

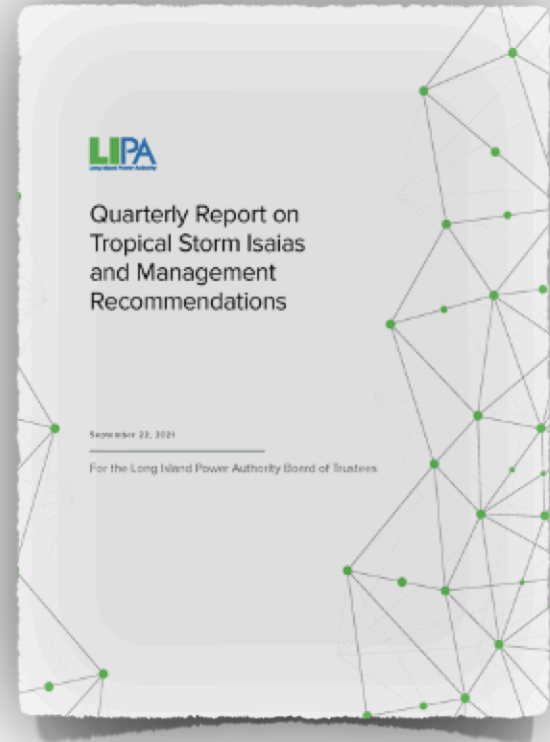


QUARTERLY REPORT ON TROPICAL STORM ISAIAS AND MANAGEMENT RECOMMENDATIONS

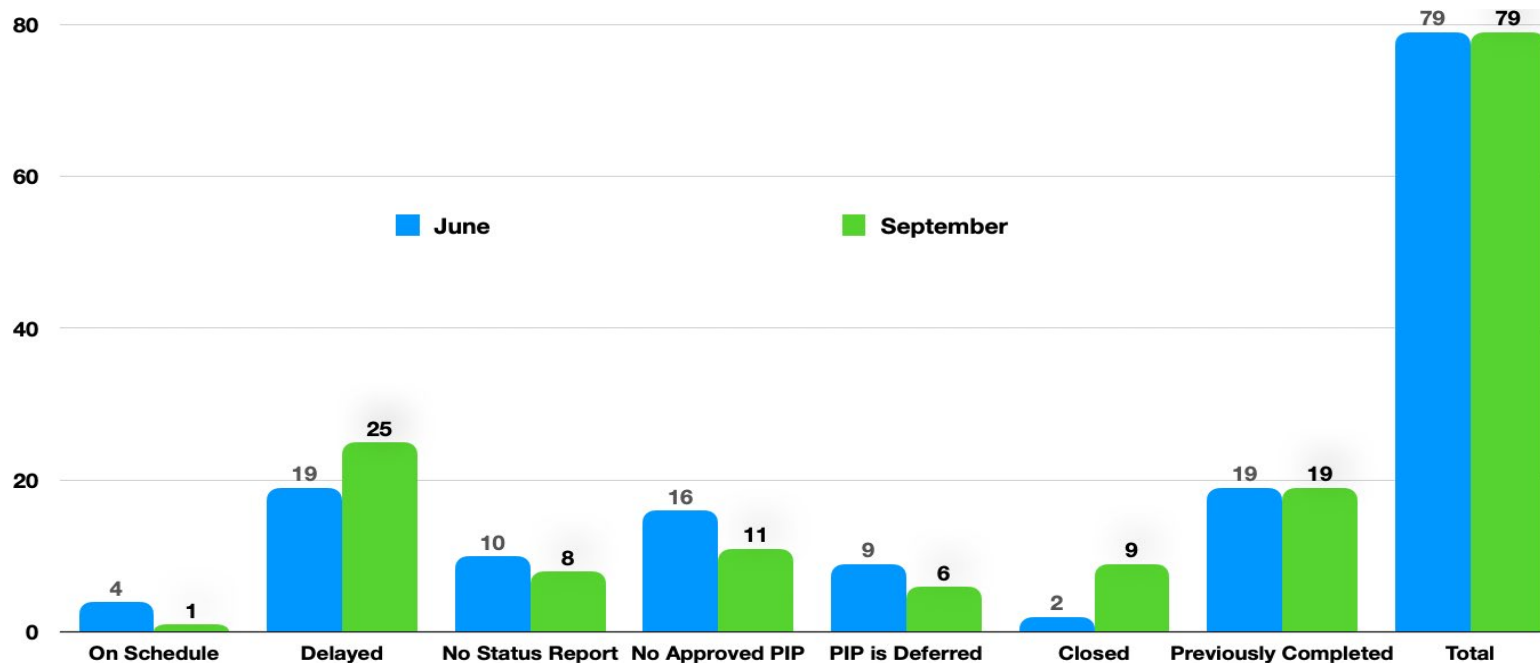
September 22, 2021

OVERVIEW

- Quarterly Report provides the status of:
 - **79 Isaias Task Force Project Implementation Plans (PIPs)**
 - **67 Management PIPs** to correct other PSEG Long Island operational deficiencies
- The Board has directed LIPA staff to:
 - Monitor PSEG Long Island's execution of the PIPs
 - Independently verify and validate (IV&V) the remediation of each recommendation
 - Report to the Board Quarterly until all PIPs are complete



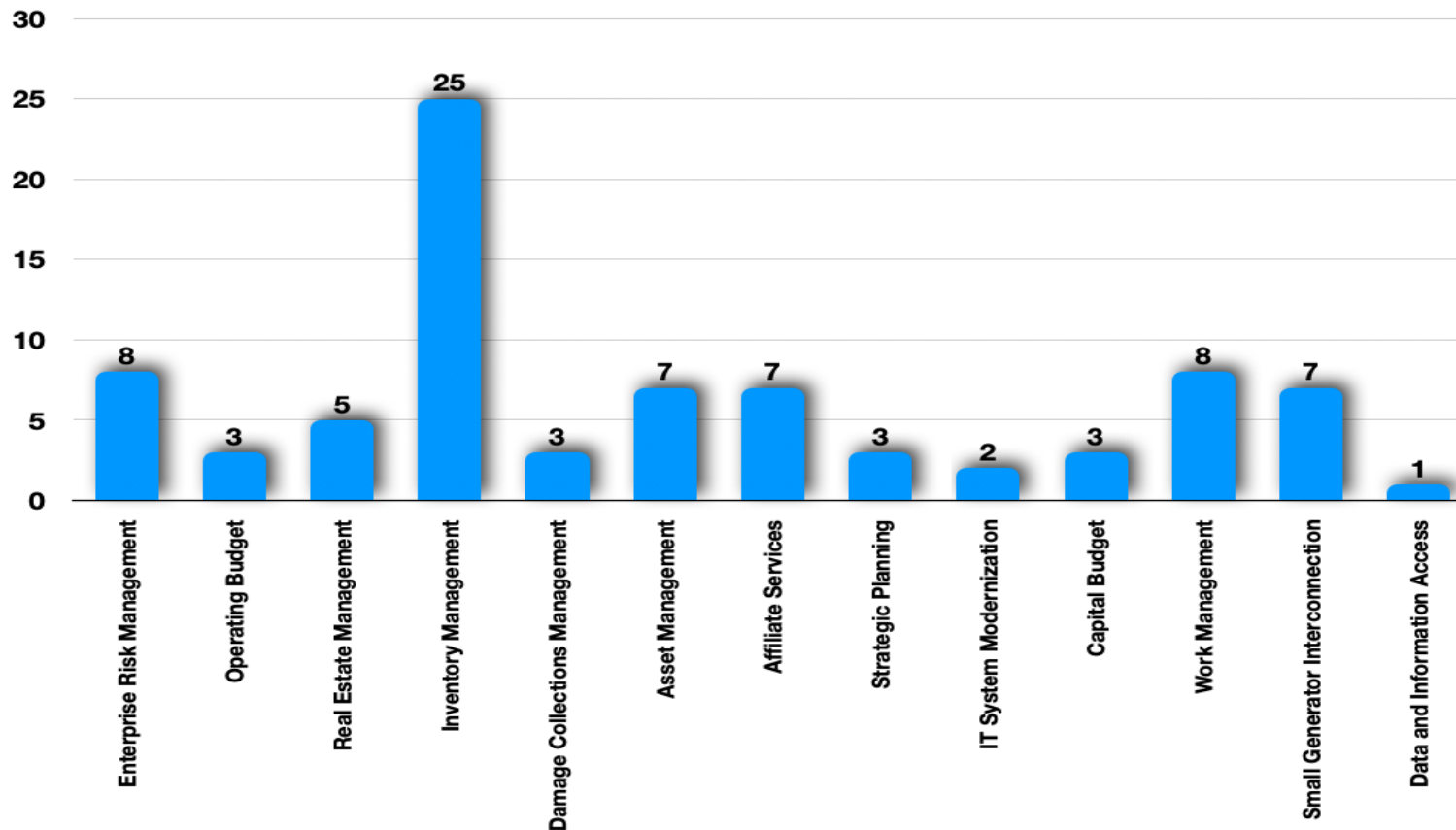
ISAIAS TASK FORCE PIP STATUS



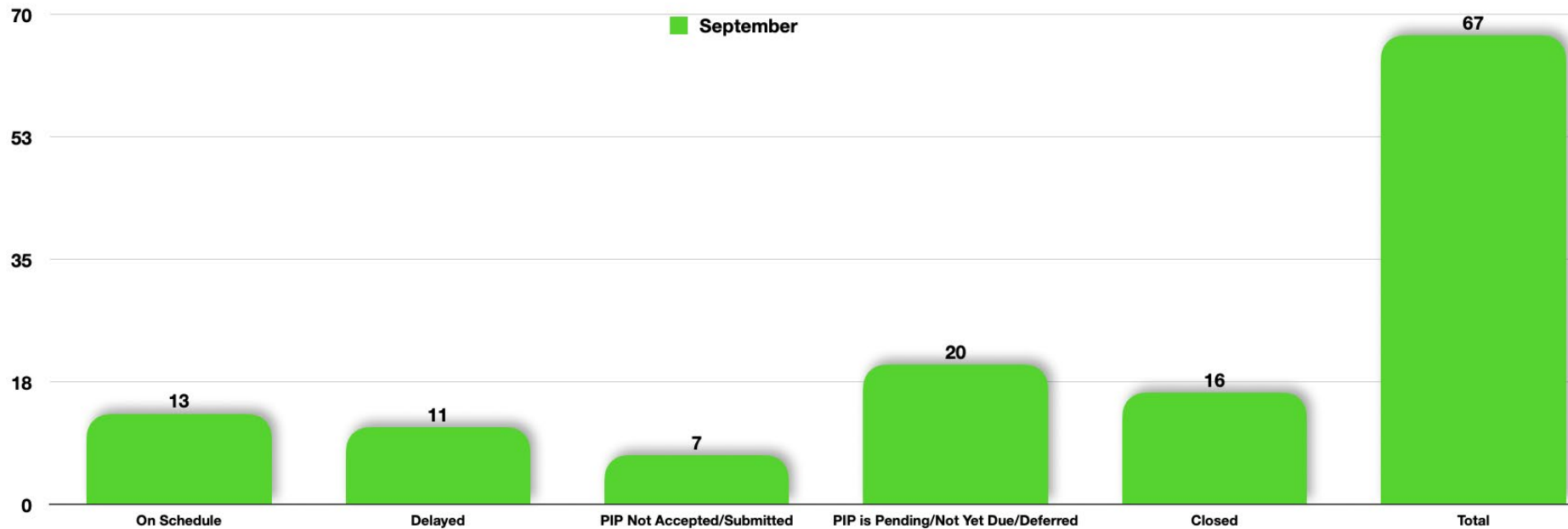
- **PSEG Long Island has made some progress in closing Task Force projects this quarter**
- **PSEG Long Island's implementation of the Isaías Task Force PIPs have fallen behind in 4 ways:**
 - There are many delays in completing the tasks called for in the PIPs, and some projects are getting further delayed over time
 - There are still areas where PSEG Long Island has not provided acceptable PIPs
 - In some areas, insufficient focus on functional and technical requirements and design efforts is contributing to the inability to maintain a schedule
 - For some PIPs, PSEG Long Island has not provided Status Reports

MANAGEMENT RECOMMENDATIONS

In addition to the 79 Task Force projects, the LIPA Board has adopted **82 Management Recommendations** addressing deficiencies in 13 non-storm operational areas



MANAGEMENT PIP STATUS



- **82 Management recommendations** have resulted in **67** PIPs. Most of these PIPs are still in the early stages of execution. **Many of the PIPs are not yet due**

TASK FORCE AND MANAGEMENT PIP UPDATE

- LIPA received 7 Project Implementation Revised Plans (PIPs) and 2 deliverables from PSEG Long Island in August
 - **Accepted: 3 PIP proposals**
- Task Force and Management PIPs still outstanding:
 - PSEG Long Island has yet to submit 1 “Tier 2” Task Force PIP
 - PSEG Long Island has not submitted revised PIPs for 7 Task Force recommendations that the Board previously considered and provided comments on at the December, January, February, meeting
 - 6 Inventory Management recommendations adopted in May and 1 Strategic Planning Recommendation adopted in April are awaiting revisions for future submission to the Board

STATUS OF REMEDIATION OF PSEG LONG ISLAND COMMUNICATIONS AND OMS

- PSEG Long Island completed an end-to-end system test of the communications and OMS v 5.5 systems in late May that **PSEG Long Island reports meets its acceptance criteria**
- This is progress and **systems are no doubt in better shape than last year**
- **LIPA is proceeding with independent verification and validation of the test of OMS v 5.5 and working with PSEG Long Island on logistics**
- 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 your test designs **comprehensively and completely exercise all end-to-end processes** (across each channel) as might be encountered in a future storm scenario like Isaias or worse
 - **Focus on fixing OMS version 6.7 or later** and not the now obsolete (and unsupported) version 5.5 of the system
 - **Build robust Business Continuity Plans** as a contingency measure

STATUS OF REMEDIATION OF PSEG LONG ISLAND COMMUNICATIONS AND OMS

- Much of the recent testing has been done of **OMS v 5.5** which is an old version of the software that is only used by two utilities – PSEG Long Island and PSE&G in New Jersey.
- Version 5.5 of the OMS is also running on 7-year-old hardware on an operating platform that the vendor has retired
- PSEG Long Island was **unable to meet its project deliverables** to implement OMS version 6.7 by June and is now planning to move to version 6.7 **after the storm season** in November 2021

BUSINESS CONTINUITY PLANS

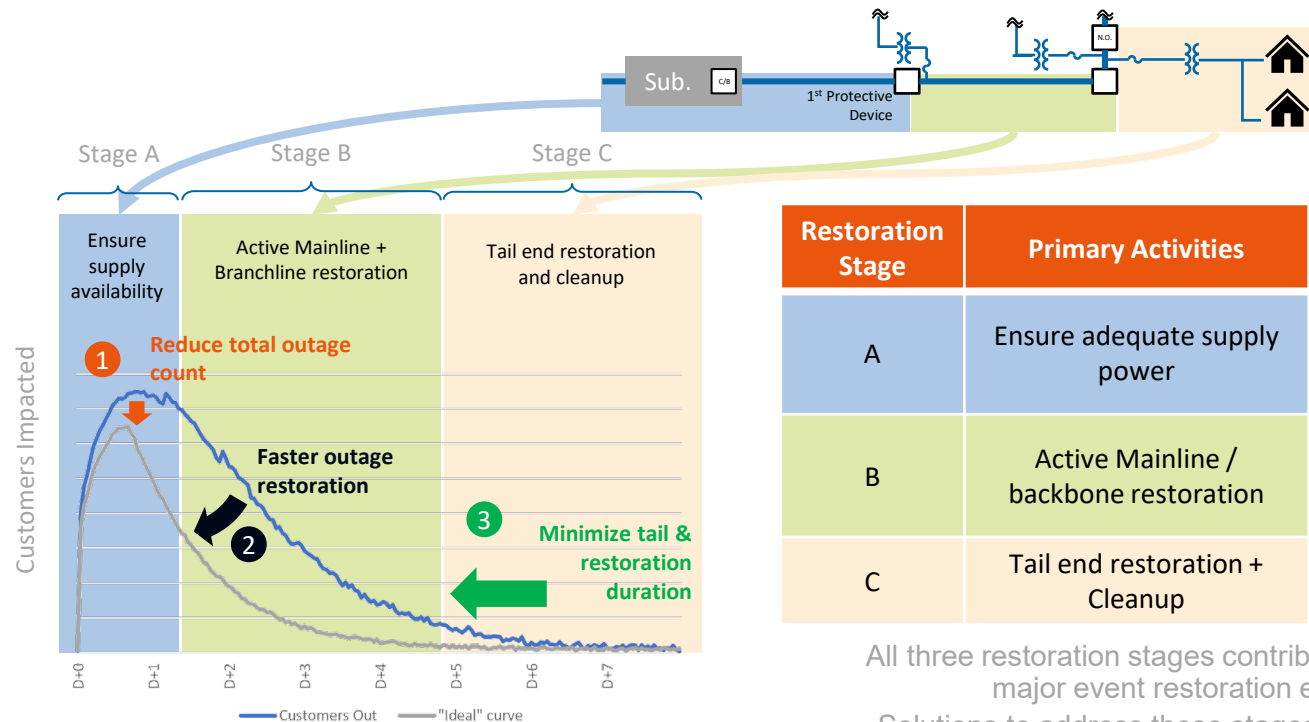
- The 90-Day Report identified the **lack of adequate Business Continuity Plans (BCPs)** as a significant management failure and recommended the development of comprehensive BCPs for all mission-critical systems and processes to enable graceful recovery from technology failures
- In response, PSEG Long Island submitted a “Restoration Contingency Plan for Critical System Failures”. A major deficiency 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
- PSEG Long Island has performed:
 - A tabletop drill of OMS and telephony failures (January 2021)
 - A functional Exercise of BCP Work-Around (April 2021)
 - Emergency Scenario Exercises (May 2021)
 - The annual Hurricane Tabletop Exercise (June 2021)
 - Review sessions with LIPA on proposed work-arounds for system failures (continuing)
- While PSEG Long Island has made progress on the BCPs, there is still significant work to be done. **PSEG Long Island reports the BCP PIP as Delayed, with a project end date of 9/30/2021.** LIPA continues to review PSEG Long Island system workarounds, providing feedback, and encouraging them to conduct real-world exercises



Grid Resiliency Improvements

RECOMMENDATIONS FOR GRID RESILIENCY IMPROVEMENTS

Several Task Force PIPs sought to improve grid resiliency and the restoration process. These various PIPs have been consolidated into two overall plans – one focused around the storm hardening (PIPs 5.4.1 and 5.4.5, addressing items ① and ② on illustrative restoration curve below), and one around restoration processes and personnel (PIPs 5.13, 5.4.3, and 5.4.4, addressing item ③ on illustrative restoration curve below)



Illustrative Restoration Curve

All three restoration stages contribute to the overall successful major event restoration effort and duration.

Solutions to address these stages should work cohesively to shorten the overall restoration duration

RECOMMENDATIONS FOR GRID RESILIENCY IMPROVEMENTS

- Major components of the next phase of resiliency improvements include:
 - Transmission / substation **load pocket hardening**
 - **Enhanced vegetation management programs** (trim to sky, and examination / optimization of trim cycle frequency utilizing species, growth rates, and other vegetation intelligence)
 - Overhead **main and branch line hardening**
 - **Automated switch deployment** and **operationalizing switches** into reclosing devices to minimize affected customers from a fault
 - **Rear-lot property undergrounding** pilots
- January 2022 milestone to cover detailed scopes of work to be completed in calendar year 2022
- August 2022 milestone to complete Project Justification Documents for 2023 budget cycle

RECOMMENDATIONS FOR GRID RESILIENCY IMPROVEMENTS

- Major components of the restoration process and low voltage crew sourcing projects include:
 - Exploration of **utilizing third party crews, licensed electricians, and potentially retirees** to act as 2-person low voltage restoration crews to work on service restorations
 - Establish **training requirements, update dispatch and crew utilization processes** to accommodate low voltage service crews during major restoration events
 - Develop a **matrix for required low voltage service crews** for given storm level responses (current working target of 400 crews for max storm response)
 - Determine impacts on **crew guides** and other storm job dispatch areas
- 227 low voltage teams were activated during Tropical Depression Henri in August 2021



Discussion