and development of tools to support reporting and analytics. The Standardized Data Access Platform will provide PSEG Long Island management, LIPA, and the DPS seamless and effective access to PSEG Long Island financial, operational, and performance data. This data repository will contain structured data from PSEG Long Island’s financial and operational systems and will be equipped with suitable tools to facilitate query, reporting, and analyses of data from the entire spectrum of data sources without the users needing to manage connections to different source systems.

The recommendation has now been incorporated into the 2022 Performance Metrics; and is being reported in the separate Quarterly Reports on 2022 Performance Metrics.

## Geographic Information System

The Geographic Information System (GIS) is a foundational platform for every utility, leveraging geographic and geo-referenced data to manage and optimize the use of spatial information. As spatial data collection and analytics technologies become increasingly sophisticated, utility IT and operational technology (“OT”) systems have evolved to leverage these capabilities, with GIS becoming an integral component of modern utility line-of-business processes and systems, including SCADA, Enterprise Asset Management, Advanced Distribution Management Systems, Distributed Energy Resource Management Systems, and Customer Information Systems.

Long-term planning is essential for leveraging the potential of GIS to optimize utility operations and drive improved decision-making via geospatial-data-derived insights. A comprehensive long-term GIS plan will assess the business objectives, opportunities, and priorities; the technology platform and marketplace; and the data, resource, and process requirements; and provide a clear roadmap for delivering business applications across the enterprise cohesively and efficiently.

PSEG Long Island’s current GIS plan consists of a GIS Roadmap and Product Lifecycle chart that identifies broad timelines for upgrades/enhancements of current components and applications over the next 10 years -- a rudimentary level of planning that falls far short of a comprehensive long-term plan. In the absence of a long-term plan, PSEG Long Island’s GIS project development has too often been conducted in an ad-hoc, localized manner, without adequate enterprise-level prioritization against business goals or evaluation of the IT marketplace.

Development of a comprehensive GIS Long-Term Plan would improve PSEG Long Island’s ability to leverage GIS as a platform for application development across the enterprise in a manner that optimizes business value. In October 2021, the Board directed PSEG Long Island to develop a PIP with the objective of developing a comprehensive GIS Long-Term Plan that provides a clear roadmap for leveraging GIS across the enterprise in a manner that optimizes business value, and that, at a minimum:

- Assesses and identifies the business objectives, opportunities, and priorities across the enterprise lines-of-business processes and systems, including SCADA, Enterprise Asset Management, Advanced Distribution Management Systems, Distributed Energy Resource Management Systems, and the Customer Information Systems.
- Evaluates the technology marketplace and develops a comprehensive ecosystem plan that considers the core platform and associated infrastructure; system resiliency; business application development toolsets and approaches; and third-party integration products and services.
- Identifies new opportunities to establish GIS-based services, applications, and capabilities to enhance utility business performance and customer experience.
- Identifies available or potential data sets and any associated data management or integration issues.
- Addresses process and resource requirements

The recommendation has now been incorporated into the 2022 Performance Metrics as part of the *GIS – Long Term Plan, Architecture and Technology Stack Upgrade Project*, and is being reported in the separate Quarterly Reports on 2022 Performance Metrics.



## Work Management - Overtime

In June 2021, the Board approved eight recommendations designed to improve work management practices at PSEG Long Island. Subsequently, LIPA has been meeting with PSEG Long Island to understand its workforce time management with respect to overtime practices.

LIPA recognizes that supplemental overtime pay related to incremental scheduling beyond the normal work schedule can be beneficial to provide staffing flexibility. For example, there are periods when non-recurring projects, unplanned work, or storm restoration can use supplemental time effectively in lieu of hiring additional staff. However, such scheduling needs to be managed properly to ensure the incremental work time was necessary and fiscally responsible.

LIPA hired a third-party consultant to review PSEG Long Island's time management and related timekeeping processes. LIPA Staff reviewed the consultant's report and compared the recommendations and findings contained in the report to efforts underway in accordance with existing Board approved Recommendations and associated PIPs. Based on this review, LIPA Staff recommended that the Board adopt the below additional Work Management Recommendations with the objective of improving workforce time management and timekeeping processes. PSEG Long Island was directed to develop a PIP for the recommendations no later than June 1, 2022. LIPA expects the Board will consider the PIP at its July 2022 meeting.

#	Reported Status	Recommendation	Status Summary	Planned End Date
WMOT-01	PIP Due July 2022	Coding and Description Enhancements: Review WBS or Work Order Coding for all projects and Operating Funded Work. Ensure coding is useful for overtime analysis purposes. On an annual basis, review "Short Text" activity codes based on usefulness and ability to enhance decision-making.	Recommendation submitted for Board approval at the March 2022 Board meeting. PIP due June 2022 for review and approval by LIPA. LIPA expects the PIP to be presented to the Board for approval in July 2022.	NA
WMOT-02	Combined with WMOT-01	Enhanced PSEGLI Management Review: Enhance PSEG Long Island internal management review including comparing actuals to target and drilling into areas and jobs that used overtime.	Recommendation submitted for Board approval at the March 2022 Board meeting. PIP combined with WMOT-01.	NA
WMOT-03	Combined with WMOT-01	Training: Develop training materials for supervisors making overtime decisions to guide decision-making in a consistent manner. Formalize the scheduling of initial training for new supervisors and refresher training for existing supervisors.	Recommendation submitted for Board approval at the March 2022 Board meeting. PIP combined with WMOT-01.	NA
WMOT-04	Combined with WMOT-01	Multi-year overtime target planning: Utilize workforce planning models and techniques to establish long-range (out-year) overtime targets by craft as a guide to ensuring effective and efficient use of overtime utilizing.	Recommendation submitted for Board approval at the March 2022 Board meeting. PIP combined with WMOT-01.	NA





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