FOR CONSIDERATION
March 29, 2021

TO: The Board of Trustees

FROM: Thomas Falcone

SUBJECT: Consideration of the Adoption of PSEG Long Island Implementation Plans for Isaias Task Force Report Recommendations and Extension of Time for the Proposed Phase II Options Analysis

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Requested Action

The Board of Trustees (the "Board") of the Long Island Power Authority ("LIPA") is requested to approve a resolution adopting certain PSEG Long Island Implementation Plans for the Isaias Task Force (the "Task Force") Recommendations and extending the due date for the Phase II Options Analysis, which resolution is attached hereto as **Exhibit "A"**.

Background

On Tuesday, August 4, 2020, Tropical Storm Isaias landed on Long Island with rain and wind gusts of up to 70 miles per hour. The resulting damage to the electrical system caused approximately 646,000 customer outages.

On August 5, LIPA's Chief Executive Officer initiated an independent investigation of the circumstances and root causes that led to well-documented lapses in PSEG Long Island's storm response. The Task Force was charged with providing actionable recommendations and overseeing PSEG Long Island's remediation activities. LIPA committed to reporting the Task Force's findings and recommendations to the LIPA Board of Trustees and the public in a 30-Day Preliminary Report and 90-Day Interim Report. There will also be a Final Report in May 2021.

The Task Force presented the 30-Day Report to LIPA's Board of Trustees at the September 23, 2020 Board Meeting and released it to the public. Because of the urgency of the immediate threat of another major storm, the 30-Day Report focused on the failures of PSEG Long Island's information technology and communication systems and their proximate causes.

On November 13, the Department of Public Service ("DPS") provided a recommendation (the "DPS Recommendation") to the LIPA Board as a result of its ongoing investigation of PSEG Long Island's storm response. DPS Staff identified more than 70 potential violations of PSEG Long Island's ERP. The DPS recommended, among other things, that LIPA:

- evaluate options to terminate PSEG Long Island as LIPA's Service Provider;

- declare PSEG Long Island's poor performance during Isaias as a first failure of the Major Storm Performance Metric as defined in the Amended and Restated Operations Services Agreement ("OSA"); and
- seek to either terminate or renegotiate the OSA to enable greater oversight by LIPA and DPS.

The Task Force presented the 90-Day Report to the Board at the November 18, 2020 Board Meeting. The 90-Day Report expanded on the findings of the 30-Day Report and addressed broader questions on the effectiveness of PSEG Long Island's management of utility operations.

As set forth in Appendix 2 and Appendix 3 of the 90-Day Report, the Task Force provided nearly 100 recommendations for the Board's consideration (the "Task Force Recommendations"). The Task Force Recommendations 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. The Task Force Recommendations are tiered based upon priority. The tiered system allows LIPA and PSEG Long Island to either implement or present implementation plans for the most critical recommendations on an accelerated basis.

By Resolution No. 1568, dated November 18, 2020, the Board directed the Task Force, together with PSEG Long Island, to implement the Task Force Recommendations, including the creation of Implementation Plans to be completed within the tiered structure as set forth in Appendix 2 and Appendix 3 of the 90-Day Report; and to report to the Board at least quarterly until such Task Force Recommendations are fully implemented.

Thereafter, by Resolution No. 1570, dated December 16, 2020, the Board adopted certain Implementation Plans for the Task Force Tier 1 Recommendations, and directed PSEG Long Island to amend the remaining Tier 1 Implementation Plans and resubmit such plans to the Task Force for review at the Board's January 2021 meeting.

By Resolution No. 1590, dated January 27, 2021, the Board adopted certain other Tier 1 Recommendation Implementation Plans and directed PSEG Long Island to amend the remaining Tier 1 and 2 Implementation Plans and resubmit such plans to the Task Force for review on or before Board's February 2021 meeting.

Thereafter, by Resolution No. 1601, dated February 24, 2021, the Board adopted certain other Tier 1, Tier 2, and Tier 3 Recommendation Implementation Plans and directed PSEG Long Island to amend the remaining Implementation Plans and resubmit such plans to the Task Force for review on or before Board's March 2021 meeting.

Discussion of Implementation Plans

On February 22 and March 10, 2021, PSEG Long Island submitted 12 Tier 1 plans, two Tier 2 and 12 Tier 3 new and revised plans, and two deliverables to the Task Force for review.

A summary of the Implementation Plans is provided as **Exhibit "B."** The Task Force recommends the Board adopt 11 of the 26 Implementation Plans as attached hereto as **Exhibit "C"** and that the

Board recommend PSEG Long Island resubmit the 15 revised Implementation Plans at the Board's April meeting with the comments in **Exhibit "B"** addressed.

In addition, as of March 29, 2021, PSEG Long Island did not submit one Tier 2 and two revised Tier 1 Implementation Plans that were previously considered by the Board in the December and February meetings and not adopted. Revised plans were requested for the Board's consideration for the January and March meetings. These remaining plans should also be submitted with the comments previously conveyed in December and February addressed.

The remaining 18 Plans shall be submitted by PSEG Long Island for Task Force review no later than April 10, 2021 for consideration at the Board's May meeting. Thereafter, the Task Force shall submit a Status Report to the Board no less than quarterly that summarizes the Implementation Plans' status for each Task Force Recommendation.

Extension of the Phase II Options Analysis

Pursuant to the Board's direction, LIPA's CEO and Staff developed the Phase I Options Analysis, which was presented to the Board on December 16, 2021. The Phase I Analysis was the first in a series of two reports detailing options to improve the management of LIPA's assets. LIPA has conducted similar analyses on at least four prior occasions -- in 1998, 2005, 2011, and 2013. The Phase I Options Analysis studied three potential alternatives – Privatization, the Single-Partner Municipal Model (i.e. the current model), and Municipal Management. At its meeting in December 2020, the Board adopted the Phase I Options Analysis; found that privatization was too costly for LIPA's customers; and directed LIPA's CEO to further develop the Single-Provider Municipal model (either with PSEG Long Island or another provider) and the Municipal Management model, as more specifically described in the Phase I Analysis, and report back to the Board in a Phase II Analysis Report no later than March 31, 2021.

LIPA's CEO and Staff have been working diligently on the Phase II Options Analysis, including negotiations with PSEG Long Island on contract reforms that would increase PSEG Long Island management alignment, accountability, and transparency, as well as facilitate greater oversight. LIPA Staff believes that providing negotiations with additional time could facilitate offering the Board and public greater choice. As such, LIPA Staff is requesting that the Board adopt the Resolution, attached hereto as **Exhibit "A"**, that, in part requests that the Phase II Options Analysis be extended until the Board's April 2021 meeting. Following the release of the Phase II Options Analysis, the Board has directed staff to schedule public comment meetings to hear from LIPA's customers and stakeholders on the alternatives presented.

Recommendation

The issues identified by the Task Force's investigation, as well as the DPS' separate investigation, remain urgent. Based upon the foregoing, I recommend approval of the above requested action by adoption of a resolution in the form attached hereto.

Attachments

Exhibit "A" Resolution
Exhibit "B" Summary of Implementation Plans
Exhibit "C" Tier 1, Tier 2, and Tier 3 Implementation Plans

Exhibit "A"

RESOLUTION ADOPTING CERTAIN PSEG LONG ISLAND IMPLEMENTATION PLANS FOR THE ISAIAS TASK FORCE REPORT RECOMMENDATIONS AND EXTENDING THE TIME FOR THE PHASE II OPTIONS ANALYSIS

WHEREAS, on Tuesday, August 4, 2020, Tropical Storm Isaias landed on Long Island with rain and wind gusts of up to 70 miles per hour, resulting in damage to the electrical system and causing approximately 646,000 customer outages; and

WHEREAS, pursuant to Section 1020-f(y) of the Public Authorities Law, General Powers of the Authority, LIPA, in part, may "make any inquiry, investigation, survey or study which the authority may deem necessary to enable it effectively to carry out the provisions of this title. . ."; and

WHEREAS, pursuant to Section 4.4(16), Rights and Responsibilities of LIPA, of the Amended and Restated Operations Services Agreement ("OSA"), LIPA, in part, has the right to "make recommendations to the Service Provider, in each case as may be reasonably necessary or appropriate to perform LIPA's oversight responsibilities and obligations with respect to the provision of Operations Services under this Agreement and as may otherwise be necessary or appropriate to comply with LIPA's legal, contractual and fiduciary obligations. . ."; and

WHEREAS, on August 5, 2020, LIPA's Chief Executive Officer initiated an independent review of the circumstances and root causes that led to the lapses in PSEG Long Island's Tropical Storm Isaias storm restoration; and

WHEREAS, LIPA's Chief Executive Officer appointed an Isaias Task Force that was charged with both providing actionable recommendations and overseeing PSEG Long Island's remediation activities; and

WHEREAS, LIPA committed to reporting the Isaias Task Force's findings, observations, and recommendations to the LIPA Board of Trustees and public in a 30-Day Report, 90-Day Report, and 180-Day Final Report; and

WHEREAS, the Task Force presented the 30-Day Report to LIPA's Board of Trustees at the September 23, 2020 Board Meeting and released it to the public; and

WHEREAS, on November 18, 2020, the Task Force presented the 90-Day Report, which provided recommendations to, among other things, (i) Change Management Incentives and Accountabilities; (ii) Reform Information Technology and Emergency Management; and (iii) Strengthen LIPA's Oversight (together with the 30-Day Report recommendations, the "Task Force Recommendations"); and

WHEREAS, by Resolution No. 1568, dated November 18, 2020, the Board directed the Isaias Task Force, in coordination with PSEG Long Island, to submit an Implementation Plan to the Board of Trustees for each Task Force Recommendation; and

WHEREAS, by Resolution No. 1570, dated December 16, 2020, the Board adopted certain Implementation Plans for the Task Force Tier 1 Recommendations, and directed that PSEG Long Island to amend the remaining Tier 1 Implementation Plans and resubmit such plans to the Task Force for review at the Board's January 2021 meeting; and

WHEREAS, pursuant to the Board's direction, LIPA's CEO and Staff developed the Phase I Options Analysis, which was the first in a series of reports detailing options to improve the management of LIPA's assets; and

WHEREAS, at its meeting in December 2020, the Board adopted the Phase I Options Analysis; found that privatization was too costly for LIPA's customers; and directed LIPA's CEO to further develop the Single-Provider Municipal model and Municipal Management model, as more specifically described in the Phase I Analysis, and report back to the Board in a Phase II Analysis Report no later than March 31, 2021; and

WHEREAS, by Resolution No. 1590, dated January 27, 2021, the Board adopted certain other Tier 1 Recommendation Implementation Plans; directed PSEG Long Island to amend the remaining Tier 1 and 2 Implementation Plans and resubmit such plans to the Task Force for review on or before Board's February 2021 meeting; and extended the time to submit the Task Force 180-Day Final Report to a 270-Day Final Report due to the Board on or before its May 2021 meeting; and

WHEREAS, by Resolution No. 1601, dated February 24, 2021, the Board adopted certain other Tier 1, Tier 2, and Tier 3 Recommendation Implementation Plans; directed PSEG Long Island to amend the remaining Implementation Plans and resubmit such plans to the Task Force for review on or before Board's March 2021 meeting; and.

WHEREAS, the Isaias Task Force has submitted to Board 11 Implementation Plans recommended for the Board's approval; and

WHEREAS, LIPA Staff is requesting that the Board consider extending the submission of the Phase II Options Analysis until the Board's April 2021 meeting; and

WHEREAS, the Isaias Task Force Recommendations include that if LIPA and PSEG Long Island renegotiate and cannot reach an agreement on acceptable reforms, or should there be a lack of progress to implement the Isaias Task Force Recommendations, the Board of Trustees consider the exercise of its rights to terminate the OSA with PSEG Long Island before 2025 due to the urgent issues identified by the Task Force's investigation.

NOW, THEREFORE, BE IT RESOLVED, the Board hereby adopts Implementation Plans for the Task Force Tier 1, 2, and 3 Recommendations attached hereto as **Exhibit "C"**; and

BE IT FURTHER RESOLVED, the Board hereby directs PSEG Long Island to amend the remaining Tier 1, 2, and 3 Implementation Plans to address the comments provided by the Isaias Task Force and resubmit such plans to the Isaias Task Force for review on or before Board's April 2021 meeting; and

BE IT FURTHER RESOLVED, that the Board hereby extends the time to submit the Phase II Options Analysis due to the Board on or before its April 2021 meeting.

Dated: March 29, 2021

Summary of Implementation Plans: ITF Tier1, Tier2 and Tier3 March Review

Date Issued	No.	Recommendation	Tier	End State	Deliverable	Date Draft Plan Received	Individual PIP Received	Accept or Reject	Comments
		Appendix 2 List Of 90-Day Report Recommendations							LATE FEBRUARY AND MARCH SUBMISSION
	Section 4	**Customer Communications and Outage Management Systems**							
11/18/20	**4.01**	PSEG Long Island should develop and execute a comprehensive strategic technology plan for outage reporting and communications.	3			3/10/21	4.01_PIP_DIGITAL v4_final	Accept with Comments	We will accept the proposal to extend the timeline for this recommendation until after the upcoming storm season. However, per our previous comment, we believe PSEG LI will need to put some additional thought into how this will be approached, what parameters will be considered, etc. We ask that PSEG LI add a deliverable that documents this Approach for LIPA review and approval prior to the planned workshops.
11/18/20	**4.02**	PSEG Long Island needs to urgently engage qualified expert consultants to guide them through the telephony redesign process.	1	PSEG Long Island has an active contract with qualified telecommunications engineering consultants (with network engineering experience in both PSTN, data networks, and mixed-vendor voice communications systems).	Telecommunications consultants engaged	2/22/21		**Marked Completed-LIPA to verify**	Subject to staff interviews.
11/18/20	**4.03**	For the long term, PSEG Long Island needs to strengthen its voice communications engineering and project management staff.	2	1. PSEG Long Island has staff with expert-level knowledge of modern voice communications engineering including (a) telephony technology (PSTN and IP), (b) voice/data networks, (c) modern elastic cloud-based call centers, (d) voice communications security. 2. PSEG Long Island has experienced project management staff with a track record of driving complex multi-vendor IT projects to completion.	1. PSEG Staff Job Descriptions and Position Requirements (Qualifications). 2. Recruitment plan. 3. Staff positions filled.	2/22/21	4.03_PIP_Telecom_update	Accept with Comments	In our discussion of this PIP, we asked for the PIP to include steps and milestones for meeting urgent needs; our understanding was that the plan would be updated to reflect PSEG LI's belief that the urgent needs have already been met via consultants (per Recommendation 4.02); however, this is not explicitly mentioned in the PIP. Additionally, please align the Work Plan dates; currently, a number of tasks have end dates that extend beyond the overall end date of 6/25/21.
11/18/20	**4.07**	Ensure that the Municipal Portal is more resilient and prepare a backup Mode of Operation in case of OMS failure.	2	The Municipal Portal performs in a responsive manner with maximum response time for outage reporting and requests for status updates limited to known time value in seconds and not minutes. In the event an OMS failure occurs or if the OMS response time exceeds the Municipal Portal's maximum response time, the system informs appropriate personnel who can then take action to configure the system to switch to backup Mode of Operation which does not rely on OMS while its operation is being restored. The backup Mode of Operation may have limited functionality but must include appropriate activation and deactivation processes accompanied by appropriate customer communications and notifications. OMS failures due to message overload should (in the long term) be addressed by architectural changes through asynchronous buffering.	1. Municipal portal which either implements request buffering or an alternate way to work asychronously with the OMS whereby guaranteeing timely response in such a way that the end users never experience a slow portal. 2. Implementation of alert message which the system sends to a support personnel when the response time from the OMS cross a pre-defined (configurable) threshold value (in seconds). 3. A list of steps/actions which a support personnel should take to configure the Municipal Portal to work in offline mode while the OMS is being restored back to normal operation (including customer comm steps). 4. A list of steps/actions which a support personnel should take in order to bring the OMS back to normal operation (including customer comm steps).	2/22/21	4.07_PIP_DIGITAL	Accept with Comments	Procedure documentation for returning OMS to normal operations has been added to the Work Plan per our previous comment; it should be added to the Deliverables list. We also request that where PSEGLI is referencing deliverables for other recommendations (such as 4.08) as part of this recommendation's response, those deliverables be referenced in the Deliverables list for this plan's traceability. Note that the functional and technical solution designs will be reviewed when the details are submitted; this is acceptance of the PIP and not the proposed solution's specifics.
11/18/20	**4.09**	Better prepare social media staff to handle barrage of posts using modern artificial intelligence tools.	3			3/10/21	4.09_Review_Social_Media_Automation	Accept with Comments	The PIP does not address how AI-generated responses will be monitored and checked by humans, which is especially significant for identifying, flagging, prioritizing, and responding to safety and health-related concerns in incoming posts. Please add a Deliverable with LIPA review and approval for the Solution Design document, which should document the to-be processes.
11/18/20	**4.10**	Implement a solution that allows the OMS to decouple customer reporting from field management activities.	3			3/10/21	410_OMS to decouple customer reporting from field management	**Resubmit in April**	Insufficiently responsive to the recommendation and previous comments. We accept the proposed solution for 4.17 as the underlying technical approach to enable the solution for 4.10. However, we still expect this PIP to address decoupling abilities' operationalization, including process and procedural documentation.
11/18/20	**4.12**	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.	1	Root causes for failures in the OMS (and feeder systems) have been identified and fixed. OMS functional and technical performance criteria (acceptance criteria) have been established and agreed upon by LIPA and the OMS system passes tests based upon such criteria. This includes and enhances 3.2.2.3, emphasizing systematic root cause identification and validation. Systems deployed to production	Deployed remediated and tested OMS, acceptance test package. Final OMS Configuration Document. All configuration items in CMDB. Business and technical sign-off.	2/22/21	4.12_PIP_OMS	**Resubmit in April**	The revised plan is insufficiently responsive to the Board's adopted recommendation and the previous comments. The OMS Causal Document included in the PIP identifies the following Root Causes: * OMS Web Services Design * V6.7 Group Manager Fatal Flaw * PragmaGEO Design * Crew Service API (CSA) Services None of the above points to hardware capacity as an issue. All four of the above causes hold CGI, the vendor, responsible. Section 5.1.2 of the PIP makes the assertion that the tests run on December 4, 2020, yielded high CPU utilization. Hence it was proven that the system was hardware limited, justifying the procurement and installation of new hardware to host the OMS and related services. The document fails to explain why all the previous tests, including the ones which were the basis of the OMS Causal Document, did not create the same high CPU load situation. What was different about the Dec 4th test as compared to the previous ones? Were the previous tests not modeled for storm Isaias? If not, how accurate is the OMS Causal Document? Wouldn't this document also be obsolete and needs to the recreated using the Dec 4th test data?
11/18/20	**4.13**	After the OMS faults are diagnosed and repaired, thoroughly stress-test the CAD system and the ESB to ensure there are no independent defects affecting either system.	1	CAD and ESB are stress tested against the repaired OMS system and all tests pass established acceptance criteria (as in 4.12).	Consolidate with 4.12	2/22/21	4.13_PIP_OMS	Accept with Comments	The recommendation asks for stress testing the CAD system and the ESB after the OMS faults have been diagnosed and repaired. There is no deliverable identified as the test plan for the CAD system stress test or a test plan for the ESB stress test. All the performance tests identified refer to OMS as the underlying system under test and not the CAD system or the ESB. Please add project plans for the CAD system stress test and ESB stress test.
11/18/20	**4.14**	Accelerate the deployment of the mobile application for foreign crews and/or their crew guides ensuring that procedures are integrated into the ERP.	1	Hardware, software, and devices ready for deployment to up to 1000 foreign crew teams. All onboarding process, training, support, and documentation completed. Testing (including load testing) completed.	Deployment record. All configuration items in CMDB. Business and Technical Signoff.	2/22/21	4.14_PIP_Field Mobility 20210215 Post-Legal	Accept with Comments	PSEGLI has made a case that integrating the mobile application with OMS 5.5 would be counter-productive due to various technical and schedule-related issues. LIPA would have preferred to see a parallel approach but, for now, is willing to accept this PIP as long as PSEGLI can stick to the proposed timeline. We expect deployment before storm season and advise appropriate project controls to ensure no slippage.
11/18/20	**4.16**	Install standby hardware resources for use during peak	1	Standby resources acquired and deployment tested/ exercised. Procedures developed.	System and process documentation for deployed standby hardware resources. All configuration items in CMDB.	2/22/21	4.16_PIP_OMS	**Resubmit in April**	The revised plan is insufficiently responsive to the Board's adopted recommendation. The PIP still claims that since the new hardware being procured only consumes 30% CPU in the 90% customer-out scenario, backup hardware to handle peak storm loads is not needed. This is not in line with the LIPA board's recommendations. Also, as previously noted, PSEGLI hasn't proven that hardware was the root cause of the issues faced during Isaias.
11/18/20	**4.18**	Monitor application performance and error logs of all mission critical application systems, such as OMS, CAD, SCADA, ESB, etc.	1	All mission critical application performance data and logs and error logs are monitored 24x7 in NOC. Processes and procedures including thresholds and corrective or preventative actions are established, documented, tested and trained for. This expands on the specific monitoring recommendations in the 30 Day Report (3.2.2.4, 3.2.2.5, 3.2.2.6, 3.2.2.7, 3.2.2.8 and 3.2.4.2) to encompass structured and documented monitoring of all mission critical systems.	System and process documentation for monitored application systems, including telecom systems. Application monitoring part of NOC operations documentation.	2/22/21	4.18_PIP_OMS	**Resubmit in April**	Insufficient information. Per the PIP and the referenced OMS Holistic Monitoring presentation, the Proposed Storm Season Fixes for OMS/CAD applications include analyzing current log files to see if certain metrics can be captured and evaluation of monitoring tools. Please update with any clarifications or specific commitments as to what will be implemented with respect to OMS/CAD log monitoring and alerting as readiness for this Storm Season. The Work Plan should be detailed to reflect the OMS 5.5 Monthly Releases proposed in the referenced slide deck and the sub-projects for the full deployment. Please also update Assumptions and Risks to reflect the removal of the OMS 6.7 dependency.
11/18/20	**4.21**	Complete the integration of the MDMS and OMS to report the meters' power restoration events.	2	OMS reflects the up to date current information about status of all the AMI meters deployed in the field.	1. Report showing status of all the AMI meters being tracked in OMS and its comparison with status of all the meters tracked in MDMS. 2. Testing report for a sample event showing OMS updates as and when a meter's power is interrupted and restored.		No PIP sumitted	**No PIP sumitted**	Please submit PIP
	Section 5	**Emergency Response Planning and Preparation**							
11/18/20	**5.01**	Improve Emergency Planning governance so that utility-wide Emergency Training is under a single Emergency Planning Team and not dispersed among various departments.	3	"1. Restructured Emergency Planning organization and governance (under a new VP Emergency Management) with appropriate staff and roles and responsibilities. 2. Relevant PSEG Long Island staff has adequate awareness and clarity on the structure and governance of Emergency Planning operation. 3. Updates to relevant sections of the ERP have been	1. Organizational and governance plan for the restructured Emergency Planning operation. 2. Implementation of this plan.	3/10/21	5.01_Review_Emerg. Training Centralization	**Resubmit in April**	Governance and Management of training needs to be centralized. The execution can be de-centralized. Accountability for the Governance and Management of training needs to be explicitly stated in the ERP to ensure that all players detailed in the ERP (both primary and second role) are covered. References to this accountability need to be referenced in ERP, BCPs and Disaster recovery documents and include all resources (operations, IT, etc.)
11/18/20	**5.02**	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.	3	"1. PSEG Long Island personnel periodically and regularly receive rigorous ERP training and exercises that include (but not limited to) the following: (a) test decision making, decision paths, and how information passes between functions; and (b) exercise well-developed and comprehensive business continuity plans (BCP).	1. ERP and BCP Test/Exercise and Drill Plans. 2. ERP and BCP Test/Exercise/Drill Reports.	3/10/21	5.02_and_5.03_Review_ERP Training Simulation	Accept with Comments	Consider compressing schedule between Storm BCP drill and AHTT.
11/18/20	**5.08**	Institute a program to train National Grid Gas and Generation resources to support damage assessment and materials handling work during major storms.	3	"1. NG Gas and NG Generation resources trained on PSEG Long Island damage assessment processes, procedures, and protocols (including periodic retraining). 2. Overall plan/processes are in place for management, training, retraining, retention/replacement of NG Gas and NG Generation employees for damage assessment and materials handling roles.	"1. Training plan 2. Management plan"	3/10/21	5.08_Review_Training Program for NG 1	**Resubmit in April**	The plan does not include any discussion with NG on what roles generation employees will agree to perform.
11/18/20	**5.10**	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).	3	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).	1. Report showing results of the review of damage assessment processes, findings and recommendations. 2. Implementation plan for recommendations arising from (1), including use of mobility app by all damage assessors.		5.10_and_5.4.6_Review_Damage Assessment Technology	**Resubmit in April**	The plan is generic and lacks a technical approach and discussion of specific technologies to be addressed. It does not provide any insight into the areas or functions that need improvement. It does not inspire confidence that the deliverables will be sufficiently comprehensive and thoughtful for approval. Please include an Implementation Plan in the Deliverables (in addition to the Implementation Schedule), which should comprehensively address the proposed implementation of relevant technologies, including operationalization, training, acquisition, etc. Furthermore, 5.4.6 states: "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)." No mention of the thorough review of crew management processes or the mobile app.
11/18/20	**5.13**	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.	3	1. A low-voltage emergency restoration plan exists and is operational that incorporates NG resources and local and off-island electrical contractors as resources to support low-voltage emergency restoration during a storm. The plan includes onboarding, training, well-developed processes and procedures to ensure its safe and reliable execution during storm situations.	"1. Revised Low-voltage emergency restoration plan. 2. Implementation of (1)."		5.13_5.4.3_5.4.4 - Utilization of NG and Local Electricians - Artifacts	**Marked Completed-LIPA to verify**	PSEG Marked Complete - LIPA to Verify
11/18/20	**5.14**	Develop a backup plan for tiered restoration in large-scale events. Train and exercise for tiered restoration operations.	3	A tiered restoration plan has been developed and documented (in the ERP) for backup conditions. Personnel have been trained and have exercised the activation of the tiered restoration plan as dictated by the BCP.	1. Backup plan - Tiered Restoration 2. Training on tiered restoration.	3/10/21	5.14_Review_Tiered Restoration	**Resubmit in April**	The revised plan is insufficiently responsive to the Board's adopted recommendation and the previous comments. There is no mention of how priorities (Transmission, substation, circuit, etc.) will be addressed. Additionally, PSEGLI says this will tie in with ETR protocols but does not mention ETR in the rest of the document. The matrix is incomplete, and the training plan is lacking detail.
	Section 6	**PSEG Lacks Transparency**							
11/18/20	**6.01**	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.	1	1. Revised CATRR formally released. 2.A policy/ process document for the development of After Action Reports which includes requirement for LIPA review and approval to ensure quality and independence.			No Revised PIP Submitted - Rejected - Feb.	**No Revised PIP Submitted**	Please resubmit the revised PIP.
	Section 7	**Leadership and Management**							
11/18/20	**7.04**	Initiate programs to develop stronger project management capability in PSEG Long Island's IT practice areas.	3	1. PSEG Long Island has strong project and program management capabilities internal to the organization.	1. Project Plan for strenthening the IT project management capability in Long Island. The project plan should identify specific goals, management, recruiting, and retention strategy and overall fit of the PM team with the rest of the IT organization.	3/10/21	7.04_Review_PMO	**Resubmit in April**	Insufficiently responsive to the previous comments. As previously stated, we are expecting a Project Plan to strengthen the IT project management capability in Long Island that identifies specific goals, management, recruiting, and retention strategy and overall fit of the PM team with the rest of the IT organization. The submitted PIP does not substantively address these areas, nor does it need to if the detailed plan is incorporated as a deliverable to be submitted for LIPA review and approval. Please include this deliverable in the PIP.
		Appendix 3 List Of 30-Day Report Recommendations							
	Section 3	**Customer Communications and Outage Management Systems**							
09/23/20	**3.2.1.1**	PSEG Long Island should complete implementing the planned telecommunication design changes and conduct additional capacity testing as soon as possible.	1	Blue Sky and Storm Days Telephone System tested and deployed. Detail design, specifications, configuration of the system is documented (as deployed). Periodic testing plan is documented and activated.	Detailed design, specifications, configuration and test documentation for a tested and deployed Blue Sky and Storm Days Telephone System with a periodic testing plan. All configuration items in CMDB.	2/22/21	3.2.1.1_PIP_Telecom v2_update	**Resubmit in April**	The revised plan is insufficiently responsive to the Board's adopted recommendation and the previous comments. (1) Detailed design and test documentation are still not incorporated as deliverables as requested in our December comments. The PIP Project End State and Success Criteria specify that the detailed design, specifications and configuration of the system will be documented, however this is not reflected in the Work Plan or the Deliverables. Note that the PIP states that the "The test plan, tests performed to date and architecture for this recommendation are provided in the appendix", however the PIP does not include an Appendix. (2) Our previous comments have made clear that we expect comprehensive end-to-end testing for this recommendation, including a sustained volume of at least 5,000 concurrent calls for at least 1 hour. We understand that PSEGLI intends for the OMS 5.5 testing initiative to satisfy this requirement. Inexplicably, instead of updating the Work Plan to incorporate this necessary testing, the PIP instead states that "This will be completed as part of the overall end to end testing effort currently in progress. As such, the effort hasn't been separately documented in this PIP", and the Work Plan continues to indicate that all tasks were completed as of 1/15/21. We do not believe PSEG should unilaterally put a LIPA recommendation out-of-scope for a PIP where LIPA has specifically requested its inclusion. (3) Our previous comments specify several other expectations that we have for capacity testing. PSEGLI has provided comments reflecting their position that these improvements to the testing model are not feasible. We encourage PSEG LI to more comprehensively document any data that they have reviewed and research and analysis that they have conducted to support their conclusions that the currently planned testing is sufficient and that improvements are not feasible. Without evidence to the contrary, we remain unpersuaded that there are no feasible options to close or narrow the gaps. (4) Note specifically that in response to our previous comment that the test plan needs to include paper analysis of carrier and Intrado capacity that considers NE USA storm scenarios where multiple utilities are utilizing Intrado and carrier bandwidth, PSEGLI has responded that "Intrado has stated that a shared capacity for 150,000+ concurrent callers is available for PSEG use. Verizon does not disclose specific details on their network, however they routinely review and adjust their capacities in order to stay in line with forecasts. To vet this information any further would require disclosure of proprietary information on the makeup and usage of other customers, which both Verizon and Intrado have indicated is not possible." This assertion contradicts statements made to the LIPA Board by Mr. Dan Eichorn that PSEGLI has indeed studied how utilities use Intrado bandwidth and has concluded that the risk is minimal.
09/23/20	**3.2.1.5**	PSEG Long Island should develop appropriate capacity monitoring and management processes to support evidence-based demand forecasting and capacity planning.	1	PSEG Long Island has capacity analysis and planning processes in place.	Process and results documentation	2/22/21	3.2.1.5_PIP_Telecom v2_update	**Resubmit in April**	Not responsive to previous comments; obsolete information. The PIP is a resubmission of the previously rejected PIP, with the addition of comments indicating that PSEGLI believes that this implementation is essentially complete and suggesting a review of the current requirements and solution. As we stated in the referenced 2/5/21 meeting, if PSEGLI believes that this project is complete, closure with the associated deliverables and artifacts should be submitted for IVBV. We will review the artifacts against our previous comments, including our request for LIPA approval of the RTM and proposed solution design. Note that this PIP itself cannot be accepted since the Work Plan is out of date; for instance, tasks with completion dates in January are listed as 0% complete. Please update to reflect the current status.
09/23/20	**3.2.2.3**	Work with CGI to obtain and implement fixes for identified application defects, which could include upgrading to a more recent version of the OMS software.	1	Application defects in the OMS have been identified and fixes obtained, tested and deployed.	Remediated and tested OMS to required capacity.	2/22/21	3.2.2.3_PIP_OMS	Accept with Comments	LIPA is provisionally accepting this plan since PSEGLI has now engaged with external experts to analyze and work on implementing various remedies related to the causes of OMS failure and is not relying 100% on CGI's statements. LIPA is still critical with respect to PSEGLI's approach to re-platforming as a method to rectify OMS failure. LIPA still would prefer that PSEGLI continue to investigate the root cause(s) of OMS failure and address that in the long run.
09/23/20	**3.2.2.4**	Automate monitoring of OMS and CAD performance at the application level to detect application failures and give administrators an opportunity to adjust the configuration settings that affect performance.	1	Deployed automated application level monitoring of OMS and CAD performance allowing administrators to make adjustments in case of application failures	System and process documentation for tested and deployed automated monitoring	2/22/21	3.2.2.4_PIP_OMS	**Resubmit in April**	Incorrect or obsolete and insufficient information. The PIP states an assumption that monitoring of the v6.7 applications will employ the same monitoring methods currently in use on the OMS v5.5 system, and the Work Plan is described as outlining the steps that will be taken to document the monitoring processes currently in place in v5.5 and to migrate that functionality to v6.7. However, the Technical Approach notes that there is currently no monitoring or alerting of application logs in case of errors. Please review and update all sections to align with the referenced OMS Holistic Monitoring slide deck and clearly specify any releases planned and or deployable for OMS v5.5. Per our comment for PIP 4.18, please be clear about what will be implemented with respect to OMS/CAD log monitoring and alerting for this Storm Season.
09/23/20	**3.2.2.5**	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.	1	Deployed automated infrastructure level monitoring of OMS and CAD performance allowing administrators to take action in case of infrastructure failures	System and process documentation for tested and deployed automated monitoring	2/22/21	3.2.2.5_PIP_OMS	Accept with Comments	System configuration documentation for OMS v5.5 and OMS v6.7 should be part of the documentation plan.
09/23/20	**3.2.2.7**	Automate monitoring of inbound outage reports to the OMS, to be able to detect and eliminate erroneous reports that may arrive from any source.	1	Deployed automated monitoring of inbound outage reports to the OMS allowing administrators to detect and eliminate erroneous reports from any source.	System and process documentation for tested and deployed automated monitoring	2/22/21	3.2.2.7_PIP_OMS	Accept with Comments	Per discussion with PSEG-LI Team, we accept this PIP with the understanding that the planned comprehensive end-to-end test will include the OMS system's scenario receiving duplicate reports at the same volume and velocity encountered in Isaias.
09/23/20	**3.2.2.8**	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.	1	Deployed automated monitoring of data quality from the IVR to the OMS allowing action to be taken in case of duplicate or otherwise bad information.	System and process documentation for tested and deployed automated monitoring	2/22/21	3.2.2.8_PIP_OMS	Accept with Comments	Per discussion with PSEG-LI Team, we are accepting this PIP with the understanding that the planned comprehensive end-to-end test will include the OMS system receiving duplicate reports and malformed reports to ensure that the OMS system can robustly manage these circumstances at the volumes that could be encountered in an Isaias-level scenario.
09/23/20	**3.2.4.1**	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.	3	Review of the storm-oriented customer journey maps implemented within the mobile and web apps have been completed, opportunities for streamlining have been identified, appropriate programming/ configuration changes have been made, and tested. Outcome: smoother and faster operation of the apps for storm-related use cases.	1. Review report (findings and recommendations) 2. Implementation plan for revisions identified in (1). 3. Implementation of (2).	3/10/21	PIP Review_3.2.4.1	**Resubmit in April**	Insufficient clarity and traceability. PSEG LI has added comments to this PIP proposing (if we understand correctly) that full re-design of the user experience/streamlining of the customer journey maps be conducted after the upcoming storm season. We are willing to accept this so long as any necessary adjustments for successful stress testing are made prior to storm season. However, we expect the body of this PIP to be updated to reflect the proposed plan/timelines. Currently, it is not clear what is planned and when, and there are potentially obsolete or unclear references to other PIPs. For instance, the PIP states that PIP 3.2.4.4 covers any updates to customer journeys, which does not seem to be the case. Please review and update the PIP body to reflect current proposed plans and address previous comments, even if the proposed plan is for some activities to be conducted after storm season.
09/23/20	**3.2.4.4**	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.	3	1. Storm scenarios have been meticulously modeled, stress testing has been conducted on the website for all customer priority customer journeys, infrastructure capacity and resiliency has been quantified/ characterized and determined to meet at least Isaias level high-activity scenarios.	1. Customer Journey model 2. Test Plan 3. Test results 4. Remediation Implementation plan (if applicable) 5. Implementation of (4) and retest.	3/10/21	PIP Review_3.2.4.4	**Resubmit in April**	Insufficiently responsive to previous comments. PSEG LI requests that this PIP be closed as it will be addressed via PIPs 4.01 and 4.15. As previously noted, individual PIPs are required for traceability. While some of the activities required to meet this recommendation may be conducted as part of the end-to-end testing discussed in 4.15, the tasks and deliverables for satisfying this recommendation should be explicitly identified in this PIP.
09/23/20	**3.2.5.1**	Review ETR strategy and revise it to allow for suspending ETRs while damage is being assessed and relevant information to estimate an ETR is still being gathered.	1	Revised ETR Operational Strategy.	Revised ETR Operational Strategy documentation, deployment, incorporation of strategy in drills.		Rejected - DEC. No Revised PIP Submitted	**No Revised PIP Submitted**	Please resubmit the revised PIP.
09/23/20	**5.4.2**	Accelerating 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. (PIP was split)		AMI/OMS integration complete and tested.	Revised Project Plans.	2/22/21	5.4.2 PIP AMI-OMS Integration	**Resubmit in April**	Insufficiently responsive to the previous comments. The PIP is still only addressing the AMI integration with OMS 6.7 and not OMS 5.5. The reason given is schedule-related. It does not address the risk associated with reliance on OMS 6.7. What if OMS 6.7 fails to deliver on its promises? The AMI integration will remain unfulfilled. Taking a risk-averse approach so that AMI integration is delivered with OMS 5.5 in addition to 6.7 will guarantee that AMI integration is available regardless of which OMS version is in use. This is what the LIPA board wanted and the PIP fails to address.

PSEG Long Island

Project Implementation Plan

For Isaias Task Force Recommendation Implementations

Recommendation No. 4.01

Project Title: PSEG Long Island should develop and execute a comprehensive and strategic technology plan for outage reporting and communications

PIP History, Feedback, and Actions

LIPA Response February 19th

The PIP lays out a rote schedule to develop a plan without description of what issues will be considered. The plan allocates only 3 days to actually discuss the plan (subtask: 4.01 - Set up meetings w/PSEG for overall strategy 2/23/21 to 2/25/21).

LIPA believes that PSEG LI needs to think strategically on all available opportunities to improve outage reporting and communications. This PIP appears to ride on the "Digital Channels" project goals and create a deliverable out of that rather than develop a thoughtful strategic discussion and plan. We recommend that PSEG LI put further thought into what it will take to develop a comprehensive strategic approach to "outage reporting and communications" and provide an appropriate "Technical Approach" to developing a "comprehensive strategic technology plan."

PSEG Long Island Actions:

- During a conference call with LIPA on Monday, March 8, 2021 regarding clarification on project plan 4.10, PSEG LI asked LIPA's option about moving out 2 project plans (3.2.4.1 and 4.01) till after storm season and LIPA requested that we update the project plan with our reasoning and they will review our submission.
- PSEG-LI recommends that we focus on operational issues and experience a storm season and in parallel develop a longer term technology strategy. We have updated the timeline to reflect this change.
- PSEG LI is also in the process of documenting the End to End storm restoration processes which will inform the roadmap for outage reporting and communications opportunity improvements.

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1. Project Definition

PSEG Long Island provides multiple digital channels to customers and stakeholders for both routine and storm and outage related communications. Routine communications include account, billing, and energy usage information; storm and outage communications include downed wire and outage reporting, customer status and estimated restoration times, overall system status and service restoration activities, and pre-storm notifications.

The Digital Channels project goal is to improve the performance and reliability of the digital channels that are used in correspondence to PSEG LI's customer base. The objectives of the project are to improve the existing infrastructure and applications used to communicate with PSEG LI customers in both the short and long term. The team is intent on verifying a prudent utility solution is in place for future storm communications. Success criteria of the project includes meeting milestones, deliverables and test requirements when performing individual and holistic stress tests on the customer communication channels.

Any mention of the "Digital Channels" in this document refers to the channels below.

- Kubra Notifi
- PSEG LI Mobile App
- IVR
- HVCA (High Volume Call App)
- PSEG public website
- MyAccount Customer Portal
- Alexa/Google

1.1. Project Purpose, Objectives, and Success Criteria

1.1.1 Project Objectives:

The objectives of the project are:

1. Align internally on long term goals and objectives for operations and infrastructure related to outage reporting and customer communications at PSEG LI
2. Create a forward-looking strategic technology plan which outlines the goals PSEG LI will set for the future infrastructure as it relates to the Digital Channels and all opportunities to improve outage reporting and communications.

1.1.2 Project End State and Success Criteria:

PSEG Long Island has put together a comprehensive and strategic technology plan which includes a holistic and integrated vision of outage reporting and customer communications infrastructure and business operations. Business stakeholders will provide input to the plan which will ultimately be reviewed and approved by PSEG LI.

2. Project Deliverables:

The following are the list of deliverables that will be delivered as part of the implementation:

Deliverable	Delivery Date	Comments
Strategy documentation template	Monday 3/31/21	Template for strategic documentation plan for outage reporting and communications
Document End to End Storm restoration processes	Monday 4/19/21	Documentation will identify opportunities to improve outage reporting and communications
Strategy documents submitted for review with PSEG LI	Monday 10/04/21	Preliminary strategy documentation
Holistic and integrated vision and end state for PSEG LI business and users	Monday 11/01/21	Final documentation after review with PSEG and latest updates incorporated from design workshops.

The Project Management Office (PMO) will create and maintain the following across all IT Implementation Plans:

- Integrated Project Plan
- Status Reports
- Risks and Issues Log

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- This effort will focus on producing a strategic long-term plan that aligns PSEG LI's strategic objectives
- Team will build the plan while considering existing infrastructure and systems
- Plan will be used as a guiding document to steer in the correct long term direction Additional project plans and detailed breakouts will be created for execution of tasks

2.1.2 Dependencies:

- PSEG LI will be dependent on leadership approval to drive and execute long term plan after creation
- The long-term strategic vision is dependent on the success of subsequent recommendations related to outage reporting and customer communications

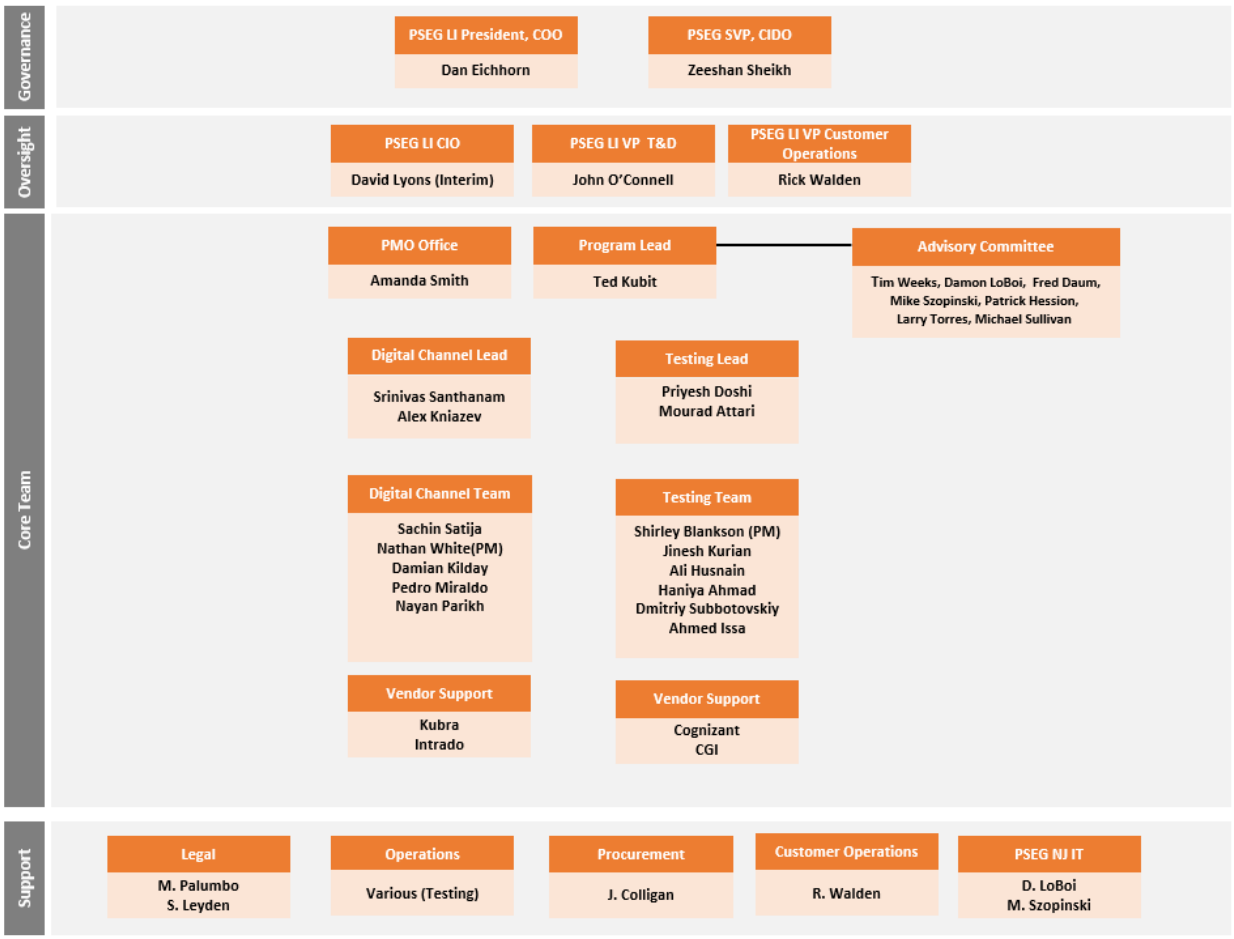
2.1.3 Constraints:

- Competing projects at PSEG LI could affect delivery timelines
- Storm season will be a priority for PSEG LI resources who will be unavailable when performing storm roles or resolving current production issues

3. Project Structure

3.1. Internal Project Organization

The Digital Channels Team and Testing Team along with vendor support from Kubra, Intrado, and Cognizant will implement the Digital Channels project. The chart below shows the internal project organization and the groups responsible for the Digital Channels project:



3.1.1 Roles and Responsibilities:

Roles and responsibilities for the Digital Channels project are outlined in the table below:

Role	Name	Responsibilities
Steering Committee	Dan Eichhorn *(Chair)* Zeeshan Sheikh John O'Connell	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remain aligned with the guiding principles as defined

	Rick Walden	• Providing guidance and input on key project decisions • Challenging the project team where appropriate • Approving major changes to the project's scope, objectives, timelines, costs, etc. • Acting as the decision maker for issues requiring escalation • Removing institutional barriers if and when they arise by serving as a project advocate
Leadership	PSEG LI CIO - David Lyons (Interim)	• Ensuring workstreams adhere to guiding principles as defined by project leadership • Managing issues and decision making • Removing obstacles that impede the success of the overall project Providing strategic guidance • Challenging the project team where appropriate • Approve procurement of external parties (as needed)
Advisory Committee Members	Tim Weeks Damon LoBoi Mike Szopinski Fred Daum Patrick Hession Larry Torres Michael Sullivan	• Providing guidance and input on key project decisions • Assisting in the procurement of external parties (as needed) • Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project • Challenging the project team where appropriate
Digital Channel Lead	Srinivas Santhanam	• Drive workstream tasks and deliver recommendations for Solution Design Specification • Provide support for Testing • Aid in the development functional requirements • Provide input on requirement / design • Coordinating Business Resources to support the project • Key Point of contact to for questions from the HVCA IVR vendor, Outage Map vendor and Xtensible Team • Providing sign off for deliverables that require business input/acceptance • Delivering the Digital Channels project on time and on budget
Project Manager	Nate White (ACN)	• Reporting overall status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resources, schedule, issues, risks and change requests • Process development, requirements definition, • Providing subject matter expertise to the project • User Impact Analysis • Facilitating workshops
Performance Engineer	Sri Kanaparthy	• Supporting Build/Test/Deploy Activities • Assist with Environment setup • Coordinating Development activities • Assist with Technical Design and Architecture • Assist with Transfer of Environments
Technical Architect	Pedro Miraldo	• Supporting Build/Test/Deploy Activities • Environment setup • Assist in the configuration of the Digital Channels • Coordinating Development activities • Technical Design • Testing Lead

		• Transfer of Environments
Business Lead	Nayan Parikh	• Process development, requirements definition, functional design • Technical Design • Supporting vendor questions and workshops Testing Execution
Test Lead	Sikder Islam	• Test Script Development • Test Script Execution for Assembly / Unit Test • Test Execution
Environment Lead	Anish Thomas	• Technical Design development • Environment design support
Test Project Manager	Priyesh Doshi	• Reporting overall testing status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Developing Testing Dashboard to accurately display current test execution • Manage resources, schedule, issues, risks and change requests • Providing testing subject matter expertise to the project • Defect Management

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below*:*

Organization/Team	Name	Responsibilities
Long Island Power Authority	Mujib Lodhi, Rick Shansky,	• Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	• Overall oversight of the entire project portfolio

4. Project Plan

4.1. Project Work Plan

LIPA ID	Type	Task Name	Current Status	% Complete	Target Start Date	Target Finish Date
4.01	**Recommendation**	**PSEG Long Island should develop and execute a comprehensive and strategic technology plan for outage reporting and communications.**	In Progress	47%	Mon 1/4/21	Mon 3/15/21
4.01	*Milestone*	*End to end process mapping data collection and documentation*	*Complete*	*100%*	*Mon 1/4/21*	*Fri 2/12/21*
4.01	Subtask	Meet with LIPA to gain clarification on this recommendation	Complete	100%	Mon 1/11/21	Mon 1/11/21

4.01	Subtask	Build out project plan based on LIPA clarification	Complete	100%	Tue 1/12/21	Wed 3/10/21
4.01	*Milestone*	*MS; End to end process analysis and roadmap*	*In Progress*	*50%*	*2/15/21*	*4/19/21*
4.01	Subtask	Review and document current storm restoration processes.	Complete	100%	Thu 2/18/21	Fri 2/19/21
4.01	Subtask	Build out template for strategy doc	In Progress	50%	Mon 2/22/21	Wed 3/31/21
4.01	Subtask	Establish a timeline for conducting strategy workshops	Complete	100%	Mon 3/1/21	Wed 3/3/21
4.01	Subtask	Set up meetings w/PSEG LI for overall strategy	Not Started	0%	Mon 8/2/21	Fri 8/6/21
4.01	Subtask	Conduct workshops and develop strategic technology plan	Not Started	0%	Thu 8/19/21	Fri 9/3/21
4.01	Subtask	Compile strategy documentation	Not Started	0%	Mon 9/6/21	Thu 9/23/21
4.01	Subtask	Review documentation w/PSEG LI	Not Started	0%	Fri 9/24/21	Mon 10/4/21
4.01	Subtask	Update with latest design from ongoing design workshops	Not Started	0%	Tues 10/5/21	Fri 10/15/21
4.01	Subtask	Review / approve documentation with PSEG LI	Not Started	0%	Mon 10/18/21	Fri 10/29/21
4.01	*Milestone*	*MS: Holistic and integrated vision and end state for PSEG LI business/users*	*Not Started*	*0%*	*Mon 11/1/21*	*Mon 11/1/21*

4.2. Risk Management Plan

The table below outlines the applicable risks and associated risk mitigations for the Digital Channels project.

Category	Project Risk	Mitigation
Resources	Resource constraints from Digital team due to competing projects.	Assign and commit business and IT resources and verify they are available to support this project. As necessary, hire contract resources to back fill normal job responsibilities
Resources	No holistic solution owner from PSEG LI to oversee entirety of solution	PSEG LI to designate a resource to be the holistic oversight for entire solution
Resources	Availability of resources due to other Storm duty priorities	Careful prioritization of projects with LIPA recommendations as top priority in order to complete all tasks/milestones on time.
Schedule / Cost	Contract negotiation could delay project due to multiple vendor partners involved for making changes to the entire architecture	PSEG LI to expedite contract approvals and determine if there are options for performing some work internally

Schedule / Cost	Vendor delays cause the schedule to shift and key project milestones are not able to be met on time	Work with the vendor to quickly resolve impediments.
Schedule / Cost	The activities outlined in the Digital Channels project become more complex than anticipated	Review the additional work required to complete the project with the steering committee. Add the scope required to complete the project to the implementation plan. Clearly identify the steps that will be taken to anticipate this complexity in future projects.
Program Management	Lack of scope/requirements control including changes needed to legacy IT systems	Lack of scope/requirements control is the leading cause of budget and schedule overruns for this scale of project. It will be critical to closely define project scope/requirements, quickly clarify any uncertainties as they arise, and escalate as required. Any changes in scope/requirements must be agreed-to by the executive steering committee.
Program Management	Additional recommendations for improvement are developed and will need to be added to this workstream	Additional recommendations that have activities similar to those addressed in this project will be identified and logically grouped within tracks. Resource requirements will be identified. Where necessary, contract resources will be hired to back fill normal job responsibilities

4.3. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PMO daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.4. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh.

5. Technical Execution Plan

5.1. Technical Approach

5.1.1 Configuration of Applications:

There will be no changes to applications required to meet this recommendation.

5.1.2 Changes to webservices:

There will be no changes to webservices required to meet this recommendation.

5.2. Quality Assurance Plan

5.2.1 QA Methodology:

The team will adhere to PSEG's IT standards for the deployment of this project. PSEG LI IT SharePoint will be used as the document repository.

- The deliverables will follow the following QA processes:
  - Team lead review and signoff
  - Peer Review (PSEG)
  - Subject Matter Advisor Review as necessary
  - PSEG Signoff by PSEGLI CIO and President & COO of PSEGLI
  - Independent Verification and Validation by LIPA CIO
- An individual test plan will be created, and for this recommendation it will include the following: Scope of testing, Test Criteria, Tests to be performed (e.g.: Functional, Acceptance, Regression, Performance Testing, End to end)
- Test plan and test results will be signed off by PSEG LI CIO and President & COO of PSEG LI, and shared with LIPA upon completion

5.3. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Project Artifacts	Description
Strategic Technology Plan for Outage Reporting and Communications	Document with holistic and integrated vision and end state for PSEG LI business and users based on strategy documentation review with PSEG and design workshops.

Revision History

Name	Date	Reason for Changes	Version
Ali Husnain	12/9/2020	Initial draft	1.1
Alexander Kniazev	12/9/2020	Updated test criteria and project scope	1.2
Alexander Kniazev/ Shirley Blankson	1/25/21	Updated Draft with new assumptions	1.3
David Lyons	3/9/2021	Updated to address LIPA's comments and new timeline assumptions	1.4

PSEG Long Island

Project Implementation Plan

for

Isaias Task Force Recommendation Implementations

Recommendation No. 4.03

Project Title: 4.03 For the long term, PSEG Long Island needs to strengthen its voice communications engineering and project management staff.

PIP History, Feedback and Actions

On January 26th, LIPA provided feedback on the submitted Tier 1 and Tier 2 implementation plans. On February 2nd PSEG-LI provided documented responses to the feedback from LIPA for all rejected IT implementation plans. PSEG-LI and LIPA met to discuss the specific feedback and proposed path forward for this Implementation plan in a meeting on 2/05/2021. The below are the PSEG-LI responses to the feedback. In the meeting PSEG-LI and LIPA discussed the feedback. No agreement was reached in the meeting, LIPA requested that we provide supporting data, rationale and updates to the Project implementations plans. LIPA stated they would take the feedback and input into consideration in reviewing the plans.

LIPA Response (Submission 1/13/2021): *The project plan does not address the key goals and deliverables of this recommendation which include the following:*

- *Plan to hire staff with expert-level knowledge of modern voice communications engineering including (a) telephony technology (PSTN and IP), (b) voice/data networks, (c) modern elastic cloud-based call centers, (d) voice communications security.*
- *Plan to hire experienced project management staff with a track record of driving complex multi-vendor IT projects to completion.*

PSEG Long Island Actions:

- As per the project plan the team will conduct a gap assessment of current staff and provide a recommendation for skills which will incorporate the stated end state. The outcome of this plan is how the gaps will be remediated. This may come in the form of hiring additional staff, it may also take the form of an IT reorganization, retraining or any of a variety of other process improvements. It is expected that there will be additional staff brought on to augment the existing team, but this PIP will determine how and where to place such resources.
- PSEG suggests review of the gap analysis and recommendation with LIPA once this activity is complete as per the project plan - February 26th versus resubmission of the implementation plan.

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1. Project Definition

This project includes efforts to strengthen staffing of the Telecom teams responsible for voice engineering and project management of Telecom projects and initiatives and to source additional capabilities as required.

1.1. Project Purpose, Objectives, and Success Criteria

Project Objectives:

The objectives of this project are to source additional resources for voice communications engineering and project management staff.

Project End State and Success Criteria:

Successful completion of any improvement initiatives that are taken forward into execution as measured by success metrics that will be developed as part of the planning and roadmap activities.

2. Project Deliverables:

Deliverable	Delivery Date	Comments
Gap Analysis and Recommendations	2/26/2021	
Improvement Roadmap	3/26/2021	
Status Reports on success metrics for each initiative put into execution	Weekly Upon Beginning of Execution of Roadmap	Per current plan, potentially start week of March 29, 2021
Final Report for each initiative	TBD	Pending Roadmap
Final Sign Off	TBD	A theoretical date of 6/25/2021 is included in project schedule, however, will be confirmed through roadmap

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- Project team will be available for design discussions and will have a designated resource who will confirm all decisions made for future improvements
- Vendor resources will be available to aid in information gathering and participate, where necessary, in improvement initiatives
- Contracts and other documentation will be made available to reviewers for analysis

2.1.2 Dependencies:

- Current Telecom staff and vendor resources will need to be made available for reviews and improvement initiatives

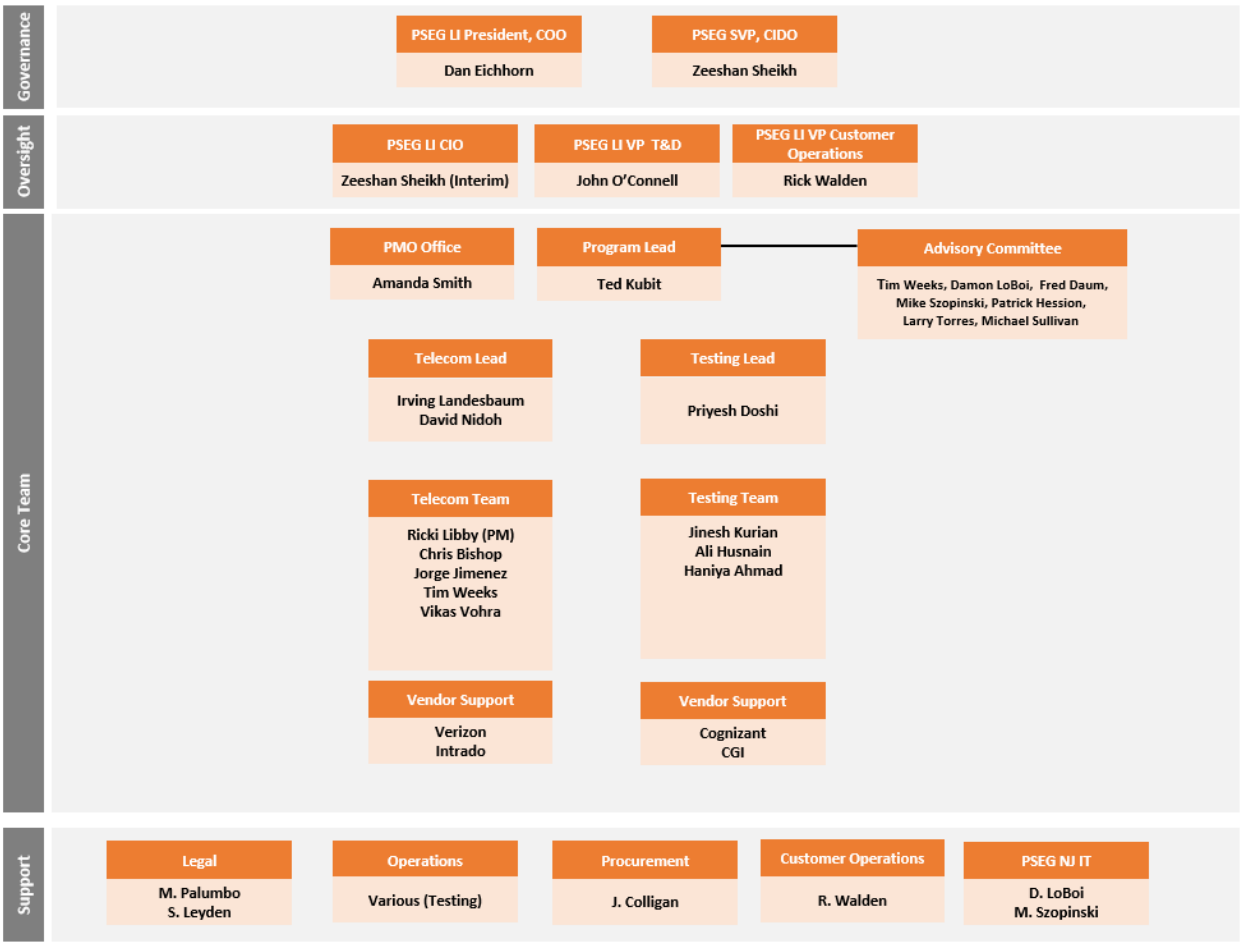
2.1.3 Constraints:

- Competing projects and operational activities that further constrain available resources. Availability of vendor resources with requisite experience to engage quickly.

3. Project Structure

3.1. Internal Project Organization

The Telecom Team, with vendor support from other suppliers will implement this modernization project. The chart below shows the internal project organization and the groups responsible for the Telecom project:



3.1.1 Roles and Responsibilities:

Roles and responsibilities for the Telecom project are outlined in the table below:

Role	Name	Responsibilities
Steering Committee	Dan Eichhorn *(Chair)* Zeeshan Sheikh John O'Connell Rick Walden	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remained aligned with the guiding principles as *defined* • Providing guidance and input on *key project decisions* • Challenging the project team where appropriate • Approving major *changes to the project's scope, objectives, timelines, costs, etc.* • Acting as the decision maker for issues requiring *escalation* • Removing institutional barriers when *they arise by serving as a project advocate*
PSEG LI CIO	Zeeshan Sheikh (Interim)	• Ensuring *workstreams adhere to guiding principles as defined by project leadership* • Managing issues and decision making • Remov*ing obstacles that impede the success of the overall project Providing strategic guidance* • Challenging the project team where appropriate • Approve procurement of external parties (as needed)
Advisory Committee Members	Tim Weeks Damon LoBoi Mike Szopinski Fred Daum Patrick Hession Larry Torres Michael Sullivan	• Providing guidance and input o*n key project decisions* • Assisting in the procurement of external parties (as needed) • Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project • Challenging the pr*oject team*
Team Lead	Kevin Planz *David Nidoh*	• Driving workstream tasks and deliver recommendations for Solution Design Specification • Coo*rdinating Business Resources to support the project* • Serving as key point of contact to for questions from the vendor • Providing sign-off for deliverables that require business *input/acceptance* • Delivering the project on time and on budget •
Project Manager	Kevin Planz *Ricki Libby*	• Reporting overall status of the project to Stakeholders and Program Leadership • Obtaining agreement on project outcomes and deliverables with management • Defining and tracking project milestones and activities • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resource*s, schedule, issues, risks and change requests* • Defining process development and requirements definition • Providing subject matter expertise to th*e project* • Conducting User Impact Analysis • Facilitating workshops
Business Lead	Chris Bishop	• Process development, requirements defini*tion, functional design* • Supporting vendor questions and workshops

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below*:*

Organization/Team	Name	Responsibilities
Long Island Power Authority	Mujib Lodhi, Rick Shansky	• Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	• Overall oversight of the entire project portfolio

4. Project Plan

4.1. Project Work Plan

To achieve the objectives outlined in Section 2 of this document, PSEG LI has developed a strategic Project Plan comprised of the following activities:

Task	Recommendation	Pct Complete	Target Start Date	Target End Date
Recommendation	**For the long term, PSEG Long Island needs to strengthen its voice communications engineering and project management staff.**	**0%**	**2/1/21**	**6/25/21**
Task	Review existing capabilities of both internal and external voice communications engineering and project management staff	0%	Mon 3/1/21	Fri 3/12/21
Task	Review current and future demand to establish resourcing needs	0%	Mon 3/1/21	Fri 3/12/21
Task	Develop a gap analysis and recommendations for improvement based on reviews	0%	Mon 3/15/21	Fri 3/19/21
Task	Management review of gaps and recommendations	0%	Mon 3/22/21	Fri 3/26/21
Task	Develop roadmap for any improvement initiatives (e.g. training, staff augmentation, etc.) including metrics for tracking and reporting success of each	0%	Mon 3/29/21	Fri 4/9/21
Task	Management review of roadmap and update to project plan to incorporate approved sourcing initiatives	0%	Mon 4/12/21	Fri 4/23/21
Task	Track metrics of each initiative and report to management on weekly basis	0%	Mon 4/26/21	Fri 7/16/21
Task	Management Review and Approval of Task (ongoing as each initiative is completed)	0%	Mon 4/26/21	Fri 7/16/21
Task	Execute sourcing as appropriate	0%	Mon 4/26/21	Fri 7/16/21
Task	Management Review and Final Sign Off	0%	Mon 7/19/21	Fri 7/23/21
Task	LIPA Task #4.03 Complete	0%	Fri 7/23/21	Fri 7/23/21

4.2. Risk Management Plan

The table below outlines the applicable risks and associated risk mitigations for the Telecom project.

Category	Project Risk	Mitigation
Resources	Availability of resources due to other Storm duty priorities	Careful prioritization of projects with LIPA recommendations as top priority in order to complete all tasks/milestones on time.
Program Management	Additional recommendations for improvement are developed and will need to be added to this workstream	Additional recommendations that have activities similar to those addressed in this project will be identified. Resource requirements will be identified.

		Where necessary, contract resources will be hired to back fill normal job responsibilities
Program Management	Vendor cooperation in initiatives could be a potential hurdle	Thorough project management and escalation procedures.

4.3. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PMO daily. Consultants will escalate issues and risks to PSEG LI Team as well that are identified in advisory activities. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.4. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh.

5. Technical Execution Plan

5.1. Technical Approach

The focus of this implementation plan will be on organizational effectiveness of the Telecom engineering and project management staff. There will not be any technical changes made to any systems, but rather a comprehensive review of existing staff and skill sets, vendors and project management processes. Gaps and recommendations will be documented and reviewed, and improvements will be identified and plotted on a theoretical timeline for review and finalization with PSEG LI management.

5.2. Quality Assurance Plan

1 The team will adhere to the PSEG's IT standards for the deployment of this project. PSEG LI IT SharePoint will be used as the document repository.
2 The deliverables will follow the following QA processes:
   a. Team lead review and signoff
   b. Peer Review (PSEG)
   c. Subject Matter Advisor Review as necessary
   d. PSEG Signoff by PSEGLI CIO and President & COO of PSEGLI
   e. Independent Verification and Validation by LIPA CIO

5.3. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Project Artifacts	Description
Gap Analysis and Recommendations	Summary of gaps or inefficiencies identified during reviews
Improvement Roadmap	Identification and description of improvement initiatives plotted on a timeline over the coming months for implementation
Status Reports on success metrics for each initiative put into execution	Status against success metrics for each improvement initiative
Final Report for each initiative	Final report showing achievement of success metrics for each initiative

Revision History

Name	Date	Reason for Changes	Version
David Nidoh	1/13/2021	initial draft	1.0 draft 1

PSEG Long Island

Project Implementation Plan

for

Isaias Task Force Recommendation Implementations

Recommendation No. 4.07

Project Title: 4.07 Ensure that the Municipal Portal is more resilient and prepare a backup Mode of Operation in case of OMS failure.

PIP History, Feedback and Actions

On January 26th, LIPA provided feedback on the submitted Tier 1 and Tier 2 implementation plans. On February 2nd PSEG-LI provided documented responses to the feedback from LIPA for all rejected IT implementation plans. PSEG-LI and LIPA met to discuss the specific feedback and proposed path forward for this Implementation plan in a meeting on 2/05/2021. The below are the PSEG-LI responses to the feedback. In the meeting PSEG-LI and LIPA discussed the feedback. No agreement was reached in the meeting, LIPA requested that we provide supporting data, rationale and updates to the Project implementations plans. LIPA stated they would take the feedback and input into consideration in reviewing the plans.

LIPA Response: *The project plan does not address the key goals and deliverables of this recommendation. Specifically, it does not provide a plan to deliver the following:*

LIPA Response #1: *Municipal Portal that either implements request buffering or an alternate way to work asynchronously with the OMS whereby guaranteeing timely response in such a way that the end users never experience a slow portal.*

PSEG Long Island Actions:

- Team reviewed LIPA feedback and are proposing the following solutions to handle asynchronous interaction with the OMS:
  - The response caching solution will always provide a response from cache and will prevent GetOutages webservice errors that are happening today due to timeouts.
  - Proposed changes to queue for incoming trouble tickets through recommendation will enable asynchronous interaction (recommendation 4.17) This will allow faster response to the customer.
  - The new reporting database which decouples Municipal Portal from the oms (for sending outage info)
- Feedback on the slow portal is addressed by:
  - The three solutions above which will always provide data to the Municipal Portal
  - Team has proposed to Kubra to upgrade their tier of service with AWS to handle any additional level of traffic

LIPA Response #1 *Continued*: *Please note that a file-based approach is not request buffering. There is nothing in the proposed plan that addresses municipal portal operation if the OMS is down or is completely non-responsive.*

PSEG Long Island Actions:

- PSEG LI has developed a BCP plan to call the Municipal Portal hotline in the event of OMS failure. This plan has been submitted to LIPA in recommendation 4.08.

LIPA Response #2: *Implementation of an alert message which the system sends to support personnel when the response time from the OMS crosses a predefined (configurable) threshold value (in seconds).*

PSEG Long Island Actions:

- The response submitted for Recommendation 3.2.3.3 includes a report that system administrators receive on the webservice performance (in time). Automated alerts for OMS are part of the monitoring response for recommendation 4.18.

LIPA Response #3: *A list of steps/actions that support personnel should take to configure the Municipal Portal to work in offline mode while the OMS is being restored back to normal operation (including customer comm steps).*

PSEG Long Island Actions:

- There is an offline mode available for the outage map which the team describes in detail in recommendation response 3.2.3.3. The Municipal Portal does not have a static offline mode and has a BCP written in the event of OMS failure as provided in recommendation 4.08.

LIPA Comment #4: *A list of steps/actions that support personnel should take to bring the OMS back to normal operation (including customer comm steps).*

PSEG Long Island Actions:

The team assumes bringing OMS back to normal operation is describing a scenario where we establish OMS is robust enough to continue receiving calls from digital channels. In this scenario:

PSEG LI will document the existing step by step procedure that explains how to bring OMS application services back to normal operation. The customer communication steps in the event of OMS failure have been provided in recommendation response 3.2.3.3.

Table of Contents

1. Project Definition

PSEG Long Island provides multiple digital channels to customers and stakeholders for both routine and storm and outage related communications. Routine communications include account, billing, and energy usage information; Storm and outage communications include downed wire and outage reporting, customer status and estimated restoration times; overall system status and service restoration activities; and pre-storm notifications.

The project goal is to verify a solution is in place to protect the OMS system from becoming inundated with customer calls in the event of a large storm with high numbers of outage reports. This project focuses on improving infrastructure providing outage information to the outage map and the Municipal Portal. In addition, the project will focus on exploring improving the scaling capabilities of the customer facing applications.

Any mention of the "Digital Channels" in this document refers to the following channels:

- Kubra Notifi
- PSEG LI Mobile App
- IVR
- HVCA (High Volume Call App)
- PSEG corporate website
- MyAccount Customer Portal
- Alexa/Google

1.1. Project Purpose, Objectives, and Success Criteria

1.1.1 Project Objectives:

To increase the resiliency of the Municipal Portal / outage map. Enhance back up mode of operation for the Municipal Portal and outage map in case of OMS failure.

In summary the project aims to:

1. Create new SLAs (scaling incoming traffic to Municipal Portal and outage map)
2. Explore viability of Kubra file-based solutions and engage Kubra to implement solutions (pending final decision)
    a. Propagate changes from file-based solutions to ESB (if needed)
3. Implement caching solution to further decouple the OMS from the customer facing applications

1.1.2 Project End State and Success Criteria:

End State:

The end state is will be a resilient outage map and Municipal Portal that are capable of providing customers with outage information in the event of OMS failure or miscommunication

Success Criteria:

- Criteria will consist of deployment & verification of operational solutions in Production environment (where applicable)
- To verify that PSEG LI has a valid and thought out implementation plan with key decisions that, when executed, will produce a robust architecture that allow for greater reliability and security of digital communications in storm situations. This implementation plan will include deliverables and provide metrics for performance testing to verify all systems are capable of handling storm scenarios.

2. Project Deliverables:

The following are the list of deliverables that will be delivered as part of the implementation:

Deliverable	Delivery Date	Comments
Detailed Roadmap and Implementation plan	Fri 01/08/2021	Create a detailed roadmap and implementation plan
Functional Design - Caching design for outage map and Municipal Portal	Tue 3/16/2021	Create a Functional Design - Caching design for outage map and Municipal Portal
Functional Design - Changes to comply to file-based format (Non-Kubra)	Thu 4/1/21	Create a Functional Design - Changes to comply to file-based format (Non-Kubra)
Functional Design - Changes to comply to file-based format for Kubra	Thu 4/1/21	Create a Functional Design - Changes to comply to file-based format for Kubra
Technical Design - Caching design for outage map and Municipal Portal	Thu 4/15/21	Update Technical Design - Caching design for outage map and Municipal Portal
Technical Design - Changes to comply to file-based format (Non-Kubra)	Fri 5/7/2021	Create a Technical Design - Changes to comply to file-based format (Non-Kubra)

The Project Management Office (PMO) will create and maintain the following across all IT Implementation Plans:

- Integrated Project Plan
- Status Reports
- Risks and Issues Log

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- PSEG LI has the necessary resources in place from an internal and third-party standpoint to complete all objectives/recommendations including implementation work as needed
- There will be no time included in the schedule for exploration of additional third-party vendors for enhanced solutions. The project team will move forward to implement recommendations and enhanced solutions for the existing PSEG LI framework and vendor partnerships
- Vendor resources will be available to provide SME time and answer any questions for respective applications
- This plan assumes current SLA can be renegotiated to increase the capability for those customer end applications to handle additional traffic

- This plan assumes that PSEG LI will accept the current Kubra proposal which includes converting all Kubra associated webservices into file-based solutions including non-outage related webservices
    - Example: Response customer account webservice is noted as the most significant on ESB side to convert to file based and will impact timeline
- This plan assumes there will be no necessary updates for CGI OMS to accommodate file-based solution
- This plan assumes performance testing will be part of the overall stress test
- This plan assumes functional designs for Kubra and the ESB changes can be completed in parallel
- This plan assumes scaling / SLA adjustment will be done for both outage map and Municipal Portal however further sessions are needed to determine if that is the correct approach. The Municipal Portal does not have the same bandwidth demands from a customer base as the outage map does

2.1.2 Dependencies:

- PSEG LI team has a dependency on Kubra to make any changes to the Municipal Portal, the outage map, the outbound proactive communications through Notifi or the inbound communications through Notifi
- PSEG LI has a dependency on XTENSIBLE for performing changes to accommodate file-based approach and caching
- PSEG LI has a dependency on the OMS team to stand up an OMS testing environment and make it available for end to end testing activities requiring the outage map and Municipal Portal
- PSEG LI procurement resources will need to be involved for licensing and other issues

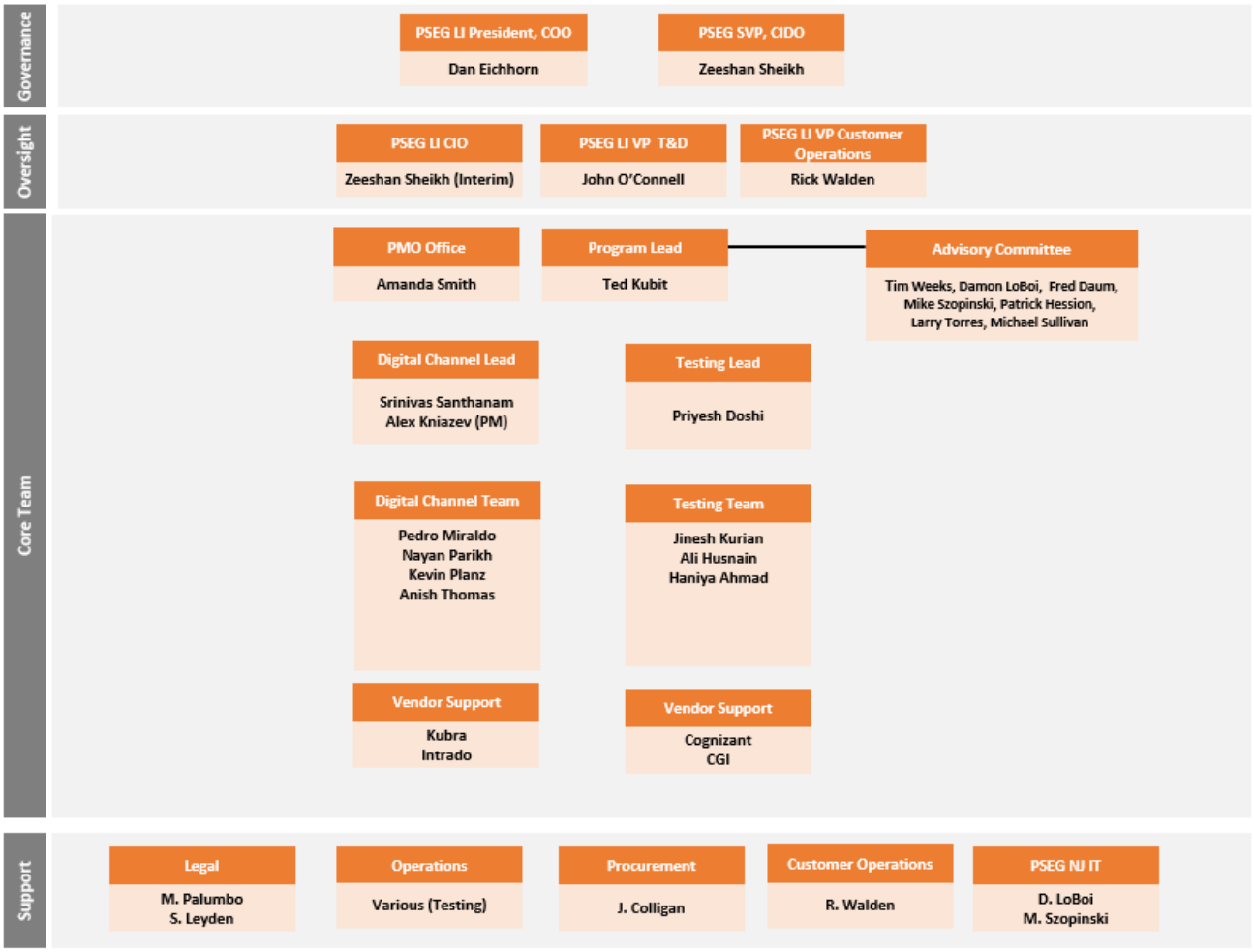
2.1.3 Constraints:

- Competing projects at PSEG LI could affect delivery timelines
- Storm season will be a priority for PSEG LI resources who will be unavailable when performing storm roles or resolving current production issues
- Kubra does not currently have a performance testing environment capable of thoroughly testing Notifi and the outage map / Municipal Portal. A contract will have to be drafted for Kubra to provide an environment for performance testing

3. Project Structure

3.1. Internal Project Organization

The Digital Channels Team, Testing Team along with vendor support from Kubra, Intrado, and Cognizant will implement the Digital Channels project. The chart below shows the internal project organization and the groups responsible for the Digital Channels project:



3.1.1 Roles and Responsibilities:

Roles and responsibilities for the Digital Channels Enhancement project are outlined in the table below:

Role	Name	Responsibilities
Steering Committee	Dan Eichhorn *(Chair)* Zeeshan Sheikh John O'Connell Rick Walden	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remained aligned with the guiding principles as defined • Providing guidance and input on key project decisions • Challenging the project team where appropriate • Approving major changes to the project's scope, objectives, timelines, costs, etc. • Acting as the decision maker for issues requiring escalation • Removing institutional barriers if and when they arise by serving as a project advocate
Leadership	PSEG LI CIO -	• Ensuring workstreams adhere to guiding principles as defined by

	Zeeshan Sheikh (Interim)	project leadership • Managing issues and decision making • Removing obstacles that impede the success of the overall project Providing strategic guidance • Challenging the project team where appropriate • Approve procurement of external parties (as needed)
Advisory Committee Members	Tim Weeks Damon LoBoi Mike Szopinski Fred Daum Patrick Hession Larry Torres Michael Sullivan	• Providing guidance and input on key project decisions • Assisting in the procurement of external parties (as needed) • Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project • Challenging the project team where appropriate
Digital Channel Lead	Srinivas Santhanam / Alex Kniazev (ACN)	• Drive workstream tasks and deliver recommendations for Solution Design Specification • Provide support for Testing • Aid in the development functional requirements • Provide input on requirement / design • Coordinating Business Resources to support the project • Key Point of contact to for questions from the HVCA IVR vendor, Outage Map vendor and Xtensible Team • Providing sign off for deliverables that require business input/acceptance • Delivering the Digital Channels project on time and on budget
Project Manager	Kevin Planz	• Reporting overall status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resources, schedule, issues, risks and change requests • Process development, requirements definition, • Providing subject matter expertise to the project • User Impact Analysis • Facilitating workshops
Performance Engineer	Sri Kanaparthy	• Supporting Build/Test/Deploy Activities • Assist with Environment setup • Coordinating Development activities • Assist with Technical Design and Architecture • Assist with Transfer of Environments
Technical Architect	Pedro Miraldo	• Supporting Build/Test/Deploy Activities • Environment setup • Assist in the configuration of the Digital Channels • Coordinating Development activities • Technical Design • Testing Lead • Transfer of Environments
Business Lead	Nayan Parikh	• Process development, requirements definition, functional design • Technical Design • Supporting vendor questions and workshops Testing Execution
Test Lead	Sikder Islam	• Test Script Development • Test Script Execution for Assembly / Unit Test

		• Test Execution
Environment Lead	Anish Thomas	• Technical Design development • Environment design support
Test Project Manager	Priyesh Doshi	• Reporting overall testing status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Developing Testing Dashboard to accurately display current test execution • Manage resources, schedule, issues, risks and change requests • Providing testing subject matter expertise to the project • Defect Management

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below*:*

Organization/Team	Name	Responsibilities
Long Island Power Authority	Mujib Lodhi, Rick Shansky,	• Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	• Overall oversight of the entire project portfolio

4. Project Plan

4.1 Project Work Plan

Project plan timeline above is preliminary, subject to change and approval

LIPA ID	Task Name	Current Status	% Complete	Target Start Date	Target Finish Date
4.07	Verify that the Municipal Portal is more resilient and prepare a backup Mode of Operation in case of OMS failure.	In Progress	28%	Mon 8/31/20	Mon 8/16/21
4.07	**Analyze Phase**	**In Progress**	**83%**	**Mon 11/9/20**	**Fri 2/19/21**
4.07	Create a recommendation for future architecture	Complete	100%	Mon 11/9/20	Fri 11/20/20
4.07	Analyze Kubra architecture for improvement areas for muni portal and outage map	Complete	100%	Mon 11/16/20	Fri 11/20/20
4.07	Full PSEG LI team review to discuss dependencies and determine issues with proposal	Complete	100%	Mon 12/14/20	Fri 1/8/21

4.07	Analyze current SLAs to determine scaling capabilities	In Progress	60%	Mon 1/25/21	Fri 2/12/21
4.07	Analyze current BCPs	Complete	100%	Mon 2/8/21	Tue 2/9/21
4.07	Determine environment needs for UAT testing	Complete	100%	Wed 1/20/21	Wed 2/10/21
4.07	Create Detailed Roadmap and Implementation plan	Complete	100%	Mon 1/4/21	Fri 2/12/21
4.07	Evaluate Kubra file based solution to determine impact for overall architecture	In Progress	46%	Thu 1/14/21	Fri 2/19/21
4.07	Verify outage file implementation will address caching enhancement to outage map and muni portal	Complete	100%	Mon 1/11/21	Wed 1/13/21
4.07	**Design Phase**	**In Progress**	**29%**	**Mon 1/11/21**	**Thu 4/8/21**
4.07	Finalize contract for performance testing	In Progress	54%	Mon 1/11/21	Fri 3/5/21
4.07	Kubra to provide performance testing SOW	Complete	100%	Mon 1/11/21	Fri 1/22/21
4.07	Kubra to draft contract	Complete	100%	Mon 1/25/21	Mon 1/25/21
4.07	Review / Approval of performance testing SOW	In Progress	56%	Mon 1/25/21	Fri 2/19/21
4.07	Contract Procurement for resources (vendor finds resources, and an agreement is signed)	Not Started	0%	Mon 2/22/21	Fri 3/5/21
4.07	Design new SLA	In Progress	22%	Tue 1/26/21	Fri 3/26/21
4.07	Create requirements for new SLA for scaling incoming traffic to muni portal and outage map	Complete	100%	Mon 2/1/21	Fri 2/5/21
4.07	Engage procurement to review new SLA	Complete	100%	Tue 1/26/21	Wed 1/27/21
4.07	Review Current SLA	Complete	100%	Thu 1/28/21	Thu 1/28/21
4.07	Determine New Benchmarks for customer website interaction	In Progress	19%	Fri 1/29/21	Fri 2/26/21
4.07	Procurement to review, negotiate and provide sign off	Not Started	0%	Mon 3/1/21	Fri 3/26/21
4.07	Review new SLA with stakeholders	Not Started	0%	Mon 3/1/21	Fri 3/5/21
4.07	Approve new SLA	Not Started	0%	Mon 3/8/21	Mon 3/8/21
4.07	*MS: Sign off of new SLA*	*Not Started*	*0%*	*Mon 3/8/21*	*Mon 3/8/21*
4.07	Kubra File based solution design	In Progress	27%	Thu 1/21/21	Thu 4/8/21
4.07	PSEG Review Kubra SOW	Complete	100%	Thu 1/21/21	Mon 2/22/21
4.07	Engage Kubra to confirm if SOW meets storm needs	Not Started	0%	Wed 2/17/21	Mon 2/22/21
4.07	Create LOE for URB approval (cost component, resource component)	Not Started	0%	Mon 2/22/21	Mon 3/1/21
4.07	Prepare for URB review (Get approval from finance, capex / opex)	Not Started	0%	Mon 3/1/21	Thu 3/4/21
4.07	Obtain Approval for funding from URB	Not Started	0%	Thu 3/4/21	Thu 3/4/21
4.07	Sign off on Kubra SOW	Not Started	0%	Thu 3/4/21	Thu 3/4/21

4.07	Create Functional Design/ RTM - Changes to comply to file based format (Non Kubra)	Not Started	0%	Thu 3/4/21	Thu 4/1/21
4.07	Create Functional Design/ RTM - Changes to comply to file based format for Kubra	Not Started	0%	Thu 3/4/21	Thu 4/1/21
4.07	RTM documentation complete/LIPA review	Not Started	0%	Thu 4/1/21	Thu 4/1/21
4.07	Data Security review and approval of Design	Not Started	0%	Thu 4/1/21	Thu 4/8/21
4.07	Review & Approve Functional Design	Not Started	0%	Thu 4/1/21	Thu 4/8/21
4.07	Caching design for outage map and muni portal	In Progress	17%	Wed 2/17/21	Thu 3/18/21
4.07	Create functional design for caching	In Progress	25%	Wed 2/17/21	Tue 3/16/21
4.07	Review and Approve Functional design for caching	Not Started	0%	Fri 3/12/21	Thu 3/18/21
4.07	Create Documentation for existing process to bring OMS back to normal operations after failure	Not Started	0%	Mon 3/1/21	Fri 3/5/21
4.07	**Build Phase**	**In Progress**	**1%**	**Mon 11/23/20**	**Thu 6/3/21**
4.07	Configure outage map and muni portal to new SLA	Not Started	0%	Sun 2/7/21	Fri 3/19/21
4.07	Kubra to configure outage map and muni portal to new SLA	Not Started	0%	Tue 3/9/21	Thu 3/18/21
4.07	Kubra to provide Unit Test results or documentation of configuration	Not Started	0%	Fri 3/19/21	Fri 3/19/21
4.07	*MS: Configuration complete*	*Not Started*	*0%*	*Sun 2/7/21*	*Sun 2/7/21*
4.07	Kubra file based solution build	Not Started	0%	Mon 4/5/21	Thu 6/3/21
4.07	Kubra to implement file based solution and functional test	Not Started	0%	Thu 4/8/21	Thu 6/3/21
4.07	ESB to make adjustments for file based solution	Not Started	0%	Thu 4/8/21	Thu 6/3/21
4.07	Create Technical Design - Changes to comply to file based format (Non Kubra)	Not Started	0%	Mon 4/5/21	Fri 4/30/21
4.07	Review & Approve Technical Design	Not Started	0%	Mon 5/3/21	Fri 5/7/21
4.07	*MS: File based solution built*	*Not Started*	*0%*	*Thu 6/3/21*	*Thu 6/3/21*
4.07	Build caching solution	Not Started	0%	Fri 3/19/21	Thu 4/15/21
4.07	Develop caching solution	Not Started	0%	Fri 3/19/21	Thu 4/15/21
4.07	Update technical design	Not Started	0%	Fri 3/19/21	Thu 4/15/21
4.07	Caching build complete	Not Started	0%	Thu 4/15/21	Thu 4/15/21
4.07	Increase ESB Connections and Memory	Complete	100%	Mon 11/23/20	Mon 11/23/20
4.07	**Test Phase**	**Not Started**	**0%**	**Fri 1/22/21**	**Thu 7/1/21**
4.07	Caching solution test	Not Started	0%	Mon 3/22/21	Fri 4/16/21
4.07	Functional test	Not Started	0%	Fri 4/16/21	Thu 4/29/21
4.07	Stress Test/Performance Test/SIT	Not Started	0%	Fri 4/30/21	Thu 5/13/21

4.07	Stress Test outage map and Muni Portal with new SLA changes	Not Started	0%	Mon 4/5/21	Fri 4/16/21
4.07	Simulate high volume traffic for Kubra outage map and muni portal	Not Started	0%	Mon 4/5/21	Fri 4/16/21
4.07	*MS: SLA testing complete*	Not Started	*0%*	*Fri 4/16/21*	*Fri 4/16/21*
4.07	File Based Testing	Not Started	0%	Thu 6/3/21	Thu 7/1/21
4.07	SIT testing for file based solution	Not Started	0%	Thu 6/3/21	Thu 6/17/21
4.07	Defect resolution	Not Started	0%	Thu 6/17/21	Thu 7/1/21
4.07	*MS: Complete UAT*	*Not Started*	*0%*	*Thu 7/1/21*	*Thu 7/1/21*
4.07	Leverage Recommendation 4.12 - Perform a holistic test simulating calls from all channels to verify time out settings do not impact one another	Not Started	0%	Fri 1/22/21	Fri 1/22/21
4.07	**Deploy Phase**	**In Progress**	**3%**	**Mon 8/31/20**	**Mon 8/16/21**
4.07	Systems Cutover	In Progress	13%	Fri 10/30/20	Mon 7/5/21
4.07	Configure the outage map and the muni portal in production	Not Started	0%	Mon 4/19/21	Wed 4/21/21
4.07	Cutover of the file based kubra solution	Not Started	0%	Thu 7/1/21	Mon 7/5/21
4.07	Caching cutover	Not Started	0%	Fri 5/14/21	Mon 5/17/21
4.07	Implement Null ETR Capabilities		100%	Fri 10/30/20	Fri 10/30/20
4.07	*MS: Complete Cutover*	Not Started	*0%*	*Mon 7/5/21*	*Mon 7/5/21*
4.07	Hypercare	Not Started	0%	Mon 7/5/21	Mon 8/16/21
4.07	30 day warranty for the solution	Not Started	0%	Mon 7/5/21	Mon 8/16/21
4.07	*MS: Complete Hypercare*	*Not Started*	*0%*	*Mon 8/16/21*	*Mon 8/16/21*
4.07	*MS: Complete Deploy Phase*	*Not Started*	*0%*	*Mon 8/16/21*	*Mon 8/16/21*
4.07	Leverage Recommendation 4.17 to provide an ESB Queue	Not Started	0%	Tue 7/20/21	Tue 7/20/21
4.07	Leverage Recommendation 3.2.4.3 to decouple OMS from digital channels with reporting database	Not Started	0%	Wed 4/21/21	Wed 4/21/21

4.1. Risk Management Plan

The table below outlines the applicable risks and associated risk mitigations for the Digital Channels project.

Category	Project Risk	Mitigation
Resources	Resource constraints from Digital team due to competing projects.	Assign and commit business and IT resources and verify they are available to support this project. As necessary, hire contract resources to back fill normal job responsibilities
Resources	No holistic solution owner from PSEG LI to oversee entirety of solution	PSEG LI to designate a resource to be the holistic oversight for entire solution
Resources	Availability of resources due to other Storm duty priorities	Careful prioritization of projects with LIPA recommendations as top priority in order to complete all tasks/milestones on time.

Schedule / Cost	Contract negotiation could delay project due to multiple vendor partners involved for making changes to the entire architecture	PSEG LI to expedite contract approvals and determine if there are options for performing some work internally
Schedule / Cost	Vendor delays cause the schedule to shift and key project milestones are not able to be met on time	Work with the vendor to quickly resolve impediments.
Schedule / Cost	The activities outlined in the Digital Channels project become more complex than anticipated	Review the additional work required to complete the project with the steering committee. Add the scope required complete the project to the implementation plan. Clearly identify the steps that will be taken to anticipate this complexity in future projects.
Program Management	Lack of Scope/Requirements control including changes needed to legacy IT systems	Lack of scope/requirements control is the leading cause of budget and schedule overruns for this scale of project. It will be critical to closely define project scope/requirements, quickly clarify any uncertainties as they arise, and escalate as required. Any changes in scope/requirements must be agreed-to by the executive steering committee.
Program Management	Additional recommendations for improvement are developed and will need to be added to this workstream	Additional recommendations that have activities similar to those addressed in this project will be identified and logically grouped within tracks. Resource requirements will be identified. Where necessary, contract resources will be hired to back fill normal job responsibilities

4.2. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PMO daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.3. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh.

5. Technical Execution Plan

5.1. Technical Approach

A multi-pronged approach is planned to increase the resiliency and reliability of the outage map and the Municipal Portal. In the current architecture, results of calls are not cached and thus creating situations with additional latency on the Municipal Portal and outage map. As a part of the future technical approach, a caching solution needs to be evaluated to reduce the load on the system. A file-based solution with Kubra should also be explored to provide outage information.

Providing the capability to cache will reduce the impact of stale or nonexistent data from displaying on the customer facing applications. Additionally, current SLA agreements will be reviewed to determine if increasing the bandwidth on the outage map and Municipal Portal is possible. This will reduce the likelihood of these customer facing applications crashing under heavy load.

5.1.1 Configuration of Applications:

Configuration changes of outage map and Municipal Portal applications are planned to be made by Kubra to increase the bandwidth capabilities of both the outage map and Municipal Portal for handling high traffic from PSEG LI customers.

Kubra will need to revisit displaying the extraction time stamp for the outage map and Municipal Portal. Currently Kubra presents the timestamp for when the map was last refreshed.

5.1.2 Changes to webservices:

This approach would call for changes to ESB webservices to prepopulate a cache prior to the webservice call from Kubra.

If file-based solution is determined to be needed, changes to the webservices would provide outage information (as well as customer information) to Kubra in the form of files (or another file type) as opposed to the current XML format.

The ESB team has analyzed the incident.getoutages webservice on the ESB which was performing poorly during the storm. The team has taken steps to re-order the transformations in the webservice to eliminate duplicates. The intent of these changes is to make the incident.getoutages webservice more responsive and reliable in communicating with the outage map and Municipal Portal.

5.1.3 Infrastructure changes:

Infrastructure changes will be solidified in future design discussions.
Proposed changes include an intermediate layer to cache outage information to provide the outage map and Municipal Portal with data in the event of OMS failure.

In addition, the team has made changes on the ESB which will improve the bandwidth between the outage map and Municipal Portal:

- ManageTroubleTicket
  - Container memory allocation increased from 1GB to 2GB.
  - Maximum number of connections to ESB service increased from 5 to 25.
  - Maximum number of connections to OMS services increased from 5 to 25.
  - Timeout setting for OMS service connection (time ESB waits for available OMS service connection) reduced from 30 to 1.5 seconds.
  - Timeout setting for OMS service response (time ESB waits for OMS service response) reduced from 30 to 12 seconds.
- ManageCustomerAccount
  - Container memory allocation increased from 1 GB to 2 GB.

- Maximum number of connections to ESB service increased from 5 to 25.
- Maximum number of connections to Kubra Notifi web services increased from 5 to 25.
- Timeout setting for Kubra service connection (time ESB waits for available Kubra service connection) reduced from 30 to 1.5 seconds.
- Timeout setting for Kubra service response (time ESB waits for Kubra service response) reduced from 30 to 12 seconds.
- Timeout setting for mainframe response (time ESB waits for mainframe response) reduced from 30 to 12 seconds.
- RCCP/GridX changes -- not performance issue plus or minus, just a noted difference.

Here are the time out changes being made to various digital channels in coordination with ESB changes.

Channel	**Current in Production**	**Settings to be Tested**
MyAccount web (Sitecore)	30 seconds	10 seconds – Gettroubleticket 10 seconds – Submittroubleticket
NuanceIVR	15 seconds	15 seconds
TFCC IVR	6 seconds (live call) 120 seconds (backup trouble ticket submission)	6 seconds (live call) 120 seconds (backup trouble ticket submission)
Voice Assistance (Alexa/Google Home)	8 seconds	8 seconds
My Account Mobile App	15 seconds – Gettroubleticket 20 seconds – Submittroubleticket	15 seconds – Gettroubleticket 20 seconds – Submittroubleticket
Kubra Texting (iFactorSL)	5 seconds – Gettroubleticket (current) 5 seconds – Submittroubleticket (current)	10 seconds – Gettroubleticket 10 seconds – Submittroubleticket *This will depend on Kubra standing up a performance testing environment.*
Kubra Outage Map	10 minutes - timeout 15 minutes - refresh	25 minute - time out 30 minute - refresh *This will depend on Kubra standing up a performance testing environment*
CGI OMS	2 minutes default **Note:** this cannot be done per individual webservice, but this would only apply to Gettroubleticket & Submittroubleticket	Please confirm the timeout settings for the CGI web services.

ESB	30-60 seconds – Gettroubleticket (current)
	30-60 seconds – Submittroubleticket (current)
		• ManageTroubleTicket
		  ○ Timeout setting for OMS service connection (time ESB waits for available OMS service connection) reduced from 30 to 1.5 seconds.
		  ○ Timeout setting for OMS service response (time ESB waits for OMS service response) reduced from 30 to 12 seconds.
		• ManageCustomerAccount
		  ○ Timeout setting for Kubra service connection (time ESB waits for available Kubra service connection) reduced from 30 to 1.5 seconds.
		  ○ Timeout setting for Kubra service response (time ESB waits for Kubra service response) reduced from 30 to 12 seconds.
		  ○ Timeout setting for mainframe response (time ESB waits for mainframe response) reduced from 30 to 12 seconds.
		• Incident.Getoutages
		  ○ Timeout setting increased from 30 to 55 minutes.

F5	Universal time out	Universal time out

5.2. Quality Assurance Plan

5.2.1 QA Methodology:

- The team will adhere to the PSEG's IT standards for the deployment of this project. PSEG LI IT SharePoint will be used as the document repository
- The deliverables will follow the following QA processes:
  - Team lead review and signoff
  - Peer Review (PSEG)
  - Subject Matter Advisor Review as necessary
  - PSEG Signoff by PSEGLI CIO and President & COO of PSEGLI
  - Independent Verification and Validation by LIPA CIO
- An individual test plan will be created, and for this recommendation it will include the following: Scope of testing, Test Criteria, Tests to be performed (e.g.: Functional, Acceptance, Regression, Performance Testing, End to End)
- Test plan and test results will be signed off by PSEGLI CIO and President & COO of PSEGLI, and shared with LIPA upon completion

5.2.2 Test Scope:

Testing of incoming calls from a future storm will incorporate the following digital channels:

ESB must be capable of handling large call volumes (to be defined in threshold documentation) and must be able to place those requests in a queue to be relayed to OMS. Testing must be done across multiple channels providing input at one time to verify real storm conditions are met and performance is not impacted with multiple reporting methods.

Channel	Test Plan (High Level)	Test Outcome
Kubra Notifi	Simulate incoming outage calls from this channel into OMS	Verify ESB is able to queue the incoming calls
PSEG LI Mobile App	Simulate incoming outage calls from this channel into OMS	Verify ESB is able to queue the incoming calls
IVR	Simulate incoming outage calls from this channel into OMS	Verify ESB is able to queue the incoming calls
HVCA	Simulate incoming outage calls from this channel into OMS	Verify ESB is able to queue the incoming calls
PSEG corporate website	Simulate incoming outage calls from this channel into OMS	Verify ESB is able to queue the incoming calls
MyAccount Customer Portal	Simulate incoming outage calls from this channel into OMS	Verify ESB is able to queue the incoming calls
Alexa/Google	Simulate incoming outage calls from this channel into OMS	Verify ESB is able to queue the incoming calls

5.3. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Deliverable	Delivery Date	Comments
Detailed Roadmap and Implementation plan	Fri 01/08/2021	Create a detailed roadmap and implementation plan
Functional Design - Caching design for outage map and Municipal Portal	Tues 3/16/2021	Create a Functional Design - Caching design for outage map and Municipal Portal
Functional Design - Changes to comply to file-based format (Non-Kubra)	Thu 4/1/21	Create a Functional Design - Changes to comply to file-based format (Non-Kubra)
Functional Design - Changes to comply to file-based format for Kubra	Thu 4/1/21	Create a Functional Design - Changes to comply to file-based format for Kubra
Technical Design - Caching design for outage map and Municipal Portal	Thu 4/15/21	Update Technical Design - Caching design for outage map and Municipal Portal
Technical Design - Changes to comply to file-based format (Non-Kubra)	Fri 5/7/2021	Create a Technical Design - Changes to comply to file-based format (Non-Kubra)

Revision History

Name	Date	Reason for Changes	Version
Ali Husnain	12/9/2020	Initial draft	1.1
Alexander Kniazev	12/9/2020	Updated test criteria and project scope	1.2
Alexander Kniazev/Nathan White	2/12/2021	Response to LIPA Comments	1.3
Alexander Kniazev/ Nathan White/ Kirankumar Ramayanam/ Nayan Parikh/ Srinivas Santhanam	2/17/2021	Response to LIPA comments	1.4

PSEG Long Island

Project Implementation Plan
For Isaias Task Force
Recommendation Implementations

Project Title: Social Media Automation

LIPA ID	Report	Task Force recommendations directly addressed in this plan
4.09	90 Day Report	Better prepare social media staff to handle barrage of posts using modern artificial intelligence tools.

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1. Project Definition

This project will change the way PSEG Long Island currently addresses social media inquiries. Today, all social media inquiries are handled manually, using a live social media analyst who is required to read the customer's social media inquiry and then manually craft an appropriate response. This process functions well in a blue-sky day when the volume of social media inquiries is manageable. However, in a large storm such as Tropical Strom Isaias, the volume of social media inquiries makes current manual processes ineffective and requires the use of automation tools and AI.

This project will:

1. Identify the top vendors in the arena of social media artificial intelligence
2. Submit an RFP to those vendors
3. Select the optimal vendor based on pre-defined RFP scoring criteria
4. Launch a project to integrate the selected vendor solution with our current social media monitoring platform, Sprinklr
5. Integrate key word prioritization to ensure any messages regarding safety; personal safety/personal health related concerns are addressed first.
6. Deliver automated social media responses once completed

1.1. Project Purpose, Objectives, and Success Criteria

Project Objectives: See bullets 1 through 5 above.

***Project End State and Success Criteria**:*

End State - Once implemented, PSEG Long Island will have the ability to enable or disable "automated responses" for customer inquiries received via Facebook, Twitter, and Instagram.

Success criteria – customers will:

1. Receive accurate/relevant automated responses to 90% of inquiries submitted
    a. At TS Isaias volume levels
    b. Within 1 hour of submission
2. Receive priority if their message contains personal safety/personal health related concerns. Key word prioritization will be built within the AI back-end development.
3. Receive a response without initial intervention from social media analysts. AI dashboard to be housed within Sprinklr. Social Media analysts may intervene if necessary.

2. Project Deliverables:

Deliverables	Delivery Date	Comments
Conduct market research and compile list of leading social media AI vendors (i.e. list of RFP candidates)	2/15/2021	Completed
Compile RFP requirements document and submit RFP to identified vendors	3/1/2021	Completed

Complete RFP and produce RFP scoring documents	3/1/2021	Initial plan revised. Decision to Sole Source (no RFP needed)
Select/announce chosen vendor	3/1/2021	Completed
Finalize T&C's and all procurement processes	4/30/2021	In Progress
Project Kickoff Meeting	5/3/2021	
Vendor solution implemented	6/25/2021	

2.1. Assumptions, Dependencies, and Constraints

Assumptions:

- Vendor solution selected with be able to integrate with existing Sprinklr platform
- PSEG Long Island IT resources will be available to support this effort given all the Tier 1 and Tier 2 IT efforts currently underway
- Current social media inquiry response processes (i.e. manual responses) will remain in place until automated solution is in place. Automated solution will be leveraged in storm scenarios and during high volume events. Key word prioritization will be integrated to ensure any messages regarding safety; personal safety/personal health related concerns are addressed first.
- Current social media process will remain on blue sky days.
- Project deliverables, budget, and timeline are vendor and IT dependent. This makes them subject to change pending resource availability and project delivery capabilities.

Dependencies:

- PSEG Long Island IT resources
- 3rd party vendor resources

Constraints:

- PSEG Long Island budgets
- PSEG Long Island procurement process guidelines and MWBE requirements
- Availability and delivery capabilities of chosen vendor and PSEG Long Island IT resources

3. Project Structure

3.1. Internal Project Organization

Role	Name	Responsibilities
Project Sponsor	Jorge Jimenez	• Ensure work streams adhere to guiding principles as defined by project leadership • Manage issues and decision making • Remove obstacles that impede the success of the overall project • Provide strategic guidance • Challenge the project team where appropriate • Support RFP creation process • Support RFP scoring and evaluation process
Project Managers	Brian Merkle Lorraine Barrucco	• Ensure project activities remained aligned with the guiding principles as defined • Provide guidance and input on key project decisions • Challenge the project team where appropriate • Approve major changes to the project's scope, objectives, timelines, costs, etc. • Act as the decision maker for issues requiring escalation • Report project status • Support RFP creation process • Support RFP scoring and evaluation process
IT PM	TBD	• Provide input on IT related items • Report project IT updates • Attend Project Meetings • Support RFP scoring and evaluation process
Subject Matter Experts	Marco Cucci	• Provide input/feedback into project requirements • Support RFP creation process • Support RFP scoring and evaluation process
Customer Technology	Nayan Parikh	• Provide input on Customer Technology IT items • Report project Customer Technology IT items • Attend Project Meetings • Support RFP scoring and evaluation process
Procurement	Matt Sanderleaf	• Lead procurement process • Support RFP creation process • Support RFP scoring and evaluation process • Negotiate terms and conditions with selected vendor

3.2. Other Stakeholders

N/A

4. Project Plan

4.1. Project Work Plan (v1.0 – will be iterative, based on vendor capabilities and PSEG Long Island IT resource availability)

Tasks	Completion Date	Comments
Form/finalize core project team	1/19/2021	Completed
Complete project implementation plan v.1.0 and send to LIPA for review and comment	1/29/2021	Completed
Conduct market research to identify top vendors for RFP	1/19/2021 – 2/15/2021	Completed
Form/finalize extended project team	2/8/2021	Completed
Conduct project status meetings, produce project status reports (bi-weekly)	2/15/2021 – 6/25/2021	Completed
Compile RFP requirements	2/15/2021 – 3/1/2021	Completed
Submit RFP to selected vendors	3/1/2021	Completed
Conduct first vendor Q&A session	3/1/2021	Completed
Conduct vendor product demos	3/1/2021	Completed
Conduct final vendor scoring and announce chosen vendor	3/1/2021	Completed
Finalize T&C's and all procurement processes	3/1/2021 – 4/30/2021	In Progress
Project kickoff meeting	5/3/2021	
Project design phase	5/3/2021 – 5/14/2021	
Project development phase	5/17/2021 – 6/4/2021	
Project testing phase	6/7/2021 – 6/18/2021	
Project end user training	6/21/2021 – 6/25/2021	
Go live	6/25/2021	

4.2. Risk Management Plan

Project risks will be tracked via a formal project issue/risk list maintained by the project manager and reviewed bi-weekly to ensure that project risks are being tracked and resolved in a timely and effective manner.

4.3. Issue Resolution Plan

Project issues will be tracked via a formal project issue/risk list maintained by the project manager and reviewed bi-weekly to ensure that project issues are being tracked and resolved in a timely and effective manner.

4.4. LIPA Reporting Plan

Project status reports will be produced bi-weekly and shared with LIPA stakeholders.

5. Technical Execution Plan

5.1. Technical Approach

Technical approach will vary based on vendor selected.

5.2. Quality Assurance Plan

- Project deliverables will be reviewed by project sponsor and core team members to ensure quality
- Project testing phase will follow a formal defect documentation, tracking, and resolution process
- Project status and project issues will be reviewed bi-weekly to ensure that project timeline, budget, and scope are on track

5.3. Documentation Plan

- See deliverables and work plan defined above.

Revision History

Name	Date	Reason for Changes	Version
Jorge Jimenez	1/28/2021	initial draft	1.0 draft
Jorge Jimenez	2/4/2021	Version 3 – timeline refinement	3.0 draft

PSEG Long Island

Project Implementation Plan

for

Isaias Task Force Recommendation Implementations

Recommendation No. 4.13

Project Title: After the OMS faults are diagnosed and repaired, thoroughly stress-test the CAD system and the ESB to ensure there are no independent defects affecting either system.

PIP History, Feedback, and Actions

On January 26th, LIPA provided feedback on the submitted Tier 1 and Tier 2 implementation plans. On February 2nd PSEG-LI provided documented responses to the feedback from LIPA for all rejected IT implementation plans. PSEG-LI and LIPA met to discuss the specific feedback and proposed path forward for this Implementation plan in a meeting on 2/11/2021. The below are the PSEG-LI responses to the feedback. In the meeting PSEG-LI and LIPA discussed the feedback. No agreement was reached in the meeting, LIPA requested that we provide supporting data, rationale and updates to the Project implementations plans. LIPA stated they would take the feedback and input into consideration in reviewing the plans.

LIPA Response:

Insufficiently responsive to the urgency, insufficient information and insufficient rigor given the criticality. The timeline for implementation is too long in the face of risk, and the May 2021 implementation date is too close to the start of the next Hurricane season.
The information that is presented in the PIP falls short of demonstrating that infrastructure is in fact a root cause of the issues. The Work Plan indicates that the OMS Causal Document was updated as of 1/8/21 with the CGI recommendations for re-platforming, but the embedded Causal Document is dated 9/14/20 and only includes the earlier determination that infrastructure is not a root cause of the issues.
Given the big uncertainty that the proposed re-platforming will resolve the issues, LIPA is concerned that there is considerable residual risk to the customers that has not been mitigated

PSEG Long Island Actions:

PSEGLI has laid out plans to replatform the V6.7 on new hardware prior to storm season and developed a systematic test plan to deploy 6.7; this plan was presented to LIPA on February 11th. While hardware is being delivered, PSEG is doing three primary activities to prepare for 6.7 implementation, all of which are required to enable a more resilient outage management system.
1 - Testing the outage management ecosystem End to End to improve the current environment and establish a baseline for 6.7
2 - Designing and building changes to decouple the outage management systems from the OMS and
3 - Design and build of enhanced monitoring capabilities

LIPA Response:

The plan does not demonstrate an appropriate level of contingency planning given the uncertainty, and also does not demonstrate the commitment to configuration management that is needed to mitigate the risk of introducing new issues given the magnitude of the proposed re- platforming change

PSEG Long Island Actions:

PSEG plan to test the ecosystem of v5.5 establishes a baseline and establishes a solution that can handle a large storm. Given this, the contingency plan for significant delay in v6.7 would be to stay on 5.5 and implement digital channel decoupling and monitoring with v5.5.

LIPA Response:
Has PSEGLI checked with Oracle (the manufacturer of the database machine) on the database issues per LIPA's verbal recommendations?

PSEG Long Island Actions:
PSEG has consulted with Oracle and has engaged Oracle DB performance engineer to lead troubleshooting, monitoring and health checks of the 5.5 and 6.7 environment

LIPA Response:
We also note that the Risk Management Plan is proforma copy and paste and has not considered the myriad and highly consequential risks associated with such an initiative. Please provide a more thorough and thoughtful risk management plan.

PSEG Long Island Actions:
Risks section has been updated to reflect potential project impacts that are captured in the Program's RAID log.

LIPA Response:
Additionally, ensuring vendor and internal resource availability and sufficiency should be part of the work plan; not assumed.

PSEG Long Island Actions:
Plans have been built with resource requirements and additional resources are being added to support all the implementation plans.

LIPA Response:
PSEGLI's complete reliance on CGI recommendations, who have not demonstrated a great track record is not prudent. Note that we have previously recommended that PSEG-LI get additional experts and continue to explore software or system configuration or other interconnected systems related root causes instead of throwing hardware upgrades at the issue without having a credible theory behind the diagnostic.

PSEG Long Island Actions:
PSEG has engaged a Master Technical Architect, OMS functional resources, DB engineers and network architects to support the testing and troubleshooting of the outage management systems alongside PSEG employees. This team was instrumental in troubleshooting the issue with the incident manager in V5.5 and worked closely with CGI to identify a fix. PSEG has engaged dedicated support from CGI for further 5.5 testing and v6.7 monitoring and implementation.

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1. Project Definition

The OMS project is focused on improving the performance and reliability of the OMS and its ecosystem. The objectives of the OMS Stress Testing (recommendation 4.13) is to systematically test the OMS system to ensure that concrete root causes are identified and remedied. After the OMS faults are diagnosed and repaired, the team will thoroughly stress-test the CAD system and the ESB to ensure there are no independent defects affecting either system. The goal is to verify that OMS systems performs during a simulation of the Isaias and Sandy storms.

Major deliverables include the documentation surrounding the short and long-term fixes applied to the current infrastructure of the OMS System, long term architecture recommendations and documentation around performance and monitoring of individual components of the solution.

Project Objectives:

Test the OMS system v6.7 for the performance and reliability in a simulation of the Isaias and Sandy storms and the OMS System v6.7 is fixed to handle the performance benchmarks identified. Identify the root causes and addressed them so that the system is ready to handle storms similar to Isaias and Sandy

***Project End State and Success Criteria**:*

CAD and ESB are stress tested against the repaired OMS system v6.7 and all tests pass established acceptance criteria (as in 4.12).

2. Project Deliverables:

Deliverable	Delivery Date	Comments
Infrastructure Installed	2/4/2021	See section 4.0 for detailed project plan
Document Technical Architecture	2/18/2021	
Go/No Go to Execute 12 Hour Performance Test	3/18/2021	
System Passes 12 Hour Performance Test	3/23/2021	
System Passes 24 Hour Performance Test	3/30/2021	
Go/No-Go Decision to Migrate to v6.7	4/23/2021	
Completed root cause analysis, Remediated recommended application performance items, Deployed and tested system hardware, acceptance test package	5/3/2021	OMS system will be remediated and fully tested prior to being deployed in production.

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- CGI Vendor resources will be available to provide SME time and answer any questions on their applications
- CGI will be providing the necessary technical and operational support to resolve any issues and defects found in testing
- Project implementation timeline is planned to complete all activities ahead of storm season
- New OMS functionality is out of scope
- PSEG LI has the available facilities, including electrical service, capable of hosting new dedicated OMS hardware
- XTENSIBLE is responsible for developing and maintaining the Sonic ESB middleware between the interfaces and the OMS.
- Required environments will be available to perform testing of the OMS system and integration points with Digital Channels
- Existing Migration and Cutover Plans will be referenced to commission the new re-platformed environment into production

2.1.2 Dependencies:

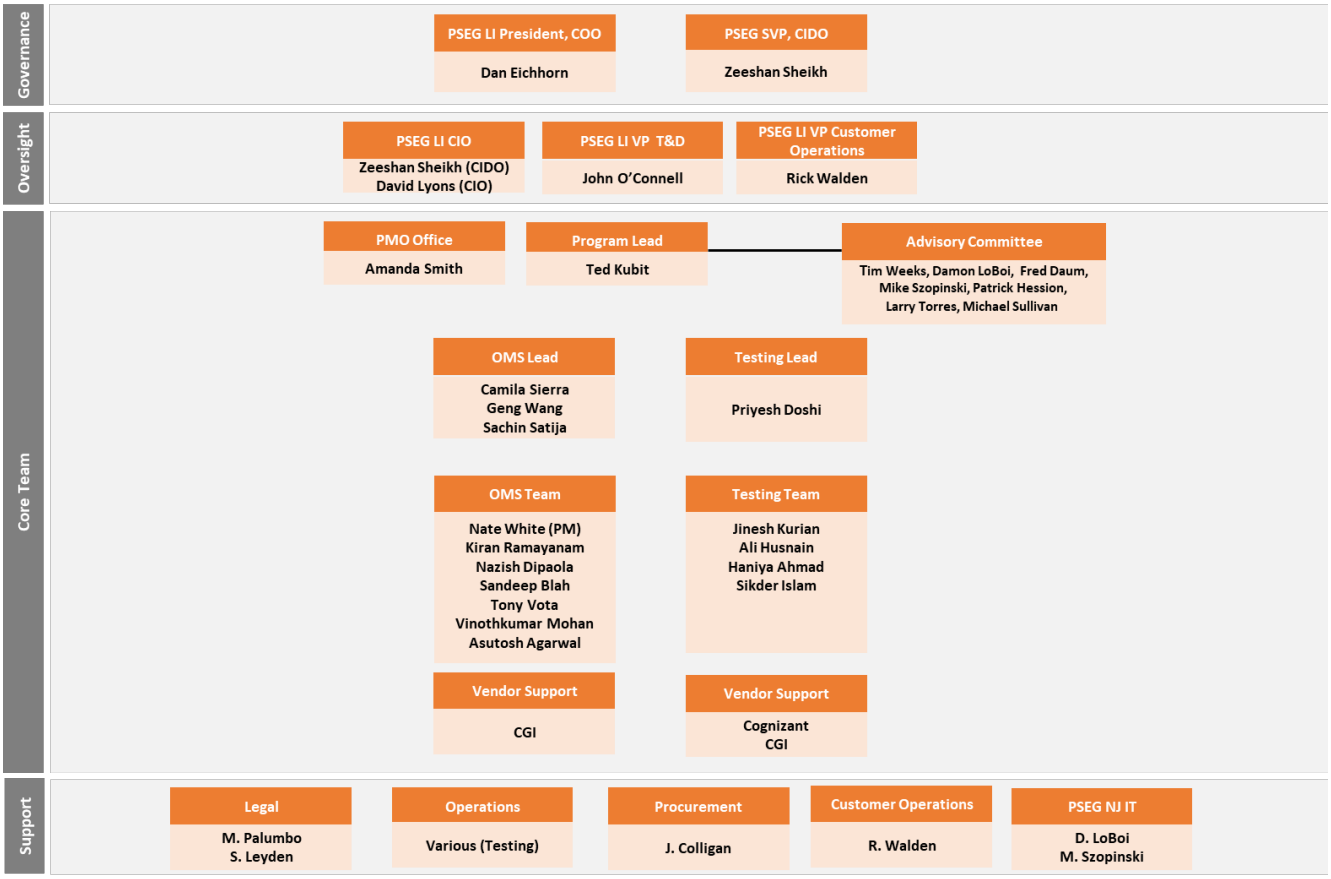
- CGI to make any required core development changes to the OMS v6.7 to enable performance
- Integrated testing of the OMS system with dependent vendors outlined in the Digital Channels and Telecom implementation plans, to provide outage information into the OMS
- XTENSIBLE to make any require core development changes to the Sonic ESB middleware between the interfaces and the OMS.
- CGI is required to make any necessary modifications to the OMS web services to provide outage status and report outages
- The timeline to complete the recommendations is dependent on procurement of new hardware required for the re-platform of OMS v6.7
- The timeline is dependent on alignment of overall test approach for all workstreams (OMS, Digital Channels, Telecom, Field Mobility) between PSEG LI and LIPA

2.1.3 Constraints:

- The number of qualified resources with subject matter expertise.
- Competing projects that further constrain available resources.
- Availability of vendor resources to provide application updates and support testing activities.

3. Project Structure

3.1. Internal Project Organization



Role	Name	Responsibilities
Steering Committee	Dan Eichhorn Zeeshan Sheikh	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remained aligned with the guiding principles as *defined* • Providing guidance and input on *key project decisions* • Challenging the project team where appropriate • Approving major *changes to the project's scope, objectives, timelines, costs, etc.* • Acting as the decision maker for issues requiring *escalation* • Removing institutional barriers when *they arise by serving as a project advocate*
PSEG LI CIO	Zeeshan Sheikh (Interim) David Lyons	• Ensuring *workstreams adhere to guiding principles as defined by project leadership* • Managing issues and decision making • Removi*ng obstacles that impede the success of the overall project Providing strategic guidance* • Challenging the project team where appropriate • Approve procurement of external parties (as needed)
Advisory Committee Members	Tim Weeks Damon LoBoi	• Providing guidance and input o*n key project decisions* • Assisting in the procurement of external parties (as needed)

	Mike Szopinski Fred Daum Patrick Hession Larry Torres Michael Sullivan	• Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project • Challenging the pr*oject team*
Team Lead	Camila Sierra Kiran Ramayanam Geng Want	• Drive workstream tasks and deliver recommendations for Solution Design Specification • Provide support for Testing • Aid in the developmen*t functional requirements* • Provide input on requirement / design • Coo*rdinating Business Resources to support the project* • Key Point of contact to for questions from the OMS vendor • Providing sign off for deliverables that require business *input/acceptance* • Delivering the OMS project on time and on budget
Project Manager	Nathan White	• Reporting overall status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resource*s, schedule, issues, risks and change requests* • Process development, requirements definition, • Providing subject matter expertise to th*e project* • User Impact Analysis • Facilitating workshops
Performance Engineer	Sri Kanaparthy	• Supporting Build/Test/Deploy Activities • Assist with Environment setup • Coordinating Development activities • Assist with Technical Design and Architecture • Assist with Transfer of Environments
Business Lead	Anthony Vota Gary Singh Mahamudul Chowdhury Paul Mattera Matthew Otto	• Process development, requirements defini*tion, functional design* • Technical Design • Supporting vendor questions and workshops • Testing Execution
Test Lead	Sandeep Blah Jinesh Kurian	• Test Script Development • Test Script Execution for Assembly / Unit Test • Test Execution
Test Coordinator	Sikder Islam	• Test Coordination between Vendor and PSEG resources • Responsible for execution of Test Scripts • Test Script Development
Environment Lead	Anish Thomas Vikas Vohra	• Technical Design development • Environment design support
OMS Developers and Subject Matter Advisors (CGI)	Peter Barnes Guillaume Simard-Lebrun Stephane Dumouchel Mark DeAgazio Neel Rana Jeffery Clark	• Responsible for working with PSEG LI to install and validate the OMS solution • Responsible for defect fixes and troubleshooting functional and performance issues

PSEG NJ IT Subject Matter Advisor	Damon LoBoi
	Michal Szopinski
	Timothy Weeks
	Michael Casella
	Ryan Wilson
	Ajith Elayidom
		• Subject Matter support with:
		  • Build/Test/Deploy Activities
		  • Assist with Environment setup
		  • Coordinating Development activities
		  • Assist with Technical Design and Architecture
		  • Assist with Transfer of Environments

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below*:*

Organization/Team	Name	Responsibilities
Long Island Power Authority	Mujib Lodhi, Rick Shansky	• Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	• Overall oversight of the entire project portfolio

4. Project Plan

4.1. Project Work Plan

Project Work Plan Objectives

This project work plan below outlines the steps that will be taken to includes System and Performance testing planned for recommendations 3.2.2.3, 4.12 and 4.13 and the complete deployment of v6.7 into production. For these three recommendations we have built an integrated project plan that is outline below.

The hardware installation is currently behind plan; the team is reviewing the plan for opportunities to accelerate and is maintaining the baseline date until all impacts can be determined.

Type	Task Name	% Complete	Start	Finish
Recommendation	**Work with CGI to obtain and implement fixes for identified application defects, which could include upgrading to a more recent version of the OMS software.**	**47%**	**Thu 12/3/20**	**Fri 3/12/21**
Task	Review application and infrastructure recommendations provided by CGI with the team	100%	Thu 12/3/20	Tue 12/8/20
Task	Update OMS Causal Document with CGI Recommendations for Re-platform	50%	Mon 12/7/20	Mon 5/3/21

Task	Document Known OMS Issues and Proposed Solutions	100%	Mon 12/7/20	Fri 1/8/21
Task	Conduct workshops to discuss the recommendations provided by CGI	100%	Wed 12/9/20	Fri 12/11/20
Task	Develop system architecture and infrastructure requirements	100%	Mon 12/14/20	Fri 12/18/20
Task	Develop Defect Delivery Schedule with CGI	100%	Mon 1/4/21	Fri 1/8/21
Task	Conduct site and electrical survey	100%	Mon 12/14/20	Wed 1/13/21
Task	Purchase and Delivery of the hardware	100%	Mon 1/4/21	Fri 1/27/21
Task	Implement the site and survey recommendations	36%	Mon 1/11/21	Wed 1/20/21
Task	Develop OMS Test Strategy	100%	Mon 1/4/21	Fri 1/15/21
Document	***Test Strategy and Plan***	***100%***	***Fri 1/15/21***	***Fri 1/15/21***
Task	Application Network Hardware Installed	22%	Thu 1/28/21	Tue 2/2/21
Task	Infrastructure Installed	0%	Thu 1/28/21	Thu 2/4/21
Task	Application and Database Setup	21%	Fri 2/5/21	Thu 2/18/21
Document	***Technical Architecture***	***0%***	***Thu 2/18/21***	***Thu 2/18/21***
Task	Application Integration Setup	0%	Fri 2/19/21	Thu 3/4/21
Task	Smoke testing of re-platformed v6.7	0%	Fri 3/5/21	Tue 3/9/21
Task	Prepare Test Data of Re-Platformed v6.7	0%	Wed 3/10/21	Thu 3/11/21
Task	Preform Dry Run in Preparation for Performance Testing	0%	Fri 3/12/21	Thu 3/18/21

Milestone	**MS: Go/No Go to Execute 12 Hour Performance Test**	**0%**	**Thu 3/18/21**	**Thu 3/18/21**
Recommendation	**After the OMS faults are diagnosed and repaired, thoroughly stress-test the CAD system and the ESB to ensure there are no independent defects affecting either system**	**8%**	**Mon 3/1/21**	**Mon 5/3/21**
Task	Review and Update Migration/Cutover Plan to V6.7	25%	Mon 3/1/21	Fri 3/5/21
Task	Perform 12-hour performance test scenario to confirm fixes of re-platformed v6.7	0%	Fri 3/19/21	Thu 3/25/21
Task	Document 12-hour performance test results and recommendation of re-platformed v6.7	0%	Fri 3/19/21	Tue 3/23/21
Milestone	**MS: System Passes 12-hour Performance Test**	**0%**	**Tue 3/23/21**	**Tue 3/23/21**
Task	Prepare the environment and perform 24-hour stress test dry run	0%	Wed 3/24/21	Wed 3/24/21
Task	Execute 24-hour stress test scenario	0%	Thu 3/25/21	Tue 3/30/21
Task	Document 24-hour stress test results	0%	Thu 3/25/21	Tue 3/30/21
Milestone	**MS: System Passes 24-hour Performance Test**	**0%**	**Tue 3/30/21**	**Tue 3/30/21**
Task	Prepare for end to end test (environment set up, test scripts, week by week plan, tool setup, etc.),	0%	Wed 3/31/21	Tue 4/6/21

Task	Execute the End to End Test for OMS Ecosystem	0%	Wed 4/7/21	Fri 4/23/21
Task	Document End to End Test Results	0%	Wed 4/7/21	Fri 4/23/21
Document	***Test Execution Results***	***0%***	***Fri 4/23/21***	***Fri 4/23/21***
Deliverable	Go/No-Go decision to Migrate to v6.7	0%	Fri 4/23/21	Fri 4/23/21
Task	Production acceptance approval and cutover prerequisites	0%	Mon 4/26/21	Fri 4/30/21
Task	Deployment of v6.7 into production	0%	Sat 5/1/21	Sun 5/2/21
Deliverable	**Completed root cause analysis, Remediated recommended application performance items, Deployed and tested system hardware, acceptance test package.**	**0%**	**Mon 5/3/21**	**Mon 5/3/21**

4.2. Risk Management Plan

Issues and risks will be identified by the PSEG LI Team and the PM daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.3. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PM daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

The table below outlines the applicable risks and associated risk mitigations for the Outage Management System project.

Category	Project Risk	Mitigation

Resources	Resource constraints from OMS team due to competing projects.	Assign and commit sufficient business and IT resources and they are available to support this project. Two new external contracted resources with OMS experience, specifically with CGI's OMS system have been hired to provide operations support allowing existing team members to focus on the project. As necessary, additional contract resources will be hired to back fill normal job responsibilities
Resources	No holistic solution owner from PSEG LI to oversee entirety of solution	PSEG LI to designate a resource to be the holistic oversight for entire solution
Resources	Availability of resources due to other Storm duty priorities	Careful prioritization of projects with LIPA recommendations as top priority in order to complete all tasks/milestones on time.
Schedule / Cost	Contract negotiation could delay project due to multiple vendor partners involved for making changes to the entire architecture	PSEG LI to expedite contract approvals and determine if there are options for performing some work internally
Schedule / Cost	Vendor delays cause the schedule to shift and key project milestones are not able to be met on time	Regular cadence with vendors (weekly) to establish priorities and address issues. Work with the vendor to quickly resolve impediments.
Schedule / Cost	The activities outlined in the OMS project become more complex than anticipated	Review the additional work required to complete the project with the steering committee. Add the scope required complete the project to the implementation plan. Clearly identify the steps that will be taken to anticipate this complexity in future projects.
Program Management	Lack of Scope/Requirements control including changes needed to legacy IT systems	The project scope has been defined; clear change control process will be established by the PMO to address requests for change
Schedule/Cost	All project activities are dependent on the successful receipt and installation of new hardware and application installation of OMS v6.7. If the hardware is delayed all project activities for this project will be impacted.	Closely monitor delivery of hardware and perform as many tasks as possible in parallel to mitigate any potential delays.
Schedule/Cost	Existing PSEG LI Data Centers require site upgrades to accommodate new hardware.	Closely monitor the site survey activities and conduct any tasks in parallel to mitigate potential delays.

	Based on the site survey recommendations additional procurement may be required which would impact the project schedule.	
Schedule/Cost	Application defects are found during testing, requiring reconfiguration	Assign resources for application remediation
Schedule/Cost	CGI OMS/CAD 6.7.4.X release quality potential issues	Early review of release notes and identify possible release gaps

4.4. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh, PSEG LI CIO (Interim).

5. Technical Execution Plan

5.1. Technical Approach

For changes to configuration of applications, the vendor has been contacted when needed and internal infrastructure has been adjusted accordingly. This systematic approach to troubleshooting and implementing changes to the application did not yield performance results to meet ISIAIS level storm requirements.

The changes implemented included changes to:

- Number of Group Managers
- Dynamic vs. Static Group Managers
- Storm ETR
- Database Monitoring
- Increase number of ObjectManager process instances
- Review PragmaGEO Configuration parameters
- Reporting
- Statistics Manager Configuration
- Storm Mode Configuration
- OMS Web Services (Get List Customer Interruption 3)

Which resulted in:

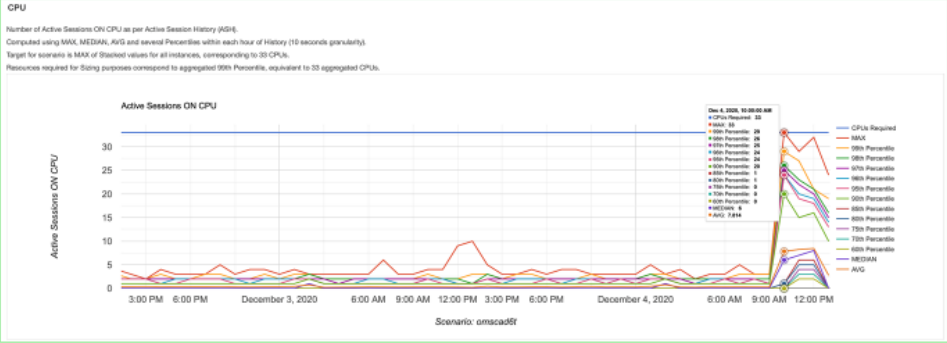
- Group Manager & Grouping configuration changes resulted in slight improvement but still observe transactions being queued/backlogged

- OMS Web Services (Get List Customer Interruption 3) – showed better performance but still has outliers to be reviewed
- Reporting components are pointed to DR Database instance
- Overall, problem still persists around Incident Manager, Group Manager & Grouping, releasing job from OMS to CAD. As many as 6 build/releases delivered by CGI but OMS/CAD business functions
- Storm ETR tested by business and will be used during future storms as needed

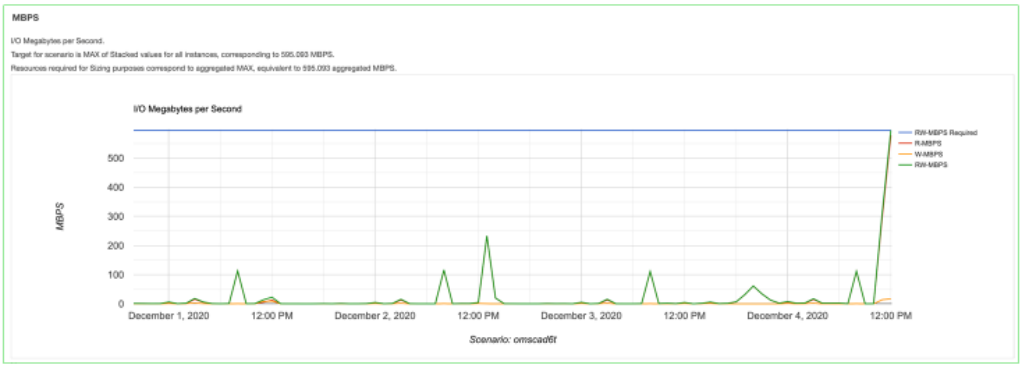
Performance Testing completed on December 4, 2020 on the application databased and resulted in the following findings.

CPU utilization spiking to ~60% of X3-2 just for OMS DB during stress test, while iops throughput usage was pretty minimal, and memory utilization was pretty much static.

EXISTING X3-2 CPU MAX



EXISTING X3-2 MBPS

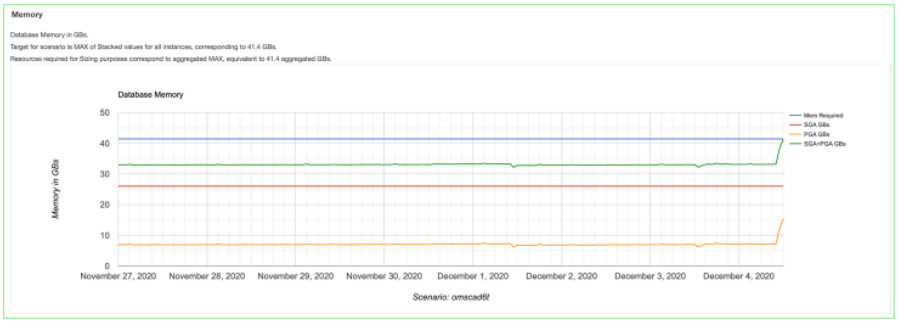


 7

EXISTING X3-2 IOPS

 6

EXISTING X3-2 MEM



Additional test results and details are here: OMS 6.7 Dry Run Test Findings 12042

The workplan has been developed to take all these items into consideration with a focus on end to end testing and functional/regression testing to ensure OMS is stable and resilient. Prior to executing additional testing activities on v6.7, the application will be installed on new hardware as planned in the 3.2.2.3 PIP.

As a result of this performance test, the following opportunities were identified to further enhance the performance of the database, these items will be addressed with the vendor, PSEG and Oracle to determine appropriate remediation steps.

Issue #	Issue/Category	Priority	Issue Period	Remediation	Scope	Implementor
1	RMA: IPC0 completion sync" in top timed wait events	Medium	11/28 - 12/7	Open SR with Oracle & Confirm that it is due to bug "Bug 28807706" & apply relevant patch	Oracle Software	PSEG
2	Tablespaces Shrunk periodically	Medium	11/28 - 12/7	Research & change frequency to once a week.	Unknown	PSEG
3	Paging & Swapping happening	Low	11/28 - 12/7	Audit memory configuration & identify root cause	Exadata	PSEG
4	Enq - TM contention waits	High	12/4/20	Identify tables with missing indexes & add indexes	CGI DB Design	PSEG/CGI
5	"gc buffer busy acquire wait" by notification2.service.exe	High	11/28 - 12/7	More analysis on why this wait is happening.	CGI Application	PSEG/CGI
6	Row lock contention waits	Medium	11/28 -12/7	More analysis on see why this is happening	OMS DB	PSEG/CGI
7	Dead Lock Errors	High	12/4/20	Identify SQL statements & strategy to mitigate. May need code change from CGI	CGI Application	PSEG/CGI
8	Parsing errors	High	12/4/20	Identify the source & work with the application owner	Unknown	PSEG/CGI
9	Sequences are not cached	Low	N/A	Check if sequence can be cached & cache	CGI DB Design	PSEG/CGI
10	Temp tables with stats	Medium	N/A	More research	OMS DB	PSEG/CGI
11	Other Foreign Keys without indexes	High	N/A	Validate with CGI & create needed. Indexes.	CGI DB Design	PSEG/CGI

OMS Causal Document: ISAIAS_CD_OMS and CAD Applicatior

5.1.2 Changes to system hardware:
The December 4, 2020 test yielded high CPU utilization during the stress test and validated the vendor's original recommendation of an upgrade and a change to the system hardware. The hardware configuration was determined with the vendor and has been ordered based on this recommendation. This is covered in greater detail in the PIP for 3.2.2.3.

5.1.3 Changes to webservices:

Changes to existing CGI webservices (Get List Customer Interruption 3) to address performance issues have been developed and deployed into production.

5.2. Quality Assurance Plan

The team will adhere to the PSEG's IT standards for the deployment of this project. PSEG LI IT SharePoint will be used as the document repository.

An individual test plan will be created, and for this recommendation it will include the following: Scope of testing, Test Criteria, Tests to be performed (e.g.: Functional, Acceptance, Regression, Performance Testing, End to end).

Test plan and test results will be shared with LIPA upon completion

The following functionalities of the v6.7 OMS system will be performance and stress tested to ensure stability during future storm events:

- PragmaCAD
- PragmaGEO
- PCall / PWeb
- OMS Incident Manager
- OMS Group Manager and Groupings
- OMS Web Services / ESB Web Services
- Outage Map Update

Testing of all functionalities of v6.7 OMS incorporate the following:

Tier	Metrics	Value Measured
Application	OMS Web Service	Measurement of requests processed versus timed-out / failed
Application	OMS Group Manager Service	Measurement of group manager service to process incoming calls into new or existing outages. Some of these would go into CMS Manager for calls into existing known outages and some would be OMS GRP MGR if it is new call / incident
Integration	ESB Web Services - Queue Depth	Measurement of queue depths during the test execution

Tier	Metrics	Value Measured
Customer Experience	Outage Map	Measurement of Outage Map update between OMS > ESB > Kubra - Frequency of updates - Accuracy of updates (Active outages and Customers Affected)
Application	OMS Incident Manager functionality	Usability of Incident Manager and perform business functions
Application	CAD functionality	Usability of CAD and perform business functions
Application	PGEO functionality	Information updates & usability of PGEO and perform business functions
Application	PCall/Pweb	Accessibility of the functionality and ability to submit outages into the system

The basis for all performance and stress testing will be based on the data model below:

Stress Test Data Model

5.2.1 OMS Performance Test Criteria and Targets

Below are the test criteria and performance targets for the 12 hour and 24 hour test scenarios. Details of the test results performed to date are in the appendix.

OMS Performance Test Criteria – 12 Hr. Run

Table-1: Model for Storm ISAIAS													
Hour >>	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**Total**
[2] SCADA Alarms	154	983	1,044	265	198	88	69	68	71	56	54	19	**3,069**
[3] Multi-Channel Transactions	114,851	221,178	188,823	35,955	12,826	10,251	9,828	8,936	9,548	10,497	5,006	6,682	**634,381**
[1] # of Cust OUT	100,172	192,910	164,690	31,360	11,187	8,941	8,572	7,794	8,328	9,155	4,366	5,828	**553,303**

OMS Performance Test Criteria - 24 Hr. Run

Table-2: Model for 90% customers affected in 24 hours																									
Hour >>	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**Total**
[2] SCADA Alarms	144	44	203	297	513	540	569	743	692	390	177	126	72	152	152	16	274	29	157	6	16	37	277	40	**5,667**
[3] Multi-Channel Transactions	29,709	9,105	41,913	61,406	106,085	111,574	117,646	153,603	143,016	80,535	36,655	26,106	14,975	31,392	31,343	3,285	56,735	5,972	32,535	1,179	3,382	7,572	57,222	8,353	**1,171,300**
[1] # of Cust OUT	25,912	7,941	36,557	53,558	92,526	97,314	102,610	133,971	124,738	70,242	31,971	22,770	13,061	27,380	27,338	2,865	49,484	5,209	28,377	1,029	2,950	6,604	49,909	7,285	**1,021,601**

5.3. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the

Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Project Artifacts	Description
OMS Causal Document	Documentation of the solutions, their configuration and constraints.
CGI Product Release Notes	CGI Product Fixes when new patches are delivered.
Test Strategy & Plan	Test cases & test data are meeting the design requirements
Test Execution Results	Test results indicate the design requirements accomplished.
Technical Architecture	Technical Architecture Diagram with updated hardware and infrastructure specifications

6. Appendix

The following is a high level summary of the test results of the testing that has been performed to date.

Date	Type of Test	Summary of test	Intent of Test
8/31/2020 - 09/02/2020	Performance Test	Overall, the v5.5 performance test delivered positive results with exception of Incident Manager functionality affected under high SCADA events and Outage Map was out-of-sync with OMS. 08/31/2020 - Storm ISAIAS model test was executed 09/01 - 09/02/2020 - executed 90% customer OUT in 24-hour period	DPS Request - Develop test plan and Strategy for simulating Storm Isaias on OMS version 5.5 and 90% outage
10/5/2020	Performance Test	During this test, multiple application components experienced fatal failures and became unusable, resulting in aborting the test at 8th hour. Overall, the OMS infrastructure performed well with exception of PWEB servers experienced high CPU utilization. The following key issues were identified: • Transactions queuing in Group Manager process resulted in incidents and circuit lockouts • Call queuing issue that was noticed resulted in customers texting OUT not reporting in OMS • Incident Manager performance degradation and un-susability of key functions like unable to release jobs to CAD, grouping issues, Geo Map not updated with number of customer affected • Outage Map didn't display the correct number of Customer outages	The purpose of performance testing is to baseline system's and application's capability prior to storm ISAIAS. As well as to view the system scalability to receive and respond to extraordinary high customer call volumes. This also provides insights to determine if response times, system throughput can be maintained under high load scenarios.
10/20/2020	Performance Test	Prior to the test, refreshed the OMS v6.7 test environment state as of 08/23/2020 from OMS v.6.7 production. This is to ensure the test environment matched production with all the fixes delivered by CGI during the storm and execute the test to baseline the performance. Observed failures or system behavior what was seen during storm Isaias. Multiple components failed includes; PGEO, Incident Manager, OMS Web Services, Group Manager & Grouping, PCAD, Outage Map updates. Documented issues observed and developed action plan to determine & implement solution	The purpose of performance testing is to baseline system's and application's capability post storm ISAIAS. As well as to view the system scalability to receive and respond to extraordinary high customer call volumes. This also provides insights to determine if response times, system throughput can be maintained under high load scenarios.

11/9/2020	Dry Run Test	This test included the following: a) All fixes provided by CGI during the storm. Build v280, v285 b) Additional CGI Recommendations c) CGI Web Services fix Except OMS Web Services performance, which was much better than prior test runs. All other components experienced similar behavior what was seen during the storm	The purpose of dry run test is to smoke test the system over a 2-3 hour period to ensure the new changes deployed work effectively with no major/minor issues that would potential impact the 12-hour performance test. This also provides insights to any failures and optimize as necessary.
11/10/2020	Dry Run Test	This test was done to troubleshoot the problems experienced during 11/09/2020 test run. And determine actions for resolution. 1. Noticed system behavior similar to 11/09/2020 test 2. Similar symptoms / issues observed Provided all necessary logs to CGI for investigation, determine root cause and solution	The purpose of dry run test is to smoke test the system over a 2-3 hour period to ensure the new changes deployed work effectively with no major/minor issues that would potential impact the 12-hour performance test. This also provides insights to any failures and optimize as necessary.
11/12/2020	Dry Run Test	Overall, the Group Manager/Grouping function and Get List Customer Interruption 3 Web Service performance was good. a. During 11/12 test, we observed few items; a. Still noticed few incidents and/or circuits locked, any further findings from logs? b. OMS Application Server experienced high memory utilization i. What caused this? And solution? c. Group Manager still had ~350+ transactions in the backlog, is this something that can be further optimized? Any opportunities? d. Analyze function was still taking long time (6-8minutes) and locking up incident manager. Any opportunities to improve? e. PCALL – During the test, address wasn't displaying on the detail page. Post testing recycled services and it worked. Prior to the test, the services were restarted but this function didn't work. Why it requires multiple times restart of services? b. Any further findings from 11/12 test? Any opportunities for improvements? c. Web Services GLCI3 – There were few outliers observed; refer to Fran Clark's email dated 11/10/2020 - "maximum response time in some periods goes a bit beyond 12 seconds"	The purpose of dry run test is to smoke test the system over a 2-3 hour period to ensure the new changes deployed work effectively with no major/minor issues that would potential impact the 12-hour performance test. This also provides insights to any failures and optimize as necessary.

11/17/2020	Dry Run Test	**ManageTroubleTicket.GetTroubleTicket (calls GetListCustomerInterruption3)** • Overall the Web Service performance was good compared to previous test runs. Overall average response was at 0.343 seconds and maximum response time of 12.305 seconds in some periods. • Noticed that the maximum response time in some periods goes a bit beyond 5-12 seconds but no further. That is because the ESB ManageTroubleTicket service is now only waiting for 12 seconds to get response from OMS InboundCustomerService.GetListCustomerInterruption3. In other words, we have no idea how long the OMS Web Service actually took to respond in those cases or if, in fact, a response was ever delivered. • We recommend CGI focus on those particular periods for further analysis **ManageTroubleTicket.SubmitTroubleTicket (calls CreateCall)** • Average response time observed at 0.293 second and maximum response time of 14.504 seconds **Open issues under investigation with CGI:** a. PGEO is not updating with incident details b. Incidents are being moved "To History" – which under storm mode setting shouldn't happen a. This appears to be a broken function. Business use case is not to allow incidents/jobs moved to history. b. Unable to view event log or details for the incidents that were moved to history. Issue observed with **Kubra Outage map updates.** Xtensible was able to identify the root cause and have provided fix. This will be tested again during next test iteration. In general, **server & database health/performance was good.** Except **OMS Application server,** was utilizing high memory and this is primarily because the number of group managers increased from 8 to 12 to speed up processing of incoming transactions. CGI recommendation is to increase memory from 32GB to 64GB on OMS application server.	The purpose of dry run test is to smoke test the system over a 2-3 hour period to ensure the new changes deployed work effectively with no major/minor issues that would potential impact the 12-hour performance test. This also provides insights to any failures and optimize as necessary.

11/24/2020	Dry Run Test	**ESB** @11:50 Receiving Sonic Fault errors from GetListCustomerInterruption3 12:10 – 12:25: ESB Containers were restarted - Xtensible to review ESB logs - OMS Web Service logs **Grp. Mgr, INC Mgr, PGEO** • SCADA events were running over an hour behind at 2nd hour. • PGEO –Switching was taking over 2 minutes to complete starting 2nd hour. Geo 'dressing' with customer numbers and call numbers were started to deteriorate from the beginning of the test. Gotten slower to "dress" as grouping pace started to get slower throughout the test • Circuit Analyze and Switching - Switching were taking over 2 minutes by the end of 1st hour • INCs release to CAD – was reasonable – • Refreshing IM: refreshing by divisions incidents filter taken few secs (5-8 sec) • Circuit Analyze: took 4 to 6 minutes starting 2nd hour. **PCAD** INCs release to CAD was reasonable Dispatching ~20secs 10 jobs – 23secs and un-dispatching was taking 1-2mins **PWEB** Experienced issues after ~11AM Reported down by Sikder @ 11:47am PWEB pages were taking 40-50 seconds to load – showing grey screen	The purpose of dry run test is to smoke test the system over a 2-3 hour period to ensure the new changes deployed work effectively with no major/minor issues that would potential impact the 12-hour performance test. This also provides insights to any failures and optimize as necessary.

12/4/2020	Dry Run Test	**ESB** **- Incident.GetOutages** o There was a maximum of 278,201 customers out in this test run. o There was a maximum ESB execution time of 12.05 minutes o There were no duplicates o This is used by Kubra for the OutageMap, MuniPortal map, and outbound Notifi communication **- ManageTroubleTicket** **o GetTroubleTicket** § The number of CGI timeouts (over 12 seconds) was also lower (about 7% of last run) § The average response time was also significantly better **o SubmitTroubleTicket** § Same notes on volume § 60 timeouts significantly lower § The average response time was also significantly better **Grp Mgr, INC Mgr, PGEO** • Performance of IM refresh started taking 12-14 seconds for 4-5K incidents. Basically 2.5x slower than the target 1sec/1K incidents • Overall performance degraded significantly about 1-1.5 hrs into the test. • At 10:26 – we had 368 circuits in the group manager backlog and it was running about 21 min behind current time. • At 11:04 – this delay was up to 47 min • PGEO crashed – 10:50 AM • After restarting it (PGEO) observed the Requested maps window could not close. After opening it – hit "X" it closed temp – and then opened up again on its own. **PCAD** • INC to CAD and multi edit UDF slowed down more than acceptable target times. • Saw incidents locked with user "000000 – which CGI indicated was the CSA process. Not sure we saw this in the past. And also – if the user is CSA – why doesn't it say that? **Outage Map -** was not getting updated **Actions;** CGI captured additional traces and are being investigated	The purpose of dry run test is to smoke test the system over a 2-3 hour period to ensure the new changes deployed work effectively with no major/minor issues that would potential impact the 12-hour performance test. This also provides insights to any failures and optimize as necessary.
12/14/2020	SCADA Interface Test	OMS system performance was stable during the first 2 hours. Beginning third hour, we started to notice OMS Incident Manager becoming unresponsive and refreshing automatically despite of manual refresh enabled as per storm mode setting. Around 16:15 Hrs, decision was made to suspend the SCADA interface services at ESB integration layer, approximately took a minute to suspend services. From this moment onwards, operations referred to SCADA PI log and started to create lockout events manually into OMS. IT & Operations continued to monitor the OMS system performance and incoming SCADA events. Around 16:35 Hrs, decision was made to resume SCADA services as the situation has past storm peak and SCADA events were low. OMS started to receive live SCADA events as normal but was still experiencing performance degradation. This time it was stable enough for operational use. Roughly for around 20minutes the SCADA services were stopped More details in the Performance Test Result document.	The purpose of Performance test of SCADA Standard Operating Procedure for validating the SCADA Interface Monitoring and Disabling & Enabling Services

Revision History

Name	Date	Reason for Changes	Version
Jinesh Kurian	12/9/2021	Initial draft	1.0 draft 1
Jinesh Kurian	12/10/2021	Modified the project plan	1.0 draft 2
McKenzie Kennedy	1/9/2021	Updated Project Plan, Technical Approach, Risks, and Quality Assurance Sections	2.0 draft 1
Ramayanam, Kirankumar	1/10/2021	Reviewed and comments added	2.0 draft 2
Nathan White	2/15/2021	Revised Risks, Project Plan and Org Chart	3.0 draft 3
Kirankumar Ramayanam	2/16/2021	Review comments provided	3.0 draft 2
Nathan White	2/17/2021	Updated Project Plan	3.0 draft 3
Nathan White/Laura Salgado	2/18/2021	PIP History added and Project Risks updated	3.0 draft 4

PSEG Long Island

Project Implementation Plan

for

Isaias Task Force Recommendation Implementations

Recommendation No. 4.14

LIPA ID	Recommendation
4.14	Accelerate the deployment of the mobile application for foreign crews and/or their crew guides ensuring that procedures are integrated into the ERP.
3.2.6.1	Test and deploy the mobility application to enable foreign field crews, or their PSEG Long Island crew guides, to receive restoration work assignments and report the completion of restoration orders electronically. Update the ERP to document the work processes required to dispatch work to foreign crews electronically and train the involved staff in this updated work process.

PIP History, Feedback, and Actions

On January 26th, LIPA provided feedback on the submitted Tier 1 and Tier 2 implementation plans. On February 2nd PSEG-LI provided documented responses to the feedback from LIPA for all rejected IT implementation plans. PSEG-LI and LIPA met to discuss the specific feedback and proposed path forward for this Implementation plan in a meeting on 2/09/2021. The below are the PSEG-LI responses to the feedback. In the meeting PSEG-LI and LIPA discussed the feedback. No agreement was reached in the meeting, LIPA requested that we provide supporting data, rationale and updates to the Project implementations plans. LIPA stated they would take the feedback and input into consideration in reviewing the plans.

LIPA Response #1: *Phase 2 does not need to wait for CGI 6.7 and should be started as soon as possible. The plan does not include steps to the design process to roll out the app to mutual aid utilities and contractors. Is any interim process possible to enable the Field app to communicate back to the RDAs or OMS using v5.5? The timeline for implementation of 8/2021 is too long. Please resubmit with a more aggressive schedule and stronger technical approach.*

PSEG-LI Actions:

- Clarified the purpose of Phases 1 and 2. Phase 1 includes expanding use of the existing app, as well as enhancements to the existing app which currently provides one-way functionality. Phase 2 will focus on designing and developing two-way functionality with OMS/CAD 6.7 and bringing additional users onto the app.
- Contracted Accenture to assess feasibility of integrating with OMS/CAD 5.5 as well as to examine business drivers and desires for the app.

LIPA Response #2: *The revised plan is non-responsive to the Board's adopted recommendation. It does not fully address the objection raised in the earlier PIP submittal. Phase 2 does not need to wait for CGI 6.7 and should be started as soon as possible. Apparently, the plan is to wait for a 6.7 feature. We have not seen appropriate justification for that especially when the urgency is required. The plan does not include steps in the design process to roll out the app to mutual aid utilities and contractors. Is any interim process possible to enable the Field app to communicate back to the RDAs or OMS using v5.5? The timeline for implementation of 8/2021 is too long. Consider evaluating commercial products capable of integrating to 5.5 or assess alternative ways to achieve OMS 5.5 integration. Please resubmit with a more aggressive schedule and a stronger technical approach.*

PSEG-LI Actions:

- Project team performed a "What If" analysis on switching courses and implementing integrations on OMS v5.5. Analysis resulted in a potential go-live date with 5.5 of early to mid-July which is after target OMS 6.7 go-live date in May. It will also extend and add risk to the planned 6.7 integration. PSEG reviewed this analysis with LIPA on 2/9/21 and provided our justification for continuing to stay course with integration to OMS 6.7. Primary drivers of July date are –
    - The API interface in CGI CAD changes from version 5.5 to 6.7, where the latter introduced new methods and functionality
    - Form and workflow design are also modified in PSEG's CAD 6.7 design, in some cases taking advantage of capabilities in the newer version

  - A Field Mobility data integration with 5.5 would impact overall CAD 6.7 upgrade planning, where another SDLC to port the 5.5 data integration to 6.7 would become mandatory for cutover
  - Due to SDLC and other right-to-left dependencies (e.g. operational readiness testing and deployment), a deployment milestone for a data integration with 5.5 in March or April would require capacity and effort away from the current plan of integrating with 6.7. If successful, it would have limited lifespan since May mandatory update required
  - There is no known coexistence option to continue using an integration into 5.5 after cutover. The overall plan would need to include a fast-follow release to update the 5.5 data integration to 6.7 by May.
- Per LIPA's feedback, the contracted Accenture team is also performing a Buy vs. Build analysis for Field Mobility based on output from business driver analysis. Output should be completed within the next few weeks.

Table of Contents

1. Project Definition

The Field Mobile App project's goal is to rapidly test and deploy the mobile application to enable foreign field crews and/or the PSEG Long Island crew guides, to receive restoration work assignments and report the completion of restoration orders electronically. In addition, update the ERIP (Emergency Restoration Implementation Procedure) to document and deploy the work processes required to dispatch work to foreign crews.

The field mobile app currently provides only one-way communication from the dispatcher to the field user. The dispatcher is able to send jobs to the field user electronically and the user is able to retrieve job details and GPS location from the app to help them expedite restoration. However, the mobile app is currently unable to support 2-way communication from the app back to OMS/CAD. Therefore, the field user still must manually update the dispatcher on job status information from the field.

The project objective is to make enhancements to the field mobile app and deploy it for use by external crews during storms. This will better enable PSEG LI to get timely data from the field on outage jobs accelerating storm restoration process and providing a better experience for our customers overall. This plan has two phases for expanding usage of the mobile app:

- Phase 1: Continue to expand one-way communication functionality (using OMS/CAD 5.5) during storms for Crew Guides. Target the usage of the field mobile app to the following external and internal user groups:
    - On Island Contractor Unit Crews (100+)
    - Crew Guides (200)

  Each Crew Guide is appointed approximately 15 FTEs during storms. Therefore 200 Crew Guides will be able to support job details assigned to approximately 3000 foreign crews as part of Phase 1 plan as outlined below.

- Phase 2: Incorporate two-way communication functionality including full integration with OMS/CAD 6.7. Moreover, undertake an assessment to update business priorities as well as re-evaluate mobile application vendor landscape

Originally in 2018 when the mobile app was initially implemented, the plan was to finish the integration back into OMS/CAD once the upgrade to 6.7 was complete. Full testing of the two-way mobile application will be able to take place once OMS/CAD is upgraded to 6.7 and deemed stable.

1.1. Project Purpose, Objectives, and Success Criteria

Project Objectives:

The project will develop processes for dispatching jobs during storms to external crews who will be using the mobile app to receive jobs and report updates as they complete their work in the field. In addition, the project also includes technical development and deployment work required to make enhancements and integrate the mobile app with OMS/CAD for full functionality.

***Project End State and Success Criteria**:*

Hardware, software, and devices (BYOD) ready for deployment to up to 1,000 foreign crew teams. All onboarding process, training, support, and documentation completed. Testing (including load testing) completed.

2. Project Deliverables:

Describe applicable Project Deliverables:

Deliverable	Delivery Date	Comments
Deployment record. All configuration items in CMDB. Business and Technical Signoff.	8/30/2021	This project will be implemented in two phases. Phase 1 will focus on improvements to one-way communication of the field mobility application. Phase 2 will focus on two-way communication of the application. Both phases will include scaling the solution and deploying to additional crews.

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- EP, Foreign Crew and Unit Crew processes will need to be established for supporting the use of the field mobile app
- Resources from the T&D Operations team, Emergency Planning, Foreign Crew Management and IT teams will be designated to drive the completion of the deliverables listed above

2.1.2 Dependencies:

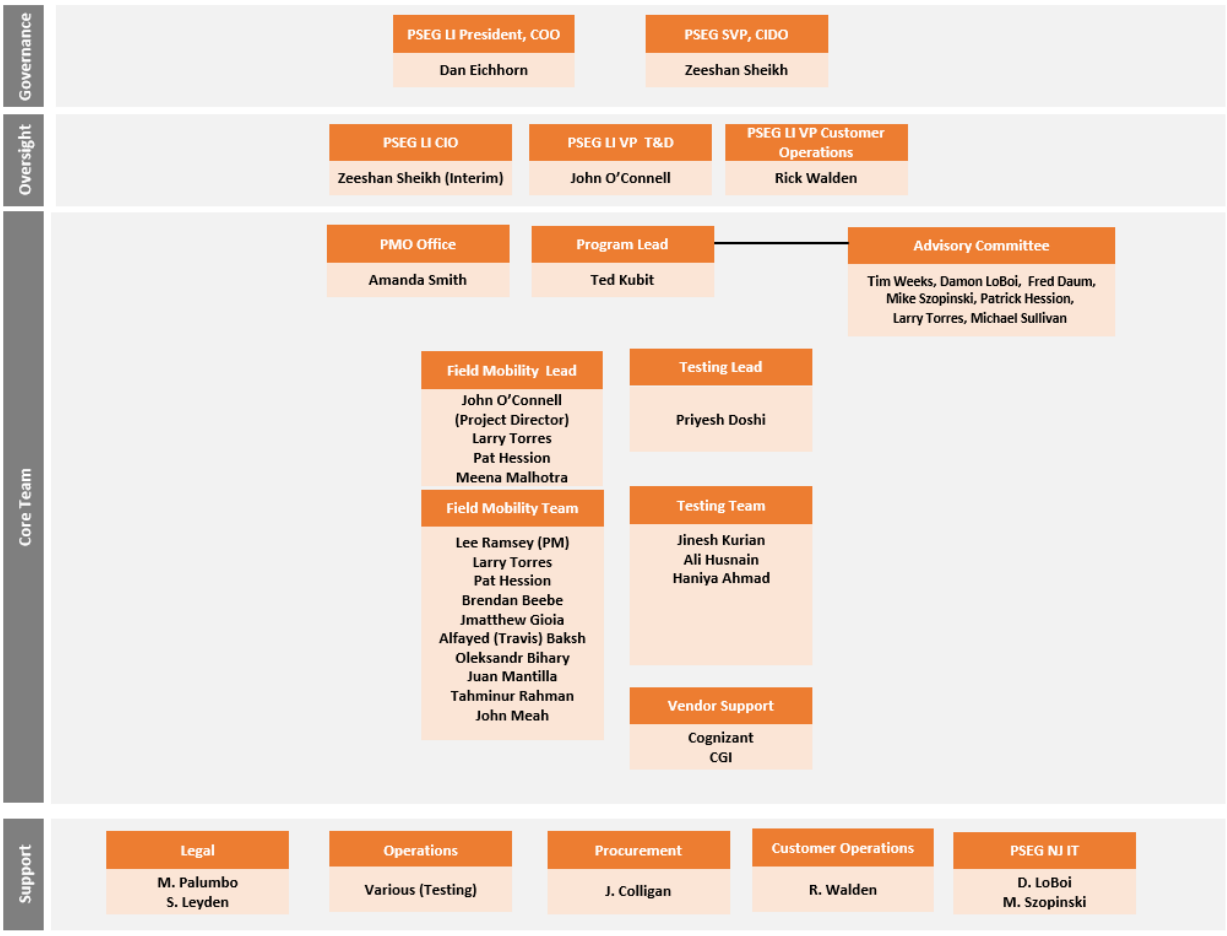
- The mobile app requires back end integration into CAD to fully complete the automated data capture from the field on jobs. The integration project will deploy once OMS/CAD is upgraded to 6.7.
- Contractor unit crews to have their own devices for BYOD usage of the mobile app
- CGI SMEs will be required for the design and implementation of the backend integration implementation to CAD 6.7.
- An assessment of business requirements and current technology vendor landscape may influence the future architecture of the application

2.1.3 Constraints:

- The mobile app currently provides one-way communication of data to mobile app users. Users are able to see the jobs assigned to them and work on them. However, any updates they make from the field does not integrate back into the back-end systems completely. Therefore, storm related dispatching processes and foreign crew process will need to build a process around crews using the app with one-way communication for the time being.

3. Project Structure

3.1. Internal Project Organization



Role	Name	Responsibilities
Steering Committee	Dan Eichhorn *(Chair)* Zeeshan Sheikh John O'Connell Rick Walden	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remained aligned with the guiding principles as *defined* • Providing guidance and input on *key project decisions* • Challenging the project team where appropriate • Approving major *changes to the project's scope, objectives, timelines, costs, etc.* • Acting as the decision maker for issues requiring *escalation* • Removing institutional barriers when *they arise by serving as a project advocate*
PSEG LI CIO	Zeeshan Sheikh (Interim)	• Ensuring *workstreams adhere to guiding principles as defined by project leadership* • Managing issues and decision making • Removi*ng obstacles that impede the success of the overall project Providing strategic guidance* • Challenging the project team where appropriate • Approve procurement of external parties (as needed)

Advisory Committee Members	Tim Weeks Damon LoBoi Mike Szopinski Fred Daum Patrick Hession Larry Torres Michael Sullivan	• Providing guidance and input o*n key project decisions* • Assisting in the procurement of external parties (as needed) • Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project • Challenging the pr*oject team*
Team Lead	Meena Malhotra	• Drive workstream tasks and deliver recommendations for Solution Design Specification • Provide support for Testing • Aid in the developme*nt functional requirements* • Provide input on requirement / design • Coo*rdinating Business Resources to support the project* • Key Point of contact to for questions from the vendor • Providing sign off for deliverables that require business *input/acceptance* • Delivering the project on time and on budget
Project Manager	Lee Ramsay	• Reporting overall status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resource*s, schedule, issues, risks and change requests* • Process development, requirements definition, • Providing subject matter expertise to th*e project* • User Impact Analysis • Facilitating workshops
Performance Engineer	Sri Kanaparthy	• Supporting Build/Test/Deploy Activities • Assist with Environment setup • Coordinating Development activities • Assist with Technical Design and Architecture • Assist with Transfer of Environments
Business Lead	Larry Torres Patrick Hession Anthony Vota	• Process development, requirements defini*tion, functional design* • Technical Design • Supporting vendor questions and workshops • Testing Execution
Test Lead	Travis Baksh	• Test Script Development • Test Script Execution for Assembly / Unit Test • Test Execution

PSEG NJ IT Subject Matter Advisor	Steven Zinser
	Bryan Serino
	Jay DaSilva
		• Assist with Transfer of Environments
		• Subject Matter support with:
		  • Build/Test/Deploy Activities
		  • Assist with Environment setup
		  • Coordinating Development activities
		  • Assist with Technical Design and Architecture

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below*:*

Organization/Team	Name	Responsibilities
Long Island Power Authority	Mujib Lodhi, Rick Shansky	• Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	• Overall oversight of the entire project portfolio

4. Project Plan

4.1. Project Work Plan

LIPA ID	Task	Recommendation	Current Status	Pct. Complete	Target Start Date	Target End Date
4.14	**Primary**	**Phase 1 - Rapidly test and deploy the one-way mobility application to enable foreign field crews, or their PSEG Long Island crew guides, to receive restoration work assignments.**	**In Progress**	**38%**	**10/1/2020**	**3/31/2021**
4.14	Subtask	T&D Ops to identify challenges and opportunities for one-way communications and usage of mobile application: Device, technical support, training, awareness, etc.	Complete	100%	10/1/2020	12/30/2020
4.14	Subtask	IT to develop Biometrics functionality for making re-signing into mobile app easier (continuous improvement)	Complete	100%	10/1/2020	11/17/2020
4.14	Subtask	IT to coordinate with EP team for distributing mobile phones and training of mobile app for internal Crew Guides	Complete	100%	10/1/2020	12/30/2020
4.14	Subtask	T&D Ops to expand field mobile app usability to On-Island Unit Crews	Complete	100%	10/30/2020	12/30/2020
4.14	Milestone	Ops to ensure 100% usage of FM app by contractor unit crews using BYOD. Communicate expectation and requirement to contracting companies	Complete	100%	12/30/2020	1/22/2021
4.14	Subtask	IT to develop and replace 15 min delay with real time sync of jobs received by crews once dispatched from CAD	Complete	100%	11/1/2020	2/10/2021
4.14	Subtask	EP and Ops to review and refine plans for OPS /RDA personnel for FM App usage; Assigning of work, completions, statuses, crew shells, etc.	Complete	100%	11/15/2020	1/31/2021
4.14	Subtask	EP to review FM App incorporation plan with FCP organization • Review initial goals • Review DRAFT plan • Determine agreed upon plan for Crew Guide usage (assignment to locations) • Assignment of FCP individual to support effort	Complete	100%	11/15/2020	12/9/2020

4.14	Subtask	EP to develop process plan for FM App usage (DRAFT) • One-way communications – Crew Guides	Complete	100%	11/20/2020	12/18/2020
4.14	Subtask	EP to revise training materials for FCP integration and RDA operations (App usage) • Focus on one-way communications • Crew shell usage	Complete	100%	11/20/2020	12/31/2020
4.14	Subtask	Ops to identify the steps for 100% usage by Unit Crews • Emphasis usage • Enhanced oversight and monitoring of App usage • Reports and tools to assist	Complete	100%	11/23/2020	1/22/2021
4.14	Subtask	IT to implement solution for re-dispatching cleared jobs in mobile app to support current process	Complete	100%	11/23/2020	12/9/2020
4.14	Subtask	EP to update the ERIP to document the work processes required to dispatch work to unit crews and crew guides electronically (Phase 1 – one-way communication)	Complete	100%	11/23/2020	1/31/2021
4.14	Subtask	Ops and IT to streamline the sign on and onboarding process required to use the FM app for unit crews during storms	Complete	100%	12/1/2020	12/30/2020
4.14	Subtask	EP to garner approval from FCM leadership and incorporate FM App usage by Crew Guides	Complete	100%	12/1/2020	12/18/2020
4.14	Subtask	EP to revise and finalize FM App process plan for FCP incorporation for one-way communication	Complete	100%	12/1/2020	1/8/2021
4.14	Subtask	IT to finalize long-term structure for FM app storm personnel to support Foreign Crew processing FM IT Team – establish storm roles for anyone currently without a role	In progress	25%	12/1/2020	3/31/2021
4.14	Subtask	FCP, RDA, EP and IT to socialize finalized FM FCP integration plan and review responsibilities	In progress	75%	12/1/2020	2/19/2021
4.14	Subtask	EP to identify FCP Crew Guides for User test • 20 Crew Guides (phase a) • All Crew Guides (phase b)	Complete	100%	12/1/2020	12/18/2020
4.14	Subtask	EP to create and finalize training documents/videos for Crew Guides	Complete	100%	12/1/2020	1/14/2021
4.14	Subtask	EP and IT to train initial 20 Crew Guides	Complete	100%	12/1/2020	1/31/2021

4.14	Subtask	Initial 20 Crew Guides to test usage of mobile app (pending event)	Complete	100%	1/22/2021	3/31/2021
4.14	Subtask	EP and IT to train remaining Crew Guides	In progress	50%	1/25/2021	3/30/2021
4.14	Milestone	EP to complete pilot of 20 Crew Guides using mobile app	Complete	100%	1/31/2021	1/31/2021
4.14	Milestone	EP to complete pilot of remaining Crew Guides using mobile app	In progress	25%	3/31/2021	3/31/2021
4.14	Subtask	EP, Ops, and IT to document the process for the use of FM app by on-island unit crews during storms	Complete	100%	12/30/2020	1/31/2021
4.14	Subtask	IT to update map in app to match current GIS map allowing field users to see most updated circuit map	Not started	0%	1/4/2021	3/31/2021
4.14	Subtask	Ops and EP to determine if supplemental Off-Island Unit Crews have the capability of supporting LI during storms with BYOD and FM app usage	Not started	0%	1/5/2021	3/31/2021
4.14	Subtask	EP to document the process for the use of FM app by Off-Island Crew Guides	In progress	75%	2/3/2021	2/19/2021
4.14	Subtask	EP to create and finalize training documents for Off-Island Crew Guides	In progress	75%	2/8/2021	2/19/2021
4.14	Subtask	EP and IT to engage with and review the Off-Island Crew Guide plan with contracted Crew Guide companies to promote awareness and assist with onboarding efforts	Not started	0%	2/15/2021	3/19/2021
4.14	Milestone	IT and T&D to test and go live with real time sync functionality from CAD to mobile app user (pending storm event)	In progress	90%	2/10/2021	2/10/2021
4.14	Subtask	Meeting: Preliminary Review of Tier 1 implementation plan responses (align on response and direction)	Complete	100%	1/6/2021	1/6/2021
4.14	Subtask	Meeting: Initial Review with LIPA	Complete	100%	1/7/2021	1/7/2021
4.14	Subtask	Meeting: Final Review PSEG LI Leadership	Complete	100%	1/8/2021	1/8/2021
4.14	Subtask	Meeting: Submission of the Tier 1 implementation plan responses to LIPA	Complete	100%	1/11/2021	1/13/2021

4.14	**Primary**	**Phase 2 - Rapidly test and deploy the two-way mobility application to enable foreign field crews, or their PSEG Long Island crew guides, to receive restoration work assignments and report the completion of restoration orders electronically.**	**Not Started**	**0%**	**1/11/2021**	**8/30/2021**
4.14	Subtask	Assess mobile app business desires/goals and compare against technology vendor landscape. Includes: - "What if" analysis of 5.5 vs. 6.7 integration - Business Priorities assessment - Buy vs. Build Assessment	In progress	84%	1/5/2021	3/31/2021
4.14	Subtask	IT to develop implementation plan for integration of app to CAD 6.7	Not Started	0%	2/1/2021	5/1/2021
4.14	Subtask	Coordination of CGI resources for design and implementation of the plan	Not Started	0%	2/1/2021	5/1/2021
4.14	Subtask	IT to provide updated design and architectural solution for implementing two-way integration	Not Started	0%	2/1/2021	4/30/2021
4.14	Subtask	IT to develop and implement the integration between mobile app and CAD once OMS/CAD is upgraded to 6.7	Not Started	0%	5/3/2021	8/30/2021
4.14	Subtask	IT to create load test plan for 2-way integration	Not Started	0%	5/3/2021	7/30/2021
4.14	Subtask	IT, Ops and EP to perform full function testing of mobile app before go-live	Not Started	0%	8/2/2021	8/13/2021
4.14	Milestone	Go live with integration from mobile app back into CAD allowing for full functionality and 2-way communication	Not Started	0%	8/30/2021	8/30/2021
4.14	Subtask	IT to develop report for real time app monitoring for usage of app	Not started	0%	5/3/2021	8/30/2021
4.14	Milestone	Review and update FCP process plans (Two Way communications)	Not started	0%	8/30/2021	8/30/2021
4.14	Milestone	Review and update RDA process plans (Two Way Communications)	Not started	0%	8/30/2021	8/30/2021
4.14	Subtask	EP, Ops, IT to provide plan to expand usage of mobile app to foreign crews	Not Started	0%	5/3/2021	7/30/2021
4.14	Subtask	EP to update training and job aid	Not Started	0%	6/1/2021	7/30/2021
4.14	Subtask	Change Management	Not started	0%	6/1/2021	8/30/2021

4.2. Risk Management Plan

The table below outlines the applicable risks and associated risk mitigations for the Field Mobile App project.

Category	Project Risk	Mitigation
Resources	No holistic solution owner from PSEG LI to oversee entirety of solution	PSEG LI to designate a resource to be the holistic oversight for entire solution
Resources	Field Mobile team lacks skills development resource for Android	Procure contractor expertise
Resources	Lack of resource in Ops and IT to support Foreign Crew management process during storms	Review Resource Plan with SLT and plan for additional resources as needed
Schedule / Cost	Dependent on CGI CAD 6.7 to go into Production and functioning appropriately	Proper testing and reasonable stability period after go-live is required to make sure application is functioning appropriately

4.3. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PMO daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.4. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh.

5. Technical Execution Plan

5.1. Technical Approach

5.1.1 Identify and Document any mobile app re-design and enhancements required to be developed:

Gather and review information from Company Stakeholders to assess the design of job cycle process including the completion of jobs

This will include the following high-level activities:

- Review 30 day and 90-day plans for assessment of recommendations and progress to date on actions

5.1.2 Develop Recommended Target State Architecture Options:

The targeted state architecture for the field mobile app requires it to be fully integrated with OMS/CAD. Since the enterprise has planned to upgrade OMS/CAD from version 5.5 to 6.7, Phase 1 or the interim plan includes the usage of the field mobile app given its current one-way limitation. Nevertheless, use of the app even in this limited way allows us to learn what process works and what doesn't so we can be better prepared once the app is ready to be fully deployed. The change management process will be critical for expanding the usage of the app to a larger audience. Phase 1 will provide insights enabling a smoother, more streamlined process when we are ready for Phase 2 which includes broadening the use of app to additional foreign crews.

5.1.3 T&D OPS, FCM and ERP Coordination:

Mobile app usage involves various groups of internal and external crews who will be using the app during storms. T&D Ops leads the effort to engage and use on-island contractors or unit crews during storms while EP and FCM teams engage crew guides, foreign crews and off-island crews required during storms. IT provides support to these business teams on how best to expand usage of the app while continuing to release app updates. The coordination of all these business groups is vital in developing a process that works well for usage of the app by various crews. Teams meet on a regular basis to coordinate and share information for better planning and achieving our project plan goals to expand the usage of the app. In addition, all these business groups provide their feedback to IT for continuous improvements and enhancements required for better customer experience when using the app.

5.2. Quality Assurance Plan

5.2.1 QA Methodology:

The team will adhere to the PSEG's IT standards for the deployment of this project. PSEG LI IT SharePoint will be used as the document repository.

An individual test plan for Phase 2 will be created, and for this recommendation it will include the following:

- Load testing for 2-way integration
- IT, Ops and EP to perform full function testing of mobile app before go live
- Crew guides to perform user acceptance testing

Test plan and test results will be signed off by PSEGLI CIO and President & COO of PSEGLI, and shared with LIPA upon completion

5.2.2 Test Scope:

The following functionalities of the Field Mobile Application will be performance tested to ensure stability during future storm events:

- Dispatching of the job and receiving the job in and out of CAD
- CAD system updates
- The full lifecycle of the job
- ETR updates
- Field user updates
- Complete functionality from end to end

Testing of all functionalities of the Field Mobile Application incorporate the following:

Tier	Metrics	Value Measured
Application	ETR Updates	Measurement of requests processed versus timed-out / failed
Application	CAD functionality	Usability of CAD and perform business functions

5.3. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Project Artifacts	Description
Deployment Record	Documentation of the deployment of the mobile application to crews
Test Strategy & Plan	Test cases & test data are meeting the design requirements
Test Execution Results	Test results indicate the design requirements accomplished.

Revision History

Name	Date	Reason for Changes	Version
Meena Malhotra	12/10/2020	Initial Draft	1.0 Draft 1
Meena Malhotra	1/11/2021	Updates based on LIPA meeting 1/7	1.1 Draft 2
Lee Ramsay, Laura Fuentes	2/11/2021	Updated plan tasks, added "PIP History, Feedback, and Actions" section	1.2

PSEG Long Island
Project Implementation Plan
for
Isaias Task Force Recommendation Implementations
Project Title: ERP Training and War-gaming Simulation Exercises Plan

The following Isaias Task Force recommendation is directly addressed as part of this plan:

LIPA ID	Report	Task Force recommendations directly addressed in this plan
5.02	90 Day Report	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.
5.03	90 Day Report	Develop simulations of emergencies and war-gaming exercises so that the response team can be challenged with realistic scenarios.

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1. Project Definition

The purpose of creating an Enhanced Emergency Training and Exercise Program is to provide more realistic training and exercises that require personnel to face challenges that may arise during storms, practice newly developed contingency plans, and be aware of PSEG Long Island storm restoration strategies and goals.

1.1. Project Purpose, Objectives, and Success Criteria

1.1.1 Project Objectives:

The objective is to develop more rigorous storm restoration training, and emergency simulation exercises. Training and exercises will focus on coordination of organizations throughout the ICS structure, and be delivered to employees with traditional and non-traditional storm roles. New processes developed in storm business continuity plans will be included.

1.1.2 Project Scope:

Develop new and enhanced training and exercise program to learn and test emergency restoration protocols and storm restoration procedures, and to develop emergency related decision making skills for potential restoration challenges.

- This project will also cover training and drilling associated with contingency scenarios outlined in ERIP-COM-004 "Restoration Contingency Plans for Critical System Failures"
- This project will not cover training and drilling associated with non-storm contingencies as Project Implementation Plan 5.04 "Create BCPs for all Mission Critical Processes" will cover training and drilling related to those contingencies

1.1.3 Project End State and Success Criteria:

This plan will be successful when the following objectives have been accomplished:

- More rigorous storm restoration training and exercises that:
    - Test decision making, decision paths, and how information passes between functions
    - Exercise well-developed business continuity plans (as per scope above)
    - Ensure that employees understand their roles within the ICS storm organization structure
- Simulations of potential emergencies are developed to challenge response team with realistic scenarios

2. Project Deliverables

The end state of this plan will be the development of a rigorous storm restoration training and exercise program along with the development of simulations of potential emergencies so that challenge the response team with realistic scenarios during exercises. The program should also integrate the storm business continuity planning concepts with Emergency Response Plan training, with a focus on key processes. The detailed work plan and status updates are listed in Section 4.1 Project Work Plan.

2.1. Assumptions, Dependencies, and Constraints

Comprehensive emergency response training and exercises will be extended to all employees who serve in traditional and non-traditional storm roles.

Additional training and exercises will be dependent on obtaining adequate numbers of subject matter experts, and interaction between various departments to provide sessions that incorporate all facets of the restoration process.

The Emergency Preparedness department may be constrained by the number of personnel available to perform the expanded trading required under this plan. Additional resources in PSEG Long Island storm organizations, and support of an emergency management consultation may be considered to supplement the existing resources.

3. Project Structure

3.1. Internal Project Organization

Larry Torres will be the Sponsor for this Project. John O'Connell will provide key executive level support and subject-matter expertise.

Role	Responsibilities
Project Sponsor Larry Torres	• Manage issues and decision making • Remove obstacles that impede the success of the overall project • Provide strategic guidance • Approve procurement of external parties (as needed) • Establish guiding principles for the project • Provide guidance and input on key project decisions • Monitor completion of activities • Challenge the project team where appropriate • Approve major changes to the project's scope, objectives, timelines, costs, etc. • Act as the decision maker for issues requiring escalation • Remove institutional barriers if and when they arise by serving as a project advocate

Key Executive Support John O'Connell	• Provide strategic direction and input on governance

3.2. Other Stakeholders

The other key stakeholders involved in the execution of this plan are:

- LIPA
- LIPA Board of Trustees
- Training Support Organizations (T&D Academy and Call Center Training Center)
- All Storm Organizations throughout the ICS Structure

4. Project Plan

4.1. Project Work Plan

The following outlines the timeline for completion of the key milestones. Senior Leadership is committed to achieving these milestones in order to build an effective operating model and address the Task Force recommendations.

Plan Milestones

Task	Owner	Current Status	Target End Date
1. Develop enhancements to the programs based on findings of "PSEG – LI Storm Training and Exercise Assessment and Benchmarking" report (dated October 20, 2020), including first priority and second priority enhancements	L. Torres	Pending	4/1/2021 – 6/20/2021 Enhancements prior to each training delivered
2. Deliver enhancements identified in #1 above	L. Torres	Pending	Deliver first priority courses by 6/30, and the balance by 9/30
3. Develop Storm BCP full scale exercise including contingency planning	L. Torres	In progress	4/1/2021
4. Get LIPA feedback on #3 and incorporate into drill	L. Torres	Pending	4/7/2021
5. Conduct Storm BCP drill	L. Torres	Pending	4/15/2021
6. Evaluate Storm BCP drill and summarize future enhancements	L. Torres	Not started	5/15/2021
7. Develop new "all employee" ICS awareness/storm restoration process overview training	L. Torres	Not started	5/1/2021
8. Deliver item #7 to all employees	L. Torres	Not started	6/30/2021

9. Design Annual Hurricane Tabletop (AHTT) exercise with specific inclusion of war gaming, decision making, and workflow paths between organizations	L. Torres	Not started	5/15/2021
10. Get LIPA feedback on #9 and incorporate into exercise	L. Torres	Not started	5/20/221
11. Conduct AHTT drill	L. Torres	Not started	6/1/2021
12. Evaluate AHTT and summarize future enhancements	L. Torres	Not started	6/30/2021

4.2. Risk Mitigation Plan

Category	Project Risk	Mitigation
Resources	Number of personnel required to perform additional training	Consider additional personnel in EP or other depts. for training
Expertise and Training Material	Time/expertise to create new material and provide coordination	Consider utilizing consultant of Emergency Management

4.3. Issue Resolution Plan

There are no foreseen issues; any issues will be raised to our Project Sponsor.

4.4. LIPA Reporting Plan

PSEGLI will provide LIPA bi-weekly (every other week) updates until plan completion.

Revision History

Name	Date	Reason for Changes	Version
Christine Bryson	2/1/2021	First draft	1.0 draft 1
Christine Bryson	3/10/2021	LIPA feedback update	1.0 draft 2

PSEG Long Island

Project Implementation Plan

for

Isaias Task Force Recommendation Implementations

Recommendation No. 3.2.2.3

Project Title: Work with CGI to obtain and implement fixes for identified application defects, which could include upgrading to a more recent version of the OMS software.

PIP History, Feedback, and Actions

On January 26th, LIPA provided feedback on the submitted Tier 1 and Tier 2 implementation plans. On February 2nd PSEG-LI provided documented responses to the feedback from LIPA for all rejected IT implementation plans. PSEG-LI and LIPA met to discuss the specific feedback and proposed path forward for this Implementation plan in a meeting on 2/11/2021. The below are the PSEG-LI responses to the feedback. In the meeting PSEG-LI and LIPA discussed the feedback. No agreement was reached in the meeting, LIPA requested that we provide supporting data, rationale and updates to the Project implementations plans. LIPA stated they would take the feedback and input into consideration in reviewing the plans.

LIPA Response:

Insufficiently responsive to the urgency, insufficient information and insufficient rigor given the criticality. The timeline for implementation is too long in the face of risk, and the May 2021 implementation date is too close to the start of the next Hurricane season.
The information that is presented in the PIP falls short of demonstrating that infrastructure is in fact a root cause of the issues. The Work Plan indicates that the OMS Causal Document was updated as of 1/8/21 with the CGI recommendations for re-platforming, but the embedded Causal Document is dated 9/14/20 and only includes the earlier determination that infrastructure is not a root cause of the issues.
Given the big uncertainty that the proposed re-platforming will resolve the issues, LIPA is concerned that there is considerable residual risk to the customers that has not been mitigated

PSEG Long Island Actions:

PSEGLI has laid out plans to replatform the V6.7 on new hardware prior to storm season and developed a systematic test plan to deploy 6.7; this plan was presented to LIPA on February 11th. While hardware is being delivered, PSEG is doing three primary activities to prepare for 6.7 implementation, all of which are required to enable a more resilient outage management system.
1 - Testing the outage management ecosystem End to End to improve the current environment and establish a baseline for 6.7
2 - Designing and building changes to decouple the outage management systems from the OMS and
3 - Design and build of enhanced monitoring capabilities

LIPA Response:

The plan does not demonstrate an appropriate level of contingency planning given the uncertainty, and also does not demonstrate the commitment to configuration management that is needed to mitigate the risk of introducing new issues given the magnitude of the proposed re- platforming change

PSEG Long Island Actions:

PSEG plan to test the ecosystem of v5.5 establishes a baseline and establishes a solution that can handle a large storm. Given this, the contingency plan for significant delay in v6.7 would be to stay on 5.5 and implement digital channel decoupling and monitoring with v5.5.

LIPA Response:
Has PSEGLI checked with Oracle (the manufacturer of the database machine) on the database issues per LIPA's verbal recommendations?

PSEG Long Island Actions:
PSEG has consulted with Oracle and has engaged Oracle DB performance engineer to lead troubleshooting, monitoring and health checks of the 5.5 and 6.7 environment

LIPA Response:
We also note that the Risk Management Plan is proforma copy and paste and has not considered the myriad and highly consequential risks associated with such an initiative. Please provide a more thorough and thoughtful risk management plan.

PSEG Long Island Actions:
Risks section has been updated to reflect potential project impacts that are captured in the Program's RAID log.

LIPA Response:
Additionally, ensuring vendor and internal resource availability and sufficiency should be part of the work plan; not assumed.

PSEG Long Island Actions:
Plans have been built with resource requirements and additional resources are being added to support all the implementation plans.

LIPA Response:
PSEGLI's complete reliance on CGI recommendations, who have not demonstrated a great track record is not prudent. Note that we have previously recommended that PSEG-LI get additional experts and continue to explore software or system configuration or other interconnected systems related root causes instead of throwing hardware upgrades at the issue without having a credible theory behind the diagnostic.

PSEG Long Island Actions:
PSEG has engaged a Master Technical Architect, OMS functional resources, DB engineers and network architects to support the testing and troubleshooting of the outage management systems alongside PSEG employees. This team was instrumental in troubleshooting the issue with the incident manager in V5.5 and worked closely with CGI to identify a fix. PSEG has engaged dedicated support from CGI for further 5.5 testing and v6.7 monitoring and implementation.

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1. Project Definition

This implementation plan is focused on managing and working with CGI to implement fixes for identified OMS application defects, in order to improve the performance and reliability of the OMS system.

Major deliverables include the documentation surrounding the short and long-term fixes applied to the OMS System v6.7 at PSEG LI including the software details like patches or new versions for the OMS system to handle high storm volumes.

1.1. Project Purpose, Objectives, and Success Criteria

Project Objectives:

Project Objective is to work with CGI to implement fixes identified in OMS v6.7 found during in Isaias storm by implementing software patches and infrastructure updates at PSEG LI to improve the performance and reliability of OMS 6.7 system.

***Project End State and Success Criteria**:*

Application defects in the OMS have been identified and fixes obtained, tested and deployed.

2. Project Deliverables:

Deliverable	Delivery Date	Comments
Infrastructure Installed	2/4/2021	See section 4.0 for detailed project plan
Document Technical Architecture	2/18/2021	
Go/No Go to Execute 12 Hour Performance Test	3/18/2021	
System Passes 12 Hour Performance Test	3/23/2021	
System Passes 24 Hour Performance Test	3/30/2021	
Go/No-Go Decision to Migrate to v6.7	4/23/2021	
Completed root cause analysis, Remediated recommended application performance items, Deployed and tested system hardware, acceptance test package	5/3/2021	OMS system will be remediated and fully tested prior to being deployed in production.

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- CGI Vendor resources will be available to provide SME time and answer any questions on their applications.
- Project implementation timeline is planned to complete all activities ahead of storm season
- Once OMS v6.7 is re-platformed the team will perform regression testing of the OMS system to ensure business functionality
- New OMS functionality is out of scope
- XTENSIBLE is responsible for developing, testing and deploying the Sonic ESB middleware between the interfaces and the OMS.
- Required environments will be available to perform testing of the OMS system and integration points with Digital Channels
- This implementation plan is only applicable to OMS v6.7

2.1.2 Dependencies:

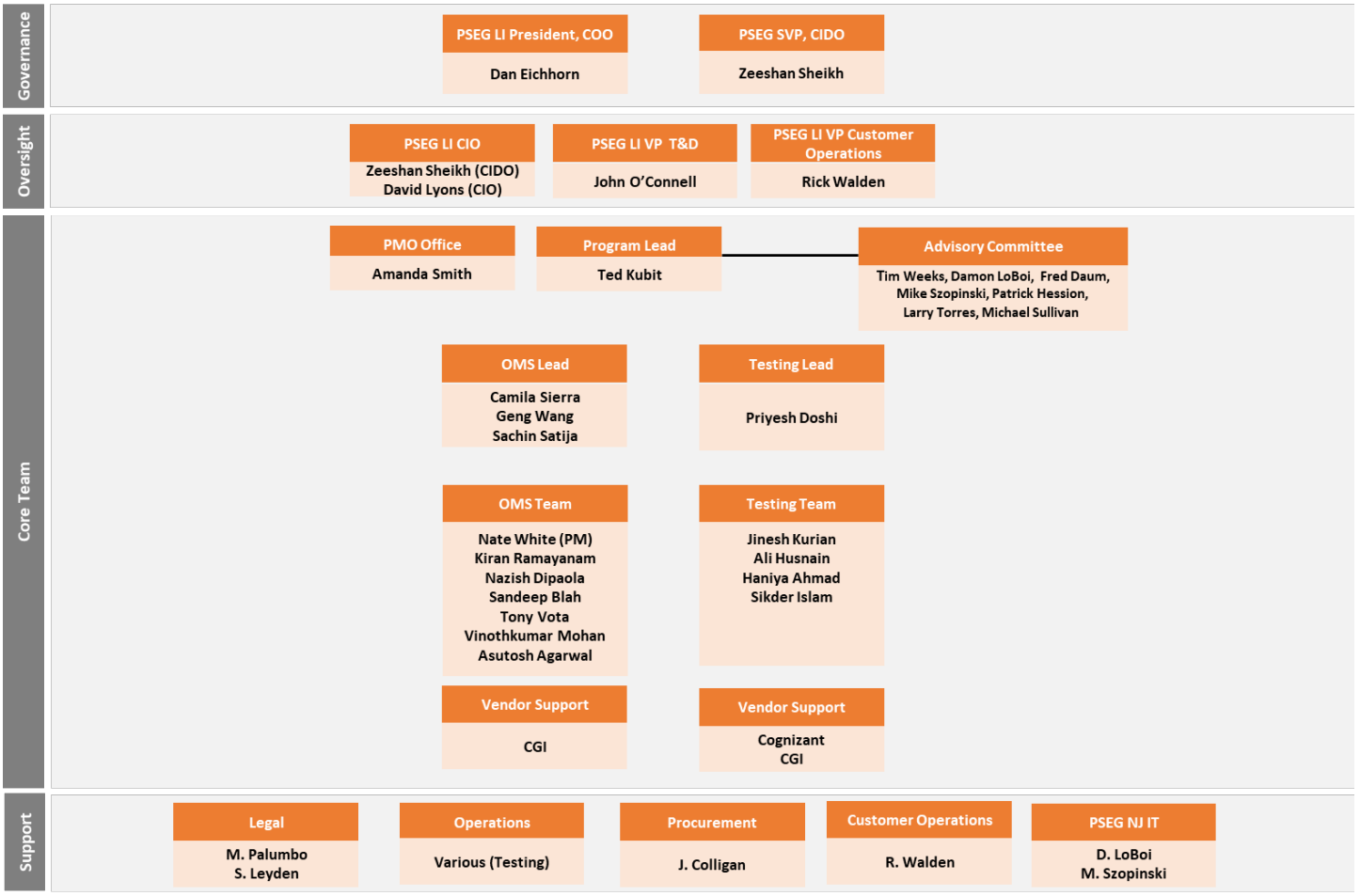
- CGI to make any required core development changes to the OMS v6.7 to enable performance
- Integrated testing of the OMS system with dependent vendors outlined in the Digital Channels and Telecom implementation plans, to provide outage information into the OMS
- XTENSIBLE to make any require core development changes to the Sonic ESB middleware between the interfaces and the OMS.
- CGI is required to make any necessary modifications to the OMS web services to provide outage status and report outages
- The timeline to complete the recommendations is dependent on procurement of new hardware required for the re-platform of OMS v6.7
- The timeline is dependent on alignment of overall test approach for all workstreams (OMS, Digital Channels, Telecom, Field Mobility) between PSEG LI and LIPA
- PSEG LI will update the available facilities, including electrical service, to be capable of hosting new dedicated OMS hardware
-

2.1.3 Constraints:

- The number of qualified resources with subject matter expertise.
- Competing projects that further constrain available resources.
- Availability of vendor resources to provide application updates and support testing activities.

3. Project Structure

3.1. Internal Project Organization



Role	Name	Responsibilities
Steering Committee	Dan Eichhorn Zeeshan Sheikh	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remained aligned with the guiding principles as *defined* • Providing guidance and input on *key project decisions* • Challenging the project team where appropriate • Approving major *changes to the project's scope, objectives, timelines, costs, etc.* • Acting as the decision maker for issues requiring *escalation* • Removing institutional barriers when *they arise by serving as a project advocate*
PSEG LI CIO	Zeeshan Sheikh (Interim) David Lyons	• Ensuring *workstreams adhere to guiding principles as defined by project leadership* • Managing issues and decision making • Removing *obstacles that impede the success of the overall project Providing strategic guidance* • Challenging the project team where appropriate • Approve procurement of external parties (as needed)
Advisory Committee Members	Tim Weeks Damon LoBoi Mike Szopinski	• Providing guidance and input on *key project decisions* • Assisting in the procurement of external parties (as needed) • Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project

	Fred Daum Patrick Hession Larry Torres Michael Sullivan	• Challenging the pr*oject team*
Team Lead	Camila Sierra Kirankumar Ramayanam Geng Wang	• Drive workstream tasks and deliver recommendations for Solution Design Specification • Provide support for Testing • Aid in the developmen*t functional requirements* • Provide input on requirement / design • Coo*rdinating Business Resources to support the project* • Key Point of contact to for questions from the OMS vendor • Providing sign off for deliverables that require business *input/acceptance* • Delivering the OMS project on time and on budget
Project Manager	Nathan White	• Reporting overall status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resource*s, schedule, issues, risks and change requests* • Process development, requirements definition, • Providing subject matter expertise to th*e project* • User Impact Analysis • Facilitating workshops
Performance Engineer	Sri Kanaparthy	• Supporting Build/Test/Deploy Activities • Assist with Environment setup • Coordinating Development activities • Assist with Technical Design and Architecture • Assist with Transfer of Environments
Business Lead	Anthony Vota Mahamudul.Chowdhury Gurkirat Singh Paul Mattera Matthew Otto	• Process development, requirements defini*tion, functional design* • Technical Design • Supporting vendor questions and workshops • Testing Execution
Test Lead	Sandeep Blah Jinesh Kurian	• Providing overall management across testing activities • Develop Test Strategy • Develop Test Data
Test Coordinator	Sikder Islam	• Test Coordination between Vendor and PSEG resources • Responsible for execution of Test Scripts • Test Script Development
Environment Lead	Anish Thomas Sohan Patel Vikas Vohra	• Technical Design development • Environment design support
OMS Developers and Subject Matter Advisors (CGI)	Peter Barnes Guillaume Simard-Lebrun Stephane Dumouchel Mark DeAgazio Neel Rana Jeffery Clark	• Responsible for working with PSEG LI to install and validate the OMS solution • Responsible for defect fixes and troubleshooting functional and performance issues

PSEG NJ IT Subject Matter Advisor	Damon LoBoi
	Michal Szopinski
	Timothy Weeks
	Michael Casella
	Ryan Wilson
	Ajith Elayidom
		• Subject Matter support with:
		  • Build/Test/Deploy Activities
		  • Assist with Environment setup
		  • Coordinating Development activities
		  • Assist with Technical Design and Architecture
		• Assist with Transfer of Environments

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below*:*

Organization/Team	Name	Responsibilities

Long Island Power Authority	Mujib Lodhi, Rick Shansky	• Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	• Overall oversight of the entire project portfolio

4. Project Plan

4.1. Project Work Plan

This project work plan below outlines the steps that will be taken to procure and install new hardware and install v6.7 to address recommendation 3.2.2.3. Recommendations 4.12 and 4.13 cover the tasks for performance and stress testing the application on the new hardware to ensure it can handle storm volumes and are included below. Once all three recommendations are complete then v6.7 will be deployed into production.

The hardware installation is currently behind plan; the team is reviewing the plan for opportunities to accelerate and is maintaining the baseline date until all impacts can be determined. Below is the January schedule submission. Dates have not changed, only percent completes. Once we evaluate the impacts of the hardware installation delays the schedule will be revised accordingly.

Type	Task Name	% Complete	Start	Finish
Recommendation	**Work with CGI to obtain and implement fixes for identified application defects, which could include upgrading to a more recent version of the OMS software.**	**47%**	**Thu 12/3/20**	**Fri 3/12/21**
Task	Review application and infrastructure recommendations provided by CGI with the team	100%	Thu 12/3/20	Tue 12/8/20
Task	Update OMS Causal Document with CGI Recommendations for Re-platform	50%	Mon 12/7/20	Mon 5/3/21
Task	Document Known OMS Issues and Proposed Solutions	100%	Mon 12/7/20	Fri 1/8/21
Task	Conduct workshops to discuss the recommendations provided by CGI	100%	Wed 12/9/20	Fri 12/11/20

Task	Develop system architecture and infrastructure requirements	100%	Mon 12/14/20	Fri 12/18/20
Task	Develop Defect Delivery Schedule with CGI	100%	Mon 1/4/21	Fri 1/8/21
Task	Conduct site and electrical survey	100%	Mon 12/14/20	Wed 1/13/21
Task	Purchase and Delivery of the hardware	100%	Mon 1/4/21	Fri 1/27/21
Task	Implement the site and survey recommendations	36%	Mon 1/11/21	Wed 1/20/21
Task	Develop OMS Test Strategy	100%	Mon 1/4/21	Fri 1/15/21
Document	***Test Strategy and Plan***	***100%***	***Fri 1/15/21***	***Fri 1/15/21***
Task	Application Network Hardware Installed	22%	Thu 1/28/21	Tue 2/2/21
Task	Infrastructure Installed	0%	Thu 1/28/21	Thu 2/4/21
Task	Application and Database Setup	21%	Fri 2/5/21	Thu 2/18/21
Document	***Technical Architecture***	***0%***	***Thu 2/18/21***	***Thu 2/18/21***
Task	Application Integration Setup	0%	Fri 2/19/21	Thu 3/4/21
Task	Smoke testing of re-platformed v6.7	0%	Fri 3/5/21	Tue 3/9/21
Task	Prepare Test Data of Re-Platformed v6.7	0%	Wed 3/10/21	Thu 3/11/21
Task	Preform Dry Run in Preparation for Performance Testing	0%	Fri 3/12/21	Thu 3/18/21
Milestone	**MS: Go/No Go to Execute 12 Hour Performance Test**	**0%**	**Thu 3/18/21**	**Thu 3/18/21**
Recommendation	**After the OMS faults are diagnosed and repaired, thoroughly stress-test the CAD system and the ESB to ensure there are no independent defects affecting either system**	**8%**	**Mon 3/1/21**	**Mon 5/3/21**

Task	Review and Update Migration/Cutover Plan to V6.7	25%	Mon 3/1/21	Fri 3/5/21
Task	Perform 12-hour performance test scenario to confirm fixes of re-platformed v6.7	0%	Fri 3/19/21	Thu 3/25/21
Task	Document 12-hour performance test results and recommendation of re-platformed v6.7	0%	Fri 3/19/21	Tue 3/23/21
Milestone	**MS: System Passes 12-hour Performance Test**	**0%**	**Tue 3/23/21**	**Tue 3/23/21**
Task	Prepare the environment and perform 24-hour stress test dry run	0%	Wed 3/24/21	Wed 3/24/21
Task	Execute 24-hour stress test scenario	0%	Thu 3/25/21	Tue 3/30/21
Task	Document 24-hour stress test results	0%	Thu 3/25/21	Tue 3/30/21
Milestone	**MS: System Passes 24-hour Performance Test**	**0%**	**Tue 3/30/21**	**Tue 3/30/21**
Task	Prepare for end to end test (environment set up, test scripts, week by week plan, tool setup, etc.),	0%	Wed 3/31/21	Tue 4/6/21
Task	Execute the End to End Test for OMS Ecosystem	0%	Wed 4/7/21	Fri 4/23/21
Task	Document End to End Test Results	0%	Wed 4/7/21	Fri 4/23/21
Document	***Test Execution Results***	***0%***	***Fri 4/23/21***	***Fri 4/23/21***
Deliverable	Go/No-Go decision to Migrate to v6.7	0%	Fri 4/23/21	Fri 4/23/21
Task	Production acceptance approval and cutover prerequisites	0%	Mon 4/26/21	Fri 4/30/21
Task	Deployment of v6.7 into production	0%	Sat 5/1/21	Sun 5/2/21
Deliverable	**Completed root cause analysis, Remediated recommended application performance items,**	**0%**	**Mon 5/3/21**	**Mon 5/3/21**

	Deployed and tested system hardware, acceptance test package.			

4.2. Risk Management Plan

The table below outlines the applicable risks and associated risk mitigations for the Outage Management System project.

Category	Project Risk	Mitigation
Resources	Resource constraints from OMS team due to competing projects.	Assign and commit sufficient business and IT resources and they are available to support this project. Two new external contracted resources with OMS experience, specifically with CGI's OMS system have been hired to provide operations support allowing existing team members to focus on the project. As necessary, additional contract resources will be hired to back fill normal job responsibilities
Resources	Availability of resources due to other Storm duty priorities	Careful prioritization of projects with LIPA recommendations as top priority in order to complete all tasks/milestones on time.
Schedule / Cost	Contract negotiation could delay project due to multiple vendor partners involved for making changes to the entire architecture	PSEG LI to expedite contract approvals and determine if there are options for performing some work internally.
Schedule / Cost	Vendor delays cause the schedule to shift and key project milestones are not able to be met on time	Regular cadence with vendors (weekly) to establish priorities and address issues. Work with the vendor to quickly resolve impediments. Resource needs are identified and communicated to Vendor in advance.
Schedule / Cost	The activities outlined in the OMS project become more complex than anticipated	Review the additional work required to complete the project with the steering committee. Add the scope required complete the project to the implementation plan. Clearly identify the steps that will be taken to anticipate this complexity in future projects. Regular discussions with hardware and application vendors are being held to ensure clear requirements are established and issues are identified early.
Program Management	Lack of Scope/Requirements control including changes needed to legacy IT systems	The project scope has been defined, clear change control process will be established by the PMO to address requests for change

Schedule/Cost	All project activities are dependent on the successful receipt and installation of new hardware and application installation of OMS v6.7. If the hardware installation is delayed all project activities for this project will be impacted.	Closely monitor delivery of hardware and perform as many tasks as possible in parallel to mitigate any potential delays.
Schedule/Cost	Existing PSEG LI Data Centers require site upgrades to accommodate new hardware. Site survey found additional electrical work that will require procurement of materials.	Material delivery is being expedited and requirements have been communicated to site managers. Space is available to set up the test environment if there are delays due to the additional electrical work; this work can be performed in parallel.
Schedule	Resources must travel to install new Hardware. Resources will then be required to quarantine for 14 days. If any resources get sick due to Covid will impact the project.	Identify back-up resources to step in if any primary resources get sick due to Covid.
Schedule/Cost	Application defects are found during testing, requiring reconfiguration	Assign resources for application remediation
Schedule/Cost	CGI OMS/CAD 6.7.4.X release quality potential issues	Early review of release notes and identify possible release gaps

4.3. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PM daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.4. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh (Interim).

5. Technical Execution Plan

5.1. Technical Approach

5.1.1 Configuration of Applications:

For changes to configuration of applications, the vendor has been contacted when needed and internal infrastructure has been adjusted accordingly. This systematic approach to troubleshooting and implementing changes to the application did not yield performance results to meet ISIAIS level storm requirements.

The changes implemented included changes to:

- Number of Group Managers
- Dynamic vs. Static Group Managers
- Storm ETR
- Database Monitoring
- Increase number of ObjectManager process instances
- Review PragmaGEO Configuration parameters
- Reporting
- Statistics Manager Configuration
- Storm Mode Configuration
- OMS Web Services (Get List Customer Interruption 3)

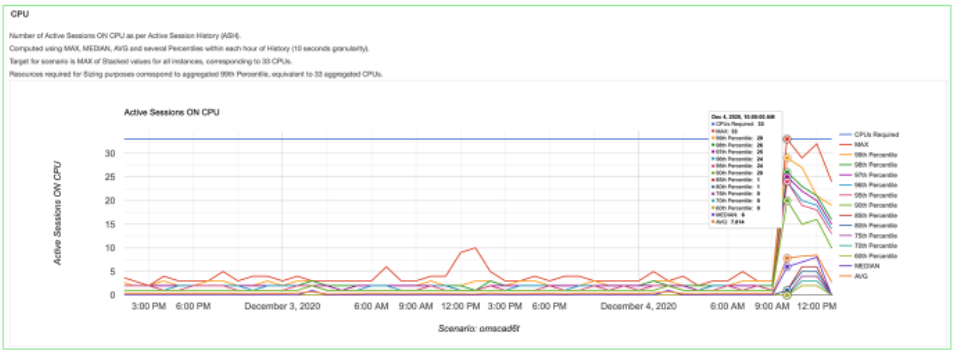
Which resulted in:

- Group Manager & Grouping configuration changes resulted in slight improvement but still observe transactions being queued/backlogged
- OMS Web Services (Get List Customer Interruption 3) – showed better performance but still has outliers to be reviewed
- Reporting components are pointed to DR Database instance
- Overall, problem still persists around Incident Manager, Group Manager & Grouping, releasing job from OMS to CAD. As many as 6 build/releases delivered by CGI but OMS/CAD business functions
- Storm ETR tested by business and will be used during future storms as needed

Performance Testing completed on December 4, 2020 on the application databased and resulted in the following findings.

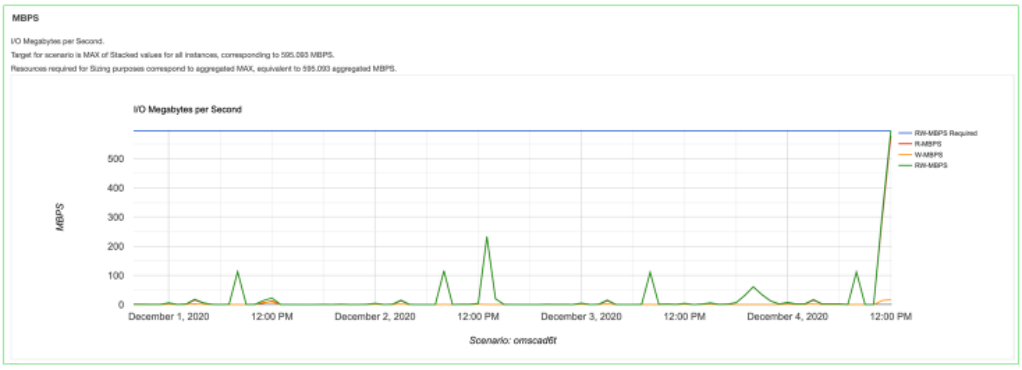
CPU utilization spiking to ~60% of X3-2 just for OMS DB during stress test, while iops throughput usage was pretty minimal, and memory utilization was pretty much static.

EXISTING X3-2 CPU MAX



 3

EXISTING X3-2 MBPS



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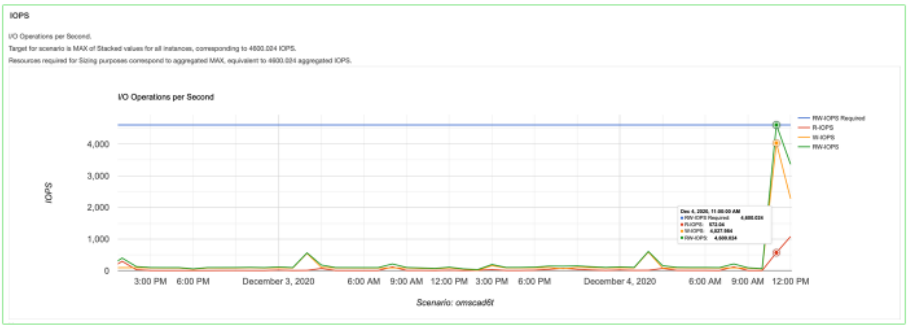
EXISTING X3-2 IOPS



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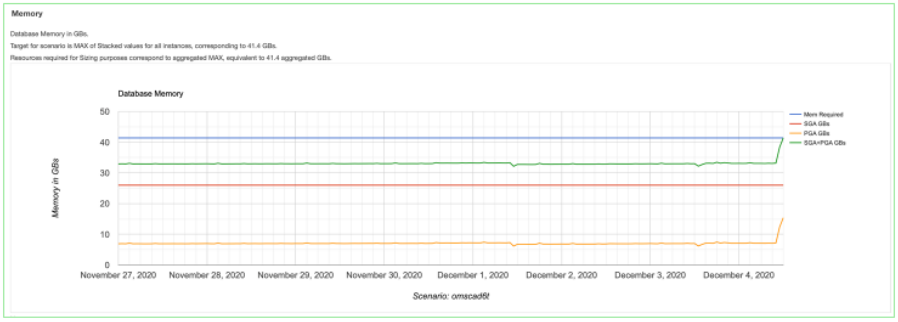
EXISTING X3-2 MEM



 4

Additional test results and details are here: OMS 6.7 Dry Run Test Findings 12042

The workplan has been developed to take all these items into consideration with a focus on end to end testing and functional/regression testing to ensure OMS is stable and resilient. Prior to executing additional testing activities on v6.7, the application will be installed on new hardware as planned in the 3.2.2.3 PIP.

As a result of this performance test, the following opportunities were identified to further enhance the performance of the database, these items will be addressed with the vendor, PSEG and Oracle to determine appropriate remediation steps.

Issue #	Issue/Category	Priority	Issue Period	Remediation	Scope	Implementor
1	RMA: IPC0 completion sync" in top timed wait events	Medium	11/28 - 12/7	Open SR with Oracle & Confirm that it is due to bug "Bug 28807706" & apply relevant patch	Oracle Software	PSEG
2	Tablespaces Shrunk periodically	Medium	11/28 - 12/7	Research & change frequency to once a week.	Unknown	PSEG
3	Paging & Swapping happening	Low	11/28 - 12/7	Audit memory configuration & identify root cause	Exadata	PSEG
4	Enq - TM contention waits	High	12/4/20	Identify tables with missing indexes & add indexes	CGI DB Design	PSEG/CGI
5	"gc buffer busy acquire wait" by notification2.service.exe	High	11/28 - 12/7	More analysis on why this wait is happening.	CGI Application	PSEG/CGI
6	Row lock contention waits	Medium	11/28 -12/7	More analysis on see why this is happening	OMS DB	PSEG/CGI
7	Dead Lock Errors	High	12/4/20	Identify SQL statements & strategy to mitigate. May need code change from CGI	CGI Application	PSEG/CGI
8	Parsing errors	High	12/4/20	Identify the source & work with the application owner	Unknown	PSEG/CGI
9	Sequences are not cached	Low	N/A	Check if sequence can be cached & cache	CGI DB Design	PSEG/CGI
10	Temp tables with stats	Medium	N/A	More research	OMS DB	PSEG/CGI
11	Other Foreign Keys without indexes	High	N/A	Validate with CGI & create needed. Indexes.	CGI DB Design	PSEG/CGI

OMS Causal Document: ISAIAS_CD_OMS and CAD Applicatio

5.1.2 Changes to system hardware:

The December 4, 2020 test yielded high CPU utilization during the stress test and validated the vendor's original recommendation of an upgrade and a change to the system hardware. The hardware configuration was determined with the vendor and has been ordered based on this recommendation.

Dedicated servers for each tier, dedicated databases on 3 node cluster, with additional capacity on all tiers and hardware is Dell with Intel Xeon Gold 6240R/6250.

New computing capacity has been added when compared to the existing servers:

	Old		New		Approximate	% Increase
Tier	CPU	Memory	CPU	Memory	CPU	Memory
CAD	6	32	48	252	1,300	800
OMS	1	32	48	252	8100	800
PWEB	4	32	16	192	1,100	600
WEB	4	16	16	192	1100	1200
PFI	4	32	16	192	1,100	600
GEO	4	32	16	192	1100	600
DB	16	128	16	384	200	300

The detailed hardware specifications for Production, Test, and Disaster Recovery environments has been ordered based on CGI's recommendation is as follows:

Item	Qty
PowerEdge R740 - OMS, CAD	16
PowerEdge R740 - WEB, PWEB, PFI	32

PowerEdge R740 - GEO	12
PowerEdge R740 - Oracle DB	12

5.1.2 Changes to webservices:

Changes to existing CGI webservices (Get List Customer Interruption 3) to address performance issues have been developed and deployed into production.

5.2. Quality Assurance Plan

The team will adhere to the PSEG's IT standards for the deployment of this project. PSEG LI IT SharePoint will be used as the document repository.

An individual test plan will be created, and for this recommendation it will include the following: Scope of testing, Test Criteria, Tests to be performed (e.g.: Functional, Acceptance, Regression, Performance Testing, End to end).

Test plan and test results will be shared with LIPA upon completion.

The following functionalities of the v6.7 OMS system will be performance and stress tested to ensure stability during future storm events:

- PragmaCAD
- PragmaGEO
- PCall / PWeb
- OMS Incident Manager
- OMS Group Manager and Groupings
- OMS Web Services / ESB Web Services
- Outage Map Update

Testing of all functionalities of v6.7 OMS incorporate the following:

Tier	Metrics	Value Measured
Application	OMS Web Service	Measurement of requests processed versus timed-out / failed
Application	OMS Group Manager Service	Measurement of group manager service to process incoming calls into new or existing outages. Some of these would go into CMS Manager for calls into existing known outages and some would be OMS GRP MGR if it is new call / incident

Tier	Metrics	Value Measured
Integration	ESB Web Services - Queue Depth	Measurement of queue depths during the test execution
Customer Experience	Outage Map	Measurement of Outage Map update between OMS > ESB > Kubra - Frequency of updates - Accuracy of updates (Active outages and Customers Affected)
Application	OMS Incident Manager functionality	Usability of Incident Manager and perform business functions
Application	CAD functionality	Usability of CAD and perform business functions
Application	PGEO functionality	Information updates & usability of PGEO and perform business functions
Application	PCall/Pweb	Accessibility of the functionality and ability to submit outages into the system

The basis for stress testing will be based on the data model below:

Stress Test Data Model

The test methodology is detailed in the "Performance Test Model" document attached here. This document is not finalized and will be updated as the project progresses.

Performance Test Model.docx

5.1. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Project Artifacts	Description
OMS Causal Document	Documentation of the OMS failures and root causes.
CGI Product Release Notes	CGI Product Fixes when new patches are delivered.
Test Strategy & Plan	Test cases & test data are meeting the design requirements
Test Execution Results	Test results indicate the design requirements accomplished.

Technical Architecture	Technical Architecture Diagram with updated hardware and infrastructure specifications

Revision History

Name	Date	Reason for Changes	Version
Jinesh Kurian	12/10/2020	Initial draft	1.0 draft 1
McKenzie Kennedy	12/10/2020	Review and updates	1.0 draft 2
McKenzie Kennedy	1/9/2021	Updated Project Plan, Technical Approach, Risks, and Quality Assurance Sections	2.0 draft 1
Nathan White	2/15/2021	Updated Project Plan	3.0 draft 1
Kirankumar Ramayanam	2/16/2021	Review comments provided	3.0 draft 2
Nathan White	2/17/2021	Updated Project Plan	3.0 draft 3
Nathan White/Laura Salgado	2/18/2021	PIP History added and Project Risks updated	3.0 draft 4

PSEG Long Island

Project Implementation Plan

for

Isaias Task Force Recommendation Implementations

Recommendation No. 3.2.2.5

Project Title: 3.2.2.5 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.

PIP History, Feedback, and Actions

On January 26th, LIPA provided feedback on the submitted Tier 1 and Tier 2 implementation plans. On February 2nd PSEG-LI provided documented responses to the feedback from LIPA for all rejected IT implementation plans. PSEG-LI and LIPA met to discuss the specific feedback and proposed path forward for this Implementation plan in a meeting on 2/09/2021. The below are the PSEG-LI responses to the feedback. In the meeting PSEG-LI and LIPA discussed the feedback. No agreement was reached in the meeting, LIPA requested that we provide supporting data, rationale and updates to the Project implementations plans. LIPA stated they would take the feedback and input into consideration in reviewing the plans.

LIPA Response January 27:

The revised plan is non-responsive to the Board's adopted recommendation. It does not address the objections raised in the earlier PIP submittal. The revised plan still does not include additional tools/procedures to support/enable corresponding actions which an administrator could take to restore normal operations.

PSEG Long Island Actions:

- This PIP has been updated with the information shared in the slide deck "OMS Holistic Monitoring" (attached) which was presented to LIPA in the February 9 "Monitoring 4.18, 3.2.2.4, 3.2.2.5, 3.2.2.7, 3.2.2.8: Holistic Monitoring Approach" meeting.
- As described in Section 5.1.1 Current State Assessment, the current infrastructure monitoring is robust for industry standard items; therefore the project team will simply apply the infrastructure monitoring in place on v5.5 to v6.7. For more details on the testing and deployment timeline please refer to section 4 Project Plan. This information can be found in slides 7 and 11 of the attached deck.
- As described in Section 2 Project Deliverables and Section 4 Project Plan, the project team will validate that the NOC team has updated their Run-Books to handle each of the alerts which will enable an administrator to take the appropriate action(s) to restore normal operations by 4/2/2021. This information can also be found in slides 7 and 11 of the attached deck.

Table of Contents

1. Project Definition

The OMS project is focused on improving the performance and reliability of the OMS and its ecosystem. The objectives of the OMS System testing (recommendation 3.2.2.5) is to develop a system to monitor and detect OMS eco-system infrastructure failures.

1.1. Project Purpose, Objectives, and Success Criteria

Project Objectives: 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.

Project End State and Success Criteria*:* Deployed automated level monitoring of OMS and CAD infrastructure providing administrators the ability to proactively monitor, detect and resolve infrastructure failures.

2. Project Deliverables:

Deliverable	Delivery Date	Comments
Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Complete	4/2/2021	
Port to v6.7	5/3/2021	

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- Monitoring of the v6.7 infrastructure will employ the same monitoring methods currently in use on the OMS v5.5 system.
- CGI Vendor resources will be available to provide SME time and answer any questions on their applications services.
- Project implementation timeline is planned to complete all activities ahead of storm season
- Required environments will be available to perform testing of the OMS system and external integrations.
- This implementation plan is only applicable to OMS v6.7.

2.1.2 Dependencies:

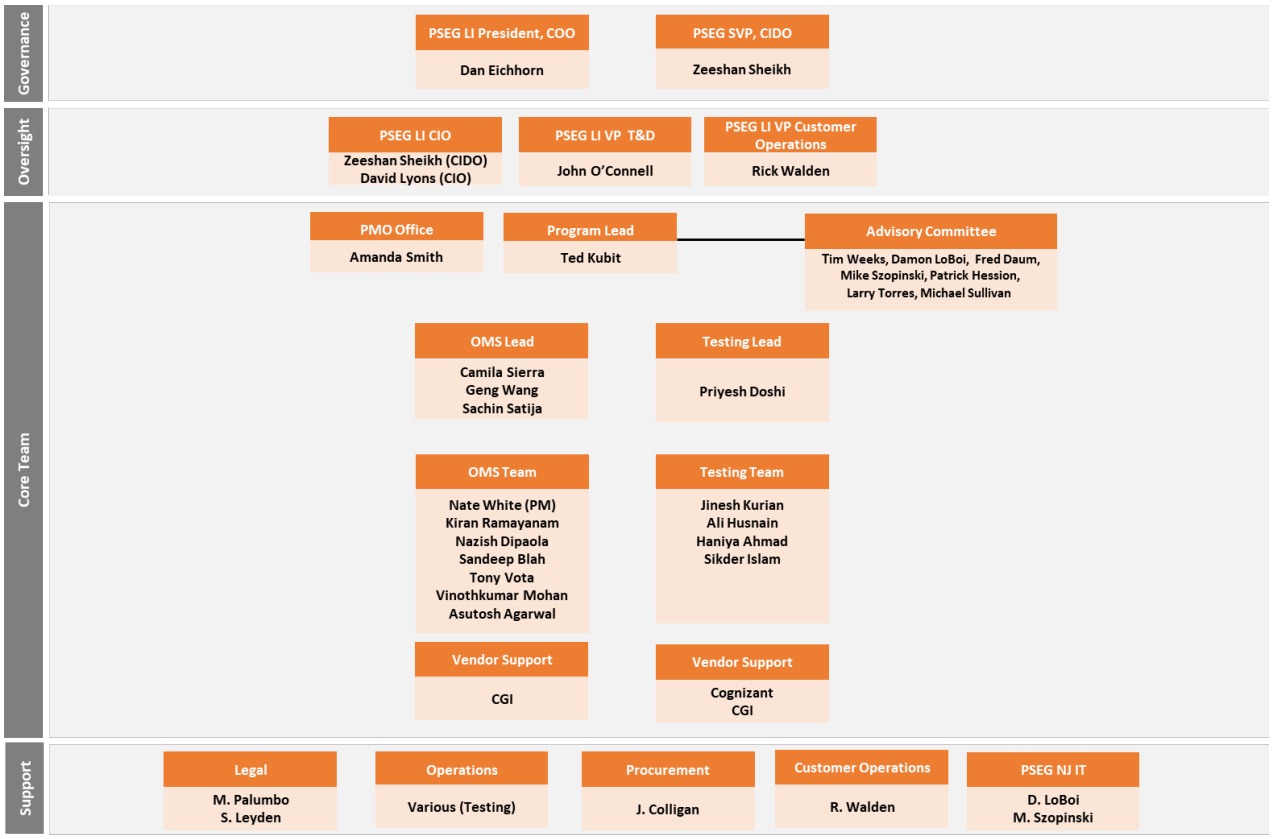
- CGI to make any required core development changes to the OMS v6.7 to enable performance
- Integrated testing of the OMS system with dependent vendors outlined in the Digital Channels plans, to provide outage information into the OMS
- The timeline to complete the migration and testing of recommendations is dependent on procurement of new hardware required for the re-platform of OMS v6.7

2.1.3 Constraints:

- The number of qualified resources with subject matter expertise.
- Competing projects that further constrain available resources.
- Availability of vendor resources to provide application updates and support testing activities.

3. Project Structure

3.1. Internal Project Organization



Role	Name	Responsibilities
Steering Committee	Dan Eichhorn Zeeshan Sheikh	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remained aligned with the guiding principles as *defined* • Providing guidance and input on *key project decisions* • Challenging the project team where appropriate • Approving major *changes to the project's scope, objectives, timelines, costs, etc.* • Acting as the decision maker for issues requiring *escalation* • Removing institutional barriers when *they arise by serving as a project advocate*
PSEG LI CIO	Zeeshan Sheikh (Interim) David Lyons	• Ensuring *workstreams adhere to guiding principles as defined by project leadership* • Managing issues and decision making • Removing *obstacles that impede the success of the overall project Providing strategic guidance* • Challenging the project team where appropriate • Approve procurement of external parties (as needed)

Advisory Committee Members	Tim Weeks Damon LoBoi Mike Szopinski Fred Daum Patrick Hession Larry Torres Michael Sullivan	• Providing guidance and input o*n key project decisions* • Assisting in the procurement of external parties (as needed) • Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project • Challenging the pr*oject team*
Team Lead	Camila Sierra Kirankumar Ramayanam Geng Wang	• Drive workstream tasks and deliver recommendations for Solution Design Specification • Provide support for Testing • Aid in the developme*nt functional requirements* • Provide input on requirement / design • Coo*rdinating Business Resources to support the project* • Key Point of contact to for questions from the OMS vendor • Providing sign off for deliverables that require business *input/acceptance* • Delivering the OMS project on time and on budget
Project Manager	Nathan White	• Reporting overall status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resource*s, schedule, issues, risks and change requests* • Process development, requirements definition, • Providing subject matter expertise to th*e project* • User Impact Analysis • Facilitating workshops
Performance Engineer	Sri Kanaparthy	• Supporting Build/Test/Deploy Activities • Assist with Environment setup • Coordinating Development activities • Assist with Technical Design and Architecture • Assist with Transfer of Environments
Business Lead	Anthony Vota Mahamudul Chowdhury Gurkirat Singh Paul Mattera Matthew Otto	• Process development, requirements defini*tion, functional design* • Technical Design • Supporting vendor questions and workshops • Testing Execution
Test Lead	Sandeep Blah Jinesh Kurian	• Providing overall management across testing activities • Develop Test Strategy • Develop Test Data
Test Coordinator	Sikder Islam	• Test Coordination between Vendor and PSEG resources • Responsible for execution of Test Scripts • Test Script Development
Environment Lead	Anish Thomas Vikas Vohra	• Technical Design development • Environment design support
OMS Developers and Subject Matter Advisors (CGI)	Peter Barnes Guillaume Simard-Lebrun Stephane Dumouchel Mark DeAgazio Neel Rana Jeffery Clark	• Responsible for working with PSEG LI to install and validate the OMS solution • Responsible for defect fixes and troubleshooting functional and performance issues

PSEG NJ IT Subject Matter Advisor	Damon LoBoi
	Michal Szopinski
	Timothy Weeks
	Michael Casella
	Ryan Wilson
	Ajith Elayidom
		• Subject Matter support with:
		  • Build/Test/Deploy Activities
		  • Assist with Environment setup
		  • Coordinating Development activities
		  • Assist with Technical Design and Architecture
		• Assist with Transfer of Environments

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below:

Organization/Team	Name	Responsibilities
Long Island Power Authority	Mujib Lodhi, Rick Shansky	• Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	• Overall oversight of the entire project portfolio

4. Project Plan

4.1. Project Work Plan

This project work plan below outlines the steps that will be taken to document the monitoring processes in v5.5 and to migrate that functionality to v6.7. The hardware installation is currently behind plan; the team is reviewing the plan for opportunities to accelerate and is maintaining the baseline date until all impacts can be determined. Once we evaluate the impacts of the hardware installation delays the schedule will be revised accordingly.

Type	Task Name	% Complete	Start	Finish
Recommendation	**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.**	**21%**	**Mon 11/23/20**	**Mon 5/3/21**
Parent	**Database**	**20%**	**Tue 1/12/21**	**Mon 5/3/21**
Task	Document current state of monitoring	25%	Tue 1/12/21	Thu 4/1/21
Task	Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Sign Off	0%	Fri 4/2/21	Fri 4/2/21
Document	*Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Complete*	*0%*	*Fri 4/2/21*	*Fri 4/2/21*
Task	Port current configurations from 5.5 to 6.7 in lower environments	0%	Tue 4/13/21	Fri 4/16/21
Task	Dev test strategy to verify ported monitoring	0%	Mon 4/19/21	Tue 4/20/21
Task	Test application porting in the v6.7	0%	Wed 4/21/21	Thu 4/22/21
Task	Receive approval of test results	0%	Fri 4/23/21	Fri 4/23/21
Milestone	*Monitoring verification complete*	*0%*	*Fri 4/23/21*	*Fri 4/23/21*
Task	Deploy ported monitoring applications to production	0%	Mon 4/26/21	Mon 5/3/21
Parents	**Infrastructure**	**20%**	**Tue 1/12/21**	**Mon 5/3/21**
Task	Document current state of monitoring	25%	Tue 1/12/21	Thu 4/1/21
Task	Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Sign Off	0%	Fri 4/2/21	Fri 4/2/21
Document	*Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Complete*	*0%*	*Fri 4/2/21*	*Fri 4/2/21*
Task	Port current configurations from 5.5 to 6.7 in lower environments	0%	Tue 4/13/21	Fri 4/16/21
Task	Dev test strategy to verify ported monitoring	0%	Mon 4/19/21	Tue 4/20/21
Task	Test application porting in the v6.7	0%	Wed 4/21/21	Thu 4/22/21
Task	Receive approval of test results	0%	Fri 4/23/21	Fri 4/23/21
Milestone	*Monitoring verification complete*	*0%*	*Fri 4/23/21*	*Fri 4/23/21*
Task	Deploy ported monitoring applications to production	0%	Mon 4/26/21	Mon 5/3/21

Parent	DB Infrastructure	20%	Tue 1/12/21	Mon 5/3/21
Task	Document current state of monitoring	25%	Tue 1/12/21	Thu 4/1/21
Task	Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Sign Off	0%	Fri 4/2/21	Fri 4/2/21
Document	*Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Complete*	*0%*	*Fri 4/2/21*	*Fri 4/2/21*
Task	Port current configurations from 5.5 to 6.7 in lower environments	0%	Tue 4/13/21	Fri 4/16/21
Task	Dev test strategy to verify ported monitoring	0%	Mon 4/19/21	Tue 4/20/21
Task	Test application porting in the v6.7	0%	Wed 4/21/21	Thu 4/22/21
Task	Receive approval of test results	0%	Fri 4/23/21	Fri 4/23/21
Milestone	*Monitoring verification complete*	*0%*	*Fri 4/23/21*	*Fri 4/23/21*
Task	Deploy ported monitoring applications to production	0%	Mon 4/26/21	Mon 5/3/21

4.2. Risk Management Plan

The table below outlines the applicable risks and associated risk mitigations for the Outage Management System project.

Category	Project Risk	Mitigation
Resources	Resource constraints from OMS team due to competing projects.	Assign and commit sufficient business and IT resources and they are available to support this project. As necessary, hire contract resources to back fill normal job responsibilities
Resources	No holistic solution owner from PSEG LI to oversee entirety of solution	PSEG LI to designate a resource to be the holistic oversight for entire solution
Resources	Availability of resources due to other Storm duty priorities	Careful prioritization of projects with LIPA recommendations as top priority in order to complete all tasks/milestones on time.
Schedule / Cost	The activities outlined in the OMS project become more complex than anticipated	Review the additional work required to complete the project with the steering committee. Add the scope required complete the project to the implementation plan. Clearly identify the steps that will be taken to anticipate this complexity in future projects.
Program Management	Lack of Scope/Requirements control including changes needed to legacy IT systems	The project scope has been defined; clear change control process will be established by the PMO to address requests for change
Program Management	Additional recommendations for improvement are developed and will need to be added to this workstream	Additional recommendations that have activities like those addressed in this project will be identified and logically grouped within tracks. Resource requirements will be identified. Where necessary, contract resources will be hired to back fill normal job responsibilities

4.3. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PMO daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.4. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh, PSEG LI CIO (Interim).

5. Technical Execution Plan

5.1. Technical Approach

5.1.1 Current State Assessment

The project team conducted an assessment of the current infrastructure monitoring landscape at PSEG which found that infrastructure monitoring is mature and sufficient for the business needs. As was communicated in the February 9 meeting entitled "Monitoring 4.18, 3.2.2.4, 3.2.2.5, 3.2.2.7, 3.2.2.8: Holistic Monitoring approach", the current infrastructure monitoring is robust for industry standard items; therefore the project team will simply apply the infrastructure monitoring in place on v5.5 to v6.7. Before the v6.7. go-live the project team will validate the NOC team has updated their Run-Books to handle all Infrastructure monitoring alerts.

Monitoring Type	Assessment	Applications Monitored	Parameters Monitored in Current State	Findings
Infrastructure	Minor enhancements needed	• Web Server • OMS • CAD • PCALL/PWEB • PField • PGEO • GIS	• CPU • Disk • Memory • Msgs (event logs) • Netstat • Procs	• Alerts are configured for thresholds of each parameter • Alerts are sent to specified recipients (5.5 alerts are sent to certain individuals, 6.7 alerts are sent to aliases)

		• Middleware ESB • Field Mobility Servers • DSCADA	• Svcs (Services running) • Trends • Uptime	• Reports – sufficient reporting to check historical data • Xymon dashboard displays current status of each server across all parameters

5.1.2 Configuration of Applications:

For any changes to configuration of applications, the vendor will be contacted when needed and internal infrastructure will be adjusted accordingly. Testing will be executed to verify changes are working as intended.

5.1.3 Changes to webservices:

Any required changes to existing webservices or development of new webservices will be developed on the preferred development platform at PSEG LI. Code will be reviewed and unit tested prior to deploying code to the test environment. SAT and SIT testing will occur in the test environment to verify functionality is working as intended

5.2. Quality Assurance Plan

5.2.1 QA Methodology:

1. The team will adhere to the PSEG's IT standards for the deployment of this project.
2. PSEG LI IT SharePoint will be used as the document repository.
3. The deliverables will follow the following QA processes:
    a. Team lead review and signoff
    b. Peer Review (PSEG)
    c. Subject Matter Advisor Review as necessary
    d. PSEG Signoff by PSEGLI CIO and President & COO of PSEGLI
    e. Independent Verification and Validation by LIPA CIO

5.3. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Project Artifacts	Description

Standard Operating Procedure / IT Runbook	Documentation of routine operations processes
Pre-Storm Checklist	Steps to be taken prior to a storm event to ensure proper system configuration

Revision History

Name	Date	Reason for Changes	Version
Phillip Vallejo	12/10/2020	Initial draft	1.0 draft 1
Jinesh Kurian	12/11/2020	Modified	1.0 draft 2
Nathan White	1/12/2021	5.5 documentation and 6.7 approach changes	1.1
Laura Salgado/Brenda Mokua	2/11/2021	Added section to address LIPA feedback, modified Project Definition, Project Deliverables, Project Plan, and Technical Execution Plan	1.2
Kirankumar Ramayanam	2/17/2021	Reviewed and comments added	1.3
Laura Salgado	2/17/2021	Updated to be in line with comments and updated project plan	1.4
Laura Salgado	2/18/2021	Updated to be in line with legal comments	1.5
Laura Salgado	2/19/2021	Updated feedback/history section to reference OMS Holistic Monitoring slide deck	1.6

PSEG Long Island

Project Implementation Plan

for

Isaias Task Force Recommendation Implementations

Recommendation No. 3.2.2.7

Project Title: 3.2.2.7 Automate monitoring of inbound outage to the OMS, to be able to detect and eliminate erroneous reports that may arrive from any source.

PIP History, Feedback, and Actions

On January 26th, LIPA provided feedback on the submitted Tier 1 and Tier 2 implementation plans. On February 2nd PSEG-LI provided documented responses to the feedback from LIPA for all rejected IT implementation plans. PSEG-LI and LIPA met to discuss the specific feedback and proposed path forward for this Implementation plan in a meeting on 2/09/2021. The below are the PSEG-LI responses to the feedback. In the meeting PSEG-LI and LIPA discussed the feedback. No agreement was reached in the meeting, LIPA requested that we provide supporting data, rationale and updates to the Project implementations plans. LIPA stated they would take the feedback and input into consideration in reviewing the plans.

LIPA Response January 27:
"This PIP disregards the stated requirements of the recommendation: '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 PIP claims that the Network Operations Center (NOC) is already monitoring these elements but does not say how, whether the process is automated and whether it is real time detection. If the end-state has already been achieved then we suggest that this recommendation be marked as complete and required deliverables submitted in February. The PIP also disregards LIPA's requirement (see Jan comments) that written requirements (RTM) be developed and obtain LIPA sign-off. Also the PIP lacks focus on the recommendation and seems to be more a copy and paste from another PIP. Please review."

PSEG Long Island Actions:

The team has met internally to review the feedback provided by LIPA to clarify and address the comments. The team has updated our Technical Approach accordingly, please see our response below, as well as in Section 5 Technical Execution Plan:

Current State (please see Section 5.1.1 Current State Assessment for more details)

The team is unclear what is meant by "erroneous" reports up above. Erroneous could mean:

1. Invalid customers / third party reports coming into PSEGLI.
2. Duplicate outage submissions from valid customers through resubmission or other means.

Currently the team does not believe it is possible to receive erroneous data into the OMS in the form of invalid customers/third party reports. The digital channels perform validations for valid customer IDs on every incoming outage report. OMS performs additional data validations on customer IDs prior to submission into the database such that referential integrity is maintained.

The other type of erroneous data that we have seen is for duplicate outage submissions (multiple outage reports from the same customer with different time stamps.)

Below and in Section 5.1.2 Plan to Address Duplicates, we describe at a high level the plan to address this type of duplicate in the short term:

- Changes we have already made or are making in the short term:
    - Changes on Intrado on the resubmission queue to reduce resubmissions coming into OMS.
        - Resubmission queue will only attempt to resubmit for two hours, limiting total resubmissions.

- Changes on Intrado in swapping existing MPLS circuit with the IPSEC tunnel.
  - This reduced number of network timeouts which in turn reduced outage reports coming into the resubmission queue and the potential for duplicates.
- Proposed changes to queue for incoming trouble tickets through recommendation 4.17.
  - Changes will allow faster response to the customer, eliminating resubmissions by the customer and by Intrado.

Note: To clarify the statement "the Network Operations Center (NOC) is already monitoring these elements," the NOC is not receiving Intrado reports, those reports are being received by business administration. NOC is only monitoring webservices (such as the OMS queue managers and infrastructure) to ensure services are up and running. This comment has been added to Section 5.1.3 Intrado Changes.

Additional proposed changes:

Storm Season Fix:

We will leverage the monitoring dashboard as an aid for operators to perform a manual workaround when needed. The OMS updates all data into database. Dispatchers can view the duplicate outage reports from monitoring dashboard (to be built as part of 3.2.2.8) and OMS has ability in the GUI to be able to mark those as false incidents and move them to history, removing them from dispatcher priority.

This fix will require new business process to be defined and documented as well as training for the operators / dispatchers in manual usage of monitoring dashboard. It will be delivered in line with the schedule that was communicated in the February 9 meeting entitled "Monitoring 4.18, 3.2.2.4, 3.2.2.5, 3.2.2.7, 3.2.2.8: Holistic Monitoring approach" in slide 5 of the attached "OMS Holistic Monitoring" deck.

Pro: no development required for enabling duplicates to be marked as false incidents in OMS. (development of monitoring dashboard is covered in 3.2.2.8)
Con: duplicate data will remain in the system until an operator marks data as a false incident(s).

Development of storm season fix will allow us the ability to monitor and detect false incidents.

The team is also including tasks in the project plan to move forward with a longer term approach, explained below:

Longer Term Approach:

Working in parallel to above changes, the digital team is exploring a conceptual approach to further reduce duplicate and/or false reports from receipt in OMS.

The approach (pending CGI confirmation, approval and detailed design sessions) is described below:

Current intent is to have OMS enhance its webservice. Calls will be routed to the reporting database, and validation is done if that same customer has called more than any configurable number of times. Once validation is completed, webservice would stop the call from going into OMS. No further action would be taken.

Pros

- Call routing and validation would be done automatically, reducing time needed for operators to manually field and log calls

Cons

- This could slow down system for making additional calls to OMS (reporting database read-only)
- CGI would need to confirm feasibility of this approach

Next steps

1. Identify business rule to define "what is duplicate" (e.g. if same customer has called more than configurable amount of times for same clue code, etc)
2. Team needs to figure out response back to the customer for this scenario through ESB to digital channel (Xtensible).

Note:

- OMS approach considered as ESB is pass through message pipe which does not do any business validations and should not in the future. All business rule validations should be done in digital channels or in OMS.
- OMS was not the cause for duplicates

Table of Contents

1. Project Definition

The OMS project is focused on improving the performance and reliability of the OMS and its ecosystem.

1.1. Project Purpose, Objectives, and Success Criteria

Project Objectives: Reduce or eliminate duplicate / erroneous outage submissions from propagating into OMS. Provide additional visibility into the data for reporting and monitoring purposes.

Project End State and Success Criteria: Changes made to the IVR / HVCA / OMS integration have greatly reduced the duplicate submission incidence rate. Additionally, new fields were added to improve monitoring and triage of outage submissions. The combination of these updates reduces the inconsistencies found during the storm. The end state is a more robust architecture with additional monitoring information which will allow a newly designated system data administrator to more accurately monitor the incoming messaging and reject erroneous outage tickets.

2. Project Deliverables:

Deliverable	Delivery Date	Comments
Requirements Traceability Matrix submitted to LIPA	3/15/2021	
Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Complete	4/9/2021	
Training for dispatchers on new business process	4/23/2021	
V6.7 go-live	5/3/2021	

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- CGI Vendor resources will be available to provide SME time and answer any questions on their applications
- Project implementation timeline is planned to complete all activities ahead of storm season
- XTENSIBLE is responsible for developing, testing and deploying the Sonic ESB middleware between the interfaces and the OMS.
- Required environments will be available to perform testing of the OMS system and integration points with IVR

2.1.2 Dependencies:

- Integrated testing of the OMS system with dependent vendors outlined in the Digital Channels, to provide outage information into the OMS

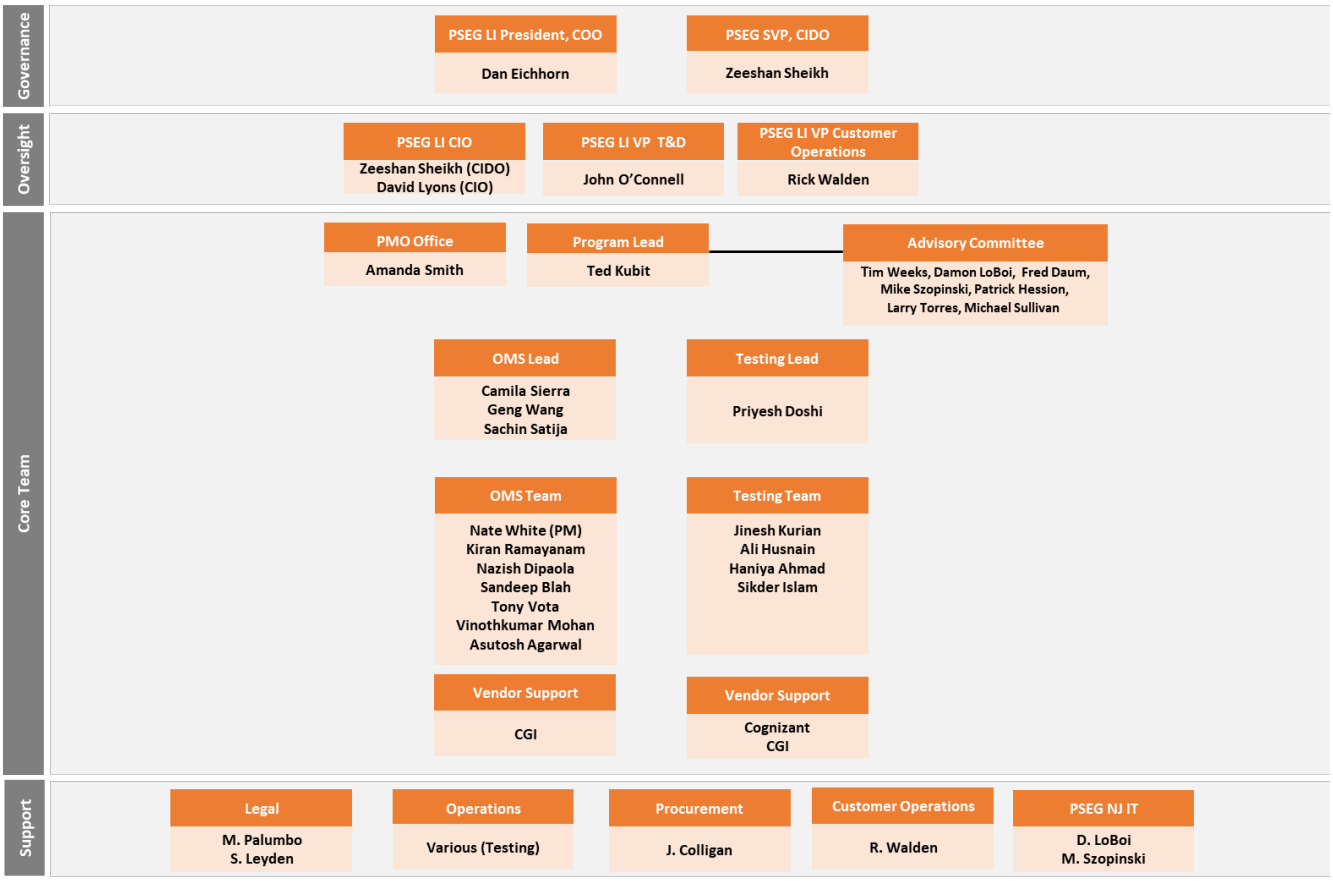
- XTENSIBLE to make any require core development changes to the ESB middleware between the interfaces and the OMS.
- CGI is required to make any necessary modifications to the OMS web services to provide outage status and report outages

2.1.3 Constraints:

- The number of qualified resources with subject matter expertise.
- Competing projects that further constrain available resources.
- Availability of vendor resources to provide application updates and support testing activities.

3. Project Structure

3.1. Internal Project Organization



Role	Name	Responsibilities

Steering Committee	Dan Eichhorn Zeeshan Sheikh	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remained aligned with the guiding principles as *defined* • Providing guidance and input on *key project decisions* • Challenging the project team where appropriate • Approving major *changes to the project's scope, objectives, timelines, costs, etc.* • Acting as the decision maker for issues requiring *escalation* • Removing institutional barriers when *they arise by serving as a project advocate*
PSEG LI CIO	Zeeshan Sheikh (Interim) David Lyons	• Ensuring *workstreams adhere to guiding principles as defined by project leadership* • Managing issues and decision making • Removi*ng obstacles that impede the success of the overall project Providing strategic guidance* • Challenging the project team where appropriate • Approve procurement of external parties (as needed)
Advisory Committee Members	Tim Weeks Damon LoBoi Mike Szopinski Fred Daum Patrick Hession Larry Torres Michael Sullivan	• Providing guidance and input o*n key project decisions* • Assisting in the procurement of external parties (as needed) • Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project • Challenging the pr*oject team*
Team Lead	Camila Sierra Kirankumar Ramayanam Geng Wang	• Drive workstream tasks and deliver recommendations for Solution Design Specification • Provide support for Testing • Aid in the developme*nt functional requirements* • Provide input on requirement / design • Coo*rdinating Business Resources to support the project* • Key Point of contact to for questions from the OMS vendor • Providing sign off for deliverables that require business *input/acceptance* • Delivering the OMS project on time and on budget
Project Manager	Nathan White	• Reporting overall status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resource*s, schedule, issues, risks and change requests* • Process development, requirements definition, • Providing subject matter expertise to th*e project* • User Impact Analysis • Facilitating workshops
Performance Engineer	Sri Kanaparthy	• Supporting Build/Test/Deploy Activities • Assist with Environment setup • Coordinating Development activities • Assist with Technical Design and Architecture • Assist with Transfer of Environments
Business Lead	Anthony Vota Mahamudul Chowdhury Gurkirat Singh Paul Mattera Matthew Otto	• Process development, requirements defini*tion, functional design* • Technical Design • Supporting vendor questions and workshops • Testing Execution
Test Lead	Sandeep Blah Jinesh Kurian	• Providing overall management across testing activities • Develop Test Strategy • Develop Test Data
Test Coordinator	Sikder Islam	• Test Coordination between Vendor and PSEG resources • Responsible for execution of Test Scripts • Test Script Development
Environment Lead	Anish Thomas Sohan Patel Vikas Vohra	• Technical Design development • Environment design support
OMS Developers and Subject Matter Advisors (CGI)	Peter Barnes Guillaume Simard-Lebrun	• Responsible for working with PSEG LI to install and validate the OMS solution • Responsible for defect fixes and troubleshooting functional and performance issues

	Stephane Dumouchel Mark DeAgazio Neel Rana Jeffery Clark	

PSEG NJ IT Subject Matter Advisor	Damon LoBoi
	Michal Szopinski
	Timothy Weeks
	Michael Casella
	Ryan Wilson
	Ajith Elayidom
		• Subject Matter support with:
		  • Build/Test/Deploy Activities
		  • Assist with Environment setup
		  • Coordinating Development activities
		  • Assist with Technical Design and Architecture
		  • Assist with Transfer of Environments

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below*:*

Organization/Team	Name	Responsibilities
Long Island Power Authority	Mujib Lodhi, Rick Shansky	☐ Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	☐ Overall oversight of the entire project portfolio

4. Project Plan

4.1. Project Work Plan

The hardware installation is currently behind plan; the team is reviewing the plan for opportunities to accelerate and is maintaining the baseline date until all impacts can be determined. Once we evaluate the impacts of the hardware installation delays the schedule will be revised accordingly.

Type	Task Name	Status	% Complete	Start	Finish
Recommendation	**Automate monitoring of inbound outage reports to the OMS, to be able to detect and eliminate erroneous reports that may arrive from any source.**	**In Progress**	**65%**	**Mon 11/2/20**	**Wed 3/24/21**
Task	Analyze current state architecture of Intrado	Complete	100%	Mon 11/16/20	Tue 11/24/20
Task	Host design sessions to produce future state architecture for interface improvements	Complete	100%	Mon 11/9/20	Fri 11/20/20
Task	Create a recommendation for future architecture	Complete	100%	Mon 11/9/20	Fri 11/20/20
Task	Conduct RCA testing to identify issues in the interface for remediation	Complete	100%	Mon 11/2/20	Fri 11/6/20

Task	Investigate outcome of RCA testing to determine appropriate fix for issues surrounding calls	Complete	100%	Mon 11/9/20	Tue 11/10/20
Task	IPSEC / MPLS Changes	Complete	100%	Mon 11/16/20	Fri 11/20/20
Task	Mobile App Monitoring	Complete	100%	Mon 11/23/20	Fri 11/27/20
Task	Create holistic monitoring presentation	In Progress	50%	Mon 2/1/21	Fri 2/19/21
Task	Implement correlation ID for outage messaging	Not Started	0%	Wed 2/24/21	Wed 3/24/21
Parent	**Storm Season Fix Approach**				
Task	Understand what currently yields "duplicate and erroneous reports"	In progress	25%	Mon 2/15/21	Fri 2/26/21
Task	Define business rule around "duplicate outage report"	Not Started	0%	Mon 2/15/21	Fri 2/26/21
Task	Finalize requirements for 3.2.2.7 business process change for duplicates based on business rule	Not Started	0%	Mon 2/15/21	Fri 2/26/21
Task	Prepare Requirements Traceability Matrix; add tasks to workplan accordingly	Not Started	0%	Mon 3/1/21	Fri 3/5/21
Task	Review and finalize RTM with PSEG LI leadership	Not Started	0%	Mon 3/8/21	Fri 3/12/21
Deliverable	*Submit RTM to LIPA; revise workplan (if needed)*	*Not Started*	*0%*	*Mon 3/15/21*	*Mon 3/15/21*
Task	Implementation & test of new business process (dependent on 3.2.2.8 monitoring dashboard solution)	Not Started	0%	Thurs 4/1/21	Fri 4/30/21
Task	Update Standard Operating Procedure/ Pre Storm Checklist / IT Runbook	Not Started	0%	Mon 3/29/21	Fri 4/9/21
Document	*Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Complete*	*Not Started*	*0%*	*Fri 4/9/21*	*Fri 4/9/21*
Task	Train dispatchers on new business process	Not Started	0%	Mon 4/12/21	Fri 4/23/21
Task	Training of dispatchers on new business process complete	Not Started	0%	Fri 4/23/21	Fri 4/23/21
Task	V6.7 go-live	Not Started	0%	Mon 5/3/21	Mon 5/3/21

The below activities are part of the potential long-term approach described in section 5.1.2. They will be coordinated with CGI and a schedule will be developed once the project team and CGI align on requirements, design, and resource availability.

Long-Term Approach

Assess solution design
Estimate effort and scope
Prepare Requirements Traceability Matrix
Review and finalize RTM with PSEG LI Leadership
Provide RTM to LIPA for approval
Sign contract for the long-term solution
Build of long-term solution
Test of long-term solution
3.2.2.7 long-term solution deployed

4.2. Risk Management Plan

The table below outlines the applicable risks and associated risk mitigations for the Outage Management System project.

Category	Project Risk	Mitigation
Resources	Resource constraints from OMS team due to competing projects.	Assign and commit sufficient business and IT resources and they are available to support this project. Two new external contracted resources with OMS experience, specifically with CGI's OMS system have been hired to provide operations support allowing existing team members to focus on the project. As necessary, additional contract resources will be hired to back fill normal job responsibilities
Resources	No holistic solution owner from PSEG LI to oversee entirety of solution	PSEG LI to designate a resource to be the holistic oversight for entire solution
Resources	Availability of resources due to other Storm duty priorities	Careful prioritization of projects with LIPA recommendations as top priority in order to complete all tasks/milestones on time.
Schedule / Cost	Contract negotiation could delay project due to multiple vendor partners involved for making changes to the entire architecture	PSEG LI to expedite contract approvals and determine if there are options for performing some work internally

Schedule / Cost	Vendor delays cause the schedule to shift and key project milestones are not able to be met on time	Regular cadence with vendors (weekly) to establish priorities and address issues. Work with the vendor to quickly resolve impediments.
Schedule / Cost	The activities outlined in the OMS project become more complex than anticipated	Review the additional work required to complete the project with the steering committee. Add the scope required complete the project to the implementation plan. Clearly identify the steps that will be taken to anticipate this complexity in future projects.
Program Management	Lack of Scope/Requirements control including changes needed to legacy IT systems	The project scope has been defined; clear change control process will be established by the PMO to address requests for change

4.3. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PMO daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.4. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh, PSEG LI CIO (Interim).

5. Technical Execution Plan

5.1. Technical Approach

5.1.1 Current State Assessment

The team is unclear what is meant by erroneous reports up above. Erroneous could mean:

1. Invalid customers / third party reports coming into PSEGLI
2. Duplicate outage submissions from valid customers through resubmission or other means.

At this time the team does not believe it is possible to receive erroneous data into the OMS in the form of invalid customers/ third party reports. The digital channels perform validations for valid customer IDs on every incoming outage report. OMS performs additional data validations on customer ID's prior to submission into the database such that referential integrity is maintained.

The other type of erroneous data that we have seen is for duplicate outage submissions (multiple outage reports from the same customer with different time stamps).

5.1.2 Plan to Address Duplicates

Below we describe at a high level the plan to address this type of duplicate in the short term:

- **Changes we have already made or are making in the short term:**
    - Changes on Intrado on the resubmission queue to reduce resubmissions coming into OMS.
        - Resubmission queue will only attempt to resubmit for two hours, limiting total resubmissions.
    - Changes on Intrado in swapping existing MPLS circuit with the IPSEC tunnel.
        - This reduced number of network timeouts which in turn reduced outage reports coming into the resubmission queue and the potential for duplicates.
    - Proposed changes to queue for incoming trouble tickets through recommendation 4.17.
        - Changes will allow faster response to the customer, eliminating resubmissions by the customer and by Intrado..

Additional proposed changes:

Storm Season Fix:

We will leverage the monitoring dashboard as an aid for operators to perform a manual workaround when needed. The OMS updates all data into database. Dispatchers can view the duplicate outage reports from monitoring dashboard (to be built as part of 3.2.2.8) and OMS has ability in the GUI to be able to mark those as false incidents and move them to history, removing them from dispatcher priority.

This fix will require new business process to be defined and documented as well as training for the operators / dispatchers in manual usage of monitoring dashboard.

Pro: no development required for enabling duplicates to be marked as false incidents in OMS. (development of monitoring dashboard is covered in 3.2.2.8)
Con: duplicate data will remain in the system until an operator marks data as a false incident(s).

Development of storm season fix will allow us the ability to monitor and detect false incidents.

The team is also including tasks in the project plan to move forward with a longer term approach, explained below:

Longer Term Approach:

Working in parallel to above changes, the digital team is exploring a conceptual approach to further reduce duplicate and/or false reports from receipt in OMS.

The approach (pending CGI confirmation, approval and detailed design sessions) is described below:

Current intent is to have OMS enhance its webservice. Calls will be routed to the reporting database, and validation is done if that same customer has called more than any configurable number of times. Once validation is completed, webservice would stop the call from going into OMS. No further action would be taken.

Pros

- Call routing and validation would be done automatically, reducing time needed for operators to manually field and log calls

Cons

- This could slow down system for making additional calls to OMS (reporting database read-only)
- CGI would need to confirm feasibility of this approach

Next steps

3. Identify business rule to define "what is duplicate" (e.g. if same customer has called more than configurable amount of times for same clue code, etc)
4. Team needs to figure out response back to the customer for this scenario through ESB to digital channel (Xtensible).

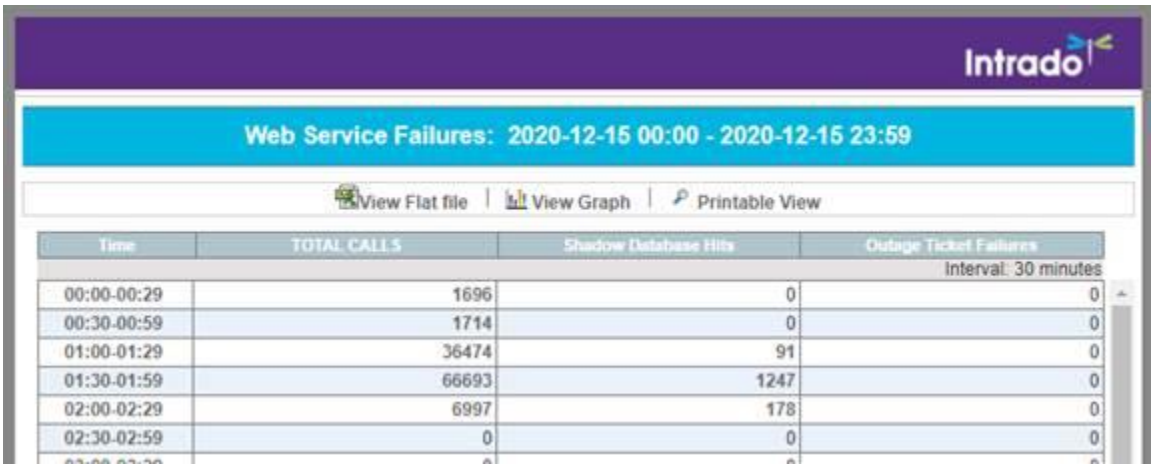
Note:

- OMS approach considered as ESB is pass through message pipe which does not do any business validations and should not in the future. All business rule validations should be done in digital channels or in OMS.
- OMS was not the cause for duplicates

5.1.3 Intrado Changes:

The team has performed a review of the monitoring applications on the Intrado side and added additional names of key resources to enable PSEG LI to be more informed of any issues that occur on the Intrado side.

We monitor the Intrado platform as well for any shadow database hits and outage ticket failures. (Note: the data below is from a stress test). To clarify the statement "the Network Operations Center (NOC) is already monitoring these elements," the NOC is not receiving Intrado reports, those reports are being received by business administration. NOC is only monitoring webservices (such as the OMS queue managers and infrastructure) to ensure services are up and running.



5.1.5 IPSEC / MPLS Swap:

During the storm, data loads over the then primary MPLS circuit exceeded its capacity. This caused web service calls to OMS from Intrado to back up and eventually time out. Additionally, the IPSEC tunnel over the internet, intended to be the backup for the MPLS connection, failed to initialize upon attempted failover.

Once connectivity to OMS was lost, outage reports began to back up on the shadow database hosted within Intrado. Before these reports were able to successfully synch with OMS, the outages were reported through other means. The eventual synching of the shadow database resulted in duplicate reports being created.

Errors in the configuration for the IPSEC tunnel were resolved and a connection was able to be established. Additionally, it was determined that the IPSEC tunnel has greater capacity than the MPLS circuit and sufficient ability to handle storm volumes. As such, the configuration was updated to leverage the IPSEC tunnel as primary and the MPLS circuit as a backup.

A failover test was conducted to confirm the functionality of both links as well as the ability to fail from one to the other in failure scenarios.

5.1.6 Mobile App Monitoring:

Changes made to monitor our API Lambda functions include:

- Access to CloudWatch metrics for additional monitoring
- Provide web service invocation counts and error counts via email alerts to Operations team

5.2. Quality Assurance Plan

5.2.1 QA Methodology:

1. The team will adhere to the PSEG's IT standards for the deployment of this project.
2. PSEG LI IT SharePoint will be used as the document repository.
3. The deliverables will follow the following QA processes:
    a. Team lead review and signoff
    b. Peer Review (PSEG)
    c. Subject Matter Advisor Review as necessary
    d. PSEG Signoff by PSEGLI CIO and President & COO of PSEGLI
    e. Independent Verification and Validation by LIPA CIO

5.3. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Project Artifacts	Description
Design Specification Document	Documentation of the solutions, their configuration and constraints.
Test Strategy & Plans	Test cases & test data are meeting the design requirements
Test Execution Results	Test results indicate the design requirements accomplished.
Operational / Standard Operating Procedure Document	Production Support team including all applicable Production Acceptance, SAP Change Management and IT Change Management documentation and approvals
Go-Live Confirmation Document	The application has been put into production environment and the Company's end users have the ability to access and use the application and its functionality as designed

Revision History

Name	Date	Reason for Changes	Version
Phillip Vallejo	12/10/2020	initial draft	1.0 draft 1
Alex Kniazev / Phil Vallejo	1/13/2021	Revised workplan, expanded technical approach	2.0
Laura Salgado/Brenda Mokua	2/11/2021	Added section to address LIPA feedback, updated Project Plan	2.0 draft 1
Laura Salgado	2/17/2021	Updated section to address LIPA feedback, updated deliverables, project plan, technical approach	2.0 draft 2
Laura Salgado	2/18/2021	Updated in line with legal feedback	2.0 draft 3
Laura Salgado	2/19/2021	Updated feedback/history section with reference to attached "OMS Holistic Monitoring" deck	2.0 draft 4

PSEG Long Island

Project Implementation Plan

for

Isaias Task Force Recommendation Implementations

Recommendation No. 3.2.2.8

Project Title: 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.

PIP History, Feedback, and Actions

On January 26th, LIPA provided feedback on the submitted Tier 1 and Tier 2 implementation plans. On February 2nd PSEG-LI provided documented responses to the feedback from LIPA for all rejected IT implementation plans. PSEG-LI and LIPA met to discuss the specific feedback and proposed path forward for this Implementation plan in a meeting on 2/09/2021. The below are the PSEG-LI responses to the feedback. In the meeting PSEG-LI and LIPA discussed the feedback. No agreement was reached in the meeting, LIPA requested that we provide supporting data, rationale and updates to the Project implementations plans. LIPA stated they would take the feedback and input into consideration in reviewing the plans.

LIPA Response January 27:
"Insufficiently responsive to previous comments. The recommendation is for automated mo nitoring on the OMS end irrespective of whether the failure mode is corrected in the IVR, hence the requested tasks for identification of all potential erroneous data forms, data correction options and potential performance impacts need to be conducted at the OMS level regardless of the originating IVR leg, which is not clearly reflected in the work plan. The request to obtain LIPA sign-off on requirements and proposed solution is not fully addressed (a LIPA sign-off task has been added only for the RTM for one part of the solution, with a duration of a single day). Re-platforming is listed as a dependency, but the impacts are not clearly addressed - the work plan should clearly identify the tasks that have this dependency
and ensure alignment of dates with OMS plans; and the technical approach should clear ly identify the OMS environments that are planned for use for the various tasks."

PSEG Long Island Actions:
As described in Section 5.1 Technical Approach, the project team aligned with CGI, Xtensible, and relevant PSEG LI stakeholders on the high-level approach for this recommendation. In time for the v6.7 go-live and storm season the project team will:

1. Deploy a monitoring dashboard built off the Request/Response data collected in the ESB.
2. Come back to LIPA with a Requirements Traceability Matrix for the monitoring dashboard in mid-March once we align on the requirements and schedule for build, test, and deployment (see Section 2 Deliverables and section 4 Project Plan for detailed schedule and deliverable dates)
3. By end of March, after detailed design workshops and procurement of the monitoring tool as described in PIP 3.2.2.4, the project team will submit a detailed design to LIPA for approval
4. This dashboard will be used by dispatchers in the new business process to remove duplicates, as described in PIP 3.2.2.7

This schedule aligns with what was communicated in the February 9 meeting entitled "Monitoring 4.18, 3.2.2.4, 3.2.2.5, 3.2.2.7, 3.2.2.8: Holistic Monitoring approach" in slide 5 of the attached "OMS Holistic Monitoring" deck.

As mentioned in PIP 3.2.2.7, with regards to "potential erroneous data forms", the team does not believe it is possible to receive erroneous data into the OMS in the form of invalid customers/ third party reports. The digital channels perform validations for valid customer IDs on every incoming outage report. OMS performs additional data validations on customer ID's prior to submission into the database such that referential integrity is maintained.

The other type of erroneous data that we have seen is for duplicate outage submissions (multiple outage reports from the same customer with different time stamps). Our current assessment of

"data correction options and their potential impacts" is discussed in PIP 3.2.2.7. We will expand on this in our detailed design discussions, and these tasks have been added to our Project Plan in Section 4 accordingly.

Table of Contents

1. Project Definition

This implementation plan is focused on creating automated monitoring of data that is arriving from the IVR to detect potentially duplicate or otherwise bad information. This plan will outline the necessary project activities that are required to implement monitoring of the interface between the IVR and OMS to flag for duplicate and other inconsistent data as well as document the process steps and solution developed.

1.1. Project Purpose, Objectives, and Success Criteria

Project Objectives: Develop and deploy automated monitoring of data quality from IVR to OMS system using Request/Response data which is currently collected in the ESB to generate reports and alarms and consolidate in a dashboard for monitoring purposes. Create procedure that documents process steps when bad data quality occurs.

Project End State and Success Criteria*:* Deployed automated monitoring of data quality from the IVR to the OMS allowing action to be taken in case of duplicate or otherwise bad information. Changes made to the IVR / HVCA / OMS integration have greatly reduced the duplicate submission incidence rate. Additionally, new fields were added to improve monitoring and triage of outage submissions. The combination of these updates reduces the inconsistencies found during the storm. The end state is a more robust architecture with additional monitoring information which will allow a newly designated system data administrator to more accurately monitor the incoming messaging and reject erroneous outage tickets.

2. Project Deliverables:

Describe applicable Project Deliverables:

Deliverable	Delivery Date	Comments
Requirements Traceability Matrix submitted to LIPA	3/15/2021	See section 4.0 for detailed project plan
Procurement of monitoring tool	3/26/2021	
Detailed design submitted to LIPA	3/31/2021	
Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Complete	4/2/2021	
Deploy to v6.7	5/3/2021	

2.1. Assumptions, Dependencies, and Constraints

2.1.1 Assumptions:

- CGI Vendor resources will be available to provide SME time and answer any questions on their applications
- Project implementation timeline is planned to complete all activities ahead of storm season
- XTENSIBLE is responsible for developing, testing and deploying the Sonic ESB middleware between the interfaces and the OMS.

- Required environments will be available to perform testing of the OMS system and integration points with IVR
- This implementation plan is only applicable to OMS v6.7

2.1.2 Dependencies:

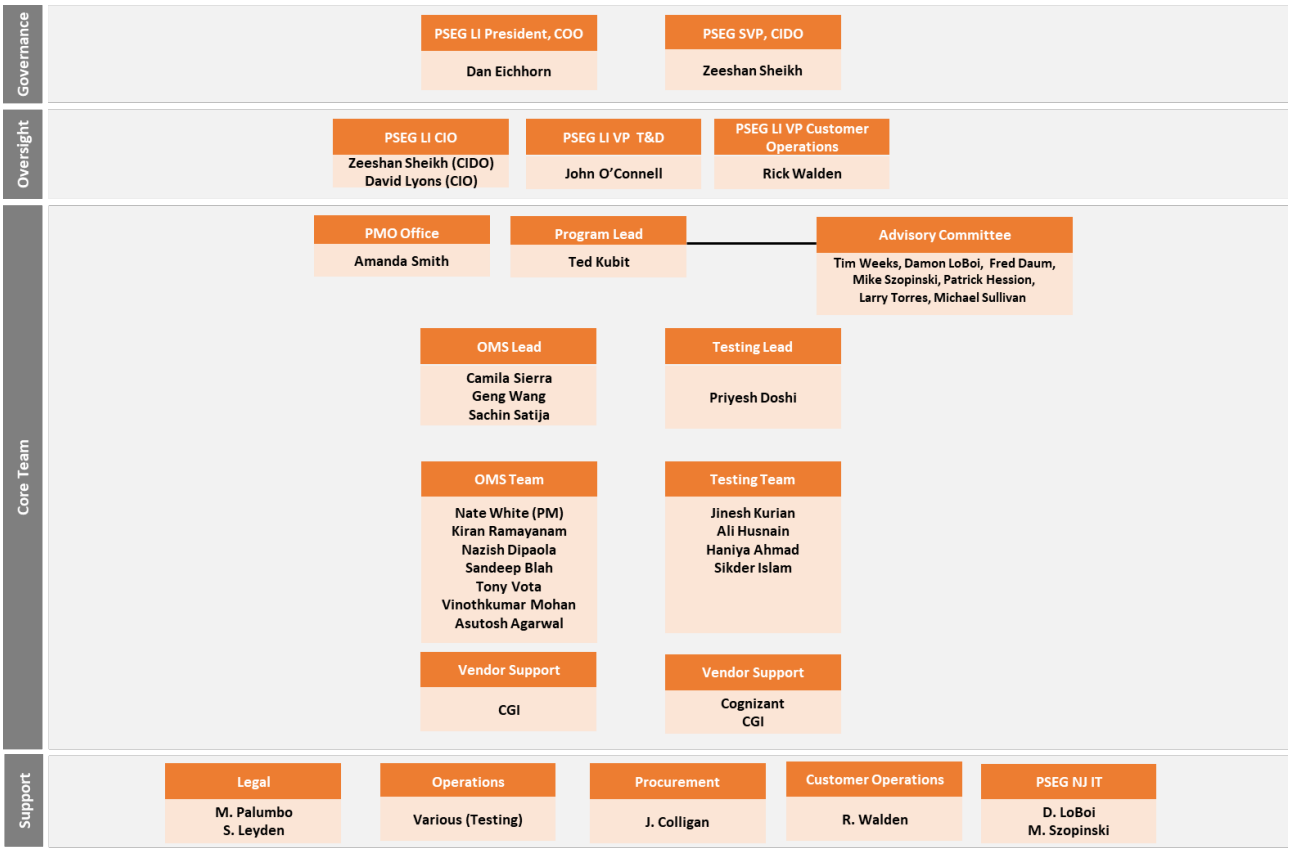
- CGI to make any required core development changes to the OMS v5.5 or v6.7 to enable performance
- Integrated testing of the OMS system with dependent vendors outlined in the Digital Channels and Telecom implementation plans, to provide outage information into the OMS
- CGI is required to make any necessary modifications to the OMS web services to provide outage status and report outages
- The timeline is dependent on alignment of overall test approach for all workstreams (OMS, Digital Channels, Telecom, Field Mobility) between PSEG LI and LIPA
- The timeline to apply the recommendations to v6.7 is dependent on procurement of new hardware required for the re-platform of OM v6.7
- The timeline to complete the recommendations is dependent on timely procurement of new monitoring tool e.g. Splunk, as outlined in PIP 4.18, by 26-March

2.1.3 Constraints:

- The number of qualified resources with subject matter expertise.
- Competing projects that further constrain available resources.
- Availability of vendor resources to provide application updates and support testing activities.

3. Project Structure

3.1. Internal Project Organization



Role	Name	Responsibilities
Steering Committee	Dan Eichhorn Zeeshan Sheikh	• Championing the PSEG LI Storm Restoration initiative • Establishing guiding principles for the project • Ensuring project activities remained aligned with the guiding principles as *defined* • Providing guidance and input on *key project decisions* • Challenging the project team where appropriate • Approving major *changes to the project's scope, objectives, timelines, costs, etc.* • Acting as the decision maker for issues requiring *escalation* • Removing institutional barriers when *they arise by serving as a project advocate*
PSEG LI CIO	Zeeshan Sheikh (Interim) David Lyons	• Ensuring *workstreams adhere to guiding principles as defined by project leadership* • Managing issues and decision making • Removi*ng obstacles that impede the success of the overall project Providing strategic guidance* • Challenging the project team where appropriate • Approve procurement of external parties (as needed)
Advisory Committee Members	Tim Weeks Damon LoBoi Mike Szopinski Fred Daum	• Providing guidance and input o*n key project decisions* • Assisting in the procurement of external parties (as needed) • Removing obstacles that impede the success of the overall project • Providing subject matter expertise to the project • Challenging the pr*oject team*

	Patrick Hession Larry Torres Michael Sullivan	
Team Lead	Camila Sierra Kirankumar Ramayanam Geng Wang	• Drive workstream tasks and deliver recommendations for Solution Design Specification • Provide support for Testing • Aid in the development *functional requirements* • Provide input on requirement / design • Coo*rdinating Business Resources to support the project* • Key Point of contact to for questions from the OMS vendor • Providing sign off for deliverables that require business *input/acceptance* • Delivering the OMS project on time and on budget
Project Manager	Nathan White	• Reporting overall status of the project to Stakeholders and Program Leadership • Identifying and escalating resource issues • Providing status reports for delivery to internal and external stakeholders (LIPA, DPS) • Manage resource*s, schedule, issues, risks and change requests* • Process development, requirements definition, • Providing subject matter expertise to th*e project* • User Impact Analysis • Facilitating workshops
Performance Engineer	Sri Kanaparthy	• Supporting Build/Test/Deploy Activities • Assist with Environment setup • Coordinating Development activities • Assist with Technical Design and Architecture • Assist with Transfer of Environments
Business Lead	Anthony Vota Mahamudul Chowdhury Gurkirat Singh Paul Mattera Matthew Otto	• Process development, requirements defini*tion, functional design* • Technical Design • Supporting vendor questions and workshops • Testing Execution
Test Lead	Sandeep Blah Jinesh Kurian	• Providing overall management across testing activities • Develop Test Strategy • Develop Test Data
Test Coordinator	Sikder Islam	• Test Coordination between Vendor and PSEG resources • Responsible for execution of Test Scripts • Test Script Development
Environment Lead	Anish Thomas Sohan Patel Vikas Vohra	• Technical Design development • Environment design support
OMS Developers and Subject Matter Advisors (CGI)	Peter Barnes Guillaume Simard-Lebrun Stephane Dumouchel Mark DeAgazio Neel Rana Jeffery Clark	• Responsible for working with PSEG LI to install and validate the OMS solution • Responsible for defect fixes and troubleshooting functional and performance issues

PSEG NJ IT Subject Matter Advisor	Damon LoBoi
	Michal Szopinski
	Timothy Weeks
	Michael Casella
	Ryan Wilson
	Ajith Elayidom
		• Subject Matter support with:
		  • Build/Test/Deploy Activities
		  • Assist with Environment setup
		  • Coordinating Development activities
		  • Assist with Technical Design and Architecture
		  • Assist with Transfer of Environments

3.2. Other Stakeholders

Identification of other internal and external project stakeholders is shown below*:*

Organization/Team	Name	Responsibilities
Long Island Power Authority	Mujib Lodhi, Rick Shansky	• Overall oversight of the entire project portfolio
Department of Public Service	Joseph Suich, Kevin Wisely	• Overall oversight of the entire project portfolio

4. Project Plan

4.1. Project Work Plan

The following project tasks are part of the larger OMS integrated project plan. These are specific to recommendation 3.2.2.8. The hardware installation is currently behind plan; the team is reviewing the plan for opportunities to accelerate and is maintaining the baseline date until all impacts can be determined. Once we evaluate the impacts of the hardware installation delays the schedule will be revised accordingly.

Type	Task Name	Status	% Complete	Start	Finish
Recommendation	**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 report.**	**In Progress**	**35%**	**Mon 11/2/20**	**Mon 5/3/21**
Parent	**Monitoring Solution**	**Not Started**	**0%**	**Mon 2/15/21**	**Mon 5/3/21**
Task	Conduct requirements workshops	In progress	25%	Mon 2/15/21	Fri 2/26/21
Task	Identify all potential erroneous data forms	In progress	25%	Mon 2/15/21	Fri 2/26/21
Task	Identify data correction options	In progress	25%	Mon 2/15/21	Fri 2/26/21
Task	Identify potential performance impacts	In progress	25%	Mon 2/15/21	Fri 2/26/21
Document	*Finalize requirements for 3.2.2.8 monitoring solution*	*Not Started*	*0%*	*Fri 2/26/21*	*Fri 2/26/21*

Task	Prepare Requirements Traceability Matrix; add tasks to workplan accordingly	Not Started	0%	Mon 3/1/21	Fri 3/5/21
Task	Review and finalize RTM with PSEG LI leadership	Not Started	0%	Mon 3/8/21	Fri 3/12/21
Document	*Submit RTM for monitoring solution and timeline to LIPA; revise workplan*	*Not Started*	*0%*	*Mon 3/15/21*	*Mon 3/15/21*
Task	Revise workplan with dates for build, test, and deployment of monitoring dashboard	Not Started	0%	Mon 3/8/21	Fri 3/19/21
Document	*Standard Operating Procedure/ Pre Storm Checklist / IT Runbook Updates Complete*	*Not Started*	*0%*	*Fri 4/2/21*	*Fri 4/2/21*
Task	Evaluation of monitoring tool	Not Started	0%	Mon 3/1/21	Fri 3/12/21
Task	Monitoring tool procurement	Not Started	0%	Mon 3/15/21	Fri 3/26/21
Task	Detailed design workshops	Not Started	0%	Mon 3/8/21	Fri 3/19/21
Task	Complete detailed design & review with PSEG LI leadership	Not Started	0%	Mon 3/22/21	Fri 3/26/21
Document	*Submit detailed design to LIPA*	*Not Started*	*0%*	*Wed 3/31/21*	*Wed 3/31/21*
Task	Implementation & test	Not Started	0%	Thurs 4/1/21	Fri 4/30/21
Task	V6.7 go-live	Not Started	0%	Mon 5/3/21	Mon 5/3/21

4.2. Risk Management Plan

The table below outlines the applicable risks and associated risk mitigations for the Outage Management System project.

Category	Project Risk	Mitigation
Resources	Resource constraints from OMS team due to competing projects.	Assign and commit sufficient business and IT resources and they are available to support this project. Two new external contracted resources with OMS experience, specifically with CGI's OMS system have been hired to provide operations support allowing existing team members to focus on the project. As necessary, hire contract resources to back fill normal job responsibilities
Resources	No holistic solution owner from PSEG LI to oversee entirety of solution	PSEG LI to designate a resource to be the holistic oversight for entire solution

Resources	Availability of PSEG LI resources due to other Storm duty priorities	Careful prioritization of projects with LIPA recommendations as top priority in order to complete all tasks/milestones on time.
Schedule / Cost	Contract negotiation could delay project due to multiple vendor partners involved for making changes to the entire architecture	PSEG LI to expedite contract approvals and determine if there are options for performing some work internally
Schedule / Cost	Vendor delays cause the schedule to shift and key project milestones are not able to be met on time	Regular cadence with vendors (weekly) to establish priorities and address issues. Work with the vendor to quickly resolve impediments
Schedule / Cost	The activities outlined in the OMS project become more complex than anticipated	Review the additional work required to complete the project with the steering committee. Add the scope required complete the project to the implementation plan. Clearly identify the steps that will be taken to anticipate this complexity in future projects.
Program Management	Lack of Scope/Requirements control including changes needed to legacy IT systems	The project scope has been defined; clear change control process will be established by the PMO to address requests for change
Schedule/Cost	All project activities are dependent on the successful receipt and installation of new hardware and application installation of OMS v6.7. If the hardware is delayed all project activities for this project will be impacted.	Closely monitor delivery of hardware and perform as many tasks as possible in parallel to mitigate any potential delays.

4.3. Issue Resolution Plan

Issues and risks will be identified by the PSEG LI Team and the PMO daily. These items will be logged in an issue/risk tracker. The information in the tracker will be reviewed by the steering committee each week. The steering committee will determine the appropriate actions (if necessary) to get the project on track. The issue/risk tracker will be used to track items to closure, identifying the resolution date and course of action taken.

4.4. LIPA Reporting Plan

Weekly status reports for all recommendations, containing project progress and documentation will be provided to LIPA by Zeeshan Sheikh, PSEG LI CIO (Interim).

5. Technical Execution Plan

5.1. Technical Approach

5.1.1 ***Monitoring Dashboard Solution***
The project team aligned with CGI, Xtensible, and relevant PSEG LI stakeholders on the high-level approach for this PIP. In time for the v6.7 go-live and storm season the project team will:

- Deploy a monitoring dashboard built off the Request/Response data collected in the ESB.
- Come back to LIPA with an RTM for the monitoring dashboard in mid-March once we align on the requirements and schedule for build, test, and deployment
- By end of March, after detailed design workshops and procurement of the monitoring tool as described in PIP 3.2.2.4, the project team will submit a detailed design to LIPA for approval
- This dashboard will be used by dispatchers in the new business process to remove duplicates, as described in PIP 3.2.2.7

This schedule aligns with what was communicated in the February 9 meeting entitled "Monitoring 4.18, 3.2.2.4, 3.2.2.5, 3.2.2.7, 3.2.2.8: Holistic Monitoring approach" in slide 7 of the attached deck.

As mentioned in PIP 3.2.2.7, as far as "identification of erroneous data forms", the team is unclear what is meant by "erroneous". Erroneous could mean:

- Invalid customers / third party reports coming into PSEGLI
- Duplicate outage submissions from valid customers through resubmission or other means.

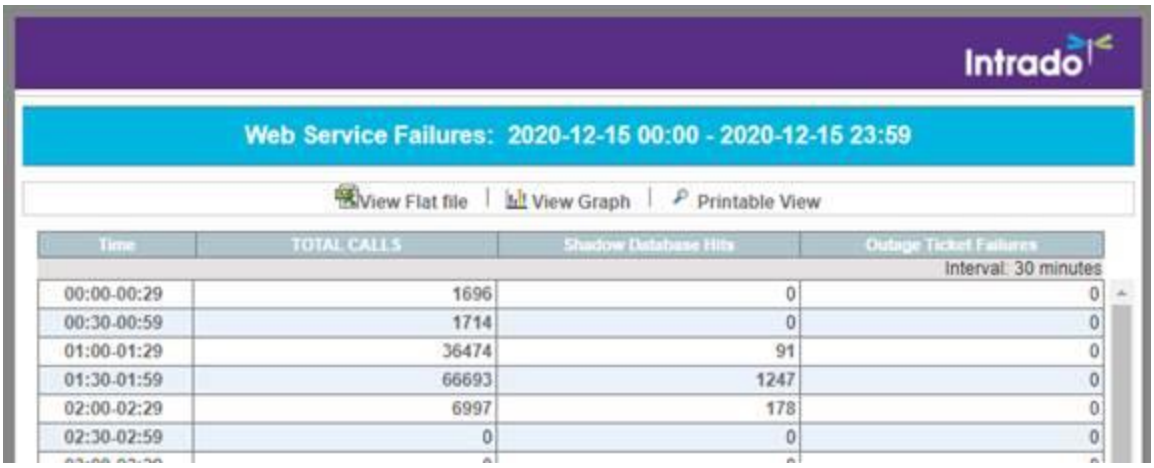
Currently, the team does not believe it is possible to receive erroneous data into the OMS in the form of invalid customers/ third party reports. The digital channels perform validations for valid customer IDs on every incoming outage report. OMS performs additional data validations on customer ID's prior to submission into the database such that referential integrity is maintained.

The other type of erroneous data that we have seen is for duplicate outage submissions (multiple outage reports from the same customer with different time stamps). Our current assessment of "data correction options and their potential impacts" is discussed in PIP 3.2.2.7. We will expand on this in our detailed design discussions.

5.1.2 Intrado Changes:

The team has performed a review of the monitoring applications on the Intrado side and added additional names of key resources to enable PSEG LI to be more informed of any issues that occur on the Intrado side.

We monitor the Intrado platform as well for any shadow database hits and outage ticket failures. (Note: the data below is from a stress test).



5.1.3 Intrado Primary / Backup Leg Improvements

Changes made on the Intrado side to incoming outage submission XMLS will add additional information for outage source and submission time which will help in monitoring and determining erroneous reports. These changes will be propagated to the ESB and OMS.

Stale threshold configuration has been reduced to two hours for outages submitted through HVCA to the queue to reduce the likelihood of duplicate outage submissions.

5.2. Quality Assurance Plan

The team will adhere to the PSEG's IT standards for the deployment of this project. PSEG LI IT SharePoint will be used as the document repository.

An individual test plan will be created, and for this recommendation it will include the following: Scope of Testing, Test Criteria, Tests to be performed (e.g.: Functional, Acceptance, Regression, Performance Testing, End to end).

Test plan and test results will be signed off by PSEGLI CIO and President & COO of PSEGLI, and shared with LIPA upon completion

The basis for all performance and stress testing will be based on the data model below:

Stress Test Data Model

5.3. Documentation Plan

Throughout the project lifecycle the implementation team will document and deliver the key deliverables as listed above in Section 2. The due date of each deliverable will be based off the

Project Schedule as outlined in Section 4.1. A final Project Closure Document will be delivered once all LIPA Recommendations in this implementation plan are completed.

Project Artifacts	Description
Design Specification Document	Documentation of the solutions, their configuration and constraints.
Test Strategy & Plans	Test cases & test data are meeting the design requirements
Test Execution Results	Test results indicate the design requirements accomplished.
Operational / Standard Operating Procedure Document	Production Support team including all applicable Production Acceptance, SAP Change Management and IT Change Management documentation and approvals
Go-Live Confirmation Document	The application has been put into production environment and the Company's end users have the ability to access and use the application and its functionality as designed

Revision History

Name	Date	Reason for Changes	Version
McKenzie Kennedy	12/9/20	Initial Draft	1.0 draft 1
Kirankumar Ramayanam / Camila Sierra	12/10/20	Reviewed and comments incorporated	1.0 draft 2
Alex Kniazev / Phil Vallejo	1/13/2021	Revised workplan, expanded technical approach	2.0
Laura Salgado/Brenda Mokua	2/11/2021	Added section to address LIPA feedback, updated Project Plan	3.0
Laura Salgado	2/17/2021	Updated section to address LIPA feedback, project objective, dependencies, project plan, deliverables, technical approach	4.0
Laura Salgado	2/18/2021	Updated in line with legal feedback	5.0
Laura Salgado	2/19/2021	Updated the feedback/history section and technical approach section to reference the OMS Holistic Monitoring slide deck	6.0